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Education and Law: The Right to Education

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Abstract

Education, like other social domains, assumes and requires an embedding in a legal framework. Moreover, education from different angles, is so important that both international law and national law guarantee certain aspects as fundamental rights.
The right to education is, without exaggeration, one of the most fundamental human rights of the twentieth and twenty-first century, not only for minors but also for adults (e.g. long-life-learning). As a socio-economic and socio-cultural right, the right to education is not only recognized in numerous national constitutions, but it too takes a prominent place in many human rights treaties; in this respect as the most important can be mentioned, inter alia, Article 26 of the Universal Declaration of Human Rights, Article 13 of the International Covenant on Economic Social and Cultural Rights, Article 28 of the Convention on the Rights of the Child and Article 26 of the UN Convention on the Rights of People with Disabilities. Furthermore, the right to education is also enshrined in regional human rights treaties, including Article 2 of Protocol No. 1 of the European Convention on Human Rights and Article 17 of the African Charter of Human Rights.
Since the first mention of the right to education in international law, it has undergone a huge evolution, although the Treaty texts have remained unchanged. That substantive development, obviously, cannot be dissociated from social progress and economic development, especially in the last decades, and this not only in the so-called West but increasingly also in wat is mentioned as countries in development. The right to education has therefore no longer the clear and simple meaning that it had in the drafting of the first treaties, in particular access to educational institutions and services.
The purpose of the proposed paper is to examine how this right to education has evolved in the last fifty years. The starting point is the case law of the European Court of Human Rights and the lessons that can be drawn. With regard to the right to education, the European Convention on human rights, although formulated in negative and not positive terms, corresponds largely to the global human rights treaties, the evolving interpretation of the European Court of Human Rights concerning this fundamental right is also instructive for other continents and countries. States are faced with questions, among others, as i) the extent of the regulatory power of the government, ii) the right to education of foreign nationals and even illegal immigrants, iii) how to deal with the right to education of minorities in a State and with a minority language as language of instruction, iv) the relationship between religious and philosophical convictions of parents and the curriculum (e.g. sex education, religious education at school), v) the problem of education for detained persons, vi) recognition of completed studies (including those abroad), vii) …
For the ICEL Conference in Tokyo is pivotal: what can be learned and, contingent, adopted from that European case law for the Asian continent and countries regarding the right to education for every individual?

Keyword: Educational law, Human Rights, Right to Education

A. Legal Basis: International Low

1. Several international[1] and regional[2] treaties on human rights contain one or more provisions with education as an object. A thorough investigation of all of those international provisions is beyond this paper's scope; here, the overview and analysis is limited to the right to education, and to the extent that this right is relevant in a European context.

2. In terms of Art. 2 of the First Protocol ECHR, *"no person shall be denied the right to education. In the exercise of any functions which it assumes in relation to education and to teaching, the State shall respect the right of parents to ensure such education and teaching in conformity with their own religious and philosophical convictions"*.[3]

3. All human rights treaties have, amongst other, for objective to create a common understanding about human rights and to formulate common standards of goals[4]; state-parties ratifying these international human rights instrument are bound to the agreements put forward in these covenants. Specifically, the State has i) to protect the right to education and has to refrain from actions which violate this right, ii) has to ensure that third parties do not infringe this right of others and iii) has to provide facilities required so that citizens can enjoy this right.

B. Brief Comparison

4. It should be noted that the right to education, such as that honoured in the ICESCR-Treaty and the Convention on the Rights of the Child, is formulated in a positive sense, while in the First Protocol to the ECHR the determination has been made in a negative sense.[5] However, the right to education plays such an important role in the education of youngsters, that a restrictive interpretation of the ECHR-guarantee would not be consistent with the aim of the provision; the right however is not absolute and may be subject to limitations, in so far as these restrictions do not curtail the right such that it is deprived of its effectiveness. Within the ECHR, States have a negative obligation not to interfere with the right to education.

Art. 2 of the First Protocol protects the right to education and the freedom of education[6], as well as the right to be respected in the teaching of the parents' philosophical, ideological or religious beliefs and the consequent right to free choice regarding the school setting and ideological and religious education.[7] The

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1 See Art. 26 Universal Declaration on Human Rights; Art. 13 International Covenant on Economic, Social and Cultural Rights; Art. 28 Convention on the Rights of the Child; UNESCO Convention against Discrimination in Education; Art. 10 Convention on the Elimination of All Forms of Discrimination Against Women; Art. 24 Convention on the Rights of Persons with Disabilities. Also G. VAN BUEREN, *The International Law on the Rights of the Child*, 233.

2 *E.g.* Art. 2 First Protocol European Convention on Human Rights; Art.14 Charter of Fundamental Rights of the European Union.

3 On the drafting of Art. 2 First Protocol: J. FAWCETT, *The Application of the European Convention on Human Rights*, 411-416.

4 P. KUNDU, "The Right to Education: Some Theoretical Issues", *Contemporary Issues and Ideas in Social Sciences* 2005/1, 3.

5 In the Campbell and Cosans case the Government of the U.K. tried to invoke the reserve it has made that the right of choice of parents for education corresponding to their religious and ideological beliefs could be accepted only to the extent that it is compatible with effective education and exercise and no unreasonable costs are incurred. The European Court rejected the argument of the government under Art. 64 of the ECHR. See: L. CLEMENTS, *European Human Rights. Taking A Case Under The Convention*, 210.

6 Commission, n° 11.533/85, 6 March 1987, Ingrid Jordebo Foundation of Christian Schools and Ingrid Jordebo vs Sweden: *"This provision guarantees the right to start and run a private school, such a right being, however, subject to regulation by the State in order to ensure in particular the quality of education"*. Cf. J. VELU and R. ERGEC, *La Convention européenne des droits de l'homme*, n° 778.

7 Further about this: L. WILDHABER, "Right to Education and Parental Rights", in R.S. MACDONALD, F, MATSCHER

freedom to enjoy education in accordance with one's own conviction has the following characteristics: it is an absolute freedom allowed to the extent that it is beyond any influence or pressure from the outside and it is a permanent freedom as far as it is not allowed to interrupt the freedom of choice. Moreover, this choice can be changed at any time at the person's discretion and should not be justified vis-à-vis the government. Those different aspects can also be found in the ICESCR-Treaty and the Convention on the Rights of the Child.
Other than Art. 13 of the ICESCR-Treaty, the direct applicability of Art. 2 of the First Protocol is widely accepted.
5. Free access to education is not required or prescribed by the First Protocol to the ECHR, while the comparable provisions of the ICESCR-Treaty and the Convention on the Rights of the Child in this respect are rather declarations of intent. All cited laws, however, contain an explicit provision on compulsory education, with the exception of the European Convention on Human Rights.

C. The Right to Education

§1 Preliminary remarks and observations

6. In interpreting and applying Art. 2, primarily by the national authorities and courts[8], one must regard the fact that its context is a treaty for the effective protection of individual human rights, and that the Convention must be read as a whole and be interpreted in such a way as to promote internal consistency and harmony between its various provisions.[9] The two sentences of Art. 2 must therefore be read not only in the light of each other but also, in particular, in terms of Articles 8, 9 and 10 of the Convention which proclaim the right of everyone, including parents and children, *"to respect for his private and family life"*, to *"freedom of thought, conscience and religion"* and to the *"freedom [...] to receive and impart information and ideas"*.[10] Art. 2 therefore restricts State interference in education.
The Convention should, as far as possible, be interpreted in harmony with other relevant rules and principles of international law of which it forms a part.[11] Finally, the object and purpose of the Convention, as an instrument for the protection of individual human beings, requires that its provisions be interpreted and applied so as to make its safeguards practical and effective.
7. The introductory phrase of Art. 2 contains a guarantee of education for the legal subject, particularly, the right of access to existing educational institutions, the right to education in the national language, as well as the right to official recognition of studies. According to the second sentence of the Article, the State, in the exercise of any functions in relation to education and teaching, shall respect the right of parents to ensure that such education and teaching is in conformity with their own religious and philosophical convictions.
8. Although the right to education qualifies as one of the most important in a modern society, and aims to facilitate political integration and the realization of socio-economic rights[12], it must be clear that the right to education is not absolute but may be subject to limitations[13]; provided that there is no injury to the substance of the right, these limitations are permitted, as education by its very nature calls for State regulation. In order to ensure that the restrictions do not curtail the right in question to such an extent as

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and H. PETZOLD (eds.),*The European System for the Protection of Human Rights*, 551.

8 Explicitly ECtHR, Leyla Şahin vs Turkey, 10 November 2005, §99; ECtHR, Köse and others vs Turkey, 24 January 2006.

9 ECtHR, Catan and others vs Molodova and Russia, 19 October 2012, §136.

10 *E.g.* ECtHR, Kjeldsen, Busk Madsen and Pedersen, 7 December 1976, §52; ECtHR, Leyla Şahin vs Turkey, 10 November 2005, §156. See also L. CLEMENTS, *European Human Rights. Taking a Case under the Convention*, 207.

11 ECtHR, Cyprus vs Turkey, 10 May 2001, §273-274; ECtHR, Catan and others vs Molodova and Russia, 19 October 2012, §136.

12 K. BEITER, *The Protection of the Right to Education by International Law*, 29-30; B. RAINEY, E. WICKS and C. OVEY, *Jacobs, White and Ovey: The European Convention on Human Rights*, 521.

13 E.g. ECtHR, Belgian Linguistic Case, 23 July 1968, §65; ECtHR, Leyla Şahin vs Turkey, 10 November 2005, §154.

to impair its very essence and deprive it of its effectiveness, the restrictions must be foreseeable for those concerned and pursue a legitimate aim. However, unlike the position with respect to Articles 8 to 11 of the Convention, it is not bound by an exhaustive list of "legitimate aims" under Art. 2. A limitation assumes a reasonable relationship of proportionality between the means employed and the aim sought.[14]

9. Lastly, as has been settled in many other cases also regarding the right to education, the Convention (and the Protocols) is *"a living instrument which must be interpreted in the light of present-day conditions"*.[15]

§2 Definition of the term "education"

10. In the Belgian Linguistic Case, the Commission has opted for a broad interpretation of the term education: nursery, primary, secondary and higher education all fall under the concept[16]
and applies with respect to both State and private institutions.[17]
In a small number of subsequent decisions, harshly criticized[18], the Commission[19] returned to its previous jurisprudence and stated that the right to education applies *"mainly to primary education (...) and not necessarily higher specialized studies"*.

§3 Scope ratione personae

11. It is generally determined that, corresponding Art. 2, no one should be denied the right to education. This provision can thus be invoked by any legal subject who is within the jurisdiction of the Contracting States. Minors and adults, nationals as well as foreigners[20], stateless persons as well as illegal residing persons[21], are therefore bearers of this fundamental right.[22] Rephrased, the right to education applies regardless of the age of the beneficiary, his nationality, etc..

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14 ECtHR, Leyla Şahin vs Turkey, 10 November 2005, §154; ECtHR, Ali vs the U.K., 11 January 2011, §53; ECtHR, Catan and others vs Moldova and Russia, 19 October 2012, §140; ECtHR, Tarantino and others vs Italy, 2 April 2013, §45.

15 ECtHR, Leyla Şahin vs Turkey, 10 November 2005, §136.

16 In general *"(...) the right to education, 'for the purpose of considering the present case', 'includes entry to nursery, primary, secondary and higher education'"* (ECTHR, Belgian Linguistic Case, 23 July 1968, §1). For *nursery education*: ECtHR, Scozzari and Giunta vs Italy, 13 July 2000, §242. For *secondary education* in particular: ECtHR, Cyprus vs Turkey, 10 May 2001, specifically §273-280. Specific for *higher education*, see ECtHR, Tarantino and others vs Italy, 2 April 2013, §43, as far as the complainer fulfils the university's entrance requirements (cf. ECtHR, Lukach vs Russia, 16 November 1999 regarding a disabled person; ECtHR, Tarantino and others vs Italy, 2 April 2013 with regard to the necessity to pass entrance examinations). Further K.A. PŪRAITÉ, "Accessibility of Higher Education: The Right to Higher Education in Comparative Approach", *Baltic Journal of Law & Politics* 2011/1, 27-51; A. JAKUBOWSKI, "The right to education (Art. 2 of Protocol No. 1 to the Convention) and numerus clausus in higher", *Studies in Public Law* 2014/1, 107 stresses that this right for higher education at all levels, *i.e.* bachelor, master and doctoral studies.

17 ECtHR, Kjeldsen, Busk Madsen and Pedersen, 7 December 1976, §50; ECtHR, Folgerø and others vs Sweden, 29 June 2007, §84; ECtHR, Hasan and Eylem Zengin, 9 October 2007, §48.

18 L. WILDHABER (*Right to Education and Parental Right*, 531) considers that the wording, the purpose and a correct interpretation of Art. 2 indicates that "education" refers to all levels of education; G. COHEN-JONATHAN (*La Convention européenne des droits de l'homme*, 492) considers that Art. 2 applies to all levels of education. According to P. KUNDU (*The Right to Education: Some Theoretical Issues* 2 and 8-12) the right to education in developing countries is derivable from economic efficiency considerations.

19 *E.g.* Commission, n° 5962/72, 13 March 1975, X vs the U.K.; same opinion also adopted in ECtHR, Georgiou vs Greece, 13 January 2000 as follows: *"Art. 2 is concerned primarily with elementary education and not necessarily advanced studies"*.

20 Commission, n° 25.297/94, 16 January 1996, Powell and others vs the U.K..

21 *E.g.* R. HODGKIN and P. NEWELL, *Implementation Handbook for the Convention on the Rights of the Child*, 23; E. KOMADA, "Turned away: The Detrimental Effect of Italy's Public Security Law on Undocumented Children's Right to education", *Boston University International Law Journal* 2011, 462.

22 Commission report of 24 June 1965, Belgian Linguistic Case, §388; also P.M. DUPUY and L. BOISSON DE CHAR-ZOUNES, "Protocole N° 1-Art. 2", in L.E. PETTITI, E. DECAUX and P.M. IMBERT (eds.), *La Convention européenne des*

This does not mean, however, that foreigners or foreign students, for example, could rely on this right to ignore an order to leave the territory with the justification that their right to education will otherwise be violated.[23] Nor can a stranger enforce access to a State under Art. 2 of the First Protocol in order to pursue an education.

The right to education can be raised by both parents (in respect of their children) as well as by the children themselves.[24] In a case where the position of the two rightful claimants come into conflict[25], the child's right has to be weighed against that of its parents, taking into consideration that the second sentence (the right of parents) is subordinate to the first sentence (the right of children to education).[26] Parents are primarily responsible for the education and teaching of their children and they may therefore require the State to respect their religious and philosophical convictions. The rights of the parents are not to be seen as absolute rights, but rather as a legitimate protection against any totalitarian tendencies of education organized by the State.[27]

12. The question also arises whether, in addition to natural persons, legal persons may rely on the protection of Art. 2 of the First Protocol; in several cases, the Commission considered this to be impossible.[28] The legal doctrine, however, does not understand why parents might not have a collectivity, an association, a private school or a church body take their interests to heart[29] and, moreover, that the legislator did not choose "individual" as the legal concept but "person" - therefore, a legal person.[30]

D. No Person Shall Be Denied the Right to Education

§1 The right of the State to regulate education

13. Although the right to education provides every citizen with the possibility of using the existing educational structures, it does not prevent the government from regulating the educational system and from providing education. After all, "*the right to education guaranteed by the first sentence of Art. 2 by its very nature calls for regulation by the State*".[31] It should be noted, therefore, that the right to education

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droits de l'homme. Commentaire Article par Article, 1003; G. COHEN-JONATHAN, *La Convention européenne des droits de l'homme*, 58.

[23] Commission, n° 7671/76, 19 May 1977, X vs the U.K. which states that the ECtHR does not guarantee a foreign person to reside in a country and in the protected right to education cannot be read any right of residence.

[24] *E.g.* Commission, n° 9303/81, 13 October 1986, Brant and others vs the U.K.; Commission, n° 10491/83, 3 December 1986, Angelini vs Sweden. The fact that a child is placed by a local authority in a foster home, doesn't deprive the natural mother to demand for her child the education that is in accordance with her wishes and personal beliefs, Commission, n° 10.554/83, 15 May 1985, Aminoff vs Sweden.

[25] For example, in the case where the parents want the child leaves school and goes to work while the child wishes to remain in school (Commission, n° 17.817/90, 8 September 1993, Bernard and others vs Luxembourg).

[26] *"As is shown by its very structure, Art. 2 constitutes a whole that is dominated by its first sentence. (....) The right set out in the second sentence of Art. 2 is an adjunct of this fundamental right to education"* (ECtHR, Kjeldsen, Busk Madsen and Pedersen, 7 December 1976, §52); cf. ECtHR, Bulski vs Poland, 30 November 2004. L. WILDHABER, *Right to Education and Parental Rights,* 546 states that Art. 2 does not really deal with the problem of conflicts between the right of parents and the rights of the children, a fortiori doesn't regulates this conflict.

[27] L. WILDHABER, *Right to Education and Parental Rights*, 547.

[28] Commission, n° 3798/68, 17 December 1968, Church of Scientology of California vs the U.K. (the government had withdrawn the recognition of a school as an educational institute); Commission, n° 11.533/85, 6 March 1987, Ingrid Jordebo Foundation of Christian Schools and Ingrid Jordebo vs Sweden: *"(...) the foundation being a legal and not a natural person, was not entitled to rely on Art. 2 (...)"*).

[29] L. WILDHABER, *Right to Education and Parental Rights*, 549.

[30] Therefore also a legal person, cf. J. VELU and R. ERGEC, *La Convention européenne des droits de l'homme*, n° 82 and n° 778.

[31] Thus ECtHR, Belgian Linguistic Case, 23 July 1968, §5; ECtHR, Campbell and Cosans vs the U.K., 25 February 1982, §41.

is an enforceable, subjective and individual right that, however, may be limited; the right can, indeed, only be exercised after the fulfilment of the legal conditions imposed.

14. The competent authority may attach conditions to the access to certain fields of study[32] (such as the possession of a particular diploma or degree[33] or the successful passing of an entrance exam[34]), impose requirements concerning the ability of prospective candidate-students in higher education[35], establish a registration or enrolment fee or forbid the transition from one educational institution to another during the school year, etc.

Nor is the government bound to admit less gifted or disabled children into mainstream education, if it establishes or subsidizes institutions providing special education for these pupils[36], or if the education provided in these institutions is more suitable for disabled children.[37] Art. 2 cannot favourably be invoked by the parents to enrol their handicapped child in a private specialized educational institution at the expense of the government[38] if disabled students can be inscribed in mainstream education with appropriate support and facilities.

Where it can be assumed that the school authorities may impose admission requirements or may refuse to admit students, either due to middle school performance, the lack of necessary skills or aptitude for a particular training or because they have exceeded a predetermined age limit for certain studies[39], a broad consensus exists that the regulatory power does not give the government the right, through the imposition of access conditions, to deny primary education to individuals. In addition to access, the government can also impose legal conditions for the continuation of already initiated studies; thus, a student may be denied a "repeat year" for the simple reason that he has not attended more required classes.[40]

15. When "regulating in the field of education", the government may also establish the educational curriculum[41], without, however, the meaning or the content of the right to education being eroded and other provisions of the ECHR being ignored. There must be a balance between safeguarding the general interest of the community, on the one hand, and the fundamental right of a person, on the other hand.[42] It may be emphasized that the applicable regulations in time and space, the function of the needs of society and the resources available to the government may vary.

§2 Margin of appreciation

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32 *E.g.* a minimum age to attend Koran study education in Turkey, cf. ECtHR, Ciftci vs Turkey, 17 June 2004.

33 Commission, n° 8844/80, 9 December 1980, X vs the U.K., *D&R*, 23, 228.

34 ECtHR, Mürsel Eren vs Turkey, 7 february 2006, §44. See also the problem of a *numerus clausus* in higher education (ECtHR, Tarantino and others vs Italy, 2 April 2013, §47).

35 ECtHR, Lukach vs Russia, 16 November 1999.

36 Commission, n° 14.135/88, 2 October 1989, PD & LD vs the U.K.; CH. KNIGHT, *Human Rights in the Education Sphere*, n° 7.

37 Commission, n° 25.214/94, 4 July 1995, Klerks vs The Netherlands (complaint against registration disabled children into mainstream education type). In this respect also the UN Convention on the Rights of Persons with Disabilities cannot longer be passed.

38 Commission, n° 14.668/89, 4 December 1989, Simpson vs U.K. and n° 13.887/88, 5 February 1990, Graeme vs the U.K.

39 Commission, n° 5492/72, 16 July 1973, X vs Austria.

40 Commission, n° 8844/80, 9 December 1980, X vs the U.K.

41 In the Valsamis-case the Court states that it has not to interfere with the choices made by the Greek government in establishing the school program, but that it is concerned regarding the fact that a pupil could be required to participate in a school parade on a holiday outside the school at the risk to be excluded for one day at school (ECtHR, Valsamis vs Greece, 18 December 1996, §31).

42 ECtHR, Belgian Linguistic Case, 23 July 1968, §5; ECtHR, Campbell and Cosans vs the U.K., 25 February 1982, §41.

16. The margin of appreciation of a State in the domain of the right to education increases with the level of education, in inverse proportion to the importance of that education for those concerned and for society at large.[43] At the university level, which currently remains optional for many people fees in general are commonplace and can be considered fully justified. The opposite goes for primary schooling providing basic literacy and numeracy, as well as integration into and providing first experiences of society, and which is compulsory in most countries. Secondary education falls between those two extremes, although secondary education plays an ever-increasing role in personal development and social and professional integration in a modern society.

The Contracting States enjoy a certain margin of appreciation in assessing whether and to what extent differences in otherwise similar situations justify different treatment. However, very weighty reasons would have to be put forward before the Court could regard a difference of treatment based exclusively on the grounds of ethnic origins as compatible with the Convention[44] and specific safeguards to ensure non-discrimination of racial or ethnic minorities are necessary.[45]

17. As for the setting and planning of the curriculum, this mainly involves questions of expediency on which it is not for the Court to rule[46] and whose solutions may legitimately vary according the country and the area.[47]

By introducing compulsory ethics classes[48] or a prohibition on the wearing of religious symbols[49], the State does not exceed this margin of appreciation conferred by Art. 2 of the First Protocol. Parents cannot oppose the integration of compulsory religious or philosophical subjects in the curriculum; such a possibility would risk making all institutionalized teaching unworkable.

§3 The right to education

18. The negative formulation of the right to education caused some confusion as to the exact scope of the right when the First Protocol of the ECHR came into force. The question arose whether this privision should be construed merely as a bulwark against a government that wants to stint the "right to education" or whether it relates to a socio-economic right to education. Another important point of discussion was whether the States had the obligation to furnish or subsidize some form of education, and whether this obligation might depend on the individual's desire. The Court gave an answer in the Belgian Linguistic Case: *"The negative formulation indicates (...), that the Contracting Parties do not recognise such a right to education as would require them to establish at their own expense, or to subsidise, education of any*

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43 Settled case-law: ECtHR, Ponomaryov and Ponomaryov vs Bulgaria, 28 November 2011, §56; ECtHR, Catan and others vs Moldova and Russia, 19 October 2012, §140. B. PRANEVIČIENĖ and A. PŰRAITĖ, *Right to Education in International Legal Documents*, 146 speak in general of *"a very broad margin of appreciation of the right to education provided in a particular state"*.

44 Regarding to education: ECtHR, Timishev vs Russia, 13 December 2005, §56; ECtHR, Oršuš and others vs Croatia, 16 March 2010, §149

45 *E.g.* ECtHR, Oršuš and others vs Croatia, 16 March 2010, §182; ECtHR, Sampani and others vs Greece, 11 December 2012, §103.

46 Settled case-law: ECtHR, D.H. and Others vs Czech Republic, 13 November 2007, §205; ECtHR, Hasan and Eylem Zengin vs Turkey, 9 October 2007, §51; ECtHR, Appel-Irggang vs Germany, 6 October 2009; ECtHR, Tarantino and others vs Italy, 2 April 2013 with regard to (entrance) examinations and other tests.

47 Explicitly in this sense ECtHR, Kjeldsen, Busk Madsen and Pedersen, 7 December 1976, §53; ECtHR, Efstratiou vs Greece, 18 December 1996, §29.

48 ECtHR, Costello-Roberts vs U.K., 25 March 1993, §27.

49 *E.g.* ECtHR, Leyla Şahin vs Turkey, 10 November 2005; On the margin of appreciation in religious and philosophical matters in education: A. FØLLESDAL, B. PETERS and G. ULFSTEIN, *Constituting Europe. The European court of Human rights in a National, European and Global Context*, 99-101; A. NIEUWENHUIS, "State and Religion, Schools and Scarves. An Analysis of the Margin of Appreciation as Used in the Case of Leyla Sahin v. Turkey", *European Constitutional Law Review* 2005, 495-510.

particular type or at any particular level"[50], nor that the government had to meet the needs of everyone within the existing education provision.[51] Nevertheless, the Court further noted that: *"However it cannot be concluded from this that the State has no positive obligation to ensure respect for such a right as is protected by Art. 2 of the Protocol"*.[52]

Further, Art. 2 cannot be seen as an obstacle to establishing State educational institutions or to its subsidizing private institutions.[53]

§4 The right of access to existing educational facilities

a) access to educational institutions

19. *The right of access*. According to the Court, there exists a right of access to, or a right to use the existing, educational infrastructure and courses of study. Naturally, States guarantee not only the right to access but access to educational institutions on the basis of equal opportunity[54]; therefore, special attention must be given to special groups of children, such as children of minority groups, children with disabilities and specific learning needs, …

20. Several Court judgements concern access to higher education. Turkish university education requires a multiple-choice examination organized by the Higher Education Council's Student Selection and Placement Centre (ÖSYM). After three failed attempts between 1994 and 1996, Mr. Mürsel Elen attended private courses to prepare for the 1997 examinations, which he passed with one of the highest results among the candidates. Nevertheless, his exam results were annulled on the advice of the academic council, given his poor results in previous years and the inexplicability of his excellent achievement. The judgement stipulates that given the absence of any proof of fraud and of any explicit accusation levelled against the student to that effect, the conclusion reached by the academic council lacked a legal and rational basis resulting in arbitrariness.[55] By annulling the applicant's exam results on the basis of the academic council's advice, the refusal to enrol the applicant denied his right to education.

A second topic concerns restrictive entrance examinations and tests to obtain a *numerus clausus* for (whether specific or not) university programmes. Firstly, in the Court's view, such entrance exams are foreseeable. Secondly, the question remains of whether the reasons for their introduction are legitimate. In the Tarantino-case the Government argued that the criteria for introducing a numerous clausus were a) the capacity and resource potential of universities and b) society's need for members of a particular (medical) profession. As to the first criterion, the Court judged that Art. 2 contains no specific obligations concerning the extent of the means of instruction and the manner of their organization or subsidization[56]; the right to education applies only as far as it is available and within relevant limits. With regard to the second criterion, the Court accepts that there ought to be a balance between the provision of educational training and the pursuit of avoiding excessive public expenditure and

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50 ECtHR, Belgian Linguistic Case, 23 July 1968, §3; Commission, n° 7010/75, 29 September 1975, X vs Belgium (concerning the organization of a continuing education course); Commission, n° 11.655/85, 10 October 1985, Glazewska vs Sweden (on the refusal of the government to set up "adapted" higher education for holders of a foreign diploma).

51 Commission, n° 7527/76, 5 July 1977, X, Y and Z vs the U.K. (no requirement for a local government to provide local educational institutions structure of a certain philosophy, ideology or pedagogical method).

52 Cf. ECtHR, Belgian Linguistic Case, 23 July 1968, *Publ.Court*, Serie A, Vol. 6, §3.

53 J. VELU and R. ERGEC, *La Convention européenne des droits de l'homme*, n° 737 ; J.E.S. FAWCETT, *The Application of the European Convention on Human Rights,* 415.

54 G. VAN BUEREN, *The International Law on the Rights of the Child*, 245-246. Specific on the access in higher education: A. PÜRAITÉ, *Accessibility of Higher Education: The Right to Higher Education in Comparative Approach*, 27-51.

55 ECtHR, Mürsel Eren vs Turkey, 7 february 2006, §46.

56 ECtHR, Tarantino and others vs Italy, 2 April 2013, §51; compare Commission, n° 8844/80, 9 December 1980, Patel vs the U.K.

unemployment in that sector.[57] Lastly, students who did not pass the *numerus clausus* were not denied the right to apply for any other course.[58] Therefore, the *numerus clausus* in this case was not disproportionate and, in applying those measures, the Italian State did not exceed its margin of appreciation[59], so that Art. 2 of the First Protocol was not violated.

21. *(Il)legally residing persons*. Specific attention should be paid to the legal residency of pupils and students: can the issue of regularity of residency of an individual in a country justify differential treatment in access to education? This legal question was raised in Ponomaryov and Ponomaryov versus Bulgaria; after their mother remarried a Bulgarian national, she and both her sons of Russian nationality were entitled to reside in Bulgaria. During their minority, they attended secondary school and when they reached a majority, they applied for a residence permit of their own. Until this permit was obtained, both youngsters had to pay a school fee to be able to attend classes and obtain a diploma. The applicants alleged they were discriminated against since certain limited categories of aliens with permanent residence permits[60] did not have to pay such a fee. The Court observes that *"a State may have legitimate reasons for curtailing the use of resource-hungry-public services such as […], by short-term and illegal immigrants, who, as a rule, do not contribute to their funding"*. The Court continues that education is a complex activity to organize and expensive to run; in deciding how to regulate access to education, in particular whether or not to charge fees for it and to whom, a State must strike a balance between the educational needs of those under its jurisdiction and its limited capacity to accommodate them. However, education is a right expressly enshrined in Art. 2 of the First Protocol and enjoys direct protection. Taking into account the fact that both youngsters were not in the position of individuals arriving unlawfully in Bulgaria, and the legal stay on their mother's permit while minors over many years, the Bulgarian authorities had no substantive objection to their remaining in the country nor did it have any serious intention of deporting them. Moreover, at the age of majority, they had taken steps to regularize their situation; they had never tried to abuse the Bulgarian educational system. The authorities took none of these matters into account and in these specific circumstances, the required school fees for secondary education were not justified.[61]

In Timishev vs Russia, an ethnic Chechen citizen received compensation for the property he had lost in Grozny and, in exchange, the applicant had to surrender his migrant card and his children were not enrolled any longer at school. Although Mr. Timishev tried to return in 1999, his entry was refused at the administrative border. The Court stresses that Art. 2 prohibits the denial of the right to education and has no stated exceptions. In a democratic society, the right to education plays such a fundamental role that a restrictive interpretation of the first sentence of the provision would not be consistent with the aim or purpose of that provision.[62]

b) at a given time

22. The phrase "*at a given time"* does not imply that Art. 2 constrains the government to establish or to subsidize specific educational facilities at the simple request of users; for example, actively building school premises and making instruction available for everybody[63], the creation of a particular kind of

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57 Cf. ECtHR, Tarantino and others vs Italy, 2 April 2013, §56.

58 Compare ECtHR, Lukach vs Russia, 16 November 1999.

59 ECtHR, Tarantino and others vs Italy, 2 April 2013, §58. Further B. SAUL, D. KINLEY and J. MOWBRAY, *The International Covenant on Economic, Social and Cultural Rights. Commentary, Cases, and Materials*, 1105.

60 For instance, the preferential treatment of nationals of E.U. member States is based on an objective and reasonable justification, because the E.U. forms a special legal order and establishes its own citizenship, cf. ECtHR, Ponomaryov and Ponomaryov vs Bulgaria, 28 November 2011, §54.

61 ECtHR, Ponomaryov and Ponomaryov vs Bulgaria, 21 June 2011, §60-62.

62 ECtHR, Timishev vs Russia, 13 December 2005, §64; cf. ECtHR, Leyla Şahin vs Turkey, 10 November 2005, §137.

63 M. NOWAK, *The Right to Education,* 254.

educational establishment[64], special education forms or new study facilities[65], the possibility of minority-speaking classes[66], an obligation to set up ad hoc (educational) courses for detainee(s)[67], etc.
In one case, the European Commission examined to what extent Art. 2 entails an obligation for a (local) government to provide school transport for pupils or to intervene in its cost. While the student was able to obtain registration in a nearer educational institution the Commission[68] submitted that the aforementioned provision did not impose a positive obligation on a State and thus cannot be invoked with a view to the introduction of Government-organized free transportation.

§5 The right to education and compulsory schooling

23. Several times, the question has been raised whether the right to education and the freedom to follow education also implied that the parents could explicitly renounce receiving education for their children and could therefore ignore, for example, a national law imposing "compulsory education". In that regard, the Commission[69] considered that *"(...) it is clear that Art. 2 implies a right for the State to establish compulsory schooling (...) and that verification and enforcement of educational standards is an integral part of that right"*.

National law of a Contracting State obliging compulsory schooling is not considered inconsistent with Art. 2 of the First Protocol, provided that there is at least sufficient space left to the parents to educate their children. The "right to learn" can therefore entail "compulsory schooling".[70]

§6 The right to education in a national or minority language

a) in general

24. Art. 2 is silent on the question of whether language education should be provided so that a genuine right to education can be realized. However, the Strasbourg case law shows that *"(...) the right to education would be meaningless if it did not imply in favour of its beneficiaries, the right to be educated in the national language or in one of the national languages, as the case may be"*.[71] In other words, a person has the right to demand education in the national language or in one of the national languages.
The principle of non-discrimination in Art. 14 ECHR does not alter that situation. Even reading Art. 14 ECHR together with Art. 2 of the First Protocol does not give the child or the parents the right to education in a language of their choice. The object of both provisions taken together is limited, and can only be understood in the sense that each State will guarantee the right to education for all legal subjects without distinction as to language. Another interpretation of the two Articles taken together would lead to absurd situations in which any person would be offered the opportunity anywhere on the State-territory to claim every possible form of education in any language. The right to education comprises in itself, therefore, no language requirement, and also the right of the parents does not imply that the States in the field of education and teaching must respect the language preference of the parents.[72] Whether the government

64 In this sense, *inter alia*, ECtHR, Simpson vs the U.K., 24 February 1998.

65 *"Persons subject to the jurisdiction of a Contracting State cannot draw from Art. 2 of the Protocol the right to obtain from the public authorities the creation of a particular kind of educational establishment"*, ECTHR, Belgian Linguistic Case, 23 July 1968, §9).

66 *E.g.* ECtHR, Skender vs the Former Yugoslav Republic of Macedonia, 22 November 2001.

67 On this topic specifically, *infra* n° 36.

68 Commission report of 28 February 1996, Cohen vs the U.K.

69 Commission, n° 10.233/83, 6 March 1984, X vs the U.K.

70 Cf. L. WILDHABER, *Right to Education and Parental Rights*, 532.

71 ECtHR, Belgian Linguistic Case, 23 July 1968, §3; ECtHR, Catan and others vs Moldova and Russia, 19 October 2012, §137.

72 ECtHR, Belgian Linguistic Case, 23 July 1968, §§6 and 7. Some criticism concerning that vision, see L. WILDHABER,

has an obligation to provide special facilities in the existing educational institutions available for the benefit of non-native foreigners whose knowledge of the language of instruction is lacking, is a legitimate question to ask. After all, for such students, the right to education remains indefinitely illusive without such provision. With regard to at least primary education, a specific regime should be developed for foreign, non-native entrants.

b) minority languages

25. In the first interstate case before the Court after the reforms[73], amongst other human rights aspects, the situation in secondary schools of Greek pupils living in northern Cyprus was at stake. These children were denied secondary-educational facilities and their parents were, as a consequence, denied the right to ensure their children's education in conformity with their religious and philosophical convictions. In northern Cyprus secondary education is open to all children in Turkish- or English-language schools and - in the strict sense - there is no denial of the right to education. Nevertheless, in the Court's opinion the continuation of secondary education for Greek-speaking pupils is unrealistic; where they have received primary education in a Greek-language schools, these facilities do not exist for secondary education and the failure of the authorities to provide the same secondary-educational facilities must be considered as a denial of the substance of the right.[74]

26. A similar case is found in Catan vs Moldova and Russia, in which the Court ruled that the forced closure of Latin-script schools and the harassment measures constituted interferences with the students' rights of access to educational institutions and to be educated in their national - Latin - language. As in the Cyprus case, the alternative for the parents was schooling in another language (and alphabet) instead of their mother tongue or long journeys for the children who faced substandard facilities, harassment and intimidation.[75]

§7 Disciplinary sanctions versus the right to education

a) disciplinary measures

27. A few cases concerned the legal question of compliance on disciplinary matters and sanctions at school, and the right to education.

In a first case, at several occasions Ms Dogru refused to take off her headscarf[76] despite the repeated requests, as this was incompatible with physical education classes. The school's discipline committee decided to expel the pupil for breaching a) the duty of assiduity by failing to participate in physical education and sport classes, b) the school's internal rules, c) a memorandum on pupils' safety during school activities. Before the ECtHR, she complained that the disciplinary matters violated her right to education because after her exclusion, she had had to take correspondence courses and she had not sought to circumvent the obligation to attend classes regularly. The ruling recalls that the right to education does not exclude disciplinary measures, such as temporary or definitive suspension in order to ensure compliance with the applicable internal rules.[77]

Right to Education and Parental Rights, 541.

73 ECtHR, Cyprus vs Turkey, 10 May 2001; C. TOPRAKSEVEN, "The Analysis of Cyprus v. Turkey: Just Satisfaction Judgment and its implications", *The Journal of Turkish Weekly*, 22 May 2014, 3p.; Ch.E. LANDAU, "Reflections on the Right to Education", in *Promoting Justice, Human Rights and Conflict Resolution Through International Law. Liber Amicorum Lucius Calfish*, 288-289.

74 ECtHR, Cyprus vs Turkey, 10 May 2001, §278.

75 ECtHR, Catan and others vs Moldova and Russia, 19 October 2012, §143.

76 In a series of cases the Court rules concerning a similar problem, but only under the angle of Art. 9 Convention: *inter alia*, ECtHR, Aktas vs France (headscarf), ECtHR J. Singh vs France, ECtHR (regarding a "keski", *i.e.* under turban generally worn by children), all decisions of 17 July 2009.

77 ECtHR, Dogru vs France, 4 December 2008, §83; a comment on this ruling in H. HASHMI, "Too Much to Bare? A Comparative Analysis of the Headscarf in France, Turkey and the United States", *University of Maryland Law Journal of Race,*

After a fire was discovered in a waste paper basket in a classroom, three pupils were advised not to return to school until the police investigation was completed. No limit was placed on the exclusion, although it was required by the applicable internal rules (max. 45 days), and during this period the applicant was offered revision-based, self-assessed work in different subjects. Following closure of the case by the prosecutor, the pupils re-entered the school after 48 days of exclusion. The Court accepts the foreseeability, reasonableness and, notwithstanding some procedural irregularities, fairness of the disciplinary measure; the exclusion was not arbitrary, school authorities tried to minimize the effects of the exclusion (by providing adequate alternative education, although this did not cover the full national curriculum) and the exclusion was temporary; the student was only removed from the roll call due to the intransigence of his family and himself.[78]

28. Likewise, in higher education, Art. 2 does not preclude disciplinary action. The Commission[79] considers, for example, that a student at the university can be dismissed by disciplinary action if it is certain that he has repeatedly violated the rules and even if that measure implies the student cannot acquire enrolment at another university.

In a second university case, several students were suspended for one or two terms on the grounds that they appeared to be lodging individual petitions requesting Kurdish-language classes as an optional module, which constituted an offence in Turkey. The Court examined the case under Art. 2, read in the light of Art. 10 ECHR. Firstly, are the sanctions foreseeable and do they pursue a legitimate aim; furthermore, is there a reasonable relationship of proportionality between the means employed and the aims sought to be achieved? It cannot be ignored that the university authorities acted on a legal basis, with regulations serving a legitimate aim in the Convention's terms. However, the applicants merely submitted petitions containing their views on the need to introduce specific language classes as an optional module and were not focused on breaching the peace or order in the university. The Court reiterated the settled case law regarding Art. 10 - freedom of expression - as one of the essential foundations of a democratic society and one of the basic conditions for each individual's self-fulfilment. Secondly, although the right to education does not exclude disciplinary measures, disciplinary regulations must not injure the substance of the right *"nor conflict with other rights enshrined in the Convention or its Protocols"*.[80] Therefore, the suspension imposed was not reasonable and proportionate.

29. It is obvious that the current (disciplinary) regulations should not prevent a pupil or student, on dismissal, from applying in a different setting for another place or subscription.[81]

b) corporal punishment

30. The reason for a ECtHR- judgement in this area was/is the use of corporal punishment ("corporal chastisement") in numerous British schools. The basic judgement, notably the Campbell and Cosans case, is actually a diptych. On the one hand, the Campbell mother had demanded from the school authorities the guarantee that her son, Gordon, would never be subjected to corporal punishment (ultimately, the boy would never be punished, as he left the relevant school at the age of 10). On the other hand, Jeffrey Cosans had taken a shortcut from school to home that led across a cemetery; according to the school regulations,

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Religion, Gender and Class 2010/2, especially 423; G. VAN BUEREN, *The International Law on the Rights of the Child*, 249-253. Compare *"[…] disciplinary sanctions are an integral part of the process whereby the school seeks to achieve the object for which it was established, including the development and moulding of the character and mental powers of its pupils"*; see also ECtHR, Campbell and Cosans vs the U.K., 25 February 1982, §33; Commission, n° 14.524/89, 6 January 1993, Kemal Yanasik vs Turkey (disciplinary penalties at a military school); Commission, n° 24.515/94, 17 January 1996, Sulak vs Turkey (suspension of a university student).

78 ECtHR, Ali vs the U.K., 11 January 2011, §64: no violation of Art. 2 First Protocol.

79 Commission, n° 24.515/94, 17 January 1996, Sulak vs Turkey.

80 ECtHR, Irfan Temel and others vs Turkey, 3 March 2009, §45.

81 Commission, n° 14.524/89, 6 January 1993, Kemal Yanasik vs Turkey.

this incident could be met with corporal punishment. On the advice of his mother, her son refused to undergo that punishment, whereupon he was suspended. Access to the school would only be granted again if his mother allowed that Jeffrey should undergo corporal punishment as long as he went to school at the institution concerned.

The complaint, based on Art. 3 of the ECHR, was rejected. The plaintiff also claimed that the suspension of her son resulted in a denial of his right to education. The Court reiterated its fixed case law, under which "*the right to education guaranteed by the first sentence of Art. 2 by its very nature calls for regulation by the State, but such regulation must never injure the substance of the right nor conflict with other rights enshrined in the Convention or its Protocols"*. It concerns the right of the child and not the right of a parent; the pupil could return to school on the condition that his parents renounced their convictions. That conviction is specifically protected by the second sentence of Art. 2, and especially "*convictions which the United Kingdom is obliged to respect (...)"*. The Court therefore decided that "*a condition of access to an educational establishment that conflicts in this way with another right enshrined in Protocol No. 1 cannot be described as reasonable (...)"*.[82]

31. The Campbell and Cosans ruling cannot be interpreted in the sense that the decision involves an absolute prohibition of taking disciplinary measures vis-à-vis pupils who misbehave in school or commit a disciplinary offence. It cannot be disputed that a school board may impose a disciplinary punishment and thus safeguard the rights of fellow pupils, but this must be done in accordance with the provisions of the Convention and the additional protocols so that the right to education is not ignored.[83] This is especially the case because any disciplinary action is the result of and due to the behaviour of the pupil himself who prevents his own exercising of the right to education; the fact that a disciplinarily sanctioned underage pupil no longer meets the requirements of compulsory schooling is not contrary to Art. 2 of the First Protocol.

§8 The right to a form of official recognition for completed studies

32. After the European Court, in its judgement concerning the Belgian Linguistic Case, had initially put forward the principal accessibility of education for everyone, it considered further: *"For the 'right to education' to be effective, it is further necessary that, inter alia, the individual who is beneficiary should have the possibility of drawing profit from the education received (...)"*.[84] In second instance, the States have the obligation to ensure some form of official recognition for finished studies and this is exactly so that the right to education would have a useful effect on the part of the holders of that right.

Citizens qualified abroad in a discipline, and would subsequently wish to settle in their country of origin, can thus turn to the latter government in order to obtain any official (academic or professional) recognition of their foreign qualifications. This recognition, however, is not automatic; the competent authorities may use accreditation and may re-examine the recognition, linking the recognition to certain conditions such as the homologation (by the equivalence) of the studies, the successful participation in an additional examination or attendance of additional training.[85] The autonomy of the competent approval authority may not lead to an absolute prohibition of recognition nor impose conditions that erode completely the protection provided by Art. 2.

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[82] ECHR, Campbell and Cosans vs the U.K., 25 February 1982, §41. See also Commission, n° 7907/77, 12 July 1978, X vs the U.K.

[83] Commission, n°14.524/89, 6 January 1993, Kemal Yanasik vs Turkey.

[84] Settled case-law: ECtHR, Belgian Linguistic Case, 23 July 1968, §4; ECtHR, Folgerø and others vs Sweden, 29 June 2007, §84; ECtHR, Sampani and others vs Greece, 11 December 2012, §75; ECtHR, Oršuš and others vs Croatia, 16 March 2010, §146; ECtHR, Catan and others vs Moldova and Russia, 19 October 2012, §137; ECtHR, Lavida and others vs Greece, 30 May 2013, §61.

[85] Commission, n° 7864/77, 9 October 1978, X vs Belgium; Commission, n° 11.655/85, 10 October 1985, Glazewska vs Sweden.

§9 The right to education and detained persons

33. The European Court had to consider three cases concerning the right to education of prisoners. In the first case, a pupil had to abandon his last year of high school after his imprisonment; the detainee's father requested that the warden of the prison allow his son to complete his school year or to allow him to attend classes to learn a trade or profession. This request was refused because it was not possible to arrange high-school courses at that time in prison. First of all, the Court considered that the applicant was only prevented from continuing in full-time education during his lawful detention and that such a restriction could not be construed as a deprivation of the right to education[86]; the fact that the prison facilities did not have the resources to arrange the requested courses did not cause them to fall outside the legal framework regulating the provision of courses for detainees. Moreover, he attended several sporting, artistic, and literary competitions, as well as a number of training and educational programmes in prison and it appears that as soon as the prison authorities provided courses or training programmes fitting the applicant's requests and educational profile, he was allowed to enrol and to attend them. Considering all this, the Romanian prison authorities had not failed to comply with the obligations enshrined in Art. 2.

In the second case, a 26 year-old man was detained on remand on suspicion of the unlawful possession of firearms. Never having finished secondary education, during his imprisonment he requested permission to enrol in the school operating in prison; according to a letter written by the Minister of Education, individuals deprived of their liberty were entitled to continue their education in prison but the letter made no specific reference to remand prisoners. In another letter, the refusal of enrolment was motivated by the fact that since the applicant already had prior convictions, the inclusion of recidivists in the prison's educational and work programmes for non-recidivists would lead to a breach of the requirement that different categories of inmates are to be kept apart and are to participate separately in correctional programmes. The ECtHR recalled that Art. 2 does not oblige a State to organize educational facilities for prisoners where such facilities are not already in place. However, in the present case, educational facilities were available but the applicant was refused access to them, so it must be examined whether this refusal was arbitrary and unreasonable. The Court doubted whether the restrictions were sufficiently foreseeable; furthermore, a lack of clarity was showed by the different reasons motivating the several refusals relying on three different (legal) grounds to justify the exclusion from the Prison School. Since the refusal to enrol the applicant in the Prison School *"was not sufficiently foreseeable, nor that it pursued a legitimate aim and was proportionate to that aim"*[87], there'd been a violation of Art. 2.

A third detainee alleged that he was not entitled to prepare for and take the final examination for his university law degree. Reiterating the principles of the Belgian Linguistic Case, the Court noted that the Convention provision comprises no specific obligations concerning the extent of the means and the manner in which the subsidization of education is organized. Furthermore, the Court considered that the applicant was only prevented from taking exams during a short period corresponding to his lawful detention (14 months), and was not otherwise deprived of access to an educational institution or of his right to an effective education.[88]

§10 The right to education and (the wearing of) religious and philosophical symbols at school

34. Several complaints to the Court concerned the issue of the wearing of headscarves and other religious symbols at school. Although this legal question is usually addressed and assessed within the scope of Art.

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86 ECtHR, Epistatu vs Romania, 24 September 2013, §62 with references to Commission, n° 23.938/94, 23 October 1995, Sorabjee vs U.K.

87 ECtHR, Velyo Velev vs Bulgaria, 13 June 2014, §42.

88 The Court therefore decided the application manifestly ill-founded, ECtHR, Georgiou vs Greece, 13 January 2000;.

9 ECHR[89], the prohibition of such wear in the present contribution is only analysed in the context of Art. 2.

A landmark ruling is the Leyla Şahin case[90] in which a fifth-year medical student, who had already studied for four years at Bursa University while wearing a headscarf, was refused the right to wear a headscarf at Istanbul University. The legal basis was a circular written by the University's Vice-Chancellor, in accordance with which the applicant was denied access to a written examination on oncology and public health, was refused to enrol in the course and admission to a neurology lecture - all because the student wore a headscarf. The prohibition against wearing a headscarf at Istanbul University was foreseeable[91] and pursued a legitimate aim of protecting the rights and freedom of others and of maintaining public order, as well as to preserve the secular character of the educational institution. The Court also accepted a reasonable relationship of proportionality between the means used and the aim pursued.[92] The restrictions on wearing a headscarf did not, therefore, conflict with Art. 2, or with other rights enshrined in the Convention.

Several cases concerned the wearing of religious symbols in France.[93] In Kervanci vs France[94], the facts are similar to those of Dogru; the Court reiterated that certain restrictions are not incompatible with Art. 2 of the First Protocol and the refusal to obey them can be penalized with temporary or permanent exclusion. Exclusion for wearing a headscarf in neutral State schools does not infringe Art. 2 of the First Protocol.

35. Of a different order is the Lautsi case; the legal problem concerned the presence of religious symbols in the classroom, in particular, crucifixes. A request to remove these religious signs was rejected. The Strasbourg institutions took two decisions.

In the first decision, the Court derived from the basic principles an obligation on the State to refrain from imposing beliefs, even indirectly, in places where persons were dependent on it or in places where they were particularly vulnerable, emphasizing that the schooling of children was a particularly sensitive area in that respect. The Court *"could not see how the display in state-school classrooms of a symbol that it is reasonable to associate with Catholicism (the majority religion in Italy) could serve the educational pluralism which is essential for the preservation of "democratic society" within the Convention meaning of that term"*, and further *"that the compulsory display of a symbol of a particular faith in the exercise of public authority in relation to specific situations subject to governmental supervision, particularly in classrooms, restricts the right of parents to educate their children in conformity with their convictions and the right of schoolchildren to believe or not believe. It is of the*

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89 *E.g.* ECtHR, Dahlab vs Switzerland, 15 February 2001 (teacher prohibited to wear a headscarf in the performance of her teaching duties; ECtHR, Leyla Şahin vs Turkey, 10 November 2005 (female university student. About religious symbols in ECtHR case law in general, see E. HOWARD, *Law and the Wearing of Religious Symbols. European bans on the wearing of religious symbols in education*, Oxon, Rouledge, 2012, especially 58-66; G. VAN DER SCHYFF and A. OVERBEEKE, "Exercising Religious Freedom in the Public Space: A Comparative and European Convention Analysis of General Burqa Bans", *European Constitutional Law Review* 2011, 424-452; B. DAVIS, "Lifting the Veil: France's New Crusade", *Boston College International and Comparative Law Review* 2011, 117-144; A. HAGBERG, "The European Convention on Human Rights and the Hijab", *Human Rights II, Regional Legal Systems*, 1128-1926; S. PEI, "Unveiling Inequality: Burqa Bans and Non-discrimination Jurisprudence at the European Court of Human Rights", *Yale Law Journal* 2013, 1019-1102.

90 A comment on this ruling in H. HASHMI, Too Much to Bare? A Comparative Analysis of the Headscarf in France, Turkey and the United States, l.c., 429 a.f.; further

91 *"It would be unrealistic to imagine that the applicant, a medical student, was unaware of the regulations restricting the places where religious dress could be worn or had not been sufficiently informed about the reasons for their introduction"*, cf. ECtHR, Leyla Şahin vs Turkey, 10 November 2005, §160.

92 ECtHR, Leyla Şahin vs Turkey, 10 November 2005, §157-159.

93 Only two complaints were lodged under Art. 2, second sentence First Protocol (ECtHR, Dogru vs France, 4 December 2008 analysed *supra*, n° 27 "disciplinary sanctions"). The other cases were introduced mainly under the angle of Art. 9 Convention (*e.g.* amongst others ECtHR, Aktas vs France and ECtHR, R. Singh vs France, all decisions of 17 July 2009).

94 ECtHR, Kervanci vs France, 4 December 2008, §80-84.

opinion that the practice infringes those rights because the restrictions are incompatible with the State's duty to respect neutrality in the exercise of public authority, particularly in the field of education".[95] Therefore, violation of the right to education *ex* Art. 2. This ruling led to overwhelming criticism in numerous countries and religious and legal organizations[96]; there was talk of a religious negation and a will to eradicate Christian history and culture in Europe, of praetorian legal activism and the will to impose a postmodern liberal ideology and an illegitimate judicial legislation[97], among other objections.

The Grand Chamber overruled the heavily criticized Chamber decision. Having recalled most of the basic principles, the Court emphasized that the second sentence of Art. 2 not only concerns the content of the curricula, but also the question of religious symbols in the classrooms of State schools; the respect referred to in the previous provision is binding for the Contracting States *"in the exercise of all the functions [...] in relation to education and teaching"*[98] and includes the organization of the school environment. The Court agreed that a crucifix is above all a religious symbol, but found that there was no evidence that this sign on a classroom wall may have had an influence on pupils. However, a crucifix on a classroom wall is a passive symbol and is not to be associated with compulsory teaching about or a proselytizing tendency in Christianity. Lastly, the parents retained their right to enlighten and advise their children, to exercise in this regard their natural functions as educators, and to guide children on a path compatible with their own philosophical convictions.[99] As far as the parents as applicants are concerned, the second sentence of Art. 2 had not been violated; as for the children, the Court understood why pupils who are in favour of secularism may see in the presence of crucifixes in the classrooms of the attended State school an infringement of the rights they derive from those provisions. However, the Court considered that there had been no violation of Art. 2 of the First Protocol.[100]

§11 The right to education and education at home/home schooling

36. The doctrine is not unanimous on the competence of state to restrict home schooling. According to WILDHABER[101], the government should be able to exercise control over the education provided and by the education at schools promote the integration of a young person; DUPUY and BOISSON DE CHARZOUNES[102], however, believe that if parents can opt for private school education this also implies the possibility of homeschooling. Both theorems partially pass on with that proviso that the government at all times must be able to exercise control on the quality of the home schooling.

37. The Konrad family belongs to a Christian community strongly attached to the Bible; the family members reject the attendance of private and State schools for religious reasons, since their beliefs do not accord with sex education, the discussion of mystical creatures at school and physical and

95 See ECtHR, Lautsi and others vs Italy, 3 November 2009, §§ 57 and 58.

96 Among others, see G. PUPPINK, "The Case of Lautsi v. Italy: A Synthesis", *Brigham Young University Law Review* 2012, 873-930; D. CAPODIFERRO CUBERO, "The Position of Children's Freedom of Thought and Religion in the Rulings of the European Court of Human Rights on the Case Lautsi v. Italy", *The Age of Human Rights Journal* 2013/1, 67-93; J. TEMPERMAN (ed.), *The Lautsi Papers: Multidisciplinary Reflections on Religious Symbols in the Public School Classroom*, Martinus Nijhoff Publishers, Leiden, 2012.

97 See, *inter alia*, L. ZUCCA, "Lautsi: A Commentary on a Decision by the ECtHR Grand Chamber", *International Journal of Constitutional Law* 2013/1, 220.

98 ECtHR, Lautsi and others vs Italy, 18 March 2011, §63.

99 Compare ECtHR, Kjeldsen, Busk Madsen and Pedersen vs Denmark, 7 December 1976, §54; ECtHR, Valsamis vs Greece, 18 December 1996, §31.

100 ECtHR, Lautsi and others vs Italy, 3 November 2009, §§77 and 78.

101 L. WILDHABER, *Right to Education and Parental Rights*, 159.

102 P.M. DUPUY and L. BOISSON DE CHARZOUNES, *Protocole N° 1 - Art. 2*, 1008.

psychological violence among pupils at school. The children are educated at home in accordance with the syllabus and materials of the (unrecognized as private education) "Philadelphia School"; their parents applied for exemption from compulsory primary school attendance and for permission for home education, but the exemption was refused by the authorities. The parents lodged a complaint that related mainly to the second sentence of Art. 2.[103] The Court recalled the former Commission's jurisdiction that Art. 2 implies the possibility for the State to establish compulsory education, either in State schools or through private tuition of a satisfactory standard[104] and noted that the German authorities and courts had carefully reasoned through their decisions and mainly stressed the fact that not only the acquisition of knowledge but also integration into and first experiences of society are important goals in primary-school education. The presumption that those objectives could not be achieved to the same extent by home education was not erroneous and fell within the State's margin of appreciation. The Court also stressed the importance of the general interest of society and the integration of minorities into society, and that therefore the aforementioned German aims were in accordance with the Court's case law on pluralism. As the parents were able to educate their children at home after school and at weekends, the parents' right to education in conformity with their religious convictions was not restricted in a disproportionate manner.

E. Some Concluding Remarks

38. Finally, note that Art. 2 of the First Protocol is not "notstandsfest"; in other words, it is a relative right. In an emergency, one can consequently deviate from this Article.

39. The States have a negative obligation not to interfere with the right to education. However, every State has the right to regulate its educational system, in so far as those regulations do not deprive the right to education of its effectiveness. If States introduce restrictions, these must have been foreseeable to those concerned, *i.e.*, parents for pupils in primary and secondary education, and students in higher education, and must be prescribed by law. Besides which, such restrictions must pursue a legitimate aim.
Between the legitimate aim sought by the State and the means employed there must exist a reasonable relationship of proportionality. The Court takes into account the duration of an exclusion of a pupil, the existence and extent of procedural safeguards for the parents and the students, the involvement of parents in the education and decisions concerning the education of their children and the opportunity of procuring alternative education, among other factors.

The European Convention on Human Rights and its Additional Protocols are undeniably to be taken as a whole, also both sentences of Art. 2 of the First Protocol. In particular, this involves "to respect private and family life", "freedom of thought, conscience and religion", "freedom [...] to receive and impart information and ideas" and "respect for the ideological an philosophical convictions of the parents.

More specifically, there is the obligation of States not to discriminate certain categories of pupils; although different reasons can underlie instances of discrimination. In the Court's case law, non-discrimination encompasses positive recognition and facilitation of a different lifestyle and regulations that are not discriminatory, as well as negative obligations that require States to refrain from discrimination although they possess a margin of appreciation for partially different treatment. Ensuring access to at least basic education on an equal basis for children belonging to a minority group is an obligation for every State within the Council of Europe. In the case of minorities, the objective and reasonable justification must be interpreted as strictly as possible.

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103 ECtHR, Konrad vs Germany, 11 September 2006. Read also F. REIMER, "School Attendance as a Civic Duty v. Home Education as a Human Right", *International Electronic Journal of Elementary Education* 2010/1, 15p.; A. MARTIN, "Homeschooling in Germany and the United States", *Arizona Journal of International and Comparative Law* 2010/1, 225-282 P. ROTHERMEL (ed.), *International Perspectives on Home Education. Do we still need Schools*, Hampshire/New York, Palgrave McMillan, 2015.

104 Commission n° 10.233/83, 6 March 1984, Family H vs the U.K.

Finally, judicial protection is essential with regard to the right to education; in the case of a breach of the right to education, parents or students must have the opportunity to lodge a complaint before courts or administrative tribunals. The courts or tribunals must then examine the complaint on the basis of both international (e.g., the ECHR) and national (e.g., constitutional) provisions regarding the right to education.

F. Selected Biography

BEITER, K. (2006), The Protection of the Right to Education by International Law, Leiden, Martinus Nijhoff Publishers

CLEMENTS, L. (1994), European Human Rights. Taking A Case Under The Convention, London, Sweet & Maxwell

COHEN-JONATHAN, G. (1989), La Convention européenne des droits de l'homme, Parijs, Economica

COOMANS, F. (2004), "Exploring the Normative Content of the Right to Education as a Human Right: Recent Approaches", *Persona y derecho*, pp. 61-100

COOMANS, F. (2009), "Justiciability of the Right to Education", Erasmus Law Review No. 4, pp. 427-443

DUPUY, P.M. and BOISSON DE CHARZOUNES, L. (1995), "Protocole N° 1 - Art. 2", (in : PETTITI, E.L., DECAUX, E. and IMBERT, P.M. (eds.), *La Convention européenne des droits de l'homme. Commentaire Art. par Art.*), Paris, Economica

FØLLESDAL, A., PETERS, B. and ULFSTEIN, G. (2013), Constituting Europe. The European court of Human rights in a National, European and Global Context, Cambridge, Cambridge University Press

HARRIS, D., O'BOYLE, M., BATES, E. and BUCKLEY, C. (2014), Law of The European Convention on Human Rights, Oxford, Oxford University Press

HODGSON, D. (1999), "The Human Right to education", *Nordic Journal of International Law*, No. 4, pp. 439-443

JAKUBOWSKI, A. (2014), "The right to education (Art. 2 of Protocol No. 1 to the Convention) and numerus clausus in higher education – some remarks on the background of the judgment of the European Court of Human Rights of 2 April 2013 in the case of Tarantino and others v. Italy", *Studies in Public Law*, No. 1, pp. 107-124

KUNDU, P. (2005), "The Right to Education: Some Theoretical Issues", *Contemporary Issues and Ideas in Social Sciences*, No. 1, pp. 1-22

LANDAU, Ch.E. (2007), "Reflections on the Right to Education", (in: *Promoting Justice, Human Rights and Conflict Resolution Through International Law. Liber Amicorum Lucius Calfish*), Leiden, Koninklijke Brill NV, pp. 281-305

MONTSERRAT, E. (1992), "Les droits sociaux dans la jurisprudence de la Commission et Cour européenne des droits de l'homme", *Rev.Trim.Dr.Homme*, pp. 147-182

MORGAN, A. (2012), *The protection of the Right to Education in the International, European and Inter-American Human Rights System*, Budapest, Central European University

NOWAK, M. (2001), "The Right to Education", in A. EIDE et al. (ed.), Economic, Social and Cultural Rights – A Textbook, The Hague, Martinus Nijhoff Publishers

PRANEVIČIENĖ, B. and PŬRAITĖ, A. (2010), "Right to Education in International Legal Documents", *Jurisprudenticija/jurisprudence*, No. 3, pp. 133-155

PŬRAITÉ, A. (2011), "Accessibility of Higher Education: The Right to Higher Education in Comparative Approach", *Baltic Journal of Law & Politics*, No. 1, pp. 27-51

SZAPPANYOS, M. (2014), "Content and Enforcement of the Right to Education in Higher Education - Does Being European Make a Difference?", *Pécs Journal of International and European Law*, No. 1, pp. 61-74

VELU, J. and R. ERGEC (1990), La Convention européenne des droits de l'homme, Brussel, Bruylant

WILDHABER, L. (1993), "Right to Education and Parental Rights", (in: The European System for the Protection of Human Rights, in MACDONALD, R., MATSCHER, F. en PETZOLD, H. (eds.)), Dordrecht, Martinus Nijhoff, pp. 531-551

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Linguistic and Sociolinguistic Awareness towards Japanese Politeness Strategies of the Japanese Studies Participants in Poland

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Abstract

The aim of this presentation is to investigate the linguistic and communicative competences of the Japanese honorifics among young language learners of Japanese studies in Poland. Their attitude towards keigo category – its diversification and significant role as a communicative strategy, especially in the perspective of implementing Japanese language in future social and professional life – is evaluated here as an important component of investigation. The major method for this research is the analysis of questionnaire conducted in the Department of Japanese and Chinese Studies among participants from different years in order to investigate their knowledge and ability to use Japanese language on different levels of its politeness and casualness. The evaluation of their motivation and attitude towards acquiring communicative skills in regard to Japanese politeness will be also mentioned. The impact of the native language, which may be regarded as an obstacle to use language for communicative purposes efficiently, will be underlined. Moreover, the selection of teaching materials as well as the role of Japanese language teachers, whose teaching strategies and engagement in developing communicative competences of students influence learning processes, will be also mentioned in order to investigate the extent of external motivations in the learning processes of individuals.

Keyword: Japanese language education, Language errors, Honorifics, Communicative competence, Language awareness

1. Introduction

Politeness (*keigo* 敬語, lit. respectful language; language of reverence) is a grammatical category of Japanese language and therefore, is a significant linguistic property which is reflected not only in the use of adequate lexemes, but in the more compound structural layer of the Japanese grammar. Hasegawa rightfully notices that *when polite expressions are systematized and incorporated into the grammar of a language they are termed honorifics* (2014: 255). Kikuchi in his book of politeness (1994), underlines that the major function of *keigo* is to serve its users in their social life and that some individual and contextual factors influence their choice to use *keigo* or not (Okamoto, Shibamoto-Smith 2016: 142). On the ground of Polish research into contemporary Japanese, Huszcza introduces the term of *honoryfikatywność* (honorifics) in order to define the specific type of communication between the sender and the receiver of the text which informs about their mutual sociable and social relations (1980: 175).

In the perspective of Japanese culture and society, relations between people (*ningen kankei* 人間関係) are frequently underlined as an important issue and apparently, we could hardly approach discussion concerning family relations, work or education and various aspects of social life of the Japanese, without mentioning, referring to or expressing Japanese politeness. It is noticeable that even the tendency to add name-following suffixes such as *-san* 'Mr/Mrs/Miss', *-chan* (suffix for familiar person) or *-kun* 'my junior; my younger colleague' while speaking or referring to the person, demonstrates that politeness is, more or less, reflected in every-day language behaviors of the Japanese. Taking into consideration the above-mentioned very brief and basic introduction of Japanese *keigo*, we can easily come to a conclusion that foreign learners of Japanese language should put greater emphasis on developing their knowledge and communicative skills of honorifics.

Nevertheless, in the perspective of Japanese studies in Poland, generally this aspect of Japanese linguistics is explored and exercised more passively – by acquiring theoretical bases and exercising the most common patterns of *keigo*, usually with a poor encouragement to give it a deep thought. Consequently, in most of cases, Japanese language learners, especially those how have not visited Japan yet, while speaking in Japanese prefer to skip more compound *sonkeigo* and *kenjōgo* patterns of politeness, and use *teineigo* forms, as they appear more familiar, less complicated and less error-prone.[105] This tendency is determined by the fact that from the beginning of Japanese language course for foreigners the focus is primarily placed on acquiring the competences of *teineigo* in its standardized version (*hyōjungo* 標準語 'standard language')[106]. Consequently such issues as: casual language, honorific/humble language or dialectal varieties of contemporary Japanese are considered as secondary, or in other words, as the set of linguistics skills which students are expected to acquire naturally through their individual experience among Japanese native speakers.

As we can also observe, in the workbooks dedicated to the first- and second-year students of Japanese studies, such as *Shokyū Nihongo* 初級日本語 or *Nyū Apurōchi* ニューアプローチ, *keigo* is briefly mentioned in the shape of few exercises, concerning mainly the opposition between the pairs

[105] According to the traditional categorization, *keigo* is divided into three categories (Kikuchi 2010: 30-31): two of them (*sonkeigo* 尊敬語 lit. honorific language, deferential language and *kenjōgo* 謙譲語 lit. humble language) are used to express and emphasize the position and mutual relation between speaker and listener or referent, however the last one (*teineigo* 丁寧語 lit. polite language, courteous language, so-called '*desu/-masu* forms') is regarded as a polite, but hierarchically-neutral way of speaking. In recent years, Japanese Ministry of Education promulgated a new five-category division of *keigo* (*sonkeigo*, *kenjōgo*, *teichōgo* 'formal polite speech', *teineigo* and *bikago* 'refined speech'). Note: we can read more about various ways of categorizing *keigo* in, inter alia, the article *On the categorization of the Japanese honorific system keigo* by Ivona Barešowa (2015).

[106] *Hyōjungo* 標準語 lit. 'standard language' is a normative and official language of Japan which was created after the Meiji Restoration in 1868 on the base of the dialect of high-class citizens of Tokyo. Note: we can read more about the standard Japanese and general language situation in Japan in *Language Planning and Language Change in Japan* by Tessa Carroll (2013).

of deferential (*sonkeigo*) and humble (*kenjōgo*) forms (e.g. *o-kaki ni naru* お書きになる 'kindly write': *o-kaki suru* お書きする 'humbly write'), verbs (e.g. *meshiagaru* 召し上がる 'kindly eat': *itadaku* いただく 'humbly eat') and the use of benefactive verbs (e.g. *itadaku* いただく'humbly receive': *kudasaru* くださる 'kindly offer': *sashiageru* 差し上げる 'humbly offer'). Although, a greater attention to the explanation of this compound category is given by the lecturers of the subject called *Descriptive Grammar of Japanese* (pol. *Gramatyka opisowa języka japońskiego*), the theoretical frame which is offered to students requires more practical approach, for example through the courses of *Business Japanese*, *Honorifics in practice* or *Japanese official writing*.

2. Aim and methodology

The main purpose of this research is to define the level of motivation and interests of Polish students of Japanese studies in learning various aspects of *keigo*, as well as to investigate their linguistic and contextual knowledge and potential ability to use Japanese language on different levels of its politeness and casualness. The possible errors and misunderstandings occurring in the use of honorifics for communicative purposes will be also mentioned.

The opinions of students introduced in this paper are also regarded as an important and supportive tool in determining the significance of external factors, such as the role of native language in *keigo* acquisition or the selection of teaching methods and materials by language teachers working in the Polish academic environment.

The research presented in this paper was conducted primarily on the grounds of the survey analysis. The questionnaire was carried out in May and June 2018 among the participants of all years (three years of bachelor course and two years of master course) of Japanese studies at the Department of Japanese and Chinese Studies of Jagiellonian University in Poland.

The number of the respondents was 73, which comprises about 75% of all students. The participants were both males and females, aged between 19 and 26 years old and before answering to the survey, they were instructed that this research is anonymous and voluntary. The questionnaire contained four multiple choice questions with the possibility to add comments or notes below each of the question.

3. Results analysis

3.1 The evaluation of the basic knowledge, attitude and communicative intuition towards *keigo* category

Language awareness, accompanied by language intuition, are considered as two important aspects of foreign language learning. According to the authors of the book *Shakai gengogaku*, from the sociolinguistic point of view, there are five major domains of language awareness: (I) Evaluation and sensation of the language or language behavior, (II) Recognition of the actual state of the language or language behavior, (III) Intentional awareness of the language or language behavior, (IV) Conviction and expectation to the language or language behavior, (V) Standards of the language or language behavior (Sanada et al. 1992: 114-116). Apparently, such properties as operational memory, grammatical correctness and speech fluency are significant, but might be insufficient in the process of foreign language learning on the advanced or professional level. What is also important is a general knowledge and orientation in the language matters, the awareness of its diversity, complexity and ambiguity, and consequently the ability to give reasonable judgments about the language. To put is simply, in order to communicate smoothly in foreign language it is important to use it knowingly or, if necessary, intuitively, and also reveal your aware and deliberative attitude towards language in use.

The respondents of the survey were asked to analyze suggested statements about Japanese politeness and define whether, in their opinion, they are correct (answer *yes*), incorrect (answer *no*), the right answer is unknown to them or the statement seems too confusing to answer it (skip the

question). The list of ten suggested statements placed below (from I to X) is accompanied by the presentation of students' answers in the simple graph (Fig.1).

I. *Teineigo* (polite language, addressative forms) is one of the subcategory of *keigo*
II. Honorifics in Japanese is a grammatical category
III. *Keigo* is rooted in Japanese traditional and consequently, is stable and unchangeable
IV. In every-day communication *teineigo* is used more often than *sonkeigo* and *kenjōgo* forms
V. *Keigo* proficiency is an import skill to find a good job in Japanese company
VI. The first conversation with new Japanese acquaintances, regardless of their age, gender or status, should be held in *keigo*
VII. During informal events such as a lunch with boss, skipping *sonkeigo* and *kenjōgo* and using less polite forms occasionally, is regarded as a natural and an appropriate behavior
VIII. Japanese youth tend to skip *keigo* or use it incorrectly and consequently, are said to be responsible for *Nihongo midare* 'disorder of Japanese'
IX. *Keigo* is a significant aspect of Japanese language and culture and therefore, Japanese studies participants should learn and practice it more during the classes of practical Japanese
X. As a foreigner I am not able to understand *keigo* rules and use it fluently and therefore, there is no need to practice it more during the classes of practical Japanese

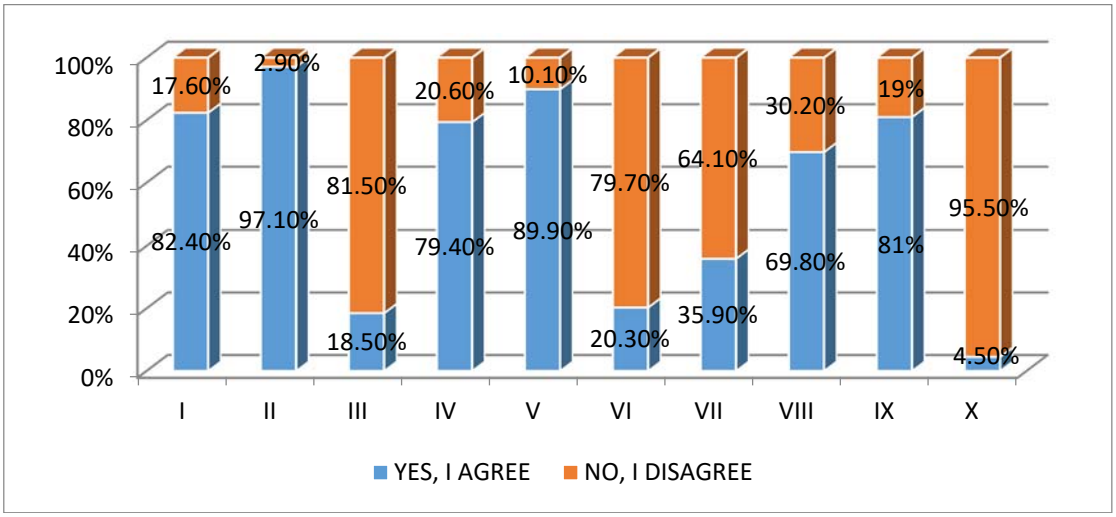

Fig.1. The answers of the participants of Japanese studies based on their knowledge, attitude and intuition towards *keigo* category

The figures presented above suggests that the opinions of the respondents about various aspects of Japanese honorifics, its features and functionality are rather similar and that they share reasonably common view and attitude to this category. As we observe, there are five statements the most of them agreed with (selected by more than 79% of respondents). Two of them reveal the knowledge of students: I. *Teineigo* belongs to *keigo* category (82,4%), II. *Keigo* is a grammatical category (97,1%), next two answers reflects their attitude: V. *Keigo* proficiency is important to find a job (89,9%), IX. *Keigo* is significant and therefore, it should be practiced more (81%). The last one is based on their sociolinguistic intuition: IV. In every-day Japanese *teineigo* is used more often than *sonkeigo* and *kenjōgo*.

There are also three statements that most of students disagreed with (selected by more than 79% of respondents). Two of them is based on the knowledge of students: III. *Keigo* is rooted in Japanese tradition and unchangeable (81,5% for *no*), VI. The first conversation with Japanese should be held in

polite language (79,7% for *no*)[107] and the last one reflects their attitude: X. Foreigners are unable to understand and use *keigo* correctly (95,5% for *no*).
The diversity in responding for the statements: VII. It is possible to skip *keigo* during informal meeting with boss (64,1% for *yes* and 35,9% for *no*) and VIII. Japanese youth skip *keigo* or use it inappropriately (69,8% for *yes*, 30,2% for *no*), demonstrates that the sociological background for the *keigo* use and the awareness of current language situation in Japan might be problematic for learners who are not natives of Japanese. It is natural for foreign students that although, they attempt to develop their linguistic competences and build certain attitude to the polite expressions, without advanced contextual awareness, their skills stay more automatic (trained) than intuitive.[108]

3.2 The awareness of the common mistakes occurring in the situational *keigo*

The respondents of the survey were asked to analyze four statements and decide whether they are grammatically and logically correct or not. Each of them was accompanied with the short description of the relation between participants of conversation. The respondents were not offered any Polish or English translation of Japanese statements. This selection was based on the individual knowledge of the author of the most common mistakes occurring in the polite speech of both, native and foreign users of Japanese. The aim of this question was to define the level of linguistic and sociolinguistic competences of Japanese language learners – they were asked to decide whether mentioned statements (from I to IV) are grammatically correct and appropriate for a suggested communicative situation (Fig.2.).

I. Part-time worker to his customer: *Nisen en kara o-azukari shimasu*. 二千円からお預かりします。[109]
II. Employee to his boss: *Ryōkai itashimashita*. 了解いたしました。[110]
III. Guide to the tourist: *Go-annai sasete itadakimasu.*ご案内させていただきます。[111]
IV. Boss to the employee: *Kore, mō ichido yarinaoshina.*これ、もう一度やり直しな。[112]

[107]In author's opinion, the majority of negative answers in this case (which suggests that *there is no need to use keigo when speaking with new-found acquaintances*) might be based on the common misconception that polite language (*keigo*) refers to *sonkeigo* and *kenjōgo* category only, without considering addressative forms as an important aspect of *keigo*. Students usually associate the word *keigo* with highly polite or humble expressions and *teineigo* with the Japanese for an every-day use.

[108]Additionally, according to the comments of three students of the first year, this question was confusing and difficult to answer. As they suggested, the theoretical explanation and limited number of exercises they were offered during classes and lectures of the first year, as well as lack of experience in putting *keigo* skills into practice, are insufficient to give a satisfactory response to suggested statements and express their attitude. Moreover, with reference to the last two statements (IX, X) one person claimed that the knowledge of *keigo* helps to assimilate with Japanese people and therefore, should be considered as an essential part of Japanese language.

[109] 'I will temporarily accept from two thousand yen.'

[110] 'Understood.'

[111] 'Please, allow me to guide you'

[112] 'Do it again.'

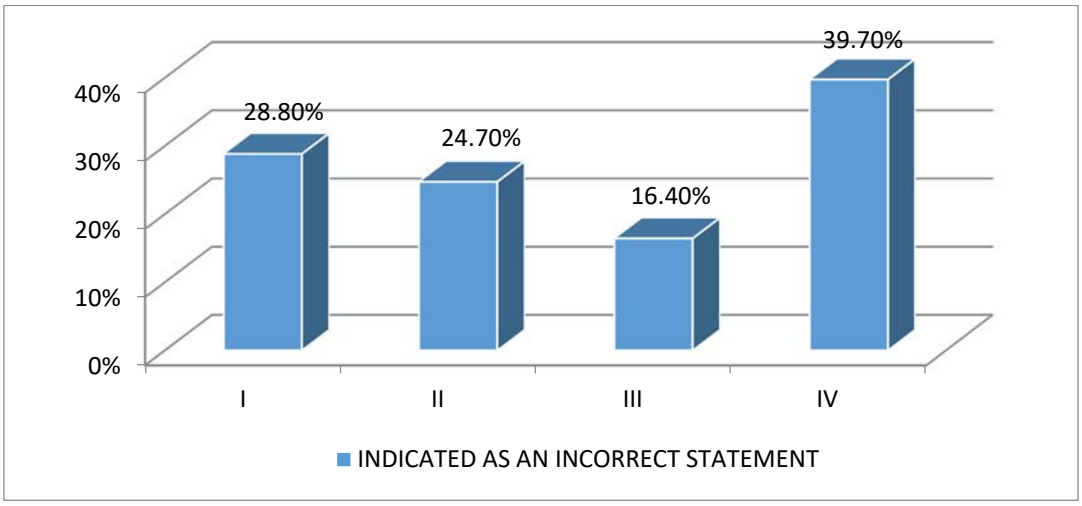

Fig.2. The estimation of the correctness and appropriateness of four suggested statements by the participants of Japanese studies

Although, these four statements contained one or more mistakes, none of the respondents indicated all of them as wrong.[113] As the examples I, II and III structurally appear more polite than the fourth one, they were suggested as incorrect with less frequency. Although, the statement IV. *Kore, mō ichido yarinaoshina* (indicated by 39,7% as wrong), is an example of correct, albeit colloquial Japanese, the use of intimate imperative form (*-na*) when speaking to the inferior, should be considered as an inappropriate behavior in working place.

The first statement, *Nisen en kara o-azukari shimasu* (indicated by 28,8% as incorrect) is an example of new type of politeness, called *manyuaru keigo* マニュアル敬語 'manual politeness; *keigo* in manuals' and refers to the set of polite phrases used for customers service (*sekkyaku furēzu* 接客フレーズ) (Akizuki 2005: 121). Although, these phrases are undoubtedly non-grammatical and illogical, they are acquired and used by young part-time workers because of their length and modest tone. In the mentioned case, Kobayashi accepts the use of the verb *azukaru* 預かる'temporarily received', but criticizes the use of participle *kara* から'from' (2008: 35-36). Japanese customers do not feel much of discomfort towards the combination … *en kara* 円から'from …yen' because, in their opinion, it is a polite way of ensuring that the rest of the amount will be certainly given back to the customer.

The second statement *Ryōkai itashimashita* (claimed by 24,7% as incorrect) is a common example of *machigaeta keigo* 間違えた敬語 'incorrect politeness'. In this case an intimate expression (*ryōkai* 了解) is combined with humble verb (*itasu* 致す).

The third example *Go-annai sasete itadakimasu* was indicated with the least frequency (16,4%) which is probably determined by the impression of a great courtesy it gives. However, this statement is a typical example of a recent common phenomena, called *nijū keigo* 二重敬語 'doubled politeness'

[113] The common mistakes occurring in the suggested statements are underlined and followed by short explanation and correct variant:

I. *Nisen en kara o-azukari shimasu* in this case the use of participle *kara* 'from' is redundant and the use of verb *azukaru* 'temporarily receive' is incorrect → *Nisen en o itadakimasu* 'I will humbly receive two thousand yen'.

II. *Ryōkai itashimashita* the use of noun *ryōkai* 'roger; consent' is inadequately polite in this kind of situations → *Shōchi itashimashita/ Kashikomarimashita* 'I respectfully understood'.

III. *Go-annai sasete itadakimasu* the use of honorific prefix *go-* with a casual form *-(s)aseru* is considered as redundant → *Annai sasete itadakimasu* 'Allow me to guide you' or *Go-annai itashimasu* 'I will humbly guide you'

IV. *Kore, mō ichido yarinaoshina* an intimate imperative form *-na* is considered as inappropriate for a conversation held in a working place and should be replaced by more adequate expression for a request → *Kore o mō ichido yarinaoshite kudasai*.

(the use of more than one indicator of politeness or modesty in one form or expression) which is considered as overdone and consequently, inappropriate language behavior (Inoue 2016: 48).

3.3 The awareness of individual language errors in the spontaneous use of *keigo*

In the next question, the respondents were asked to indicate the most common language errors or negative speaking habits in the spontaneous use of honorifics. They were suggested six negative or confusing tendencies (from I to VI) and were asked to propose other possible problems occurring in polite speech (Fig.3.)

I. I confuse polite structures with benefactive verbs, such as: *-te itadaku* ていただく 'to humbly receive a favor' and *-te kudasaru* てくださる 'to kindly offer a favor'
II. I confuse *sonkeigo* and *kenjōgo* forms, e.g. *O-kaki ni naru* お書きになる 'to kindly write' and *O-kaki suru* お書きする 'to humbly write', *go-ran ni naru* ご覧になる 'to kindly look at' and *haiken suru* 拝見する 'to humbly look at'
III. I confuse causative-benefactive structures with benefactive structures, e.g *sasete itadakemasu ka*? させていただけますか 'could you kindly allow me to do' and *shite itadakemasu ka?* していただけますか 'could you kindly do'
IV. I confuse or skip honorific prefixes such as *go-* and *o-*, e.g. *go-renraku* ご連絡 'contact', *o-henji* お返事 'answer', *go-kakunin* ご確認'confirmation', *o-sake* お酒 'alkohol'
V. I overuse addressative forms in regard to appreciative and modest forms which I use less often
VI. I generally do not use honorific forms because I am afraid to use them incorrectly
VII. Additional comments (e.g. suggestions of other common errors)[114]

[114] Additional comments:

1. I usually forget to use *keigo* when speaking in Japanese
2. My knowledge of *keigo* is too small to find out whether I make mistake or not
3. I have never used *sonkeigo/ kenjōgo* in practice
4. I usually forget to use *keigo* expressions because there is no need to speak very politely in other languages I know.
5. In my opinion Japanese honorific system is confusing and irritating.
6. I have a difficulty with assuming whether my statement in Japanese is impolite or too polite.
7. I do not confuse *sonkeigo* and *kenjōgo* but I unwittingly make mistakes since I am using *keigo* sporadically.
8. Japanese honorific system consists of set phrases and therefore, it is difficult to come up with adequate polite expression in spontaneous conversation.
9. I sometimes forget to replace common verbs such as *shiru* 知る'to know' with its appreciative (*go-zonji ni naru* ご存知になる) or humble (*zonjiru* 存じる) variants.

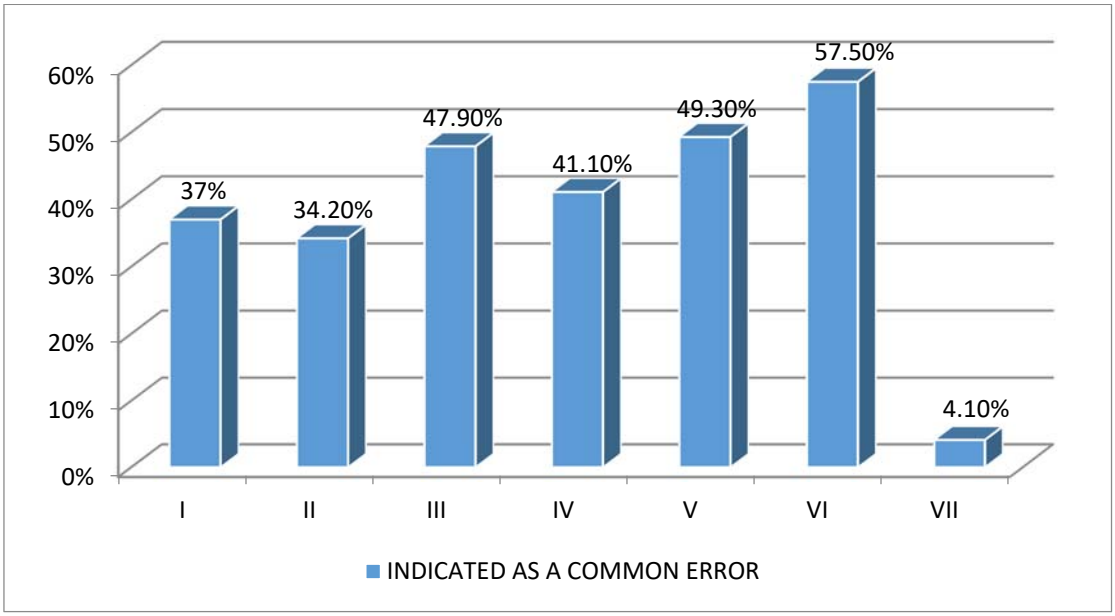

Fig.3. Common language errors and negative habits in the spontaneous use of *keigo*

The rates presented in the graph (VI. 57,5%, V. 49,3%), as well as the additional comments suggested by the students, indicate that they tend to abstain from using honorific and humble forms, as they are afraid of committing mistake, and prefer to use less complex addressative forms. In the spoken communication the tendency to select more simple, familiar and safe structure and refrain from using complex expression that could be used incorrectly, is a natural and common behavior. Mahmoud claims that simplification – the omission of certain linguistic (grammatical or lexical) elements by language learners – results from the incomplete knowledge of target language.

Simplification or reduction of the language by dropping certain elements is only one consequence of transfer from the native or the target language. It is a result of opting for the maximum amount of learning or communication with the limited number of forms or rules available. (Mahmoud 2014: 276)

Selinker classifies the communicative strategy of omitting elements and structures which are presumed by learners as redundant in spontaneous communication as one of the five fossilization processes occurring in second language learning (1972)[115]. Above-mentioned common tendency to select simple and more familiar but less polite and adequate expression may be regarded as an example of the simplification, or paraphrase (Tarone 1983)[116] on the communicative level.

> *Gaikokujin ga chukan gengo o mochiite gengo kōdō o okonau sai ni wa, ijō no yō na bogo washa no kakaeru mondai ni, sara ni mokuhyō gengo no shūtoku ga jūbun de nai koto kara kuru mondai ga kuwawaeru koto ga aru. Sono mondai no shurui wa, genkyū shitai jibutsu ya genshō o shiji suru tango ga wakaranai to itta goiteki na mondai kara, keigo ya seisa no aru gengo kōmoku ga umaku tsukaenai to itta hatsuwa no teisetsusei no mondai made, sono shūtoku dankai ni ōjite iroiro ni kotonaru.*[117] (Sanada et al. 1992: 149)

[115]Selinker analyzes common errors occurring in the use of second language and suggests five fossilization processes that hinder the process of language acquisition (1972): language transfer, transfer of training, overgeneralization, strategies of communication and strategies of learning (Richards 1974: 35-41, Żurek 2014: 293).

[116] Tarone introduces three types of communicative strategies: paraphrase (approximation, word coinage and circumlocution), transfer (literal translation, language switch, appeal for assistance, mime) and avoidance (message abandonment, topic avoidance) (Sanada et al. 1992: 149-150).

[117]‘Aside from above-mentioned difficulties held by native speakers, to foreigners who perform language behavior when using interlanguage, additional problems occur and they are determined by the insufficient acquisition of the target language. These problems are differentiated by the level of acquisition: from lexical difficulties e.g. lack of knowledge of word indicating or relating to things or phenomena or the problem with communicative appropriateness e.g. improper use of polite expression or

As a language learner attempts to participate in the conversation with the limited number of linguistic tools, the occurrence of difficulties is inevitable. However, the goal of communicative strategy is to be communicative and comprehensible due to ones competences and limitations and therefore, from this point of view, language correctness and appropriateness appear to be a secondary matter.

Other suggested errors were selected by more than thirty percent of respondents. Japanese studies participants admit that their often confuse benefactive constructions, especially those proceeded by causative form *-saseru* 'to make sb do sth' as they seem difficult to comprehend during spontaneous, fast conversation with Japanese natives (indicated by 47,9% of the respondents). Learners also tend to unintentionally skip honoric prefixes (*o-*, *go-*) added to nouns (indicated by 41,1%). As the absence of prefixes do not influence or change the meaning of the expression they appear easy to be forgotten or skipped.[118]

In the analysis of common mistakes and negative tendencies in the use of *keigo* it is necessary to mention the role of the teachers and teaching materials. Although, the development of language skills, as well as the tendency to make language errors is determined by the individual conditions and cognitive skills of the learners (Mahmoud 2014, 275-276), teaching strategies, to a certain extent, impact the language skills, especially in the first stage of learning when the theoretical explanations predominate over practical use. The tendency to easily forget or skip honorific or humble indicators and the general lack of confidence when speaking politely in Japanese is determined mostly by the scarcity of exercises that motivate and encourage students to accustom oneself to Japanese honorifics (e.g. role playing, listening to business Japanese). In other words, according to the survey results and students commentaries, negative attitude towards politeness is primarily determined by the fear and the feeling of strangeness and uneasiness towards *keigo*.

3.4 Communicative competences and the general orientation in the Japanese polite register

Speech in every language is diversified, which means that depending on the situation (e.g. formal/ informal), circumstances and environment (e.g. as for a lawyer language: inside the court/ outside the court) and the participants of the conversation (their age, status, background, relations with the speaker etc.) language in use changes. In the Japanese perspective language varieties are called *gengo henshu* 言語変種. Sociolinguists distinguish regional variants (dialects) from language registers, which are determined not by the individual property of the speaker, but by the setting of the conversation (Sanada et al. 1992: 35)

> *Register to wa hōgen dialect ga hanashite no zokusei ni yotte kettei sareru henshu de aru no ni tai shite, hanashite no okareta bamen ni yotte kettei sareru henshu no koto de aru.*[119] (Sanada et al. 1992:152)

genderly-diversified linguistic issues'.

[118] Less than forty percent of respondents claim to confuse benefactive forms which possess the same function but are used differently (e.g. by the selection of different participles) e.g. *Sensei ni oshiete itadaku* 先生に教えていただく 'receive an explanation from teacher' and *sensei wa oshiete kudasaru* 先生は教えてくださる 'teacher *x* gives an explanation' (indicated by 37% of the respondents). Japanese language learners also admit to have a difficulty with an appropriate use of appreciative and humble structures e.g. *o-yobi ni naru* お呼びになる'to kindly call' and *o-yobi suru* お呼びする'to humbly call' because of their structural resemblance (selected by 34,2%).

[119]'Register, in contrast to dialect which is a variety determined by the nature of the speaker, is a variety determined by the setting of a conversation'

Although, the choice of the language register is up to the speaker, the society imposes rules which restrict the selection of a register.[120] As the Japanese society requires the use of polite language in certain situations, linguistic competences are significant but insufficient to appropriately adjust the level of politeness to the particular situation. Therefore, it is important to develop communicative competences.[121]

Due to the significant role of the context and social background in polite speech, Japanese studies participants were asked to decide whether the suggested communicative situations (from I to X) require the use of *keigo* or not (Fig.4.).

I. Boss speaking to the employees in working place
II. Employee speaking to the boss in working place
III. Women in every-day communication with unrelated person
IV. Young people speaking to elderly people
V. Children speaking to unrelated person
VI. Children speaking to their relatives in every-day situations
VII. Students speaking to their *senpai* 'superiors' inside the school
VIII. Students speaking to their *senpai* outside the school
IX. Students speaking to their professors and lecturers
X. Japanese studies participants speaking to the older Japanese

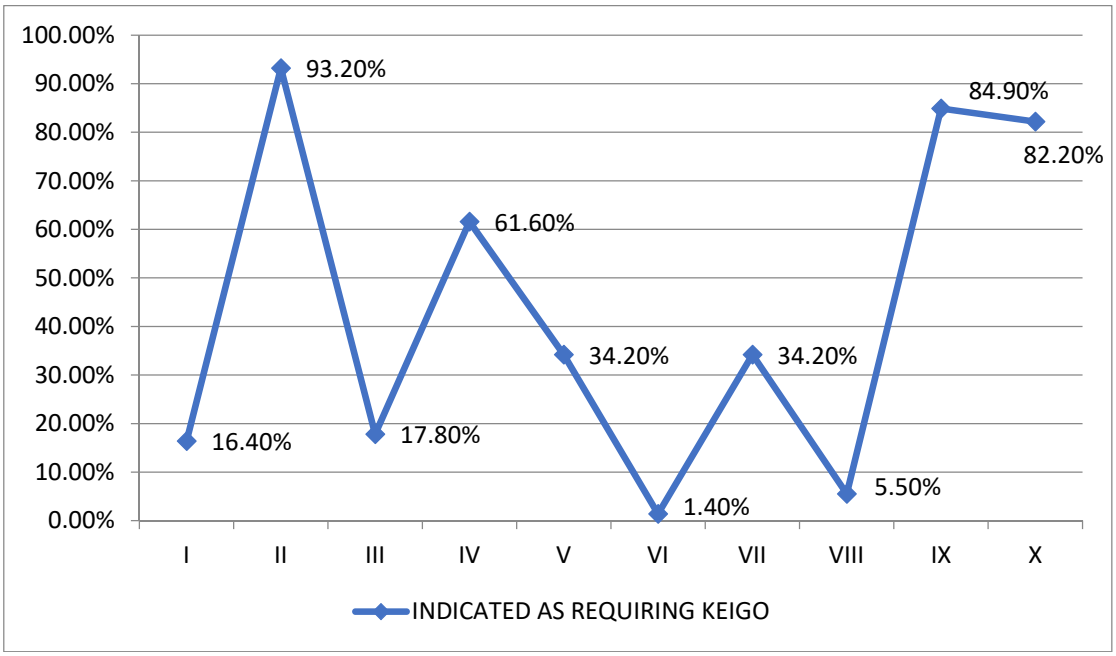

Fig.4. The selection of the communicative situations that require use of *keigo*

According to the graph, three examples were indicated as obviously requiring the use of *keigo* (selected by more than 80% of respondents). In students' opinion, employees are obliged to use polite forms when speaking to their bosses in the work place (II. 93,2%). In the academic environment the use of polite expression is also necessary (IX. students speaking to their professors and lecturers –

[120]To put it more simply, the lawyer should use legal language in the court and the teacher should not use obscure words when speaking to the students in the classroom. However, both of them may speak freely when hanging out with friends or family after work.

[121]The term *communicative competence* was introduced to linguistics by Dell Hymes in 1972 and it refers to the combination of linguistic and sociological knowledge of the language users.

84,9%). Respondents also admitted that although they are foreigners, as Japanese language learners they ought to use polite expressions when speaking to the older Japanese – 82,2%).

On the other hand, five of the answers were selected in less than 20% of cases, which suggests that, in students' opinion, the use of *keigo* is not a priority matter in proposed situations (especially in case of VI. Children speaking to their relatives in every-day situations – 1,4% and VIII. Students speaking to their *senpai* outside the school – 5,5%). In above-mentioned cases, students choices were probably motivated by two non-linguistic factors – familiarity between the participants of communication (children speaking to relatives), as well as the setting of the conversation (outside of the school = casual, unofficial environment).[122]

The suggestions for the forth statement are particularly interesting. The obligation to use polite expressions by young people speaking to their elders was selected by only 61,6% of the respondents, which, in author's opinion, is relatively rare. In the Japanese perspective, age is regarded as one of the dominant factors influencing the use of appropriate expression. If young speaker skips *keigo* when speaking to older person, it is regarded as incorrect and inappropriate. If it is unintentional behavior, it means that the speaker lacks basic social skills and proper upbringing; however, if it is an intentional act, it may suggest that the speaker attempts to irritate or offend the listener. It is important for the foreign learners to be more aware and cautious when using language for communicative purposes. From this point of view, diversity in students' answers comprises an important admonition to the Japanese language teachers that the greater emphasis should be putted on increasing communicative competences of their students.

Also, students suggestions for the first situation (boss speaking to employees in working place, indicated by 16,4% of the respondents) demonstrate, that in their general opinion, superiors are not obliged to speak politely to their inferiors. Although, it can be assumed that the use of polite, less polite or even, impolite expressions is motivated by the individual preferences of the boss, generally the official character and structure of *shokuba* 職場 'workplace' require, to certain extent, use of polite patterns of speech and behavior[123], and consequently, in some cases, notorious lack of appropriate behavior could be regarded as an overuse of someone's position.

4. Conclusion

With reference to the above-mentioned analysis, it can be concluded that although, Japanese studies participants acquire mainly theoretical knowledge of Japanese politeness, the limited number of practical exercises, as well as relatively poor contribution of the lecturers in developing sociolinguistic competences of the students, result in fear for using *keigo* for communication purposes. The results of the survey indicate that Japanese language learners possess general basic knowledge about Japanese honorifics (they know how to define and classify *keigo* category and they are able to present the most difficult and complex aspects of its use and indicate individual errors), however rather than using it incorrectly, Polish learners of Japanese tend to omit *sonkeigo* and *kenjōgo* in spontaneous speech in favor of more familiar *teineigo* forms.

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[122]However, as for the eighth example, it can be assumed that asking Japanese young people the same questions, their suggestions would be opposite – no matter if the conversation takes place inside or outside the school, Japanese students usually use polite language (*teineigo*) when speaking to their superiors. If they repetitively skip it, they can be regarded as ill-mannered or lacking social skills. The suggestions of the survey respondents were influence by general attitude between Polish students who basically do not consider older students as their superiors.

[123]Although, it is an individual choice of the person whether he/she will speak more or less politely to the subordinates, in every official environment it is inevitable to occasionally use such set phrases as: *O-matase shimashita* お待たせしました 'Excuse me for being late', *Yoroshiku o-negai shimasu* よろしくお願いします 'I look forward to…', *Osore irimasu ga* 恐れ入りますが 'I am really sorry but…', *Sekkaku desu ga* せっかくですが 'It is a rare occasion but…', *Ainiku desu ga* あいにくですが 'Unfortunately but' etc.

Moreover, Japanese language learners demonstrate rather negative attitude towards *keigo* category, which is motivated by the lack of confidence, fear for incorrect or inappropriate use of language, as well as, the impact of their first language or other familiar languages (such as English for European) which are thought to be less rigid and complicated in regard to honorifics than Japanese. Consequently, the motivation and interests of Japanese language learners in developing *keigo* skills are rather low.
The negative attitude towards *keigo* category in certain cases is also dictated by its misconception and the overgeneralization of Japanese *jōge kankei* 上下関係 'vertical relations'. In the additional comments, students admitted that they are often irritated by the fact that in Japanese perspective, people of the higher status do not have to use *keigo*, while their inferiors and especially women, are expected to be more polite and elegant. However, what generally constitutes and determines the use of honorifics is, not a gender or social inequalities, but a relation between the sender and the receiver of the message, between the sender and the listener, who is not a receiver of the message and also between the sender and a person he/she is referring to (Huszcza 1996: 51). Obviously, *jōge kankei* refers to the situation when *meshita no mono ga meue no mono ni tai shite, aite no kōi ni wa sonkeigo, jibun no kōi ni wa kenjōgo o tsukau koto ga kitai saremasu* (Ishiguri 2013: 109)[124], however, there is no indication that in Japanese society only superiors should be respected and inferiors should not, or that only women should be elegant and men could be rude.[125]

The reality is more structuralized and complex. Additionally, social and cultural changes in contemporary Japan influence certain transformation of communicative strategies, also in regard to Japanese honorifics.[126]

Jabłoński, with reference to Ogino, states that *keigo* acquisition begins relatively late in Japan – when the Japanese, usually in their twenties graduate from school and start working. He claims that, in every communicative society honorifics is an indicator of maturity and readiness to fulfill social roles (2013: 174). Also Ishiguro states that the awareness of *keigo* grows when the Japanese become *shakaijin* 社会人'social person; working adult' (2013: 110).[127] Japanese studies participants who wish to work in Japanese company will be also given opportunity to familiarize with *keigo* after graduation. However, Japanese language teachers are responsible for building solid grounds for their students in order to change general attitude towards *keigo*.
What is also important is to emphasize the significance of context and situation in communication. Ishiguro entitled his sociolinguistic book *Nihongo wa kūki ga kimeru* 日本語は空気が決める 'In Japanese language the atmosphere is settled' (2013) (in this case the word *kūki* 空気 'air, atmosphere' refers to the particular situation or mood). The author analyses various aspects, registers and variants of contemporary Japanese in the context of the atmosphere which determines strategies of communication (e.g. skipping *teineigo* during first encounter could be considered as an impolite behavior, but using *teineigo* when speaking with close friends could be considered as irony, joke or prank). However, it is not only the Japanese language that varies due to external factors. Every language works like that. Therefore, it is crucial for all language learners to concentrate on developing linguistic competence, however, always keeping in mind that language and society are mutually

[124]'It is expected that the person of a lower status towards the person of a higher status uses appreciative forms when speaking about the acts of the partner and humble forms when speaking about himself/ herself.'
[125]In Japanese linguistics the fictitious speech used to depict typical or stereotypical features of the speaker (such as woman language, man language, gangster language, old-man language etc.) is called *yakuwari-go* 役割語 'role language' (Note: find more in Kinsui 2014 or Ishiguro 2013: 95-100).
[126]Inoue assuages the fears of language purists claiming that these changes do not indicate the disintegration of Japanese honorifics (*keigo no midare* 敬語の乱れ), but are evidences of its constant progress (*hatten tojō* 発展途上) with a greater concern towards the listener (2017: 5).
[127]*Gakusei seikatsu o oete, shakaijin seikatsu ni hairu toki, keigo to iu no wa tsuyoku ishiki saremasu* 'After finishing students life and entering the life of working- (lit. society) adult, the awareness of the honorifics intensifies.'

connected and dependent and that the knowledge and aware use of different registers of foreign language can make their life among native speakers easier and more comfortable.

References

Akizuki, K., *Arienai Nihongo*, Chikuma shinsho, 2005.
Barešowa, I., On the categorization of the Japanese honorific system Keigo, *Topics in Linguistics*, 2015, 15.
Bugajski, M., *Język w komunikowaniu*, Wydawnictwo PWN, 2006.
Carroll, T., *Language Planning and Language Change in Japan*, Routledge, 2013.
Geyer, N., *Discourse and Politeness. Ambivalent Face in Japanese*, Continuum, 2008.
Hall, E.T., *Beyond Culture*, Garden City, Anchor Press, 1976.
Hasegawa, Y., *The Routledge Course in Japanese Translation*, Routledge, 2012.
Hasegawa, Y., *Japanese: A Linguistic Introduction*, Cambridge University Press, 2014.
Huszcza, R., O gramatyce grzeczności, *Pamiętnik literacki, czasopismo kwartalne poświęcone historii i krytyce literatury polskiej*, 1980, 71/1, 175-186.
Huszcza, R., *Honoryfikatywność*, Wydawnictwo Akademickie Dialog, 1996.
Hymes, D., On Communicative Competence, in the book: Pride, J.B. and Holmes, J. (eds) *Sociolinguistics. Selected Readings*, Penguin, 1972, 269-293.
Inoue, F., *Keigo wa kawaru*, Taishūkan shoten, 2017.
Inoue, M., *Dekiru hito wa, koko made yatte iru: Isshō tsukaeru keigo no kihon ga mi ni tsuku hon*, Yamato shuppan, 2016.
Ishiguro, K., *Nihongo wa kūki ga kimeru. Shakai gengogaku nyūmon*, Kōbunsha, 2013.
Itō, E., Chūkan gengo goyōron no chōryū, in the *Kotoba no kagaku*, Nagoya Repository, 2003, 87-104.
Jabłoński, A., *Homeostaza tekstu. Tłumaczenie i komunikacja międzykulturowa w perspektywie polsko-japońskiej*, Wydawnictwo Naukowe UAM, 2013.
Karasawa, A., *Keigo surasura book*, Seikō shobō, 2005.
Kikuchi, Y., *Keigo*, Kōdansha, 1994.
Kikuchi, Y., *Keigo sainyūmon*, Kōdansha, 2010.
Kinsui, S., *Vācharu Nihongo. Yakuwari-go no nazo*, Iwanami shoten, 2014.
Kitahara Y., *Mondai na Nihongo*, Taishūkan shoten, 2004.
Kitahara Y., *Mondai na Nihongo. Sono yon*. Taishūkan shoten, 2004.
Kobayashi S., *Sono baito-go o yamenasai*, Nihon keizai shinbun shuppansha, 2008.
Leech, G., The Pragmatics of Politeness, *Oxford Studies in Sociolinguistics*, 2014.
Mahmoud, A., Simplification in Language Learning: What Do Learners Simplify? in the *Studies in English Language Teaching*, 2014, Vol. 2, No 3, 275-280.
Marcjanik, M., *Grzeczność w komunikacji językowej*, Wydawnictwo PWN, 2007
Miller, R. A., *Japan's Modern Myth: The Language and Beyond*, Waetherhill, 1982.
Nyū Apurōchi Chūkyū Nihongo, Gobun Kenkyūsha, 2002.
Okamoto, Sh., Shibamoto-Smith J.S., *The Social Life of the Japanese Language: Cultural Discourse and Situated Practice*, Cambridge University Press, 2016.
Piotrowski, A., Ziółkowski, M., *Zróżnicowanie językowe a struktura społeczna*, Wydawnictwo PWN, 1976.
Richards, C.J., *Error Analysis: Perspective on Second Language Acquisition (Applied Linguistics and Language Study),* Routledge, 1974.
Sanada, Sh., Shibiya, K., Jinnouchi, M., Sugito, S., *Shakai gengogaku*, Ōfū, 1992.
Sekiyama, K., *Chūkan gengo goyōron e no shōtai. Hito, kotoba, kyōiku no intāfeisu o*

saguru, retrived from http://sekky.tripod.com/ylc99.html, 6 May 2018.
Selinker, L. *Interlanguage, in the: International Review of Applied Linguistics in Language Teaching, 1972, 10:3, 209-241.*
Shimizu, T., *Chūkan gengo goyōron gairon*, Surī Eī Nettowāku, 2009.
Shirazumi, Sh., *Komyunikēshon to bunka hendō*, Hakutō shobō, 1988.
Shō, I., Nihongo no shōkosei hyōgen, *Daigakuin ronbun-shū*, 2011, 8.
Shōkyū Nihongo, Tōkyō Gaikokugo Daigaku Ryūgakusei Kyōiku Sentā, Bonjinsha, 2010, 1 and 2.
Suzuki, T., *Kotoba to bunka*, Paper Shinsho, 1992.
Yamauchi, S. (ed.), *Gengo kyōikugaku nyūmon*, Taishūkan shoten, 2003.
Żurek, A., Z badań nad interjęzykiem, in the book of A. Dąbrowska, U. Dobesz [ed.], *40 lat wrocławskiej glottodydaktyki polonistycznej. Teoria i praktyk*

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The Employability of Undergraduates in Taiwan: From the View Point of Enterprises

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Abstract

97.73% of companies in Taiwan are SMEs, and these SMEs also provide undergraduates with opportunities for internships outside of school. Most public schools and a small number of private schools also require students to engage in off-campus internships before graduation. Unfortunately, companies that offer internship opportunities often feel there were exists a gap between school and company. The researcher analyzed the university off-campus internship course objectives and requirements for graduation and found that universities only focused on professional curriculum learning but seemed to have overlooked competencies expected of undergraduates prior to internships. Therefore, the purpose of this study is to gain an insight into companies' views on the employability of undergraduates. This study randomly selected 128 companies awarded the TTQS (Talent Quality Management System) assessment certificates by the National Association of Small & Medium Enterprises Taiwan, Ministry of Economic Affairs in 2017. According to the statistical analysis and discussion, the conclusions and recommendations drawn are as follows: 1. In view of companies' views on employability, employees' "general knowledge" is given greater importance; 2. Among the 37 employability items, companies attach the greatest importance to "working under pressure"; 3. Top managers attach greater importance to "general knowledge" compared to middle managers; 4. Compared to other countries, the top ten employability items given importance are practically the same, although Taiwan gives special emphasis to learning ability.

Keyword: Internship, Employability, Small and Medium-size Enterprises (SMEs), Undergraduate, Cooperative Education

1. Introduction

According to the "2017 White Paper on Small and Medium Enterprises (SMEs) in Taiwan", there are 1,408,313 SMEs in Taiwan, accounting for 97.73% of all enterprises' in Taiwan. In addition, 8,810,000 are employed by SMEs, accounting for 78.19% of the total employed population (Ministry of Economic Affairs, 2017).

The statistical figures show that SMEs are the main stable sources of the labor market in Taiwan and are the main driving force contributing to Taiwan's development. However, most SMEs do not know how to make their employees more valuable and nurture talents. SMEs often lack systematic employee training, resulting in the inability to accumulate proper employee needs and employee training inspection results. In view of this, in order to improve, develop and apply the manpower quality of SMEs, The Workforce Development Agency, WDA has especially set up a quality management system to assist SMEs in improving training and talent development, the so-called TTQS (Talent Quality Management System) (Workforce Development Agency, 2017a).

The TTQS was set up by government sectors and was implemented in 2007. TTQS was the abbreviation of Training Quality System in the early days. By 2014, the WDA emphasizing on the value of talents and the establishment of an optimized talent development system changed TTQS into Talent Quality Management System (Workforce Development Agency, 2017b). This system is a corporate training and talent development quality inception system, and all companies are eligible to apply for the certification from the WDA. Companies that pass evaluations by the governed departments are companies with an outstanding performance in employee training and talent development. Since talents are the most important assets of a company, under the promotion of the government, many companies realized the importance of talent development and therefore took the initiative to actively seek TTQS certification. Most companies that have obtained TTQS certification believe that university graduates may become their future employees. Hence, these companies also provide internship opportunities to undergraduates. This study hypothesizes that these companies have better knowledge of undergraduates. Therefore, the samples in this study are TTQS certified companies in 2017.

In order to strengthen the employability of undergraduates, the Department of Technological and Vocational Education, MOE proposed the "Outline of technical and vocational education policy" in March 2017. The outline states that students should strengthen their abilities in practice through systematic internship systems in order for companies to hire graduates best resembling the site of practice (Ministry of Education, 2017). Off-campus internship sites are the best sites for simulating the real world of work, but do schools really understand companies' needs? Many studies and graduates have confirmed that the existing school education is not in line with companies' needs and students' career development and there exists a gap between internship sites in which students have internship and the company' applications. There also exists a big gap between the abilities that students learn in school and the abilities needed in the actual company internship workplace. Therefore, the purpose of this study is to gain an insight into employability expected of undergraduates form the perspective of companies. The research conclusions shall serve as a reference for schools when making curriculum adjustments or cultivation of abilities.

2. Literature Review

2.1 Off-campus internship in Taiwan

In Taiwan, most public schools and a few private schools require undergraduates to take an off-campus internship course before graduation. It is a pity that some students only see off-campus internship as a "course" during their internship, unaware of abilities needed in the actual work environment. Although institutions that offer internships are only a temporary workplace, the field can provide a win-situation for employees and practitioners (Coco, 2000). Unlike formal employees, there is no need for interns to abide by employment commitment and a contract. Instead, interns can better

understand whether working in such an environment is suitable for them and reflect on which abilities need strengthening in the real world of work. The abilities needed in the real world of work make up the so-called employability.

Clearly, internships feature prominently when it comes to the employability of graduates from higher education (Binder, et al., 2015). During the internship, students with experiences in the industry could increase students' capacity for practical applications to highlight the features of vocational and technological education while further facilitating industry-academia exchange and collaboration to achieve a win-win and mutual benefits (Website of Industry-Academy Cooperation Information, 2017).

In 2012, the Department of Technological and Vocational Education, MOE put forth "VTE Reconstruction Program II". An important policy direction of the program is to import external corporate resources into the school through industry-academia cooperation in order to assist teachers in actual teaching and enhance students' abilities in practice. Most schools hired company lecturers to conduct classes in the school and share their practical experiences, but the policy effectiveness remained limited.

Later, in 2017, the Department of Technological and Vocational Education, MOE put forward the "Outline of Technical and Vocational Education Policy", stating that students should strengthen their abilities in practice through a systematic internship system in order for companies to hire graduates best resembling the site of practice (Ministry of Education, 2017).

Based on Universities' differed professional and teaching needs, the schedule for students' off-campus internship varies. Some require 2-month summer internships; others require 6-month semester internships; and still others require 1-year academic year internships. Table 1 shows off-campus internship curriculums allotted in universities of science and technology from 2012 to 2015. Table 1 also shows the yearly increase of off-campus internship students, an indication that the universities too are aware of the importance of internships to students.

Table 1 Statistics of School Year 2012-2015 opened off-campus internship courses in technology universities and students in Taiwan

School Year	Number of Technology University	Number of Got Grant	Number of Students have Attended Off-campus Internship
2012	91	79	53,774
2013	91	83	60,374
2014	88	86	76,336
2015	87	87	80,000 at least

Source: Website of Industry-Academy Cooperation Information, "Industry experts collaborate to teach," Retrieved from https://www.iaci.nkfust.edu.tw/Industry/CP.aspx?s=41&n=60, 2017.

Based on the research of Binder's, et al. (2015) shows that internship can bring direct and positive results to students' career development. Compared to students that had not engaged in internship, those who had engaged in internship found a job faster after graduation. Those who had engaged in internship also had a higher salary and job satisfaction compared to those who had not done so (Binder, et al., 2015). In view of the above advantages, most students chose to engage in internship, whether or not it was a graduation requirement. At present, many unveils even encourage their students to take part in overseas internships, thus expanding internship sites worldwide.

2.2 The definition of employability

The academia has had divided views on the definition of employability. According to the Business Dictionary (2018), employability could be defined as "A group of essential abilities that involve the

development of a knowledge base, expertise level and mindset that is increasingly necessary for success in the modern workplace." According to this definition, better employability enables individuals to acquire many job posts. By strengthening employability, individuals will have better development in a business environment. Yorke (2006) has ever mentioned that employability is *"*a set of achievements- skills, understandings and personal attributes- that make graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy(Yorke, 2006).*"*

Employability is also the drive of intrinsic motivation. It can prompt individuals to obtain knowledge and abilities necessary for their job and increase the employment opportunity. Employability can project individuals' assessment of their own employment possibilities. This self-in-context assessment affects individuals' decision and action to obtain additional knowledge and skills (Koen, Klehe, & Van Vianen, 2013). Therefore, employability is not knowledge and skills; instead, it is the knowledge of the individuals' future development value and action in a specific context. Employability is an important issue as far as government sectors and higher education institutions (HEIs) are concerned. With the popularization of higher education and economic development and changes, undergraduates are subject to harsher and more challenging situations as far as their competitiveness in the workplace is concerned (Saunders, & Zuzel, 2015). The ranking of world-renowned universities often includes alumni's social reputation, employment rate after graduation, job salary, work attitude and social influence as the main assessment items. Hence, many universities are committed to changing and improving their curriculums and teaching, in the hope of enabling graduates to possess employability in the job market. Hazenberg, Seddon, & Denny (2015) emphasize that employability involves individuals, organizations and societies; it is also a work-centered adaptability of individuals. Sound employability will enable individuals to find a job quickly and easily and adapt to the workplace better.

2.3 Dimensions of employability

Exactly what contents should employability cover? Related studies in the past have held different arguments. Fugate et al. (2004) believe employability is "pro-active adaptability" that includes the dimensions of career identity, personal adaptability and social networking skills (social and human capital).

Misra and Mishra (2011) thought employability is not just dependent upon the labor market forces, but also on other factors like willingness, capacity, mobility training (skill enhancement) and functional flexibility (changing shifts, working beyond job description). Employability is ultimately "the ability to be employed" (Asonitou, 2015).

For instance, technology universities are recognized as the prime engineering who will teach future engineering practitioners and present students with the knowledge on how to become "employable" that is how to develop a range of employability skills which include not only hard skills i.e. discipline specific skills, technical and IT skills but perhaps most importantly soft skills i.e. communication and interpersonal skills, ethics, critical thinking, leadership, entrepreneurship, life-long learning, problem-solving, social responsibility, adaptability, flexibility and others. Furthermore, the core competencies in the professional skills in EECS (Electrical Engineering and Computer Science) include: Possess the basic concepts of electrical engineering, the use of basic tools, ability to operate equipment and related equipment, ability to use information technology, ability to use electronic technology, ability to apply basic optical knowledge, ability to present results of work, the concept of information security, work safety concept, a total of nineteen items (Chang, et al, 2017).

Brennan et al. (2001) conducted a survey on university graduates from 12 countries (now employees). The U.K. and Japan were specifically separated, while the averages of ten European countries were obtained. Three countries were compared in terms of employability valued by the employer as perceived by the employees. With the assistance of universities, 45,000 new graduates who were already working were surveyed. The questionnaire consists of three dimensions and 37

employability abilities, including: Specific/ professional basic knowledge, general knowledge/ abilities, and behavior/ character / personality dimensions. The questionnaire survey is placed in Part E of the research report. In order to compare the research results of Brennan et al. (2001) this study adopted the same questionnaire and the three dimensions to measure the companies' views on employability.

3. Methodology

3.1 Participants

The lists of institutions with TTQS certification (National Development Council, 2017) were downloaded from the Plate of Government Opening Data in 2017. Purposive sampling was used to select companies as the research samples. There were 804 companies in the initial list. After deducting public associations, schools and other non-profit organizations, 448 TTQS certified companies were obtained. This study adopted the 448 companies as the parameter and used Creative Research System (2015) to calculate the number of samples, 316 companies in total. Through random sampling, the samples were selected, and the questionnaire was mailed to these institutions. Questionnaires were recovered from 128 companies, accounting for the effective recovery rate of 40.51%.

3.2 Procedure

In order to develop a valid and reliable questionnaire, items are translated based on related literature in to Chinese and on previous studies in this study. There were two English teachers double-direction-checked the correction of the scales. The questionnaire consists of two sections. The first section is about demographic information contains 5 items. The second section consists of 37 items concerning the Employability. All scales comprised 5-point Likert-type items. The average time for completing each questionnaire is 5-6 In order to develop a valid and reliable questionnaire, items are translated based on related literature into Chinese and on previous studies in this study. There were two English teachers double- direction- checked the correction of the scales. The questionnaire consists of two sections. The first section is about demographic information contains 5 items. The second section consists of 37 items concerning the "Employability". All scales comprised 5-point Likert-type items. The average time for completing each questionnaire is 5-6 minutes.

3.3 Measurement

The Employability Scale implemented in this study was developed by Brennan, J., Johnston, B., Little, B., Shah, T., & Woodley, A. (2001). The Employability Scale consists of 3 dimensions: 1.Specific/ professional basic knowledge (SBK), 2.General knowledge/ abilities (GKA), and 3.Behavior/ character / personality (BCP). All items are rated using a 5-point scale ranging from 1 (Very strongly disagree) to 5 (Very strongly agree). Sample items include "Broad general knowledge", "Working under pressure", and "Loyalty, integrity." Internal consistency of total scale is measured with Cronbach's alpha (α= .946), and sub-scale in SBK is .854, in GKA is .869, and in BCP is .886.

4. Results and Discussion

4.1 Ranking on the Employability's Dimension

In this study, employability has three dimensions, including Specific/professional basic knowledge (SBK), General knowledge/abilities (GKA), and Behavior/ character/personality (BCP). The survey results, as shown in Table 2, show that the GKA mean far exceeds the mean of BCP and SBK. This signifies company supervisors attach greater importance to general knowledge/abilities.

4.2 Ranking on the Employability

In addition to the meaning of the dimensions in Table 2, it also shows the ranking of the respective employability items. The means of the 37 employability items show that "working under pressure" has the highest mean (average=4.74), followed by "learning abilities (4.66)", "initiative (4.63)", "problem-solving ability (4.61)", and "ability to work in a team (4.60)." From the top five employability items, it can be found that four of the items fall under GKA and one falls under BCP, indicating that Taiwanese companies attach great importance to employees' "working under pressure".

Table 2 Rank of employability's dimensions and their items

Employability	Mean	SD	Ranking in Dimension	Ranking in Total
1. Specific/ professional basic Knowledge(SBK)	**4.144**	**.662**	**3**	
1-1 Broad general knowledge	4.31	.637	4	18
1-2 Cross-disciplinary thinking/knowledge	4.13	.668	7	28
1-3 Field-specific theoretical knowledge	4.35	.647	3	16
1-4 Field-specific knowledge of empirical/ practical methods	4.43	.636	1	11
1-5 Foreign language proficiency	4.17	.653	6	26
1-6 Computer skills	4.38	.577	2	12
1-7 Understanding complex social, organizational and technical systems	3.77	.655	10	34
1-8 Planning, coordinating and organizing	4.27	.661	5	21
1-9 Applying rules and regulations	3.74	.734	11	36
1-10 Economic reasoning	3.87	.787	9	32
1-11 Documenting ideas and information	4.09	.628	8	29
2. General knowledge/ abilities (GKA)	**4.333**	**.593**	**1**	
2-1 Problem-solving ability	4.61	.506	3	4
2-2 Analytical competencies	4.22	.651	12	24
2-3 Numerical abilities	3.30	.828	14	37
2-4 Learning abilities	4.66	.474	2	2
2-5 Reflective thinking, assessing one's own work	4.23	.605	11	23
2-6 Creativity	4.07	.630	13	30
2-7 Working under pressure	4.74	.457	1	1
2-8 Accuracy, attention to detail	4.51	.561	5	8
2-9 Time management	4.50	.547	6	9
2-10 Negotiating	4.29	.642	9	19
2-11 Physical and mental fitness for work	4.33	.677	8	17
2-12 Manual skills	4.24	.612	10	22
2-13 Working independently	4.36	.598	7	15
2-14 Ability to work in a team	4.60	.507	4	5
3. Behavior/ character / personality (BCP)	**4.265**	**.622**	**2**	
3-1 Initiative	4.63	.515	1	3
3-2 Adaptability	4.52	.561	2	6

3-3 Assertiveness, decisiveness, persistence	4.04	.692	10	31
3-4 Power of concentration	4.38	.563	5	13
3-5 Getting personally involved	4.29	.666	7	20
3-6 Loyalty, integrity	4.52	.575	3	7
3-7 Critical thinking	3.86	.707	11	33
3-8 Oral communication skills	4.45	.559	4	10
3-9 Written communication skills	4.17	.629	9	27
3-10 Tolerance, appreciation of different points of view	4.37	.573	6	14
3-11 Leadership	3.77	.704	12	35
3-12 Taking responsibilities, decisions	4.18	.715	8	25

4.3 Differential Analysis of Background Variables of Participants on Employability

In this study, the differences in the background variables of participants on employability were analyzed and explored. These background variables include: Gender, seniority, job title (top managers, middle managers, employees), and company type (manufacturing industry and non-manufacturing industry), company scale (SMEs and large enterprises). The t-test and ANOVA statistical methods were employed to compare the differences in the participants' background and employability. Statistical results show that gender, seniority, company type, and company scale showed no significant differences in terms of the participants' gender, seniority, company type and company scale, while the job title of the participants produced significant differences on their views on employability. As shown in Table 3, top managers' views were significantly higher in GKA (general knowledge/ abilities) compared to middle managers and employees, indicating top managers attach considerable importance to employees' general knowledge.

Table 3 An Analysis of Difference of Participants' Background Variables on the Employability

Variables	**cell**	**N**	**SKB Mean value**	**SD**	**t/F**	**GKA Mean value**	**SD**	**t/F**	**BCP Mean value**	**SD**	**t/F**
Gender	Male	35	4.189	.404	.837	4.341	.372	.145	4.242	.441	-.356
	Female	93	4.119	.430		4.330	.364		4.271	.409	
Trade	Manufacture	68	4.167	0.386	.813	4.362	0.359	.965	4.270	0.394	.152
	Unmanufactured	60	4.106	0.463		4.300	0.372		4.258	0.444	
Size	Large	79	4.162	0.422	.805	4.378	0.369	1.778	4.318	0.418	1.851
	SME's	49	4.100	0.427		4.261	0.351		4.179	0.405	
Seniority	Below 3 years	15	4.224	0.398	.536	4.405	0.281	.467	4.400	0.315	1.575
	3-6 years	19	4.182	0.492		4.365	0.438		4.346	0.509	
	Above 6 years	94	4.116	0.414		4.315	0.363		4.226	0.408	
Position	Top executive	36	4.247	0.433	2.914	4.450	0.340	4.366*	4.380	0.390	2.660
	Mid-executive	25	3.985	0.398		4.177	0.365		4.137	0.415	
	employee	67	4.137	0.415		4.328	0.360		4.250	0.421	

*$p < .05$

4.4 A Comparison on the Views of the U.K., Europe, Japan and This Study on the Degree of the Importance of Employability

In addition to the statistical analysis above, the research findings of Brennan et al. (2001) and this study were compared, as shown in Table 4. Table 4 shows a comparison of the top ten employability items in the U.K., Europe, Japan, and Taiwan. Worth noting is that the survey by Brennan et al. (2001) in 2001 was conducted on graduates who had already been working.

The self-report method was used to find employability items given greater emphasis by employers. This study conducted a survey on company representatives to find employability items they expected from university graduates. Although these two studies use the same questionnaire, the survey targets were different. In view of the employability items given the greatest emphasis, "working under pressure" was the same for the U.K. and Taiwan, while Europe and Japan valued "problem-solving ability". In view of the top five, four countries valued the "problem-solving ability".

In Taiwan, employability items "learning abilities" ranking second and "initiative" ranking third is less important to the other three countries. Additionally, it was also found that employers in Taiwan are less concerned with employees' oral communication skill while the other three countries find them considerably important. This finding is worthy of Taiwan's vigilance.

Table 4 Top 10 Employability Required in Employment from Enterprises

UK(2001)	**Europe(2001)**	**Japan(2001)**	**Taiwan(2017)**
1 Working under pressure	1/2 Problem solving ability; Working independently	1 Problem solving ability	1 Working under pressure
2 Oral communication skills	3 Oral communication skills	2 Fitness for work	2 Learning abilities
3 Accuracy, attention to detail	4 Working under pressure	3/4/5 Oral communication skills; Accuracy, attention to detail; Adaptability	3 Initiative
4 Working in a team	5 Taking responsibility and decisions	6/7 Working in a team; Working under pressure	4 Problem-solving ability
5 Time management	6 Working in a team	8/9 Power of concentration; Time management	5 Work in a team
6 Adaptability	7 Assertiveness, decisiveness and persistence	10 Initiative	6 Adaptability
7 Initiative	8/9/10 Adaptability; Initiative; Accuracy, attention to detail		7 Loyalty, integrity
8 Working independently			8 Accuracy, attention to detail
9 Taking responsibility and decisions			9 Time management
10 Planning, coordinating and organizing			10 Oral communication skills

Source: Partial data adopted from Brennan, J., Johnston, B., Little, B., Shah, T., & Woodley, A. (2001). *The Employment of UK graduates: comparisons with Europe and Japan.* Higher Education Funding Council for England.

5. Conclusions and Limitations

5.1 The Importance of Employability Rated by Companies is Focused on Employees' General Knowledge and Abilities

The above analysis shows that most Taiwanese companies value employees general knowledge (GKA). General knowledge refers to basic listening, speaking, reading, writing, and calculation proficiency. These abilities are directly reflected on employees' performance in different aspects. In

addition, the company representatives also attached great importance to employees' learning ability since it is impossible for the school to teach students all the abilities needed by the company.

On top of this, with environmental changes, employees must constantly study on the job and learn in order to keep up with the times. Employees must demonstrate a strong learning ability to adapt well to the company. Undergraduates should take the initiative to learn in school and engage in extended reading based on the contents taught by the teacher. The employability dimension ranking second is BCP (behavior/ character / personality). BCP is the employee's positive attitude and personality traits when faced with work or tasks; the employability dimension ranking third is SBK (specific/ professional basic knowledge).

SBK refers to specific or basic professional knowledge and competency in a specific field. This finding serves as a reminder that Taiwan's university education should attach importance to students' basic abilities and sound work attitude. As for expertise cultivation, they can continue to learn in the workplace through their sound learning ability.

5.2 Of the top five rankings of employability, "working under pressure" is the most important, followed by "learning abilities", "initiative", "problem-solving ability", and "ability to work in a team"

As shown in Table 2, the top five employability items ranked by their degree of importance to enterprise representatives are: "working under pressure", "learning abilities", "initiative", "problem-solving ability", and the "ability to work in a team". First, according to the definition of the Career Center of the University of Leeds, pressure can be defined as "The stress or urgency of matters requiring attention, the burden of physical or mental distress and the constraint of circumstances." (Career Center of the University of Leeds, 2017).

When a person starts work for the first time, this individual faces supervisors, direct superior, indirect supervisors, colleagues, and even consumers. Hearing different voices from different people, the individual must have the ability to judge the priority, an inevitable process of socialization. Secondly, professional knowledge taught in school often lags behind what companies need. As long as new employees can maintain a strong learning ability, they can make up for their lack of professional knowledge that they didn't learn in school. Thirdly, most Taiwanese companies inherit the bureaucratic system, dividing the company interior into small work teams or task groups. New employees should seize every opportunity to participate in teamwork even if they are only team assistants. As long as they are part of the team, they will have the chance to participate in the team's establishment, formation, planning, processing, problem-solving, and even task completion as a team, which are helpful for their future development in the company.

5.3 Compared to Middle Managers, Top Managers Value GKA (General Knowledge/Abilities) More

The third main research finding is quite interesting. Compared to middle rank managers, top managers value the employability item of GKA (general knowledge/abilities) even more. The main reason for this is that compared to middle managers, most top managers have been in the company longer and have come across more employees. They are better able than middle managers to understand which employees have potential and are more aware of which employee qualities are needed through recruitment, training and promotion processes. Middle managers basing on their own experience believe that employees with better GKA have better efficiency and performance during work execution, which in turn brings the company more benefits.

5.4 Compared to Other Countries, Taiwan Values Learning Ability More.

In the comparison of 37 employability items, the top ten employability items in the U.K. and Taiwan are quite similar. Both the U.K. and Taiwan value "working under pressure" and "working in

a team". It is speculated that this result is due to several reasons. First, it is possible related to the company type. 97.73% of companies are small and medium-size enterprises, SMEs. Under the operational condition of low capital and high cash flow, every company must constantly compete with other similar companies. In order to maintain their competitiveness and sustainability, they need to constantly innovate, making employees working under pressure a normal. Therefore, this is a reminder for higher education that we should provide more challenging tasks or assignment to students, so that they will complete assigned tasks within the given time limits to increase their tolerance and resilience. Secondly, due to the rapid progress in science and technology, companies always hope to see employees who maintain initiative and active learning attitudes towards continuous learning. In fact, company supervisors are not likely to know about every area of expertise than the employees. Oftentimes, supervisors appropriately authorize employees to work independently on many tasks. If company employees can actively seek knowledge, the company will be able continue to improve and innovate (Chang, J.-C., et al, 2015). If the company can quickly learn and apply new technologies or new knowledge, the company will become a learning organization.

5.5 Limitations

This study has two limitations. First of all, Brennans' research was conducted 16 years ago, and this study was completed this year. If Brennan's research was to be carried out on this day, the employability rankings may not be the same as those 16 years ago. Limited by research time and manpower, this study only used data from 16 years ago for comparison. Secondly, the questionnaire was sent to the human resources departments of companies awarded TTQS assessment certification in 2017. Although the study made it clear the questionnaire was to be filled out by the manager representatives, there was no way to know who really filled out the questionnaire. From the backgrounds of the questionnaire respondents, it was learned that the respondents included top managers, middle managers, and employees. Therefore, the research results may contain certain tolerable survey errors.

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References

Asonitou, S., Employability skills in higher education and the case of Greece. *Procedia-Social and Behavioral Sciences*, 175, 2015, 283-290.

Binder, J. F., Baguley, T., Crook, C., and Miller, F., The academic value of internships: Benefits across disciplines and student backgrounds. *Contemporary Educational Psychology,* 41, 2015, 73-82.

Brennan, J., Johnston, B., Little, B., Shah, T., and Woodley, A., *The Employment of UK graduates: comparisons with Europe and Japan*, Higher Education Funding Council for England, 2001.

Business Dictionary, *Definition of employability*, Retrieved from http://www. businessdictionary.com/definition/employability-skills.html on 26 February, 2018.

Career Center of University of Leeds., *The definition of pressure*. Retrieved from http://careerweb.leeds.ac.uk/info/4/make_yourself_employable/202/ employability_skills/13 on 28 February 2018

Chang, Jen-Chia, Hsiao Yuan-Du, Chen, Su-Chang, and Yu Tsung-Ta., Core entrepreneurial competencies of students in departments of electrical engineering and computer sciences (EECS) in universities. *Education+ Training*, https://doi.org/10.1108/ET-10-2016-0160, 2017.

Chang, Jen-Chia., Lin, Hsin-I, and Hsiao, Hsi-Chi., Off-campus practicum institution of IT foreign companies: Taking Company N as an example. *International Journal of Technology and Engineering Education, 12*(1), 2015, 15-24.

Coco, M., Internships: A try before you buy arrangement. *SAM Advanced Management Journal*, 65, 2000, 41-47.

Creative Research System, *Sample size calculator*. Retrieved from http://www. surveysystem.com/sscalc.htm on 2 February 2018.

Fugate, M., Kinicki, A. J., and Ashforth, B. E., Employability: A psycho-social construct, its dimensions, and applications. *Journal of Vocational Behavior*, 65(1), 2004, 14-38.

Hazenberg, R., Seddon, F., and Denny, S., Programme recruitment and evaluation: The effect of an employability enhancement programme on the general self-efficacy levels of unemployed graduates, *Journal of Education and Work*, 28(3), 2015, 273-300.

Koen, J., Klehe, U.-C., and Van Vianen, A. E. M., Employability among the long-term unemployed: A futile quest or worth the effort? *Journal of Vocational Behavior*, 82(1), 2013, 37-48.

Ministry of Economic Affairs, *2017 White Paper on Small and Medium Enterprises in Taiwan*. Small and Medium Enterprise Administration, Ministry of Economic Affairs, Taiwan, 2017.

Ministry of Education, 2017, *Technical and vocational education policy guideline*. Retrieved from https://ws.moe.edu.tw/001/Upload/3/relfile/6315/52872/d595 d36a-1b27-42d3-b50f-95c0f4671296.pdf on 1 March 2018.

Ministry of Education, 2012, *The rules of processing in financial support for opening off-campus internship in technological university by Ministry of Education,* Retrieved from http://edu.law.moe.gov.tw/LawContentDetails.aspx?id=FL 050926&KeyWordHL=&StyleType=1 on 5 January 2018.

Misra, K. R. & Mishra, P., Employability skills: The conceptual framework & scale development. *The Indian Journal of Industrial Relations*, 46 (4), 2011, 650-660.

National Development Council, *Plate of government opening data: Public information, List of 2016 & 2017 TTQS Awards*. Retrieved from https:// data.gov.tw/dataset/41723 on 28 February 2018.

Saunders, V. and Zuzel, K., Evaluating employability skills: Employer and student perceptions, *Bioscience,* 15(1)*,* 2015, 1-15.

Website of Industry-Academy Cooperation Information, *Industry experts collaborate to teach*, Retrieved from https://www.iaci.nkfust.edu.tw/Industry/CP.aspx?s= 41&n=60, on 20 February 2018.

Workforce Development Agency, 2017a, *Organization & Job Description: Organization Structure*, Retrieved from https://www.wda.gov.tw/en/cp.aspx? n=FA94DF276F0D33EA on 20 February 2018.

Workforce Development Agency, 2017b, *Introduction to TTQS*. Retrieved from https://www.wda.gov.tw/en/cp.aspx?n=8BA243970C0C2DA8 on 20 February 2018.

Yorke, M., *Employability in higher education: What it is-What it is not.* York: Higher Education Academy, 2006.

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Anxiety in Speaking English among Senior Students: A Case Study in a Chinese Independent Secondary School

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Abstract

The purpose of this study was to determine the anxiety in speaking English as a second language among senior three EAP students in the language classrooms. This study was conducted using a mixed-method approach. This study also investigated the factors that cause anxiety among the Senior Three EAP as well as how it differs between male and female students. The questionnaire was adapted from Horwitz's (1983) Foreign Language Anxiety Scale(FLAS) and renamed as English Language Classroom Anxiety Scale (ELCAS). The data obtained were analyzed using SPSS version 22.0 Windows, designed to establish the presence and amount of anxiety related to speaking English in the language classroom. The qualitative part consisted of individual semi-structured interviews. The questionnaire was also the basis for the choice of the interviewees. The investigation was carried out among all Senior Three EAP students in school involving 293 students. The results showed that students experienced the moderate level of anxiety in the language classroom on the whole. It also found that speaking is not always the main source of anxiety, but speaking in front of the class is to most of them. The qualitative date findings revealed that the factors mainly contribute to anxiety were; Communication Apprehension, Fear of Negative Evaluation, Test Anxiety and Anxiety of English Class. The findings from this study provide an overall understanding to teachers on the current emotional situation of the second language learners and the relevant pedagogical implication to restore a better learning outcome for all learners.

Keyword: Anxiety in Speaking, English as Second Language, Language Classroom

1. Introduction

Learning English at Hin Hua High School has given a strong emphasis in the school curricular despite being a Chinese Independent Secondary School. The English language Centre employs a small class differentiated teaching pedagogy and the course books are aligned to Common European Framework of References for Languages (CEFR). Further to this, an authentic learning mode is also created in order to expose students to the 21st Century Skills where research and academic writing is involved. The program structure designed with a well-balanced learning in listening, speaking, reading and writing which incorporates a task based and communicative approach. This is in line with the school's vision to nurture students who are globally competent. Globalization has opened new avenues and increased the opportunity for many Hin Hua High School students to be accepted internationally to further their tertiary education.

Generally, students are expected to acquire the listening, speaking, reading and writing skills in the academic context. Language activities such as oral presentations, group discussions and role–plays also contribute extensively in the syllabus when it comes to overall assessment for English Language. With this shift of paradigm in the teaching and learning adapting to the 21st Century classroom pedagogy, lessons are inclined towards student-centred approach. Academic research has been part of the syllabus for the past four years at Hin Hua High School and all EAP students are required to complete a small-scale research on the first half of the year complete with a full academic writing report and a presentation on their research. When presenting in English is required, students find it very challenging. "The ever-growing need for a good communication skill in English language has created a huge worldwide demand for achieving a good demand of English among its non-native speakers around the globe" (Mehmoodzadeh, 2012, p. 466).

Speaking seems to be the most important skill of all the four skills (listening, speaking, reading and writing) because people who know a language are usually referred to as speakers of that language (Ur, 1996). The major goal of all English language teaching should be to give learners the ability to use English effectively, accurately in communication (Davies & Pearse, 1998). However, not all language learners after many years studying English can communicate fluently and accurately because they lack necessary knowledge. It is undeniable that English is the most common and the most important language in the world. Therefore, English serves as the second language in Malaysia. Though Hin Hua High School is a Chinese Independent Secondary School, new approaches are constantly implemented in the English Language Centre for the betterment of the students.

In short, English has become the second most important language to the students. It is because they need to master the language in order to excel in their studies and to prepare themselves for the competitive tertiary education. They have to compete with other learners. Universities or even employers nowadays prefer candidates who are proficient in English to meet the demands of globalization.

1.1 Statements Of Problems

Although students have been exposed to the English Language since their primary years, they do encounter certain level of anxiety when it comes to English language learning particularly speaking in the classroom. At this stage their learning is hindered and thus unable them to achieve the level of proficiency they are required to attain in accordance to their level. In other words, they often become frustrated and intimidated each time oral presentations are assigned to them, especially when they are dealing with research matters and communication skills required for a successful presentation (King.2002).

It is therefore essential to investigate Senior Three EAP students' anxiety level when they use the English Language in speaking. By gaining insight of this situation, it will help teachers to prepare effective lessons and also help students to overcome this fear.

1.2 Purpose Of The Study

The purpose of the present study is to:

i. investigate the Senior Three EAP students' overall level of anxiety in the language classroom.
ii. identify the factors that causes anxiety in the Language classroom among Senior Three EAP students.
iii. examine the gender difference among the anxiety level of the participants.
iv. identify the causes of anxiety towards English Language learning in the classroom.

1.3. Research Questions

Although a number of researches on language anxiety in schools and university levels have been conducted, there is still a lack of information as how speaking anxiety is experienced by second language learners in a Chinese Independent Secondary School environment. Most language anxiety studies focused more on foreign language acquisition. In addition, there is still a lack of studies on investigating the strategies employed to overcome the speaking anxiety in the Chinese Independent Secondary School setting. Based on the above problem statements, the research questions for this study were:

1. What is the level of anxiety among Senior Three EAP students in the language classroom?
2. Which factor(s) cause anxiety in speaking among Senior Three EAP students?
3. How does the level of anxiety differ between male and female students of Senior Three EAP?
4. What are the causes of speaking anxiety experienced by students of Senior Three EAP in the classroom?

1.4 Significance of the Study

This study enables all teachers at English Language Centre especially those teaching the Senior classes to get useful information about students' anxiety level towards English Language particularly on their speaking. The information will help them to design effective teaching methods that can help to reduce the language anxiety and to create less stressful learning atmosphere.

Furthermore, the findings from this research can also be taken into consideration to help students find appropriate measures to overcome their anxiety problems. It is our role as teachers to ensure students cope well in their learning process so that they acquire competency in the second language.

2. Review of Literature

The literature review focuses on elements of speaking anxiety and related research that have been carried out to identify the level, factors, the gender differences and the causes of anxiety among the second language learners.

2.1 Language Anxiety

Maclntyre and Gardner (1994) said that the feeling of tension and apprehension is specifically associated with second language contexts, including speaking, listening, and learning (Onwuegbuzie, Bailey, & Daley, Factors associated with foreign language Anxiety, 1999). Maclntyre et al. reveal that anxiety is some sort of apprehension while listening, speaking and learning the second language.

Ferris (1998) investigated the speaking and listening problems among international students who study English and revealed that the majority of the students' encounter problems when it comes to oral presentations or when they try to participate in the classroom during class discussions raised by the teachers. When the students feel that they cannot convey their emotions and thoughts, they in many

cases get the feeling of apprehension and frustration (MacIntyre and Gardner, 1991; Watson and Friend 1969; Horwitz *et al*.,1991)

Historically, the traditional Chinese system of education was (and still largely is) based on memorization and "getting knowledge" (Rao, 2001). Hence, testing is relied on as the major method of "measuring one's knowledge". In Taiwan, the learning of English is also more test-oriented rather than communication-oriented.

A study by Lindy Woodrow (2006) was conducted concerning the conceptualization of second language speaking anxiety, the relationship between anxiety and second language performance, and the major reported causes of second language anxiety. Being multilingual certainly, has many positive sides. Paradowski (2010) maintains that multilingualism is a kind of natural potential which is available for every normal human being, and it is not an unusual exception. Multilingual speakers excel over their monolingual peers, not only in linguistic knowledge and skills, but also cognitive, social, personal, academic, and professional aspects (Listyani,2017). The participants in this study were advanced English for Academic Purposes (EAP) students studying on intensive EAP courses immediately prior to entering Australian universities (N = 275). The second language speaking anxiety scale (SLSAS) was developed for the study. This instrument provided evidence for a dual conceptualization of anxiety reflecting both oral communication within and outside the language learning classroom. Female students demonstrated a higher level of foreign language learning motivation than male students. The results also showed that the female students get more anxious than the male students while speaking in English in class.

Young (1992) and Wang (2010) in Ozturk and Gurbuz (2013) stated that speaking in one's second language can cause high level of anxiety. The fact that teachers often expect students to perform greater than their competency level causes them to perform poorly due to the fear of being evaluated negatively. This happens when they are unprepared to answer or present publicly. This is where anxiety is seen in their speech.

2.2 Tobias Model, 1979

It is understood that the cognitive process in any situation such as in a language classroom comprises of three stages that is input, processing and output. Tobias (1979) suggests that the arousal of anxiety might interfere with cognitive performances at any or all of the three stages.

According to the Tobias Model shown in Figure 1, anxiety acts as a filter at the input stage by not allowing some information to enter the cognitive process. In language class, some students become anxious and may not be able to grasp on the spoken language as quickly as they should as anxiety interferes with their processing ability. On the other hand, in a more relaxed situation they tend to grasp as much information as possible in a calmer and effective way and do not circum to interference. As such anxiety causes distraction at the processing stage.

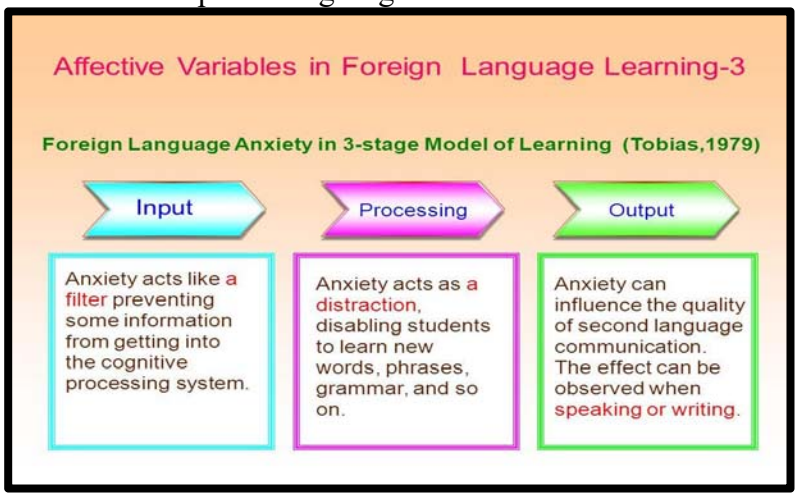


Figure 1: Tobias Model 1979

2.3. Factors of Anxiety

There are several researches who have initiated investigation on the various factors that contribute to speaking anxiety among learners (e.g., MacIntyre & Gardner, 1991; Yahya, 2013; Öztürk & Gürbüz, 2014; Mukminin et al., 2015). Horwitz & Cope (1986, p.127) confirming that language learning anxiety relates to academic performance evaluation, described three types of language learning anxiety: communication anxiety, test anxiety, and fear of negative evaluation. The subsequent part consists of literature review of the different causes of speaking anxiety in the language classroom.

The primary reason of fear of mistake is that students are afraid of looking foolish in front of other people and they are concerned about how others will see them (Kurtus, 2001). In addition, Hieu (2011) and Zang (2006) cited in He and Chen (2010) explain that students feel afraid of the idea of making mistakes as they are worried that their friends will laugh at them and receive negative evaluations from their peers if they make mistake in speaking English. Students' fear of making mistakes in speaking English has been a common issue especially in an EFL context like in Indonesia.

2.3.1 Communication Apprehension

Zhao Chunli and Zhang Yanan (2016) agreed that the proficiency of target language affects the learning process for learners to achieve competency as they believe that spoken language is the foremost important element which influences language learning process. In other words, the students whose communication apprehension level in the L1 was high also felt more difficulties in learning the second language (Jihyeon Jeon,2005).

2.3.2 Fear of Negative Evaluation

As claimed by Carleton, McCreary, Norton, and Asmundson (2006) students generally feel disturbed emotionally if they are being judged in front of the class as the tendency of making mistakes is relevantly high. Besides Melouah (2013) states that they do not want to be evaluated negatively by others.

2.3.3 Test Anxiety

Test anxiety is defined as "an apprehension over academic evaluation which is a fear of failing in test situations" (Horwitz & Young, as cited in Joy, 2013, p. 2). Melouah (2013) relates that the fear of getting negative evaluation which indirectly affects their self-esteem, thus hinders learners from moving on rather easily giving up on during the learning process.

2.3.4 Anxiety of English Classes

Almost every student experiences anxiety when it comes to learning. Being asked to speak in front of the class or answer a teacher's questions is a common source of anxiety for students. Even an upcoming examination is something to be anxious about, especially when they know that it will be a difficult test. Such temporary feelings of anxiety are instances of state anxiety. (Boonrat P, Wisessuwan A & Tubree Chalong,2012)

2.4 The Impact of Gender

In a similar study which assessed a group of high school students in the Shangdong Province of China, Cui (2011) revealed that there were negative connections between anxiety and students‟ English performance. The language learning anxiety was found to be higher in males than females. Woodrow (2006) also carried out a mixed-approach study that investigated the relationship between anxiety and second language performance and the major causes of second language anxiety.

2.5 Causes of Anxiety

The primary reason of fear of mistake is that students are afraid of looking foolish in front of other people and they are concerned about how others will see them (Kurtus, 2001). In addition, Hieu (2011) and Zang (2006) cited in He and Chen (2010) explain that students feel afraid of the idea of making mistakes as they are worried that their friends will laugh at them and receive negative evaluations from their peers if they make mistake in speaking English. Students' fear of making mistakes in speaking English has been a common issue especially in an EFL context like in Indonesia. As argued by Middleton (2009), most EFL students are afraid to try and to speak in a foreign language they learn. In this context, as he adds, students do not want to look foolish in front of the class. In some other cases, they also worry about how they will sound, and are scared of sounding silly and so on.

2.6 Limitations of the Study

Further studies to cross-validate findings achieved from this study to areas like levels of proficiency, environmental and age factors and exposure to English and their relationships to anxiety is needed.

3. Research Methodology

3.1 Data Collection

This study employs a mixed method approach which involves a combination of quantitative and qualitative methods, using a questionnaire, records and for the purpose of triangulation a semi-structured interview. By mixing the sets of data collected, the researcher forms a more complete picture of the problem than if either set of data had been used alone (Creswell & Plano Clark, 2007).

3.2 Participants

The participants of the study were 293 Senior Three EAP students (129 males and 164 females). They were all Senior Three students from science and arts classes. Their average age is 19. They have all been studying English for the past 10 years. All of them have been doing oral presentations throughout their years in the Chinese Secondary School and aware of the assessment criteria for the Oral English marks.

Two instruments were used for this study. They were a questionnaire assessing students' anxiety level and an achievement test. The questionnaire consists of two parts. One was intended to collect demographic information of the participants, such as their gender, age and class. The other was the adapted version of FLCAS that was designed by Horwitz (1986).

3.3 Tools

3.3.1 Language Anxiety Scale

A set of questionnaire was adapted from the Foreign Language Classroom Anxiety Scale (FLCAS) by Horwitz (1983) for this study. The FLCAS was developed by Horwitz in order to examine the scope and severity of foreign language anxiety. According to Renee von Wörde (1998), the scale has been used in many studies of anxiety and it has been found to be a highly reliable and valid tool of measurement to be equally used for second language acquisition as well.

However, in this study, the items were adapted based on the items of communication apprehension, fear of negative evaluation, test anxiety and anxiety of English class. It is because the items are related

with speaking anxiety as well as possible causes contributing to it in the second language environment. The questionnaire consisted of 23 items, each on a 4-point scale ranging according to Strongly Agree (scale point 4), Agree (scale point 3), and Disagree (scale point 2) and lastly Strongly Disagree (scale point 1). (Appendix 1)

Table 1: English Speaking Anxiety Survey

Part 1 General Information	Gender Age Class
Part 2 Communication Apprehension Fear of Negative Evaluation Test Anxiety Anxiety of English Class	Item No. Total 1,2,4,5,6,7 6 10,12,14,15,17 5 18,19,20,22 4 24,25,26,28.29.30,31,32 8

3.2.2. Records

The record used to assess students' speaking achievement is the final Oral English examination administered at the end of the semester. The oral marks included two parts: listening and speaking, which were intended to assess students' overall ability in Oral English. Oral marks contribute fifteen percent to the average English Language marks for the semester examination. The speaking marks are a combination of activity conducted throughout the semester. All testing items were moderated and approved by the English Language Panellists and Head of Department at English Language Centre, which ensured the reliability of test paper.

Table 2: Oral English Assessment Criteria Senior Three EAP

LISTENING	SPEAKING	ORAL ENGLISH	AVERAGE MARKS FOR ENGLISH LANGUAGE
100%	100%	100%	15% from the Oral English Total

Table 3: Listening and Speaking Mark Template

Listening1	Listening 2	Listening 3	LISTENING	Speaking 1	Speaking 1	Speaking 1	SPEAKING
IELTS 1	IELTS 2	IELTS 3	100%	IELTS Speaking Part 2	Forum Presentation	Research Presentation	100%

3.2.3 Semi-structured Interview

A semi-structured interview was designed to gather information needed for deeper understanding of the factors affecting second language anxiety. Based on the oral mark records,1 high scorer, 1 average scorer and 1low scorer were selected to be interviewed to gain a more in-depth perception on the speaking anxiety. (Appendix 2)

Interview questions for follow-up interviews

1. How does it feel to speak English in class?
2. How often do you speak English outside the class? Why?
3. Are you confident when you give an in-class presentation? Why?
4. What prevents you from speaking English freely in the language classroom?
5. How can your English teacher help to reduce your anxiety when speaking in English?

3.3 Data Analysis

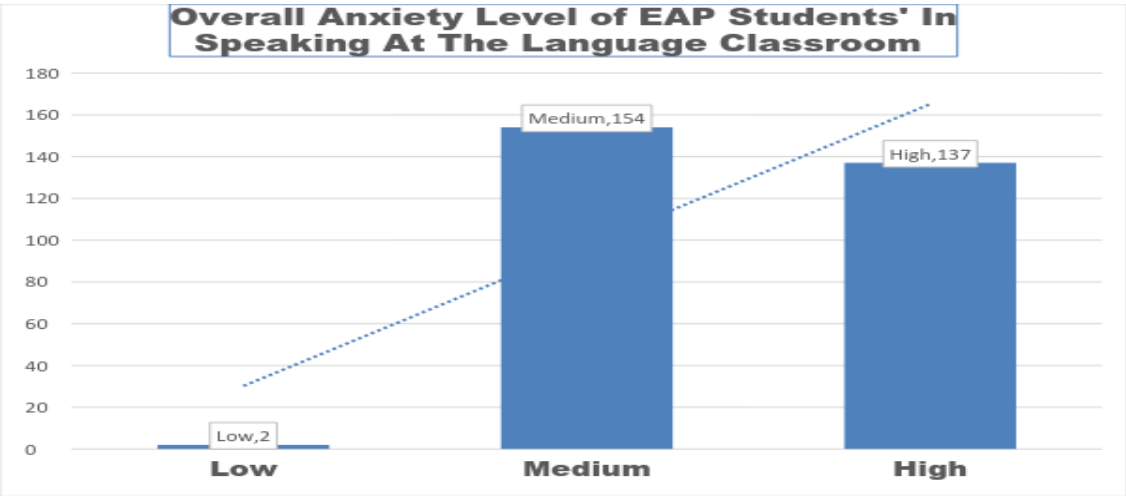
SPSS 22.0 was employed to analyse the data. Firstly, descriptive analysis was performed to compute the means and standard deviations for each item and each kind of anxiety to see the general situation of high school students' anxiety in English classrooms. Secondly, t-tests (t distribution tests) were employed to see if there were any differences in language anxiety between male students and female students.

4. Findings

In line to the objectives, the findings from the questionnaire showed the level anxiety as perceived by the respondents for this research. The students' overall level of anxiety in their current language learning process was obtained by calculating the total amount of respondents for each of the level.

RQ 1: What is the overall speaking anxiety level of Senior Three EAP students in the language classroom?

As shown in Figure 1, majority of the students (52.6%) indicated they experienced a moderate level of anxiety in speaking at their current English language classrooms in the school. An equally high number of students (46.8%) showed that they are having high level of anxiety whereas only 0.7% of students are found to be showing low level of anxiety in speaking as learners of English Language.



Range: High : 165-122
Medium: 121-78
Low : 77-33

Figure 1: Level of anxiety

On the contrary anxiety can be viewed in the positive aspect as well. At the same time, a moderate amount of it might help create a sense of motivation for the learners to learn or to work harder in order to be proficient in the target language (Khairi & Nurul Lina, 2010). Lim and Mardziah (2014) argued that if students are found to be not anxious at all and are relaxed in their learning process, they may not truly learn any new things and cannot progress in their language acquisition process.

RQ : 2. What are the factors that cause anxiety in speaking among Senior Three EAP students?

Table 4: The overall means and standard deviation of the components of ELCAS

Anxiety VARIABLES	MEAN	STANDARD DEVIATION
Communication Apprehension	2.33	.5506
Fear Of NEGATIVE Evaluation	2.45	.5661
Test Anxiety	2.50	.5244
Anxiety Of English Class	2.80	.4209

Generally, the results of the descriptive analyses showed that all 23 items mean were above 2.00. In reference to Table 4 the results indicate that the fourth type of anxiety factor in speaking was "Anxiety of English Classes", is the most highly impactful factor of anxiety among the students of Senior Three EAP where the mean value 2.80 is perceived. The mean of the anxiety indices students' speaking level in the language classrooms, as such indicated that the Senior Three EAP students indeed had the feeling of anxiety for speaking in their language classrooms.

Besides that, through the computation of means and standard deviations of each kind of anxiety, it was found that students' "Test Anxiety" evaluation, the mean of which reached 2.50, obviously indicates the fear of tests among students generally makes them to have a lack of confidence in speaking. Subsequently the next factor that is "Fear of Evaluation" with the mean value of 2.45 shows that students tend to feel nervous and fearful when it comes to assessment in speaking activity. Finally, "Communication Apprehension" with the lowest mean value of 2.33, thus, confirms that students are able to speak most of the time but they lack self-confidence in their individual speaking capabilities.

The detail findings on the four factors are as shown below. Table 5 shows that from the 8 items, the highest value of mean is 2.42 for the item "I feel more tense and nervous in my English class than in any other classes". Zhang, 2011 claimed that learning a second or foreign language is not always an enjoyable and anxiety-free experience. This indicates students' anxiety arises to a worrying stage when it comes to English Lesson as they need to switch their mode of learning and speaking to English Language.

Table 5: Percentages, means and standard deviation of the components of Anxiety of English Classes item

Items	SD	D	A	SA	MEAN	SD
It frightens me when I don't understand what the teacher is saying in English.	10.2	34.8	46.1	9.2	2.26	0.482
It wouldn't bother me at all to take more English classes/lessons/courses to improve myself.	21.5	41.0	26.6	10.9	2.05	0.386
I am always not focused during my English class.	4.8	28.3	12.3	54.6	2.35	0.536
In English class, I can get so nervous I forget things I know.	4.4	30.7	16.7	48.1	2.36	0.471
I often feel like not going to my English class.	2.0	16.0	43.7	38.2	2.40	0.472
I feel pressured to prepare very well for English lessons.	4.4	34.5	46.4	14.7	2.36	0.474
I feel more tense and nervous in my English class than in my other classes.	1.4	7.8	44.0	46.8	2.42	0.555
When I'm on my way to English class, I am always nervous and not relaxed.	3.4	16.4	46.8	33.4	2.38	0.471

As for the second factor referring to Table 6 on Test Anxiety , the highest mean value from all the 4 items is 2.40 which states “I am afraid that my English teacher is ready to correct every mistake I make”. It relates conversely to self-esteem of the learners and also closely relates to fears of getting some negative evaluations (Zhang Yanan,2016). Students’ lack of readiness and preparedness contributes to this factor mainly especially when the speaking assessment is in progress.

Table 6: Percentages, means and standard deviation of the components of Test Anxiety

Items	SD	D	A	SA	MEAN	SD
1 get nervous when the English teacher asks questions which I haven't prepared in advance.	13.0	29.7	31.7	25.6	2.20	0.330
I worry about making mistakes in English class.	12.3	18.1	29.0	40.6	2.22	0.386
I am usually not at ease during tests in my English class.	10.9	48.8	34.5	5.8	2.24	0.517
I am afraid that my English teacher is ready to correct every mistake I make.	2.0	16.4	55.3	26.3	2.40	0.534

Another contributing factor is Fear of Negative Evaluation from Table 7 which shows a relatively high mean score 2.30 is for two of the items “It embarrasses me to volunteer answers in my English class” and “I am afraid that the other students will laugh at me when I speak English”. this clearly reveals that students feel anxious of speaking in class as other students laugh at them.

Table 7: Percentages, means and standard deviation of the components of Fear of Negative Evaluation

Items	SD	D	A	SA	MEAN	SD
I tremble when I know that I'm going to be called in English class.	11.3	36.5	43.3	8.9	2.24	0.468
It embarrasses me to volunteer answers in my English class.	7.8	39.9	39.9	12.3	2.30	0.457
I can feel my heart pounding when I'm going to be called on in English class.	12.6	38.9	39.2	9.2	2.21	0.450
I always feel that the other students speak English better than I do.	22.9	56.3	18.8	2.0	2.02	0.565
I am afraid that the other students will laugh at me when I speak English.	7.5	29.0	48.1	15.4	2.30	0.464

The final factor that attributes to students’ anxiety in speaking is Communication Apprehension, Table 8 where the item I feel very self-conscious about speaking English in front of other students has the highest mean score 2.34. Apparently, students generally are more conscious on the perception of others on them when speaking in class as the fear of making mistakes and facing embarrassment bothers them the most.

Table 8: Percentages, means and standard deviation of the components of Communication Apprehension

Items	SD	D	A	SA	MEAN	SD
I never feel quite sure of myself when I am speaking in my English class.	21.2	33.4	34.5	10.6	2.05	0.368

I start to panic when I have to speak without preparation in English class.	18.1	15.4	24.6	42.0	2.11	0.382
I would not be nervous speaking English with native speakers.	11.6	9.6	36.9	42.0	2.23	0.457
I feel confident when I speak English in class.	12.6	10.2	32.1	45.1	2.21	0.454
I feel very self-conscious about speaking English in front of other students.	5.5	45.4	45.1	4.1	2.34	0.564
I get nervous and confused when I am speaking in my English class.	8.9	46.1	39.9	5.1	2.28	0.528

RQ 3 : How does the level of anxiety differ between male and female students of Senior Three EAP?

In terms of anxiety between male and female students, Table 9 shows that males' generally have a higher mean score than females in speaking at the language classrooms for all variables of anxiety. However, the results of the t-test showed from Table 10 that there were no significant differences between males and females in all the anxiety variables ($p<0.05$) as all the anxiety shows values more than 0.05. This concludes that both male and female are equal in the impact on speaking the English Language.

Table 9: Males and Females Speaking Anxiety in The Language Classroom

Anxiety Variables	Gender	Total	Mean	Standard Deviation
Communication Apprehension	Male	129	2.4251	.53601
	Female	164	2.2480	.55091
Fear Of Negative Evaluation	Male	129	2.5907	.53902
	Female	164	2.3305	.56203
Test Anxiety	Male	129	2.6124	.51630
	Female	164	2.4040	.51392
Anxiety Of English Class	Male	129	2.7946	.42899
	Female	164	2.7896	.41579

Table 10: The Comparison of Males and Females

Anxiety Variables	t-value	Significance of t-value ($p<0.05$)
Communication Apprehension	2.764	0.991
Fear Of Negative Evaluation	4.005	0.206
Test Anxiety	3.439	0.750
Anxiety Of English Class	0.100	0.652

RQ 4: What are the causes of speaking anxiety experienced by students of Senior Three EAP in the classroom?

Table 11: Summary Of Students Responses' in Interview

No.	Interview questions
1	How does it feel to speak English in class? ▪ Speaking in class becomes less stress-free as we get to know our peers well and this boost my confidence to speak in class. ➢ I am not afraid of making mistakes so whenever I need to present in English I would just do it though I know I will make many mistakes. ❖ Speaking in class gives me the worst fears, I am never confident as it causes me to be emotionally stressed as well.
2.	How often do you speak English outside the class? Why? ▪ I always speak English to certain groups of my friends as it has been our regular way of interaction when we meet. At the same time I also use English to interact with my family members it has been our norm. ➢ I have very few opportunities to speak English other than my English teacher as most of my friends do not feel comfortable with it. ❖ I do not speak English at all as my friends will definitely laugh at me and this makes me lack confidence to even pronounce a word.
3.	Are you confident when you give an in-class presentation? Why? ▪ Yes, I am because I have been exposed to English from my childhood days and the constant exposure to the language allows me to speak well. Attending Cambridge classes has built my confidence in speaking. ➢ I can speak English but not very confident on the right usage of vocabulary to explain certain things. This is dues to my lack of

	practise. ❖ I am not confident at all during presentation especially when needed to present in front of the class. I stammer and make a lot of mistakes
4.	What prevents you from speaking English freely in the language classroom? ▪ At times certain things are best heard and explained in Chinese than English. Though I am a confident speaker, I certainly want my message to get through effectively most times. ➢ My peers are my main challenge to speak English freely as most of the time they would laugh at me and say that I'm showing off when I try to converse in English. ❖ I tend to get nervous easily when I start speaking in English. I am unable to overcome this as it has been a condition for me since I was a child.
5.	How can your English teacher help to reduce your anxiety when speaking in English? ▪ Teachers can support by creating group speaking activity lessons in class but at times speaking individually also benefits us a lot. Workshops, student showcase and other forms of presentations can be conducted to encourage and motivate us to perform better in speaking. ➢ Group speaking activities is one-way teacher can help us speak better as when the whole group is out and talking we feel very confident of ourselves and not shy to make mistakes. ❖ My teacher tries to encourage or calm me when I am presenting but presenting individually without my friends watching at me makes me even more confident.

Each different symbol indicates different responses from 3 level interviewees.

5. Discussion

Finally, to summarize findings in this study, we can conclude that more than a half of students investigated do not feel positive about speaking English in class. The interviewees in the study felt generally positive about speaking, but most of them stated that they often feel anxious when speaking and presenting in class.

In accordance with the objectives, the findings from the questionnaire elicited responses regarding the level of anxiety as perceived by the students in their current position as second language learners for English Language. The overall findings of the first research questions indicated that a majority of Senior Three students do experience anxiety to speak in English Language as they perceive to have a moderate level of anxiety which is relatively similar to reports which investigated the level of anxiety among adolescent English language learners in Malaysia (Siti Faridah & Nabilah, 2015; Lim & Mardziah, 2014; Wong, 2009). The level of anxiety in their current language learning process was obtained by calculating the total amount of respondents for each of the level.

Secondly, the second research question has revealed the significant factors influencing the students' anxiety in speaking at the language classrooms. The factors identified are (1) "Communication Apprehension", (2) "Fear of Negative Evaluation", (3) "Test Anxiety" and (4) " Anxiety of English Class". Among these the highest stated factor is the " Anxiety of English Class" (m=2.86; SD =0.5466). This result also reflects in tandem with the suggestion by Horwitz (1986) in which it is common to discover apprehensive language learners especially in language classrooms. A similar remark has also been made by Guiro (in Horwitz et al., 1986) in which anxiety is never too far

away from a language learner's mind as it is a deeply upsetting psychological proposition which intimidates a learner's self-concept and worldview. The next highest influential factors are Test Anxiety (m=2.50; SD =0.5244) and Fear of Negative Evaluation (m=2.45; SD= 0.5661) are at a close range. This finding is supported by other studies conducted by Pappamihiel (2002) and Marwan (2007) where participants in both studies also agreed that these factors are one of the highest contribution factor in language anxiety. Test anxiety and Negative Evaluation are considered one of the most important aspects of negative motivation. Like fear of exams, quizzes and other assignments used to evaluate the students' performance. It is similar to the observation made in a study by Mohd. Ariff, Siti Rosmaini, and Hancock (2008) in which they noted that students have a high chance of being unproductive in preparing for their language tests due to their fear of those tests. Ohata (2005) also made a similar discovery in another study involving Japanese learners of English from Indiana University of Pennsylvania. This clearly indicates that students are clearly aware on the emphasis given on English Language in school and the concern they have on the effects it has on their average marks at the end of the semester. The final factor, Comprehension Apprehension (m=2.33; SD= 0.5506) contributes to the least on the scale. Though students lack the ability to comprehend on teacher's instruction in class at times, it does not seem to be the dominating factor to their speaking anxiety in class as most of the time they have their peers to give support and teachers are able to provide a comfortable environment for students to get over this.

Thirdly, the third research question revealed that on the female students tend to have less anxiety in speaking compared to male students when speaking is concerned. Therefore, it is not hard to imagine that females are more confident in their abilities to learn a new language well. Once they gain faith in their capabilities, they will be more ready to "approach threatening situations" (Dörnyei, 2001) in English classrooms. In contrast, males are more anxious about English classes. In addition, Aydin (2001) suggests that self-comparison to others causes learners to show behaviours that are more competitive. Because the learners give more importance to achievement and want to be more successful, it may cause them to be more anxious especially in oral exams. Apparently, the gap between males and females is not very large. In many English-speaking assessments, some male students attained the highest scores. That is the reason why no significant differences were found between them, though males' means were a little higher than females. In general, females are thought to be more adept in language learning than males.

In addition, the fourth research question explored that students expressed their limited opportunity to speak the target language inside and outside their language classroom. Being second language learners, they find it a challenging to express their thoughts in the target language. The following interviewees' answers (original wordings) to the question on the elements leading to the uncomfortableness during speaking activity in class:

Student B: in front of the class does not bother me too much because I am not worried of making mistakes but of course, I prefer a group presentation to individual presentation.

Students C: I ***am very afraid of being laughed at in class. I am only confident when speaking in English to two of my good friends A and B. When I speak in English especially when presenting, I go blank and forget my lines or do not know what words to use***

Alsaraj (2014) who found that the English language was only taught as a subject supports this finding. As a result, students have limited number of English classes and do not have sufficient time to communicate using the language.

Another aspect that consistently halt students speaking confidence is class is the lack of vocabulary. They tend to get nervous or out of words when explaining certain matter as unable to expand their thoughts well. The following data are responses from the interviews:

Student B : I am confident of myself but I know I am not able to speak fluently because I lack of vocabulary to say the right thing at the right time

Student C : I'm only confident when my two good friends A and B are with me. But many times, I'm not confident because I don't know what to say and how to say

According to Suzan Hammad Rafada (2017) students' lack of vocabulary may be because of their lack of reading. Raising their awareness of enhancing their reading skills is essential in order to enrich their vocabulary.

Further to this, some identified aspects like the lack of support, lack of understanding due to language barrier, the fear of teacher's negative feedback and time limitation for practicing the target language, peer anxiety, and test anxiety contributes to the speaking anxiety.

Student A: I feel sometimes when I feel over radical about certain issues, I may not want to say it out aloud because afraid it might convey the wrong message to the listeners. Some thoughts are better said in Chinese than in English.

Student B :My friends are the main challenge for me to speak English in the class. They will always feel that I am trying to show off. The only person I can speak English in class is my teacher.

Student C : Since young I have been very nervous when speak in English or Bahasa. This is not new to me. During the IELTS test also the same thing happened to me, I cannot speak. My hands were were wet with sweat..

According to findings Asian students, due to cultural factors, are typically afraid of the possibility of being embarrassed or being laughed at in front of other people in the language classroom (Ohata, 2005; Zhao, 2007; Liu & Jackson, 2008; Liu, 2007). They find this aspect worrying as it will cause them to "lose face", which eventually makes them to losing one's dignity as it exposes one's weaknesses in front of others.

6. Conclusion

The present study was to investigate the level of anxiety as well as the contributing factors of second language speaking anxiety experienced by Senior Three EAP at Hin Hua High School. Through the use of a modified version of Horwitz et al.'s (1986) English Language Classroom Anxiety Scale, the outcome of this study revealed that many Senior Three EAP students endure anxiety in the oral classroom due to factors like fear of interaction, fear of perception of others, low self-confidence and low self-esteem and many others. On the basis of these results, several implications were proposed to raise teachers and educators‟ awareness about the negative impacts anxiety has on students‟ ability to speak and the various sources that contribute to it. It is hoped that these implications will encourage the teachers to identify students with a high level of anxiety and create a safe supportive environment so that they feel motivated to communicate orally and practice the English language. The findings from the literature review for the study similarly indicated that high school students indeed had the feeling of anxiety in their English classrooms(Zhao's,2007). The reasons for such results can be explored from two aspects. One aspect is closely related with high school students themselves. The other mainly deals with some external factors. In the aspect of students themselves, the existence of anxiety should firstly be attributed to their English proficiency, which was not high enough to allow them to communicate with others freely, express themselves adequately in class and answer teachers' questions properly (Zhao Na, 2007). So, in English classrooms where much communication is needed, high school students are more anxious than in other classes.

The investigation also found that English language learning anxiety scores did not differ significantly across genders. This finding indicates that female and male learners are similar in terms of English language anxiety. However, as noted earlier, there are opposing findings in the literature about this issue.

Implications

Finally, there is a need to have empirical techniques and implementations on effective teaching practices in order to reduce anxiety among second language learners in the classroom. This study has revealed evidently that majority of Senior Three EAP students face anxiety when it comes to speaking. Teachers should help create a non-threatening, relaxing learning environment where students can take risks and make mistakes without fear of embarrassment or negative impact.

On contrary to this, English teachers could create learning environments with a definite potential for success through setting attainable goals and reasonable challenges for students. Opportunities for success and celebrating success will enhance their self-confidence (Bandura, 1993). Students' self-confidence level will boost and this notable success will motivate students to thrive better in speaking of the English Language. These are a few suggested ideas teachers can try in the classroom:

1. Allow students sufficient time for planning, preparation and practice.
2. Create a comfort zone for students to speak English in the classroom by not giving prior importance to marks and perfectionism.
3. Assure students that mistakes are part and parcel of their learning process.
4. Positive reinforcement and remarks to be given timely to boost students' self–confidence in speaking.
5. Introduce new vocabulary and writing it on the board or sharing it with the students so that they are able to use them in their oral presentation.
6. An indirect approach can be used to correct students' mistakes where teacher repeats the wrongly pronounced words several times in class so that the particular student gets the right pronunciation.
7. Teacher modelling is also another way of building self-confidence among students as this allows students to have an idea on what they are expected to do for their assigned speaking activities.
8. Incorporate role-plays to encourage speaking as students feel comfortable speaking in a group than individually.
9. Always finding time to support and help students outside the classroom time if needed.
10. Share educational links that have speaking online practices (British Council, BBC, Al-Jazeera, etc) that can help students improve their speaking as well to build confidence

References

Boonrat, P., Wisessuwan, A., & Tubsree, C. (December, 2012). Foreign Language Classroom Anxiety of Secondary Students of International Education Program for Basic Education, Piboonbumpen Demonstration School, Burapha University. *HRD Journal, 3*.

Chen, Y. (2015). ESL Students' Language Anxiety in In-Class Oral Presentations. *Marshall Schollar, 962*.

Cui, J. (July, 2011). Research on High School Students' English Learning Anxiety. *Journal of Language Teaching and Research, 2*(4), 875-880. doi:10.4304/jltr.2.4.875-880

Hadziosmanovic, L. (2012). *Students' Perspective on Speaking Anxiety and Dynamics in the ESL Classroom.*

Jeon, J. (2005). *A Study on Oral Presentation Anxiety and Confidence: A Comparison between L1 and L2 Presentations.*

Khaidzir, M. F. (2015). Investigating Foreign Language Anxiety (fla) Among Thai students learning English as a foreign language. *Journal of Education and Social Sciences, Vol. 1, (June) ISSN XXXX-XXXX*, 40-65.

Kim, J.-Y. (Spring, 2014). College EFL Learners' Speaking Motivation under English-medium Instruction Policy. *THE JOURNAL OF ASIA TEFL, 11*(1), 37-64.

KÖKSAL, D. O., ARSLAN, D. C., & BAKLA, D. A. (April, 2014). An Investigation into Foreign Language Learning Anxiety, stress and personality in higher education. *International Journal on New Trends in Education and Their Implications, 5*(2), 1-10.

Larry, F. (Oct 14 , 2012). Using Photos With English Language Learners.

Leichsenring, A. (Summer, 2017). Japanese Learner Preferences for Varieties of English and Oral Assessment. *The Journal of Asia TEFL, 14*(1), 1-210. doi: http://dx.doi.org/10.18823/asiatefl.2017.14.1.13.179

Listayani. (Summer, 2017). *The Stories of Four Indonesians in Their Survival Using ForeignLanguagesAbroad.* doi:http://dx.doi.org/10.18823/asiatefl.2017.14.2.9.327

Mak, B. (May, 2011). An Exploration of -speaking-in-class anxiety with Chinese EFL Learners. *Science Direct, 39*, 202-214. Retrieved from www.sciencedirect.com

Mary Siew, L. W. (April, 2009). Language anxiety and motivation to learn English: a glimpse into the form 4 classroom. *UPALS International Conference on Languages* , (pp. 1-15). Pulau Pinang.

Na, Z. (September, 2007). A Study of High School Students' English Learning Anxiety . *Asian EFL Journal, 9*(3).

Nimat, N. (2013). A*n Investigation of English language anxiety.*

Rafada, S. H. (2017). Major Causes of Saudi Learners' Speaking Anxiety in EFL Classrooms. *International Journal of English Language Education, 5*(1), 1-18. doi:10.5296/ijele.v5i1.1064

Rahman, K. I. (n.d.). *A study on second language speaking anxiety among UTM students.*

Usaha, K. Y. (September, 2012). A Measure of EFL Public Speaking Class Anxiety: Scale Development and Preliminary Validation and Reliability. *5*(12). doi::10.5539/elt.v5n12p23

Wang, C. (Spring, 2017). Two Affective Variables and Language Learners' Perceptions of Classroom Interaction. *The Journal of Asia TEFL, 14*(1), 16-31. doi:http://dx.doi.org/10.18823/asiatefl.2017.14.1.2.16

Woodrow, L. (2006). Anxiety And Speaking English As A Second Language. *RELC Journal, 37*, 308-328. doi:DOI: 10.1177/0033688206071315

Appendix

Table 11 Summary of Students' Responses in interview

ICEL_0084

Principal Leadership Constructs School-Based-Curriculum and Shapes School Culture for Teaching and Learning: Rooting on Core Competence

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Abstract

Rooting on the context of accelerating and rapid societal change and global competence trend, this study explored the meaning of core competence, roles of schooling for cultivating students to be holistic people and strategies for shaping competence campus. Secondly, this study reviewed the related literature of meaning of core competence, curriculum program and teaching design for competence in schools and strategies to shape school culture for teaching and learning of competence. In order to achieve the research purpose, this study adopted interview and document analysis to collect data. According to the literature review and interview / document analysis, researcher proposes conclusions as follows: 1.meaning of core competence; 2. the main point in global competence, China and Taiwan; 3. School is a learning organization and learning base in competence campus; 4. Principals play roles of vision leadership, instruction leadership, curriculum leadership; 5.Teachers' roles for shaping competence campus; 6. The strategies of shaping competence campus; 7.The process and related factors of constructing school-based curriculum. Finally, researcher proposes reflection for this study.

Keyword: Principal leadership, School-base curriculum, School culture, Effective teaching, Core competence

1. Introduction

Context

Following the accelerating and rapid societal change, economic development, digital information, demographic structure transformation and intercultural communication around the world, we must think how to live for the better world. What's the competence that we must possess it? Which approach that we may achieve the goal? Two decades ago, The Delors report (Delors, 1996) had reflected long deliberation and discuss our important lives in the society during 1993-1996. They considered that "learning throughout life is the heartbeat of society." At the same time, they built "learning to know, Learning to do, learning to live together / learning to live with others, and Learning to be," as the four pillars of education.

Most recently, such as OECD and Harvard Graduate School of Education (2017) posted "OECD PISA Global Competence Framework" to cultivate youth for the better future. In the framework, they reflected "What is global competence?" "Why do we need global competence?" and "Can schools promote global competence?" In addition, "Global competency for an inclusive world" was an important proposal for preparing youth for an inclusive and sustainable world within global competence framework. This framework pointed out that "Global Competence is only one dimension of what people will need to learn. --- Over time it could present a picture of the knowledge, skills, attitudes, values and competencies required for the 2030 world." (OECD, 2018: 2)

In recent years, Ministry of Education in Ministry of Education in Taiwan (2014) and China (2016) all posted the educational policy about core competence for students learning to cultivate them to be a future people in the world. Both of the core competence policy all emphasize on cultivating students to be a lifelong learning, participating in society and holistic people development through education. In Taiwan, the policy emphasized on teaching and developing students' ability in accordance with their background and ability, developing students' ability. Meanwhile, it also emphasized that students apply their knowledge, ability and attitude to resolving problems in the daily lives. In China, core competence policy emphasize that constructing moral character and educating people are the basic education / traditional mission. That is to say it implicates that China emphasizes moral education from ancient times.

Rooting on the previous statement, schooling plays very important role for cultivating students to be a holistic people with global competence for the better world. Therefore, researcher reflects "What is core competence?" "Which curriculum of teaching and learning will cultivate students to be holistic people?" "How principals construct and shape school culture of learning?" These questions lead researcher to explore following research problems.

Purposes and extended research problems

The purposes of this study are as follows:

Purpose1: Exploring the meaning of core competence.

Research problem1-1: Exploring the meaning of core competence in Taiwan.

Research problem1-2: Comparing the difference between Taiwan and other country within meaning of core competence.

Purpose2: Exploring schooling plays the roles to cultivate students to be holistic people with core competence.

Research problem2-1: Exploring which roles to play when schooling cultivate students be holistic people with core competence.

Purpose3: Exploring the strategies of principals and organization members construct school-based-curriculum and shape school culture rooting on core competence orientation.

Research problem3-1: Exploring which principal leadership strategies are used to construct school-based-curriculum rooting on core competence orientation?

Research problem3-2: Exploring which principal leadership strategies are used to shape school culture rooting on core competence orientation?

Literature Review

The meaning of core competence

As previous statement, in Delors report (Delors and colleagues, 1996) had proposed four pillars of education for twenty-first century sustainable development. They emphasized that everyone proposes competence for accelerating society is very important. In addition, according to OECD for PISA's definition of core competence as follows:

> ***Global competence is the capacity to analyze global and intercultural issues critically and from multiple perspectives, to understand how differences affect perceptions, judgments, and ideas of self and others, and to engage in open, appropriate and effective interactions with others from different backgrounds on the basis of a shared respect for human dignity.***(OECD, 2018:4)

The definition emphasized on multidimensional capacity of knowledge, understanding, skills and attitudes. Especially, a competent individual communicates and interacts with others in the accelerating multicultural society.

In addition to the two declarations, Taiwan and China's core competence policy all also emphasized same meaning and schooling's important role. For example, Ministry of Education in Taiwan (2014:3) proposed core competence and that is a development axis of curriculum. Meanwhile, it is personal knowledge, ability and attitude for adapting daily lives and future challenge. In China(2016:1), core competence means students must possess moral character and key capacity for adapting life long development and societal change.

However, what the global and regional core competence is, all the competences emphasizes cultivating a life long, participating society and holistic people for the future inclusive world, and also people possess knowledge, capacity and attitude to resolve daily problems. Meanwhile, schooling plays an important role for cultivating students to be a future holistic people.

Curriculum program and teaching design for competence in schools

It's without doubt that schooling plays important key role for cultivating competent youth and people's future. So, constructing the school-based curriculum is not only an approach for teaching and learning but also an educational system and policy for cultivating student's core competence. For example, Education Bureau (The Government of the Honk Kong Special Administration Region of the People's Republic China) (2013)expected that "*Schools are able to construct their own holistic school-based curriculum, explore diversified learning resources, build a systematical knowledge management platform and nurture a learning organization culture to facilitate schools' sustainable development.*"

In addition, principals and teachers must understand the meaning of key competences and the principles for curriculum design, developing teaching materials and school-based-curriculum development (Lin, 2017: 17). Schools construct special curriculum programs for teaching and students' learning of core competence. For example, the curriculum design and program, computational thinking (Voogt, Fisser, Good, Mishra, & Yadav, 2015: 715-728), business English teaching (Geng, 2017: 322-326；Graves & Garton, 2017: 442-448), nursing and midwifery education (Murararaneza & Mtshali, 2018:175-181) and pedagogical style (Seatter & Ceulemans, 2017: 47-70) are proposed in schools.

Meanwhile, merging subject content knowledge, teaching and learning to design curriculum, for example, merging mathematics knowledge, teaching and learning also be explored (Huang, Zhang, Mok, Zhao, Zhou, & Wu, 2017: 321-335). Problem-based learning strategy on enhancing college student's industrial oriented competences learned was designed on the teaching and learning strategy (Chung, Yeh, & Chen, 2016: 285-307). Other strategies, for example, work-process-based approach to designing competence-based occupational standards and vocational curricula, were used to design curriculum for specific learning purpose (Tutlys & Spöttl, 2017: 50-66).

Strategies to shape school culture for teaching and learning of competence

Schools construct school-based curriculum and consider the related factors, school culture, teachers' professional development, teaching style and students' needs, then get together to merge the factors to the competent orientation and sustainable campus. Basing on the conceptual thinking and needs, principals play a head leader role. As Pan, Nyeu & Cheng (2017: 168) pointed out that principals face challenge for cultivating students to be a holistic people. Meanwhile, they enforce school-based curriculum and effective instruction, and encourage teacher professional learning. In addition, stakeholders' participation are the social capital and support for establishing the conditions to improve teaching and learning.

Due to impact of multicultural / intercultural diversity in schools, reframing school culture is the important strategy to improve schools' ecology for students' learning. For example, the school culture diversity, teaching style and content, and decision making process may change through intercultural education methods and extracurricular educational strategies (Malazonia, Maglakelidze, Chiabrishvili, & Gakheladze: 2017). In addition, curriculum change and teacher competence development were reflected through school organization (the individual level, the group/program level and the whole school level) and strength school culture perspective (conceptual consistency and operational consistency) were proposed (Cheng, 1994: 26). Reframing specific curriculum and connecting local and international framework for sustainability (Iliško, Oļehnoviča, Ostrovska, Akmene, & Salīte, 2017: 103-113). Combining digital technology, and e-learning and intercultural competences to design pedagogy also is an effective cultivating students' intercultural competence (Malac & Kostoloányová, 2017: 344-352).

Integrated comment

As the previous statements and literature review, following the rapid societal, economic and political change, digital information's stimulation, demographic structure transformation and multicultural diversity around the world, educators and related groups members reflect / think that how

they help the youth people for the future. Therefore, the organizations of OECD and UNESCO, the decision making unit of China and Taiwan, and other countries all propose related policies and practices for cultivating youth people for the future.

The previous organizations, ministries and schools proposed core competence for cultivating youth people to be a competent and holistic people. Meanwhile, not only the core competence is a global and regional perspective but also is an educational, intercultural thinking and practices. Therefore, national government, society and schooling all play important roles to cultivating youth people to be a holistic people.

Meaning of the core competence is the people who possesses knowledge, capacity and attitude to resolve daily problems, and can communicate smoothly in the multicultural environment. In schools, principals are very important leaders to lead schools toward future. Principal leadership constructs school-based curriculum and connects teaching pedagogical, materials, students learning and school culture to cultivate students for the future.

Strategies for shaping teaching and learning school culture are also the practice approach for cultivating students to be a competent people. There are several approaches to do besides constructing school-based curriculum, other approaches include reframing school culture and organization, curriculum, searching for stakeholders / societal support and encouraging teachers' processional learning, etc.

Metodology

Methods

This study adopts following methods for purposes.

Interview: Researcher uses interview with principals and directors of elementary schools.

Document analysis: Archives and policy texts are the analysis document for core competence.

Research Cases

Principals and directors of elementary schools and scholars are research cases through purpose sampling in Taiwan. Researcher selects six elementary school principals and a junior high school principal in Pingtung County, an elementary school principal and a director of academic affairs of elementary school in Kaohsiung City. Especially, three schools are getting on charter schools and experimental education, diet and agriculture education in Pingtung County. At the same time, an aboriginal people elementary school is the research case in Pingtung County.

Research Field

Research field includes any place that researcher appoints with research participants according to appointed meeting rooms, school office etc.

Data Coding

Giving the codes through different / multi methods (interview and document analysis, etc.), research participants and dates. For example, “(P1, IN, 20180305)” means that researcher interviews the first principal on March 5, 2018. “(D1, IN, 20180305)” means that researcher interviews the director on March 5, 2018. “(P2, DO, 20180227)” means that researcher collected the document of the second principal on February 27, 2018.

Truth and Reliability

Truth and reliability are constructed through continuous interviews, checking document and triangulation except literature review.

Research Ethics

This study considers ethics according to “National Cheng Kung University Governance Framework for Human Research Ethics.”

Result and Discussion

Meaning of core competence

All the principals thought the meaning of core competence with consistency. They pointed out that core competence "not only is the knowledge but also emphasize to resolve daily problems" (P1, IN, 20180303；p2, IN, 20180305；P3, IN, 20180318；P4, IN, 20180327；P6, DO, 20171216；IN, 20180301). It is a person possesses knowledge, capacity, value and attitude to get body, mind and soul to be balance in the accelerating change environment (P6, IN, 20180402). Meanwhile, it's a " "*function ability"* and learning power of "*transfer of learn* " in the reality" (P3, IN, 20180318). The principal emphasized that "generic skill" focuses on operative ability in the daily reality. It's general ability of cross fields, for example, communication, analysis, reasoning, resolving problems, team cooperation, etc." (P3, IN, 20180318).

Meanwhile, core competence is a "life long learning as the four pillars of education in The Delors report" (D1, IN, 20180305). A principal especially emphasized "core competence" is the "*process of learning transforming*" and ability of knowledge, action and reflection in brilliant life (P4, IN, 20180327).

A school located in the suburbs of Pingtung County, two aboriginal people (Paiwan and Rukai people) consists with the main students components. Based on principal's educational philosophy, school and local culture, they practice charter school and then develop experimental education for developing school missions in school. The principal pointed out that they will construct a "competence orientation's ethnic progress campus" and emphasize students resolving daily problems (P6, IN, 20171217).

In summary, the previous principals and director's perspective about core competence consists with OECD, UNESCO, China and Taiwan's core competence's framework and content. Core competence is not only cognition, knowledge but also an attitude and practice for resolving daily problems. An individual competence emphasizes lifelong learning, transfer of learning and process of transforming. Meanwhile, core competence is related with the school culture, developmental orientation and missions. Especially, principals play an important role to share competence orientation campus and lead the schools toward future.

The role of principals and schooling for sharing competence campus

As the earlier statements, principals are the important head teacher to shape school as a competence orientation campus. For example, an experimental education school, located in the suburbs of Pingtung County, principal pointed out that they will develop environment education with connecting the local environment and lead students learn within natural environment. So schooling played the "*learning support system of multi-knowledge-ability*". Rooting on the system, schooling plays the following roles: 1. Grounded knowledge: guider for field curriculum's basic learning; 2. local identification: planner for hometown culture's caring; 3. Humanity respect: cross culture and interactional learner; 4. Ecology sustainability: dialoguer of ground and nature for developing holistic people. Rooting on the educational goal and process of teaching and learning, we flipped curriculum through creative thought teaching. Meanwhile, we also flipped students' thinking and direction for various issues (P5, IN, 20180306). As a principal pointed out that school ought to provide "vision" to merge core competence and curriculum, develop support system for teaching and curriculum. Meanwhile, constructing evaluation mechanism is the important role of school (P2, IN, 20180305).

"We must flip teachers' thinking and teaching, administrative operation, students' curriculum, parents' thinking and other various inference dimensions in order to understand future children capacity " (P3, IN, 20180318). She especially pointed out that "flipping the teaching strategies and behavior is the most important strategy. We want to let the "competitive learning" to be a "symbiosis learning", from "quantitative education" to "qualitative education" and from "purpose education" to "meaning

education"" (P3, IN, 20180318). Therefore, schooling play "flipping pusher" role for shaping competence orientation campus (P3, IN, 20180318). In other words, schooling played role of "guiding", "promoting" and "transforming" for cultivating core competence students (D1, IN, 20180305).

As the previous perspective, principals play role of instruction leadership and curriculum leadership (P1, IN, 20180303). Meanwhile, school will be a learning organization and base for teachers' cooperation to prepare curriculum, and then school will develop curriculum and be a teaching base (P1, IN, 20180303). A principal especially emphasized that schooling ought to let students understand that learning is a process of merging cognition, action and reflection for cultivating core competence (P4, IN, 20180327).

In summary, not only the schooling play important role for cultivating students to be a competent and holistic people, but also principals play guider and leader to lead the school for future. In general, schooling constructs administrative and teaching's support system and evaluation mechanism to shape competence campus, help teachers develop teaching strategies, construct school-based curriculum for special mission and core competence teaching. Schools ought to be a learning organization, learning base for shaping competence campus.

In addition, principals are the important flipping pushers, vision leaders, instruction leaders and curriculum leaders for shaping competence orientation campus. Especially, all the principals and director emphasize that teachers must develop profession and flip teaching strategies for competence orientation teaching. So school is the learning organization for cultivating students to be a competent people.

Strategies for shaping competence orientation campus

Strategy 1: Constructing extra and internal school support system

Extra and internal school system is a connecting network for schools' sustainable development. So all the schools shape competence orientation campus with integrating internal system and search for extra support. For example, in aboriginal tribe school, the principal searches for tribe Elders to help constructing home-school relationship and helping team teaching in school and community.

Curriculum is co-constructed of school, tribes, families, local churches, and educational materials and resources (P6, DO, 2018020; IN, 20180218).

In addition, principal searched for extra foundation to help practice diet and agriculture education (P3, IN, 20180318), ecology education (P5, IN, 20180306) to construct school-based curriculum for charter school mission and shape competence campus.

The previous social resource includes local government support and stakeholders who help schools to be a better future.

Strategy 2: Constructing School-based curriculum

All the schools construct school-based curriculum as the first strategy for shaping competence campus. For example, school executed diet and agriculture education (P1, IN, 20180303；P3, IN, 20180318), ecology education (P5, IN, 20180306), experimental education (P6, IN, 20180207). At the mean time, the above schools are all carter schools that they have unique school culture, background and special mission in Pingtung County and in Kaohsiung City.

In general, the process of constructing school-based curriculum have the following procedure, for example, SWOT analysis (D1, IN, 20180305；P3, IN, 20180318). All the principals pointed out that constructing school-based curriculum must understand school vision, culture, mission, teacher procession and needs, then connect local / social resource and plan program.

Strategy 3: Flipping teachers' professional competence

Facing the educational policy's leading and schooling innovation, not only principal leadership and elated factors are very important but also teachers must flip their teaching content knowledge, pedagogical knowledge and pedagogical content knowledge. So principals pointed out that we must

flipped teaches' thinking and profession competence for shaping competence orientation campus as previous statement.

Strategy4: Shaping school to be a learning organization

As the previous statement, school is a learning organization and learning base for competence campus. All school members get together learn in school. They learn through cooperative team and learn to construct school-based curriculum, develop teaching competence.

Conclusion

This study explored the meaning of core competence, schooling roles to cultivate students to be holistic people and strategies for shaping competence campus based on the context of accelerating and rapid societal change, economic development, digital information, demographic structure transformation and intercultural communication around the world. Secondly, this study review the related literature of meaning of core competence, curriculum program and teaching design for competence in schools and strategies to shape school culture for teaching and learning of competence. According to the literature review and interview / document analysis, researcher proposes the following conclusions:

1. Core competence is personal knowledge, ability and attitude for adapting daily lives and future challenge. Especially, it emphasizes the capacity of resolving daily problems and intercultural communication. Not only the core competence is a cognitive knowledge but also it is an applied capacity for resolving daily problems and social participation.
2. Core competence not only is global competence but also is related region / local competence for the future schooling. Global competence emphasizes intercultural communication and multi dimensions' capacity, region /local competence emphasizes moral character and key capacity for adapting life long development and societal change (China) and educational process for special schooling mission (Taiwan).
3. School is a learning organization and learning base in competence campus. Meanwhile, school plays guider and flipping pusher for cultivating students to be a future competent people.
4. Principals play roles of vision leadership, instruction leadership, curriculum leadership for shaping competence campus.
5. Teachers are the important roles for shaping competence campus, so they must develop profession and flip teaching strategies for competence orientation teaching.
6. The strategies of shaping competence campus include (1) connecting and constructing extra and internal school support system is the strategy; (2) constructing School-based curriculum; (3) Flipping teachers' professional competence; (4) shaping school to be a learning organization.
7. Constructing school-based curriculum is the important step for shaping competence. All the school members must understand school vision, culture, mission, teacher procession and needs, and then connect local / social resource and plan program under principal's leadership and support system of government, society, stakeholders, parents, local community.

Finally, researcher takes a reflection for this study as follows. This is not only a "research methodology and method" but also a "thinking and learning process". "What's the meaning of core competence?" "What are the roles of schooling in shaping competence campus?" "How do principals lead school toward competence campus?" "Which are the strategies of shaping competence campus?" Especially, how do teachers develop their procession and transfer their pedagogic knowledge and strategies?"

So we must think that which is the excellent teacher and teacher education for the future. Not only teachers must learn to flip pedagogical knowledge and strategies but also students must learn to be a holistic people. They not only live in the region and local but also live global village. All the people must possess global vision and internationalization, and then resolve any daily problems around the world.

In summary, schooling, principal leadership and teachers all play very important roles for shaping competence campus and cultivating future competence people.

References

Cabatan, M. C. C., & Grajo, L. C. Internationalization in an occupational therapy curriculum: A Philippine–American pilot collaboration. *The American Journal of Occupational Therapy, 71*(6),

1-9, retrieved from https://search.proquest.com/docview/1964554040?accountid=170225on 25 October 2017.

Cheng, Y. C. Effectiveness of curriculum change in : An organizational perspective. *The International Journal of Educational Management, 8*(3), 1994, 26-34, retrieved from https://search-proquest-com.ezproxy.nptu.edu.tw/docview/229140749?accountid=170225on 13 July 2017.

Core Competence Research Team. Chinese students develop core competence. *Journal of The Chinese Society of Education, 10*, 2016, 1-3.(China)

Chung, P., Yeh, R. C., & Chen, Y. Influence of problem-based learning strategy on enhancing student's industrial oriented competences learned: An action research on learning weblog analysis. *International Journal of Technology and Design Education, 26*(2), 2016, 285-307, retrieved from https://search-proquest-com.ezproxy.nptu.edu.tw/docview/1787236724?accountid=170225 on 13 July 2017.

Delors, J. *Learning: the treasure within*, *Report to UNESCO of the International Commission on Education for the Twenty-first Century.* UNESCO Publishing Press, 1996. (Paris, France)

Education Bureau. *School-based Curriculum Development in the Primary Schools,* retrieved from http://www.edb.gov.hk/en/edu-system/primary-secondary/applicable-to-primary-secondary/sbss/school-based-curriculum-primary/index.html#expecton 23 December 2017. (Hong Kong, China)

Geng, C. On the teaching innovation of business English teaching: A study on multimodal communicative competence of ethnic universities . *Theory and Practice in Language Studies, 7*(4), 2017, 322-326, retrieved from https://search-proquest-com.ezproxy.nptu.edu.tw/docview/1888910592?accountid=170225 on 13 March 2018.

Graves, K., & Garton, S. An analysis of three curriculum approaches to teaching english in public-sector schools. *Language Teaching, 50*(4), 2017, 441-482, retrieved from https://search-proquest-com.ezproxy.nptu.edu.tw/docview/1938396370?accountid=170225 on 23 December 2017.

Huang, R., Zhang, J., Mok, I. A. C., Zhao, W., Zhou, Y., & Wu, Z. Perceived professional knowledge and competence of mathematics specialists and its development in china. *International Journal for Lesson and Learning Studies, 6*(4), 2017, 321-335, retrieved from https://search-proquest-com.ezproxy.nptu.edu.tw/docview/1950655369?accountid=170225 on 23 December 2017.

Iliško, D., Oļehnoviča, E., Ostrovska, I., Akmene, V., & Salīte, I. Meeting the challenges of ESD competency-based curriculum in a vocational school setting. *Discourse and Communication for Sustainable Education, 8*(2), 2017, 103-113, retrieved from https://search-proquest-com.ezproxy.nptu.edu.tw/docview/1995418085?accountid=170225 on 10 February 2018.

Kangaslathi, J., &Pohoaţă, G. Education for the future. *Euromentor Journal, 8*(4), 2017,7-18, retrieved from https://search-proquest-com.ezproxy.nptu.edu.tw/docview/1986081301?accountid=170225 on 10 February 2018.

Lin, Y. Transformation and design of competence-based curriculum and instruction. *Journal of Education Research*, 275, 2017, 4-17.

Malach, J., & Kostoloányová, K. School as digitally competent educational organization: Specific preparation for work positions and educational roles. *European Conference on e-Learning; Kidmore End*, Oct., 2017, 344-352, retrieved from https://search-proquest-com.ezproxy.nptu.edu.tw/docview/1968935060?accountid=170225 on 12 February 2018.

Malazonia, D., Maglakelidze, S., Chiabrishvili, N., & Gakheladze, G. Factors of students' intercultural competence development in the context of Georgia. *Cogent Education, 4*(1) , 2017, retrieved from https://search-proquest-com.ezproxy.nptu.edu.tw/docview/1994426529?accountid=170225 on 12 February 2018.

Ministry of Education. *General Program of Curriculum Guideline for the 12-year Basic Education*, retrieved from https://www.naer.edu.tw/files/15-1000-7944,c639-1.php?Lang=zh-tw on 28 November 2017.(Taipei, Taiwan)

Murararaneza, C., & Mtshali, G. N. Conceptualization of competency based curricula in pre-service nursing and midwifery education: A grounded theory approach. *Nurse Education in Practice, 28*, 2018. 175-181, retrieved from https://search-proquest-com.ezproxy.nptu.edu.tw/docview/2001520976?accountid=170225 on 12 February 2018.

OECD and Harvard Graduate School of Education. *Preparing Our Youth for a Better World: OECD PISA Global Competence Framework Launch*, retrieved from http://www.pz.harvard.edu/professional-development/events-institutes/preparing-our-youth-for-a-better-world-oecd-pisa-global on12 December 2017.

OECD. *Global competency for an inclusive world*, retrieved from https://www.oecd.org/pisa/aboutpisa/Global-competency-for-an-inclusive-world.pdf on 4 March 2018.

Pan, H. W., Nyeu, F., & Cheng, S. Leading school for learning: Principal practices in Taiwan. *Journal of Educational Administration, 55*(2), 2017, 168-185,retrieved from https://search-proquest-com.ezproxy.nptu.edu.tw/docview/1879597389?accountid=170225 on 20 March 2018.

Seatter, C. S., & Ceulemans, K. Teaching sustainability in higher education: Pedagogical styles that make a difference. *The Canadian Journal of Higher Education, 47*(2), 2017, 47-70, retrieved from https://search-proquest-com.ezproxy.nptu.edu.tw/docview/1947021553?accountid=170225 on 12 February 2018.

Tutlys, V., & Spöttl, G. From the analysis of work-processes to designing competence-based occupational standards and vocational curricula. *European Journal of Training and Development, 41*(1), 2017, 50-66, retrieved from https://search-proquest-com.ezproxy.nptu.edu.tw/docview/1850296581?accountid=170225 on 12 February 2018.

Voogt, J., Fisser, P., Good, J., Mishra, P., & Yadav, A. Computational thinking in compulsory education: Towards an agenda for research and practice. *Education and Information Technologies, 20*(4), 2015, 715-728, retrieved from https://search-proquest-com.ezproxy.nptu.edu.tw/docview/1718124892?accountid=170225 on 12 February 2018.

ICEL_0085

Career Maturity of Adolescents at Vocational School in Special Region of Yogakarta Viewed from School Connectedness

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Abstract

The objective of this research is to observe the career maturity of the adolescents studying at Vocational Schools in Special Region of Yogyakarta, viewed from school connectedness. Crites (Lee, 2003) & Super (Dodd, Odom, & Boleman, 2014) defined career maturity as a preparation for a career. The research subjects were 262 students of Grade XI of State Vocational High School 1 Sleman in Special Region of Yogyakarta. The scale used in this research was Career Maturity Inventory - Adaptability Form C (Savickas & Porfeli, 2011). The result of analysis using partial correlation showed that there was a significant correlation between school connectedness and career maturity on the level of ≤0.01 (p = 0.408) and was able to explain the career maturity variants as much as 16.46%. Hence, it can be concluded that the higher the level of school connectedness the adolescents have, the higher the level of career maturity they own.

Keyword: Adolescent, Vocational School, Career Maturity, School Connectedness

1. Introduction

The importance of career maturity in adolescent has been shown in a number of studies. The research conducted by Savickas, Briddick, and Watkins (2002) revealed that career maturity was related to social adjustment level of adolescents which was indicated in their openness in interpersonal relation and positive orientation toward social norms. Besides, career maturity was also identified to be correlated with many of positive personality and cognitive in adolescents, such as higher intelligence, emotional stability, assertiveness, accuracy, imaginative mindset, confidence and self-control, openness and spontaneity in participation both in discussion and doing assignments, achievement-oriented, no procrastination and effective time management, positive attitude toward education (Coertse & Schepers, 2004).

Super (Mubiana, 2010) was convinced that in order that an individual experienced a successful career progress and maturity, the person must have managed to get through each stage of development, and failures in the implementation might cause troubles for the individual to cope with the development assignments. Adolescents, according to Super (Lau, Low, & Zakaria, 2013; Rachmawati, 2012), are in the stage of exploration (15-24 years old) of Life Career Stages and in the crystallization period (14–18 years old) of their Vocational Developmental Tasks for a Life Span. In the exploration phase, adolescents start to be aware of that job is an important aspect of life and on the tentative stage of exploration, adolescents start to narrow the choices by considering their ability, availability of training, and job opportunity which eventually make them opt for the jobs which they think they can reach before enter the working world (Lau, Low, & Zakaria, 2013). In fact, not all of the teenagers in those age periods can fulfill the career stage assignments.

The study carried out by Prahesty and Mulyana (2013) on 308 students of grades X, XI and XII consisting of 87 senior high students, 147 vocational school students, and 74 Islamic senior high school students revealed that the average rate of career maturity of vocational school students was 31.99 which was lower than the average rate of senior high school students (34.17) and Islamic senior high school students (32.52). This is very sad considering that vocational schools have educated the students in compliant with the required skills even in the first year of schooling. In addition, the slogan of Vocational School "Vocational School Can" meaning ready to work, smart, and competitive is considered as not yet realized since the unemployment rate of Vocational School graduates is higher compared to the other schools in the similar category. The latest data of Central Bureau of Statistics showed that in August 2013 the unemployment rate increased up to 7.39 million people, and around 11.19% of the total or about 814,000 people were Vocational School graduates on the highest rank (Detik, 2014).

Crites and Super (Coertse & Schepers, 2004) explained that an individual with career maturity would show specific characteristics, such as having more self-information to broaden insights, acquiring required competencies to make information-based decisions, combining the knowledge about oneself and about working world and applying the knowledge to plan career. The result of another interview which was conducted by the researchers on Sunday (private interview, 6 July 2014) with one of the students of one of the Vocational Schools in Yogyakarta revealed that to select school after finishing junior high school, the student was helped by the considerations given by her family (father, mother, dan older siblings) as well as her mates which resulted in the decision to study at one of study programs in one of Vocational Schools in Yogyakarta. In the first year, the student admitted that she was in trouble with the materials of the study she chose. However, the student obtained more insights about the study she took from her teachers, class fellows, and family. Besides, the student tried to find more information about the concentration she was taking and the related careers on the internet. She also said that she eventually felt well-adjusted with the concentration she took after doing Field Work Practice (PKL) program for three months. From that, the researchers could draw the conclusion that the student had career maturity characteristic as stated by Crites and Super (Coertse & Schepers, 2004). Additionally, Smith and Patton (2007) argued that part-time job could prepare the students to sharpen their skills required for a number of careers or jobs.

One of many factors which influences career maturity is school as the environmental factor (Super in Prahesty & Mulyana, 2013). School connectedness is the meaning perceived and acquired by an individual as the result of his/her connection to various aspects and components at school. International Centre for Guidance Studies (IceGS, 2011) mentioned that school did not only influence the careers of adolescents, but also influence how they approached the careers. Kaur's study result (2012) proved that there was a correlation between the school climate and career maturity. Even though up to recent there has not yet been a study to directly measure the correlation between school connectedness and career maturity, both of the studies aforementioned can strengthen the possibility of direct influence of school connectedness on career maturity in adolescents.

2. Research Method

Research Subject

The subject of this research was the students of Grade XI of all study programs (Office Administration, Accounting, Marketing, and Boutique Fashion) at State Vocational High School 1 Sleman Special Region of Yogyakarta, in the age range 15-18 years.

Data Collecting Method

The data collecting method in this research was Likert Scale in which each of the statement of the scale asked for the respondents to choose one among four options for the answer. Career maturity was measured using Career Maturity Inventory (Form C) composed by Savickas and Porfeli (2011) which was already adapted by the researchers into Indonesian. This scale measured three dimensions reflecting career selection preparedness (concern, curiosity, and confidence) and consultations dimension to measure individual relational style in the process of career selection. In the scale, there were 24 statements divided into 20 unfavourable items with the score ranged from 1 to 4, where score 1 meant Strongly Agree, score 2 meant Agree, score 3 meant Disagree, and score 4 meant Strongly Disagree. The other four were favourable items with the score ranged from 4 to 1, where 4 meant Strongly Agree and so forth.

The School Connectedness scale was composed by the researcher by referring to the formula of Libbey (2004) which comprised 27 favourable statements with the score 1 for Highly Irrelevant (HI), score 2 for Irrelevant (I), score 3 for Relevant (R), and score 4 for Highly Relevant (HR). This scale revealed eight school connectedness dimensions, namely engagement, discipline and positive relation, extracurricular activity, positive attitude toward school, care, trust in teachers, attitude and behavior of the teachers, and class climate.

Data Analysis Method

The method used to analyze the data in this research was Pearson's product moment correlation test which was determined to observe the relation or correlation between two research variables, namely school connectedness and career maturity with the value of $p<0.05$ to be considered significant. The testing and measurement of the research normality, linearity, and hypothesis used program SPSS 21.0 for Windows.

3. Results and Discussion

1. Assumption Test

a. Normality Test

Table 1

Variabel	Score S-W	p	Description
Career Maturity	0.992	0.167	Normal
School Connectedess	0.992	0.170	Normal

a. Lilliefors Significance Correction

b. Linearity Test

Table 2

Variabel	F (Sig.)	
	Linearity	Deviation from Linearity
Career Maturity * School Connectedness	50.185 (0.000)	0.740 (0.857)

2. Hypothesis Test

Table 3

Variabel	R	Sig.	Description
Career Maturity * School Connectedness	0.408^{**}	0.000	Acceptable

From the tables above, it can be seen that the hypothesis proposed by the researchers was **acceptable** because the significance value of $p = 0.000$, so $p < 0.01$. This shows that the higher the level of school connectedness, the higher the level of career maturity in adolescents. In contrast, the lower the level of school connectedness, the lower their level of career maturity.

In addition, the importance of this research finding can be seen from the values of correlation (r) coefficient and determinant (r^2) coefficient. From the tables above, the results showed that school connectedness variable could explain career maturity in adolescent variants as much as 16.46%.

3. Additional Analysis

a. Additional Analysis on Career Maturity Predictor

Table 4

Model	R	R Square	R Square Change
1	.386[a]	.149	.149
2	.426[b]	.175	.033
3	.442[c]	.186	.014

a. Predictors: (Constant), SC4_PositiveAttitude

b. Predictors: (Constant), SC4_ PositiveAttitude, SC6_BelievetheTeacher

c. Predictors: (Constant), SC4_PositiveAttitude, SC6_ BelievetheTeacher, SC1_*Engagement*

The component of school connectedness which became the main predictor in career maturity was positive attitude toward school which contributed as much as 14.9%. The second predictor was trust in teacher with the contribution of 3.3%. And, the third predictor was engagement contributing 1.4%.

The results above were fortified by the analysis based on the components of career maturity which indicated that positive attitude toward school was the most predictive component in two components of career maturity as shown in the table below.

b. Additional Analysis on Predictor of Each Career Maturity Component

Table 5

Concern				***Confidence***			
Model	R	R Square	R Square Change	Model	R	R Square	R Square Change
1	.401[a]	.160	.160	1	.301[a]	.091	.091
2	.422[b]	.178	.017	2	.334[b]	.112	.021
Curiosity				***Consultations***			
Model	R	R Square	R Square Change	Model	R	R Square	R Square Change
1	.326[a]	.106	.106	1	.258[a]	.067	.067
2	.355[b]	.126	.020	2	.296[b]	.087	.021
3	.375[c]	.140	.014	3	.322[c]	.103	.016

Career Concern

a. Predictors: (Constant), SC4_PositiveAttitude

b. Predictors: (Constant), SC4_ PositiveAttitude, SC3_ Extracurricular

Career Curiosity

a. Predictors: (Constant), SC1_*Engagement*

b. Predictors: (Constant), SC1_*Engagement*, SC3_ Extracurricular

c. Predictors: (Constant), SC1_*Engagement*, SC3_ Extracurricular, SC4_PositiveAtittude

Career Confidence

a. Predictors: (Constant), SC4_ PositiveAtittude

b. Predictors: (Constant), SC4_PositiveAttitude, SC2_ DisciplineandPositiveRel

Career Consultation

a. Predictors: (Constant), SC2_DisciplineandPositiveRel

b. Predictors: (Constant), SC2_ DisciplineandPositiveRel, SC7_TeacherAttitude

c. Predictors: (Constant), SC2_ DisciplineandPositiveRel, SC7_ TeacherAttitude, SC8_ClassClimate

The component of school connectedness which became the main predictor in career concern was positive attitude toward school with the contribution amounting 16%, and the second predictor was extra-curricular activity as much as 1.7%. In career curiosity, the component of school connectedness which became the main predictor was engagement with 10.6% contribution followed by extra-curricular activity as much as 2% and positive attitude toward school as much as 1.4%. In the component of career confidence, the component of school connectedness which acted as the main predictor was positive attitude toward school contributing 9.1%, and the second predictor was discipline and positive relation as much as 2.1% contribution. Moreover, discipline and positive relation was the component of school connectedness which became the main predictor in career consultations with the contribution amounting 6.7%. Also, the second predictor was teacher attitude with the contribution as much as 2.1%, and the third was class climate as much as 1.6%.

In addition to demonstrating the most predictive components, the tables above also revealed that the correlation between positive attitude toward school and career concern was more intensive compared to the correlation between positive attitude toward school and career curiosity as well as toward career confidence. It means that the component of positive attitude toward school is able to explain more about career concern component than it is to career curiosity and career confidence components in the career maturity variable.

4. Discussion

The result of analysis using correlation test showed the significance value of $p = 0.000$ ($p < 0.01$). This indicates that the hypothesis of this research is acceptable which means that the higher the level of school connectedness, the higher the level of career maturity in adolescents. In contrast, the lower the level of school connectedness, the lower their level of career maturity.

The final result of *CMI Form C* was that there were five scores (Savickas & Porfeli, 2011). The first score was the total score of career selection preparedness based on the sub-scales of concern, curiosity, and confidence. The other scores were the individual scores of those four sub-scales (concern, curiosity, confidence and consultations). This research showed that the adolescents had the highest average score at concern sub-scale as much as 3.208. This result was in line with the result of Savickas and Porfeli (2011), Chan *et al*. (2015), Dodd, Odom, and Boleman (2014), and Migunde, Othuon, and Mbagaya (2015) studies which were based on three sub-scales (concern, curiosity, and confidence). This signed that the adolescents had high orientation toward their future. It can be proven because 87% of the adolescents strongly agreed/agreed with planning a career which would benefit them. In addition, 95% of the adolescents strongly agreed/agreed that they needed to concern with their future job, and they even frequently thought about the working place they were about to enter. (82%).

The different interpretation occurred in the sub-scale of consultations to observe the individual style and strategy in selecting career (Savickas & Porfeli, 2011). Savickas and Porfelli (2011) proposed two categories of styles with the lowest score referring to independent relational style and the highest score referring to interdependent relational style. The study result showed that 16% of the adolescent chose independent style to make career selection. This meant that the adolescent had the tendency to express themselves in making career selection. Meanwhile, 84% of the adolescents had the inclination to use interdependent style by asking for suggestion and opinion of family and friends to select career.

Positive attitude toward school was the component of school connectedness which was proven to be the most reliable predictor which could explain career maturity as much as 14.9%. Furthermore, it was also the main predictor in two other components of career maturity (see table 13-14). This indicates that adolescent who had positive attitude toward school tended to have higher level of career maturity compared to that who did not. This positive attitude was supported by 94.2% of adolescents who believed that they would be successful at school. 99.6% of the adolescents thought that their schooling period was very important for their future, and 97.8% of the adolescents were convinced that by studying at school they could reach their future goals.

Another finding in this study was the average scores of career maturity obtained by the students. The students of Boutique Fashion acquired the highest average score with 2.883, followed by marketing (2.7798), office administration (2.7728), and accounting (2.563). However, if the average score was based on the existing class group, the result showed that class office administration 1 reached the highest average score with 3.011. The other class average scores were class office administration 2 = 2.6896; class office administration 3 = 2.6280; class accounting 1 = 2.5436; class accounting 2 = 2.5524; class accounting 3 = 2.5892; class marketing 1 = 2.7235; class marketing 2 = 2.8832; and class boutique fashion = 2.8833.

The rank analysis result showed that the students ranking 1 to 10 had average score of 2.80 which meant that they had higher level of career maturity than those who ranked 10 or above (with the average score of 2.68). This agrees with a number of studies which found that an individual with high academic achievement tended to have high score of career maturity (Khan & Alvi, 1985; Hirschi, 2010; Rani, Gupta & Sharma, 2013). Ulusuoy and Onen (2014) discovered that the students with low level of academic motivation would also had low level of self-maturity. This indicated that the students with high level of career maturity would tend to be aware that the academic success would impact on them to reach their career objectives. (Ulusuoy & Onen, 2014).

The result based on age was very surprisingly unexpected. The students who aged 15 years had higher average score of career maturity (2.83) than those who aged 16 and 17 years (2.71) and 18 years (2.73). This finding was different from the study conducted by Dodd, Odom, and Boleman (2014) who

found that the career maturity average score of the adolescents aged 18 years was higher than that of those aged 14 and 15 years. Another finding of this study also revealed that the adolescent living in their parents' house tended to have higher average score of career maturity (2.72) compared to those who lived with their relatives (2.68). Moreover, the adolescents whose fathers were private company employees had higher average score of career maturity (2.81) than the adolescent whose fathers worked as government employees (2.67), entrepreneurs (2.74), and labour (2.71). Also, the adolescent whose mothers worked as teachers had the inclination to have higher average score of career maturity (2.84) compared to those whose mothers worked as government employees (2.67), private employees (2.78), entrepreneurs (2.67), and labour (2.72).

The availability of guidance and counselling program also had positive impact on the students' career maturity (Lau, Low & Zakaria; Sirohi, 2013). The school where the research was conducted applied guidance and counselling program and even included it in the curriculum with face-to-face meeting once a week for each class. The assumption was seconded by the result of this study which showed that 55.7% or as many as 146 (n=262) students were categorized as having very high level of career maturity. This was also supported by the study of Sirohi (2013) which demonstrated that the availability of program guidance and counselling brought the students to have high level of career maturity in terms of self-awareness and job information compared to the other schools which did not provide this facility.

The weakness of this study is that the research data were collected only in one school, namely State Vocational High School (SMKN) 1 Depok Yogyakarta. Different characteristics of schools might generate different data like in the studies performed by Sirohi (2013) and Roy (2015) which revealed that the students of private schools had higher level of career maturity compared those of state schools. Prahesty and Mulyana (2013) research also showed that there was a discrepancy in student's career maturity viewed from the school types with the average scores of 34.17 for senior high school students, 31.99 for vocational school students, and 32.52 for Islamic senior high school students. In addition, the research carried out by Houtte and Maele (2012) indicated that the students of technical/vocational schools had low *sense of belonging* compared to those who studied in academic schools.

Conclusion

Based on the analysis and discussion result, it can be concluded that the level of career maturity positively correlates to school connectedness variation in adolescents studying in Grade XI of Vocational School.

Recommendation

1. For adolescents

   This study result has revealed the importance of the adolescents' intra-school activities which can increase their preparedness to face the working world. The activities include academic engagement and extra-curricular activities at school. Therefore, adolescent is expected to actively and seriously involves in various school activities and utilizes maximally the facilities provided by school for the students.

2. For schools

   This study has shown that positive attitude toward school might increase the career maturity of the adolescents. Consequently, schools are expected to be able to convince the students that school is important for their future, and by schooling the students can achieve their goals and increase their confidence that they can reach success at school. Besides, it is suggested that teachers are concerned with their students both in the academic scope and in the non-academic scope. Schools must also nurture the students' discipline and be fair. Those measures have been proven to influence the students' career maturity. The realization of career maturity in the

vocational school students will result in realization of vision “Vocational High School Can” to prepare the students to work, be smart and competitive.

3. For further research

It is suggested that the data collection is conducted in different types of schools, not only in one school. Furthermore, the other demographic data richness in this research must be reviewed in the further similar research.

References

Chan, K. Y., Uy, M. A., Ho, M.-h. R., Sam, Y. L., Chernyshenko, O. S., & Yu, K.Y. T. (2015). Comparing two career adaptability measures for career construction theory : Relations with boundaryless mindset and protean career attitudes.. *Journal of Vocational Behavior*, 87, 22-31. doi: 10.1016/j.jvb.2014.11.006.

Coertse, S., & Schepers, J. M. (2004). Some personality and cognitive correlates of career maturity. *SA Journal of Industrial Psychology*, 30(2), 56-73.

Dodd, C. F., Odomm, S. F.,& Boleman, C. T. (2014). The career maturity of 4-H healthy lifestyles program participants. *Journal of Youth Development*, 9(3), 29-39.

Hirschi, A. (2010). Positive adolescent career development: The role of intrinsic and extrinsic work values. *Career Development Quarterly,*58(3), 276-287.

Houtte, M. V.,& Maele, D. V. (2012). Students' sense of belonging in technical/vocational schools versus academic schools: The mediating role of faculty trust in students. *Teachers College Record,*114, 1-36.

Kaur, P. (2012). Career maturity among adolescents in relation to their school climate. *International Journal of Research in Education Methodology*, 1(1), 10-13.

Khan, S. B.,& Alvi, S. A. (1985). Career maturity in relation to differences in school curriculum. *Canadian Counsellor*, 19(3 & 4), 144-151.

Lau, Low & Zakaria. (2013). Gender and work: Assessment and application of super's theory – career maturity. *Psychology and Behavioral Sciences*. Vol.2 No.2 36-42.

Lee, S. K. (2003). The relationship of family interaction to Korean high school girls' career attitude maturity. *International Journal of Human Ecology*, 4(2), 1-14.

Libbey, H. P. (2004). Measuring student relationships to school: Attachment, bonding, connectedness, and engagement. *Journal of School Health*. Vol.74 No.7 274-283.

Migunde, Q., Othuon, L., & Mbagaya, C. (2015). Moderating role of age on the relationship between career readiness and career indecision. B*ritish Journal of Psychology Research*, 3, 42-50.

Mubiana, P. B.,. (2010). *Career maturity, career knowledge, and self knowledge among psychology honours students: An exploratory study*. Dissertation. - : University of Pretoria.

Omasu, F., & Takahashi, Y. (2013). The impact of a sense of belonging on lethargy and career maturity. *Open Journal of Preventive Medicine*. Vol.3, No.6, 393-401.

Prahesty, I. D.,& Mulyana, O. P. (2013). Perbedaan kematangan karir siswa ditinjau dari jenis sekolah. *Jurnal Penelitian Psikologi* (www.ejournal.unesa.ac.id), 2 (1), 1-7.

Rachmawati, Y. E. (2012). Hubungan antara self-efficacy dengan kematangan karir pada mahasiswa tingkat awal dan tingkat akhir di universitas surabaya. *CALYPTRA: Jurnal Ilmiah Mahasiswa Universitas Surabaya*, 1 (1), 1-25.

Rani, P., Gupta, M.,& Sharma, N. (2013). Role of academic performance, career decision making and locus of control on career maturity among (10+12) level students. *Anvikshiki The Indian Journal of Research*, 7(3), 54-60.

Roy, S. (2015). A study on career maturity of secondary school students in relation to school management. *Scholarly Researh Journal for Interdisciplinary Studies*, 3 (18), 171-179.

Savickas, M. L., Briddick, W. C.,& Watkins, C. E. (2002). The relation of career maturity to personality type and social adjustment. *Journal of Career Assessment*, 10(1), 24-41 Savickas, M. L.,

Briddick, W. C.,& Watkins, C. E. (2002). The relation of career maturity to personality type and social adjustment. *Journal of Career Assessment*, 10(1), 24-41.

Savickas, M. L.,& Porfeli, E. J. (2011). Revision of the career maturity inventory: The adaptability form. *Journal of Career Assessment*, 19(4), 355-374. doi: 10.1177/1069072711409342.

Sirohi, V. (2013). Vocational guidance and career maturity among secondary school students: An indian experience. *Annual International Interdisciplinary Conference (AIIC)*, 381-389.

Smith, E., & Patton, W. A. (2007). A serendipitous synchronisation of interests: Employers and student-working.*Proceedings 10th Annual AVETRAConference: Evolution Revolution or Status Quo. VET in New Contexts*.Melbourne: Australia.

Ulusoy, F. M.,& Onen, A. S. (2014). The effects of the professional maturity levels of secondaryschool students on their academic motivations.*Procedia - Social and Behavioral Sciences*. 143, 1153-1157.doi: 10.1016/j.sbspro.2014.07.570.

ICEL_0088

The Effect of Grammar-Based Teaching on TOEIC Preparation for Occupational Target Group Students as Effective Labors in the Trade Liberalization under ASEAN Economic Community

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Abstract

The purpose of the research is to study the effect of grammar-based teaching material for Burapha University students in an occupational target group to be ready for TOEIC test. Grammar as the TOEIC Conqueror is grammar-based teaching material developed by the researcher. The participants were 80 third year students from the faculty of nursing, the faculty of engineering, the faculty of medicine, and the faculty of management and tourism in accountancy of Burapha University. These participants were divided into two groups and these two groups were taught TOEIC preparation courses for 30 hours by using different teaching materials, Grammar as the TOEIC Conqueror and Longman Preparation Series for the New TOEIC Test Intermediate Course commercial book. All Participants were asked to take pre-test and post-test. Their scores were analyzed and compared by t-test. The result of the research shows that their scores of post-test were higher than pre-test. There was no significantly difference between two groups' index of effectiveness. The result of the research can conclude that to develop grammar-based teaching material is the another choice for educators to prepare learners to take the TOEIC test.

Keyword: TOEIC Test, Grammar-Based Teaching, ASEAN Economic Community

1. Introduction

Because of trade liberalization in the ASEAN Economic Community (the AEC), labor markets across the region will be open for member countries' workers. Thailand is a member of the AEC. This means that Thai students have opportunities to work in any member countries in the AEC. The English language is a lingua franca for the AEC. Saraithong, W. (2013) point out that to be able to reap benefits from the liberalized labour market, Thai workers need to overcome their language shortcomings. Saraithong, W.(2012) stated that the more liberalized labor market could provide opportunities for Thai workers. However, they need to improve their weak English proficiency. The best way to do this is English language preparation for college students who will be the workers in the trade liberalization soon. Engineers, nurses, architects, surveyors, doctors, dentists and accountants are occupational groups as the ASEAN region that becomes liberalized under the AEC in 2015. As a result, students of these fields should prepare their English language as soon as possible. The first thing all workers face is an English proficiency test to show that they can work in English well. TOEIC is an English language proficiency test for people whose native language is not English. TOEIC test scores indicate how well people can communicate in English with others in the global workplace. It is used for making decisions in hiring employees. This is the pass to work in the newly liberalized labour market of the AEC. To prepare Burapha University students in an occupational target group ready to the situation, they should prepare their English language skills for TOEIC immediately. The commercial textbooks for TOEIC preparation usually exclude grammar, which is the backbone of English language.

2. Scope of the Study

The grammar-based teaching material for TOEIC preparation will be created. The third-year students in nursing, engineering, medicine, and accounting will be separated into two groups. The first group will be taught with the grammar-based teaching material for TOEIC preparation and the second group will be taught with commercial textbook for TOEIC preparation. Both groups have to do the pre-test and post-test. The pre-test and post-test are the TOEIC model tests. The results of pre-test and post-test of two groups will be studied. The population of the study Eighty third-year students in nursing, engineering, medicine, and accounting of Burapha University were the population of the study. They were separated into two groups. The first group was taught with the grammar-based teaching material for TOEIC prepared by the researcher and the second group will be taught with commercial textbook for TOEIC preparation. Both groups have to do the pre-test and post-test. The pre-test and post-test are the TOEIC model tests. The results of pre-test and post-test of two groups will be studied. 3 Location The study will be done at Burapha University Subjects of the study

1. To study the effect of grammar-based teaching on TOEIC preparation for occupational target group students in Burapha University.
2. To compare the effect of TOEIC preparation teaching by using the material developed by the researcher, Grammar as the TOEIC Conqueror, and the commercial book, Longman Preparation Series for the New TOEIC Test Intermediate Course. The Instrument 1. Grammar as the TOEIC Conqueror is the material developed by the researcher used to teach the 40 participants in group one. 2. Longman Preparation Series for the New TOEIC Test Intermediate Course is the commercial book used to teach the forty participants in group two.
3. The practice test one from the New TOEIC Test Intermediate Course book is used as pre-test and post-test for all participants in two groups. The test components and the numbers of test items are the same as the TOEIC test. Both of them take two hours to complete.

3. Method

Population

The population of the study are eighty third-year students in the faculty of nursing, the faculty of engineering, the faculty of medicine, and the faculty of management and tourism in accountancy of

Burapha University. The written invitation letters were sent to the four faculties to ask for third-year students from these four faculties to join the study.

Participants

All eighty third-year students from the faculty of nursing, the faculty of engineering, the faculty of medicine, and the faculty of management and tourism in accountancy were divided into two groups. Each group consists of ten third-year students from each faculty, so there are forty students from four faculties in each group. Environment All participants were third-year students at Burapha University who passed two requirement English foundation courses. The two groups were taught TOEIC preparation for thirty hours without grading. The courses didn't affect their grade in any subjects. The participants from the two groups studied English for TOEIC preparation for six hours on Saturdays at Burapha University.

Instruments

1. Grammar as the TOEIC Conqueror Grammar as the TOEIC Conqueror is the material for TOEIC preparation that the researcher developed. This material consists of grammar points that can be seen in TOEIC test. They are presented one by one with example test items.

For instance, the sentence, "The owner had the store _____ for the holiday. (close)" was presented after causative verb was explained to make learners understand this grammar point easily and clearly.

All grammar points are shown and deeply explained. For the parts of speech topic, all kinds of English words are stated. They include nouns, adverbs, adjectives, prepositions, conjunctions, pronouns, etc. All important aspects of each grammar point are described. Characteristics of nouns, types of nouns, and six noun positions are explained in the topic of nouns. The example of the description about noun as below.

Noun

Characteristics of Noun

1. article (a/an/the/possessive adjectives: my/your/our…/demonstrative:
this/that/these/those/number/a lot of…)

2. If noun is countable noun, it can be plural
student—students
watch– watches
wife—wives
child---children
fish---fish

3. Noun can be possessed
The roof of my house is white.
My house is white.
My parents' bedroom is cleaned every day

Six Noun Positions

Noun can be placed in six positions in a sentence.

1. Subject
2. Direct object
3. Indirect object
4. Object of preposition
We study English on Saturdays.
5. Complement that usually follow verb be/linking verb
Martha is a good teacher.
6.Appositive

Jefe, my new colleague, moved to this town last week.
I don't like Jefe- my new colleague.

Types of Noun

Countable noun/ Uncountable noun

countable noun----- singular/ plural
uncountable noun---- singular
Rice is main dish for Thai people.

Abstract noun/Concrete noun

Abstract --- singular
Loneliness is a problem for Thai students in Australia.

Suffixes for noun

-ty	-ion	-age	-al(burial)
-ance	-ence	–ant	-ian
-ry	-y	-ee	-er
-or	-ment	-ess	-eed
-ful	-hood	-ic	-ist
-let	-ure		

English grammar for the TOEIC test is explained from the basics to the advanced. Before explanation of types of verb, the sentence structure is shown for learners to understand why and how the verb in the sentence works. Geffner (2016) stated that a subject and a verb are the keys of English sentences. What is a complete sentence?

INSERT AN APPROPRATE WORD INTO EACH SPACE

1. The …….. will soon be finished.
2. A strange……..is following.
3. ……..is one of my favorite activities.
4. My ……. brought her frog to school.

Every sentence in English has Three important and necessary elements

1) the SUBJECT: who or what the sentence speaks about.
2) the VERB: what the sentence says about the subject.
3) a COMPLEAT IDEA: additional information may need to added to the subject and verb in order to complete the idea.

Which of the following are sentences, containing all three elements above?

- Boy ! (calling a waiter in a restaurant)
- Susan ! (calling to a friend)
- Sit down! (teacher giving an order)
- Harry is (describing Harry)
- Harry ate. (telling what Harry did)

Verb

The verb can be:

One word

Jack studies well.
Our milkman delivers on weekends.
English majors at this university are lucky.

A group of words consisting of helping/auxiliary verbs and -ing or past participle from (v3) of the main verb

The student was punished for copying.

The ruins have been restored by the archeological Department.
The players are waiting for the bus

A compounding

The students sang and danced.
Tom watched television and did his homework at the same time.
Types of Verb

Action Verb

Action verbs may also be divided according to their use in sentences.

The wind blew the seeds to far fields.
The wind blew strongly from the south.
I am reading that book for an assignment.
I am reading slowly and carefully

Transitive verb

• When there is a noun phrase referring to something or someone other than the subject which serves as the receiver of the action, the verb is called “transitive” (AVT); the noun phrase which completes the meaning by receiving the action is known as the DIRECT OBJECT (DO).

John wrote his name on his book. Intransitive Verb

• If a verb can stand by itself without requiring a noun phrase to receive the action and complete the meaning, it is called “intransitive”

(AVi).

John always sleeps in his parent’s bedroom.

The Mid Verb

• This box weighs six kiloes.
• His present cost sixty baht.
• Jerry has a new green bike.
• The poor student lacked ambition and self-confidence.

VERBS OF BEING/LINKING VERBS

• Gregory is intelligent./ Gregory is here.
• Gregory was a clever student.
• That snake looks dangerous./That snake stays there.
• My childhood pal became a famous celebrity.

Verb be/Linking verb can be followed by

1. adjective
2. adverb
3. nouns

Linking Verb

feel	appear	look	run
seem	sound	prove	stay
get	become	smell	turn
grow	remain	act	taste

***linking verb can be action verb

Your sandwich smells good. linking verb
I smell your sandwich. action verb

Suffixes for verb

-en	-fy	-ize	-ise

dark---darken
simple---simplify

capital---capitalize
critic---criticize

In addition, the important detail of each sub topic is described to build learners' strength root. For example, all types of tenses in English are taught one by one tense with all important detail with easy understand words and symbols.

Verb Tense
• Past
- Past simple tense
- Past continuous tense
- Past perfect tense
- Past perfect continuous
• Present
- present simple tense
- present continuous tense
- present perfect
- present perfect continuous
• Future
- future simple tense
- future continuous tense
- future perfect tense
- future perfect continuous

The research believes that grammar can build as a strong pillars of the building. Learners who want to prepare themselves for taking TOEIC test should have deeply knowledge of grammar. This can help them get good scores for the test and it is a great root for improving other aspects of English.

2. The commercial book, Longman Preparation Series for the New TOEIC Test Intermediate Course. The author of this book is Lin Lougheed. The reason why this commercial book is chosen for this study is Dr. Lin Lougheed who is universally recognized as the leading authority in test preparation. As a best-selling author he has helped millions of English language learners prepare for the IELTS, TOEFL, and TOEIC exams. In addition to his test preparation books, teachers around the world in middle schools through university use his books to teach listening, reading, writing, and speaking skills.(http://lougheed.com/about.php)

This book includes TOEIC test directions, an example of TOEIC test answer sheet, explanation of each part of the TOEIC test, and two practice tests. For TOEIC test directions, they are reprinted by permission of Educational Testing Service whose copyright.

This book presents the content about the test part by part. There are two main parts, listening comprehension and reading. For each main part, sub topics are provided and described with examples and exercises. First, there are four sections for listening comprehension part. All sections are Photo, Question-Response, Conversations, and Talks. The another main part is reading. This part includes three sections, Incomplete Sentences, Text Completion, Reading Comprehension. The Reading Comprehension section consists of two kinds of passages, single passages and double passages.

3. The practice test one from the New TOEIC Test Intermediate Course book is used as pre-test and post-test for all participants in two groups. The test components and the numbers of test items are the same as the TOEIC test. Both of them take two hours to complete. The practice test one from

the New TOEIC Test Intermediate Course book covers all components of the TOEIC test. There are seven parts with 200 test items and time duration to take the test is two hours. For each part consists of all sub sections. For example, par t5, part 6, and part 7 are in the reading part. They are incomplete sentences, text completion, and reading comprehension with single and double passages.

Data Collection

1. All participants from both two groups, the participant group using Grammar as the TOEIC Conqueror and the participant group using Longman Preparation Series for the New TOEIC Test Intermediate Course book, were asked to take pre-test before learning.
2. After taking pre-test, the first group of participants were taught for TOEIC preparation by using Grammar as the TOEIC Conqueror. This is grammar-based teaching material developed by the researcher for 30 hours.
3. The second group of participants were taught for TOEIC preparation by Longman Preparation Series for the New TOEIC Test Intermediate Course book for 30 hours.
4. When both of participant groups finish their TOEIC preparation courses, They were asked to take post-test. 5. The scores of two participant groups from both pre-test and post-test were collected to be analyzed. Data Analysis The scores of two participant groups from both pre-test and post-test were collected to be analyzed to find the percentage, mean scores, and standard deviation. The mean scores of two groups were analyzed for the progress scores, and then the index of effectiveness of two groups were calculated. Data were compared to find the answers of the research questions.

4. Results

Table 1 shows the comparison of the mean scores between pre-test and post-test of the group of participants who were taught for TOEIC preparation using the teaching material developed by the researcher.

Scores	N		S.D.	T	p
Pre-Test	40	115.55	32.90	8.88*	0.000
Post-Test	40	131.20	34.17		

It can be seen in the above table that the descriptive statistics of the participants' mean scores on the pre-test and post-test of participant group using the teaching materials developed by the researcher are 115.55 and 131.20. It can be clearly seen that the mean score obtained on the post-test (131.20) is significantly higher than the one obtained on the pre-test (115.55) at $p < .05$.

Table 2 shows the comparison of the mean scores between pre-test and post-test of the group of participants who were taught for TOEIC preparation by using the commercial book, Longman Preparation Series for the New TOEIC Test Intermediate Course.

Scores	N		S.D.	T	p
Pre-Test	40	113.75	27.17	3.46*	0.001
Post-Test	40	131.25	34.13		

From the table 2, it can be seen that the descriptive statistics of the participants' mean scores on the pre-test and post-test of participant group using the commercial book, Longman Preparation Series for the New TOEIC Test Intermediate Course, are 113.75 and 131.25. It can be concluded that the

mean score of the post-test (131.20) is significantly higher than the one of the pre-test (115.55) at $p < .05$.

Table 3 shows the mean scores of the pre-test and post-test between the groups of participants who were taught for TOEIC preparation by using the commercial book, Longman Preparation Series for the New TOEIC Test Intermediate Course and the groups of participants who were taught for TOEIC preparation by using the teaching materials developed by the researcher, the progress scores, and the index of effectiveness.

Score	The teaching materials developed by the researcher		The commercial book	
		Percentage		Percentage
Pre-Test	115.55	57.8	113.75	56.58
Pro-Test	131.20	65.6	131.25	65.63
the progress scores	15.65	7.83	17.5	8.75
the index of effectiveness	0.002		0.002	

Table 3 shows that the progress scores of the participants in the teaching materials developed by the researcher (15.65) is slightly lower than the progress scores of the participants who were taught by using the commercial book (17.5). The index of effectiveness of the two groups are at the same level (0.002). Therefore, it can be concluded that there is no difference in the index of effectiveness between two groups.

Table 4 illustrates the comparison of the progress scores between the group of participants who were taught using the teaching material developed by the researcher and the group of participants who were taught using the commercial book.

The progress score	N		S.D.	T	p
The teaching material developed by the researcher	40	7.83	5.57	-4.32*	1.000
The commercial book	40	8.75	2.72		

On a closer inspection of Table 4, one can conclude that the average of the progress scores of teaching by the teaching materials developed by the researcher and teaching by the commercial book are 7.83 and 8.75. It can be argued that there is no significant difference between using the teaching materials developed by the researcher and using the commercial book in teaching TOEIC preparation for the participants at p level 1.000.

5. Conclusion

The main purpose of the research is to study the effect of grammar-based teaching on TOEIC preparation for occupational target group students as effective labors in the trade liberalization under ASEAN Economic Community.

For the participant group using the teaching materials developed by the researcher, the mean scores obtained on the post-test is significantly higher than the one obtained on the pre-test. For participant group using the commercial book as teaching material, the mean scores of the pre-test is significantly lower than the mean score of post-test.

Whatever method used to teach learners can make progress of language acquisition, so the scores of the post-test after learning should be higher than the scores of the pre-test.

In addition, to study the effect of teaching method should be done in many aspects. This will can help researchers get more deeply details in the effect. And These details can be studied in many ways. The result of the research can improve teaching material that can help learners get higher progress in English skills. English skills must be tested for choosing the labors in international community, ASEAN Economic Community. The reason why labors' English skills in AEC is important and must be tested is that English language is essential for communication between international community.

The answer of the main research question can be answered that grammar-based teaching material developed by the research well affect to English language progress of Burapha University students in an occupational target group to be ready for TOEIC.

The second purpose of the research is to compare the effect of grammar-based teaching material and commercial material's on TOEIC preparation for occupational target group students in Burapha university.

From the result of the research, the progress scores of two participant groups must be compared. The result of the research shows that the progress scores of the participants in the teaching materials developed by the researcher is slightly lower than the progress scores of the participants who were taught by using the commercial book. Because of slightly different between them, the index of effectiveness of the two groups are at the same level. There is no difference in the index of effectiveness between two groups.

The result of the research can answer the second research question clearly. When the progress scores of two participant groups were compared, there was no significantly difference between their index of effectiveness.

To study the effect of grammar-based teaching on TOEIC preparation for occupational target group students as effective labors in the trade liberalization under ASEAN Economic Community is the main purpose of the research. The result of the research can conclude that to develop grammar-based teaching material is the another choice for educators to prepare learners to take the TOEIC test. Grammar is still the core part of English language skills. Standardized tests usually include grammatical assessment. Some of test items are related to grammar knowledge. To strengthen grammar knowledge can help test takes get higher scores in the TOEIC Test.

Suggestions for Further Study

1. The further study should include the other types of errors that were not studied in this research because some errors in the participants' writing were not categorized in the checklist. These errors frequently occurred, so they should be studied.
2. The writing tasks that will be studied should be paralleled. This enables the result consistent.
3. The correlation between types of writing tasks and types of errors should be studied to create suitable activities in writing class.

References

AEC Monitoring. (n.d.). from http://asean.org/asean-economic-community/ aecmonitoring/

Azar, B. (2007). Grammar-Based Teaching: A practitioner's perspective. TESL-EJ, 11 (2).

Chancharoenchai, K. and Saraithong, W. (2012). The determinants of New coming workers' English proficiency in the ASEAN Economic Community: A Case of Thai

Vocational Students. The IISES International Interdisciplinary conference

Farzad, S.(2009). English as an International Language: Perspectives and Pedagogical Issues. British Library Cataloguing in Publication Data

Geffner, A. B. (2016). Business English (Sixth ed.). NewYork: Barron Educational Series.

Gerald, F.(2012). The Nation May 14, 2012.

Langan, J., & Johnson, B. (2015). English essentials: What everyone needs to know about grammar, punctuation, and usage. West Berlin, NJ: Townsend Press.

Lougheed, L. (2007). Longman preparation series for the new TOEIC® test intermediate course answer key. White Plains (N.Y.): Pearson Education.

Lougheed, L. (2015). http://lou

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A Study of Problem-Solving Abilities with Polya's Problem-Solving Process of Tenth-Grade Students at the Demonstration School of Ramkhamhaeng University

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Abstract

The purposes of this research were as follows. (1) To evaluate the learning management plans with Polya's problem-solving process. (2) To find out the effectiveness of the tests by using Polya's problem-solving process. (3) To compare outcomes of problem-solving learning with Polya's problem-solving process. (4) To compare problem-solving abilities with Polya's problem-solving process. (5) To study students' satisfaction with the use of Polya's problem-solving process in Physics with a topic of Momentum and Collisions of tenth-grade students.

The sample in this research consisted of tenth-grade students at the Demonstration School of Ramkhamhaeng University in a total of 2 classes, the 2nd semester, academic year 2016. The research was conducted by simple random sampling. The research instruments consisted of (1) a quality assessment form of learning management plans in a total of 4 sets in a topic of Momentum and Collisions. (2) An efficiency assessment form used with the test of Polya's problem-solving process. The results indicated the efficiency values of E1/E2 according to 80/80 standard criterion. (3) The comparison of outcomes of problem-solving abilities with Polya's problem-solving process. The results indicated the reliability of 0.73. (4) The comparison of problem-solving abilities with Polya's problem-solving process. The results also indicated the reliability of 0.73. (5) The study of students' satisfaction with the use of Polya's problem-solving process. The results indicated the reliability of 0.91. The statistics used in data analysis were mean, standard deviation and t-test.

The research findings indicated as follows: (1) The results of the quality assessment of all the four sets of the learning management plans in a topic of Momentum and Collisions were at a very good level. (2) The effectiveness of the learning management plans for problem solving with Polya's problem-solving process showed that the efficiency obtained from bringing total practice score and post-test scores filled into the table for calculation resulted in the value of E1/E2 at 80.61/81.8. (3) The students who received the learning management of problem solving with Polya's problem-solving process had higher post-test achievement scores in Physics (Momentum and Collisions) than pre-test achievement scores with a statistic significance of 0.05. (4) The students who received the learning management of problem solving with Polya's problem-solving process had higher post-test achievement scores measured by The problem-solving ability test by using 7 situations in Physics (Momentum and Collisions) than pre-test achievement scores with a statistic significance of 0.05. (5) The students who received the learning management of problem solving with Polya's problem-solving process had overall satisfaction with applying Polya's problem-solving process in problem solving with a topic of Momentum and Collisions at a good level.

Keyword: Learning Management Plans with Polya's Problem-Solving Process, Problem-Solving Abilities, Students Satisfaction

1. Introduction

Education is a cornerstone of country development. It helps in developing the youth of the country to grow with quality and potential as well as supporting them to get ready to be representatives and main forces to develop the country onwards. Therefore, it is a direct responsibility of teachers to train and refine these young people to grow up with quality and readiness to be good citizens who are responsible for society and the nation. However, it is difficult to manage education effectively and produce students with equal knowledge and skills. Since each student has a different background and aptitude, it is the responsibility of teachers to provide learning activities that facilitate the learning for diverse learners to the utmost. The National Education Act B.E. 2542 (1999) and Amendments (Second national Education Act B.E. 2545(2002), Section 22 mentions that "Educational management must be based on the principle that 'All learners have abilities to learn and develop themselves and are considered most important.' So the education management process must encourage students to develop naturally with their full potential." (Nattaporn Phoaem, 2007).

In the management of teaching sciences, one of major problems that is commonly found and discourages students to learn is Physics problem solving. The substance of physics subject is often related to many variables. To solve physics problems, students must have a clear understanding and be able to link variables to correlate meaningfully. Another problem found is a lack of confidence of students. When they have to solve a problem alone or try to do something dubiously, they will be hesitant to express their opinion, make a decision and take an immediate action for problem solving.

The researchers had taken the above two problems to research and find out solutions to improve the teaching to be more effective. Therefore, Polya's Four-Stage Method was used to solve these problems. In this learning management, students will have a clear solution to the problem including orderly steps and guidelines. Therefore, the problem analysis was conducted by separating each part distinctly. In the problem-solving process, students will divide parts of problem into identified variables and unidentified variables. Then, they need to find out correlation of variables and then link them to equations and theories. The analysis will be done on each student's mind map, which has 4 steps according to Polya's theory. When the correlations had been matched, the students will be able to choose correct equation or method to solve the problem. The final step is the process of verifying the validity of variables and answers if they are consistent with the theories or not. Polya's problem-solving process can help students solve physics problems more effectively.

The Purposes of the Study

1 To evaluate the learning management plans with Polya's problem-solving process.
2. To determine the effectiveness of the test with Polya's problem-solving process.
3. To compare the outcomes of problem-solving learning with Polya's problem-solving process.
4. To compare the problem-solving abilities with Polya's problem solving process.
5. To study the students satisfaction with Polya's 4-steps problem-solving process.

Literature Review

Mayer, Richard N. and Wittrock, Merlin C. (2006), and Akcaoglu, Mete. (2014) defied problem solving as a widely accepted skill for learners that is critical for self-development. Moreover, Akcaoglu, Mete. (2014) stated that the problem solving process must include understanding, substitution or symbolic representation, planning, and implementation. Problem-solving ability can be developed in many ways. However, the Akcaoglu's research had recommended a psychoanalytic program or visual programming that affects the problem-solving process of learners, especially in contexts related to calculation.

Passmore, T. (2007) stated that problem solving and child-centred learning have been recognized as the most appropriate method for studying mathematics at the school level or at some universities.

George Polya is a person who initiated a concept that involves motivating learners to find a solution to their problems (heurisitcs).

TERTEMIZ, N. and SULAK, Erkam S. (2013) had studied problem-posing skills by analyzing the data obtained from problem-solving and problem-posing techniques by using Polya's 4-step problem-solving process. The experiment results showed that this method worked effectively. Although it changed the value in the situation that assigned learners to solve the problem, it did not change the condition of the situation. Conversely, the change in the condition of the situation without changing what the students had done, the results showed that the learners could still solve problems.

Ankan, Elif E. and Unal H. (2015) had tested seventh-grade students in problem-solving and problem-posing abilities. The samples were 20 gifted students and 85 ordinary students. The data analyzed were both qualitative and quantitative data. The results indicated that the relationship of various problem-solving skills, abilities to address problems with several problem-solving methods and problem-posing abilities were interrelated indifferently among gifted students and ordinary students. In addition, the problem-solving process also depended on students' experiences as well.

Lee, Chun-Yi and Chen, Ming-Jang. (2015) had studied on the instruction with the use of Polya's problem-posing techniques in the subject of geometry with the secondary school level. It was found that students who received geometric instruction by using traditional lecture-based teaching methods could not develop rational skills in geometry problem solving. In this study, the teaching methods were modified by grouping learners into two groups, including a control group and an experimental group. The control group received the ordinary instruction. And the experimental group received the instruction with the use of Polya's 4-step solving-problem process. The results showed that the group that received the instruction with the use of Polya's 4-step solving-problem process had higher post-test achievement scores than the control group that received the ordinary instruction. In addition, the group that received the instruction with the use of Polya's 4-step problem-solving process were more involved in the learning process as well.

2. Methods

Study Sample

Population The population used in this study was tenth-grade students at the Demonstration School of Ramkhamhaeng University, the 2nd semester, academic year 2016, in a total of four classes.

Sample The samples used in this study were tenth-grade students at the Demonstration School of Ramkhamhaeng University, the 2nd semester, academic year 2016, in a total of two classes.

Research Instrument

The instruments used in this study were as follows.

1. The quality assessment form of the learning management plans in a total of 4 sets.
2. The test of Momentum and Collisions in a total of 20 items, which is a 4-choice objective test, and the problem-solving ability test by using 7 situations, which is a subjective test.
3. The satisfaction questionnaire for Polya's problem-solving process with 5-level rating scale as following details: 5 = highest level of satisfaction, 4 = high level of satisfaction, 3 = moderate level of satisfaction, 2 = low level of satisfaction, 1 = lowest level of satisfaction.

Research Methodology

The creation of the learning management plans for problem solving with Polya's problem-solving process in a topic of Momentum and Collisions adhered with the elements of the plans based on the instruction planning form of the Demonstration School of Ramkhamhaeng University and used the following instruments.

(1) Pre-test and post-test in a topic of Momentum and Collisions in a total of 20 items with 4 multiple choices.
(2) The problem-solving ability test by using 7 situations.
(3) In-class test in a total of 4 sets, 5 points each, for finding out the efficiency of E_1 and post-test in a total of 1 set, 20 points (full score).
(4) Creating a students' satisfaction questionnaire

The learning achievement tests and Polya's problem-solving abilities were used to find out Index of Item Objective Congruence (IOC). The results were found to be in a consistent level. Difficulty and discriminative power of the tests used 27% technique *of Chung Teh Fan*. The results indicated that the tests were in the range of 0.2-0.8. The reliability of the learning achievement tests was analyzed by using KR 20 Formula of Kuder-Richardson. The results were found to be 0.732 for all issues. And t-test was found at 15.493. The Polya's problem-solving ability test used reliability analysis with Cronbach's method. The reliability was found at 0.818 including mean of 24.03, standard deviation of 3.764 and t-test of 22.079. The satisfaction measurement used reliability analysis with Cronbach's method. The reliability was found at 0.904 including mean of 41.17 and standard deviation of 6.513.

Data Analysis

The researchers conducted the data collection in this study as following:
1) Pre-testing to assess before-class learning achievements in a topic of Momentum and Collisions in a total of 20 items with 4 multiple choices, and the problem-solving ability test by using 7 situations.
2) Experimenting by teaching according to the learning management plans with Polya's problem-solving process in a total of 4 sets, in-class test in a total of 4 tests, 20 points each and post-test to find out efficiency of E_1/E_2.
3) Post-testing to assess before-class learning achievements in a topic of Momentum and Collisions in a total of 20 items with 4 multiple choices and the problem-solving ability test by using 7 situations.
4) The questionnaire was used to measure satisfactions with Polya's problem-solving process.
The researchers analyzed the data by an interactive statistical program including the Arthetic Mean: $\bar{x}$, Standard Deviation (S.D.), finding out efficiency of the problem-solving test with Polya's problem-solving process (E_1/E_2), and the significant test by using t-dependent (t-test).

3. Results

Part 1 Effectiveness of the learning management plans with Polya's problem-solving process

From the assessment of the learning plans of Momentum and Collisions, it was found that the overall quality of the plans was at a very good level, as shown in the table.

Table 1 Effectiveness of the learning management plans with Polya's problem-solving process

Item	Evaluation List	Plan 1			Plan 2			Plan 3			Plan 4		
		$\bar{x}$	S.D.	Quality Level	$\bar{x}$	S.D.	Quality Level	$\bar{x}$	S.D.	Quality Level	$\bar{x}$	S.D.	Quality Level
1	The learning units were complete, proper and full of consistent details.	5.0000	.00000	Excellence	5.0000	.00000	Excellence	5.0000	.00000	Excellence	5.0000	.00000	Excellence
2	The learning management plans were consistent and associated with a defined learning units.	5.0000	.00000	Excellence	5.0000	.00000	Excellence	5.0000	.00000	Excellence	5.0000	.00000	Excellence
3	The learning management plans had entire key elements that were correlated each other.	4.3333	1.15470	Very Good	4.3333	1.15470	Very Good	4.6667	.57735	Excellence	4.3333	1.15470	Very Good
4	The written subject matters in the plans were correct.	4.3333	1.15470	Very Good	4.3333	1.15470	Very Good	5.0000	.00000	Excellence	4.6667	.57735	Excellence
5	The purposes of learning were clear and full of inclusive substances.	4.6667	.57735	Excellence	4.6667	.57735	Very Good	4.6667	.57735	Excellence	4.6667	.57735	Excellence
6	The objectives of learning could develop students in terms of knowledge, process skills and attitudes.	4.6667	.57735	Excellence	4.6667	.57735	Excellence	4.6667	.57735	Excellence	4.6667	.57735	Excellence
7	The objectives of learning were sort out from easy to difficulty.	4.6667	.57735	Excellence	4.6667	.57735	Excellence	4.6667	.57735	Excellence	4.6667	.57735	Excellence

Item	Evaluation List	Plan 1			Plan 2			Plan 3			Plan 4		
		$\bar{x}$	S.D.	Quality Level	$\bar{x}$	S.D.	Quality Level	$\bar{x}$	S.D.	Quality Level	$\bar{x}$	S.D.	Quality Level
8	The contents were defined suitably for class periods.	4.6667	.57735	Excellence	4.3333	.57735	Very Good	4.3333	.57735	Excellence	4.3333	.57735	Very Good
9	The learning activities were consistent with purposes and substances.	4.6667	.57735	Excellence	4.6667	.57735	Excellence	4.6667	.57735	Excellence	4.6667	.57735	Excellence
10	The learning activities were consistent with purposes and class levels of students	4.6667	.57735	Excellence	4.6667	.57735	Excellence	4.6667	.57735	Excellence	4.6667	.57735	Excellence
11	The learning activities were diverse and practical.	4.3333	1.15470	Very Good	4.0000	1.73205	Very Good	4.6667	.57735	Excellence	4.0000	1.73205	Very Good
12	The learning activities could promote thinking process of students.	4.0000	1.73205	Very Good	4.0000	1.73205	Very Good	4.3333	1.15470	Very Good	4.0000	1.73205	Very Good
13	The activities focused on learning from real practices.	4.3333	1.15470	Very Good	4.0000	1.73205	Very Good	4.3333	1.15470	Very Good	4.0000	1.73205	Very Good
14	The learning activities were intervened in quality and good values.	4.0000	1.73205	Very Good	4.0000	1.73205	Very Good	4.0000	1.73205	Very Good	3.6667	1.52753	Very Good
15	Equipment, media, and learning resources were various to the substance.	4.0000	1.73205	Very Good	4.0000	1.73205	Very Good	4.3333	1.15470	Very Good	4.0000	1.73205	Very Good
16	Equipment, media, and learning resources were appropriate to the substance.	4.0000	1.73205	Very Good	3.6667	1.52753	Very Good	4.3333	1.15470	Very Good	4.0000	1.73205	Very Good
17	Students used media and learning resources by themselves.	4.3333	1.15470	Very Good	4.0000	1.73205	Very Good	4.3333	1.15470	Very Good	4.0000	1.73205	Very Good
18	Students made work pieces by using their own knowledge and thinking	4.0000	1.73205	Very Good	4.0000	1.73205	Very Good	4.3333	1.15470	Very Good	4.0000	1.73205	Very Good

Item	Evaluation List	Plan 1			Plan 2			Plan 3			Plan 4		
		$\bar{x}$	S.D.	Quality Level	$\bar{x}$	S.D.	Quality Level	$\bar{x}$	S.D.	Quality Level	$\bar{x}$	S.D.	Quality Level
	rather than following teachers' assignments.												
19	The assessments were correspond to the learning objectives.	4.0000	1.73205	Very Good	4.0000	1.73205	Very Good	4.6667	.57735	Excellence	4.3333	1.15470	Very Good
	Total	**4.3333**	**1.15470**	**Very Good**	**4.2982**	**1.12554**	**Very Good**	**4.3158**	**1.13981**	**Very Good**	**4.2982**	**1.12554**	**Very Good**

Part 2 Results of finding out efficiency of the test with Polya's problem-solving process

The test was measured its effectiveness of the actual teaching. From the calculation to find out efficiency by bringing the total practice score and the post-test scores to fill in the table to calculate, E_1/E_2 were found at 80.61/81.84 as shown in Table 2.

Table 2 Results of the effectiveness of the learning management plans with Polya's problem-solving process

Number of Students (49 students)	**In-class Score**				**Total (20 points)**	**Post-test Score (20 points)**
	Learning Plan 1 (5 points)	**Learning Plan 2 (5 points)**	**Learning Plan 3 (5 points)**	**Learning Plan 4 (5 points)**		
ΣX	195	197	198	200	790	802
$\bar{x}$	3.98	4.02	4.04	4.08	16.12	16.37
S.D	.63	.63	.58	.53	1.65	.81
Percentage	E_1 79.59	E_1 = 80.41	E_1 = 81.63	E_1 = 80.64	E_1 = 80.61	E_2 = 81.84
E_1/E_2	**80.61/81.84**					

Part 3 Comparison of before-class and after-class outcomes of solving-problem learning with Polya's problem-solving process

From Table 3, the data analysis results indicate the average scores of before-class and after-class outcomes of problem-solving learning with Polya's problem-solving process were different with a statistical significance level of 0.05. These results were consistent with the research hypothesis defined. The mean after the learning management was at 11.16 (S.D. = 1.72), which was higher than the mean before the learning management of 6.14 (S.D. = 1.74).

Table 3 Results of comparison of before-class and after-class outcomes of problem-solving learning with Polya's problem-solving process

Score	**Total**	**Full Score**	$\bar{x}$	**S.D.**	**t-test**	**Sig.**
Pre-test	49	20	6.142	1.744	15.493	.000
Post-test	49	20	11.163	1.724		

Part 4 Comparison of before-class and after-class problem-solving abilities with Polya's problem-solving process

From Table 4, the results of the data analysis showed that the average scores of before-class and after-class problem-solving abilities with Polya's problem-solving process were different with a statistical significance level of 0.05. These results were consistent with the research hypothesis defined. The mean after the learning management was at 27.86 (S.D. = 2.79), which was higher than the mean before the learning management of 10.70 (S.D. = 5.77).

Table 4 Results of Comparison of before-class and after-class problem-solving abilities with Polya's problem-solving process

Score	Total	Full Score	$\bar{x}$	S.D.	t-test	Sig.
Pre-test	49	35	10.704	5.770	-22.079	.000
Post-test	49	35	27.857	2.791		

Part 5: The study of students' satisfaction in problem solving by using Polya's process

From Table 5, the results of the data analysis revealed that the students were overall satisfied with Polya's problem-solving process. The average score was at a very high level ($\bar{x}$ = 3.65, S.D. = 0.59). While considering in each learning topic, the students were satisfied with the learning of Polya's problem-solving process. The averages were at a very high level in every learning topic. The averages can be sorted in descending order as following: Collision in One Dimension and Conservation of *Momentum* ($\bar{x}$ = 3.70, S.D. = 0.61), Collision in Two Dimensions and Explosion ($\bar{x}$ = 3.68, S.D. = 0.74), Momentum, Impulse and Impulsive Force ($\bar{x}$ = 3.67, S.D. = 0.65), and Flexible and Inflexible Collisions ($\bar{x}$ = 3.59, S.D. =0.63).

Table 5 Study results of students' satisfaction in Polya's problem-solving process

Students' satisfaction in Polya's problem-solving process	$\bar{x}$	S.D.	Satisfaction Level
1. Topic: Momentum, Impulse and Impulsive Force	3.6735	.65789	High
2. Topic: Collision in One Dimension and Conservation of *Momentum*	3.7007	.61706	High
3. Topic: Flexible and Inflexible Collisions	3.5918	.63925	High

4. Topic: Collision in Two Dimensions and Explosion	3.6803	.74212	High
Total	3.6616	.59595	High

Discussion

From the study of the use of Polya's problem-solving process in the learning management, the findings indicated as follows: 1. The quality of the learning management plans in a total of 4 sets were at a very good level and can be actually used in the learning management. 2. The effectiveness of the learning management plans for problem solving with Polya's problem-solving process was found that the efficiency of the total practice score and the post-test scores filled into the table for calculation resulted in the values of E_1/E_2 at 80.61/81.84, according to a standard criteria. 3. The students who received the learning management for problem solving with Polya's problem-solving process had the pre-test achievement scores with the mean of 6.14 points and standard deviation of 1.74 points and the post-test achievement scores with a mean of 11.16 points and standard deviation of 1.72 points. As a result, the before-class standard deviation was lower than the after-class standard deviation. This represented that the students who received the learning management with Polya's problem-solving process had a higher overall learning achievement. It means that Polya's problem-solving process could improve self-development of the sample. This was consistent with the post-test achievement scores which were higher than the pre-test achievement scores at a statistical significance level of 0.05. In conclusion, to accomplish problem solving, a learner needs to have clear and concrete steps. According to the study of Lee, Chun-Yi and Chen, Ming-Jang (2015), the teaching with Polya's problem-posing techniques in the geometry study of secondary school students indicated as follows: The sample who received the learning management with the Poly's process had higher post-test achievement scores than pre-test achievement scores of the control group who received the ordinary instruction. 4. The students who received the learning management for problem solving with Poly's problem-solving process were tested with the problem-solving ability test by using 7 situations. The results indicated that they had pre-test achievement scores in problem solving with the mean of 10.70 points and standard deviation of 5.77 points as well as post-test achievement scores with the mean of 27.86 points and standard deviation of 2.79. It was found that the results of before-class standard deviation was higher than after-class standard deviation. This represents that the students who received the learning management with Polya's problem-solving process had more effective problem-solving abilities. This was consistent with post-test achievement scores of problem solving that were higher than pre-test achievement scores with a statistical significance level of 0.05. Similarly, Akcaoglu, Mete. (2014) stated that the problem-solving process must include understanding, substitution or symbolic *representation* for a clearer illustration, and planning before implementing following the plan. This can support students to develop problem-solving skills and improve problem-solving abilities to be more effectively. Moreover, the research by TERTEMIZ, N. and SULAK, Erkam S. (2013) also

supports problem-solving skills. It was found that students who received the learning management for problem solving with Polya's problem-solving process could solve problems well. Although the given situation was adjusted, the original condition still remained. Or the condition of the situation was adjusted, but the problem-solving process that students had already trained was used. The results indicated that the change in the condition did not affect the students' problem-solving abilities. This represented that the implementation following Polya's problem-solving process can be used to solve problems of various situations. 5. The students were satisfied in applying Polya's problem-solving process with other subjects relating to calculation at a good level. And the students were satisfied with the learning management for problem solving with Polya's problem-solving process at a good level.

References

Nattaporn, P., The development of learning outcomes on problem solving of fourth grade students taught by Tai technique together with the Polya process, *Master Thesis of Education Department of Curriculum and Instruction Graduate School at Silpakorn University, Thailand, 2007.*

National Education Act of B.E. 2542 (1999), *(revision)* no. 2 (B.E.2545), retrieved from http://media.wix.com/ugd/2cef27_c7c9894bd94e7b6e42e48f128de.37069pdf on 7 April 2014.

Akcaoglu, M., Learning Problem-Solving through Making Games at the Game Design and Learning Summer Program, *Educational Technology Research and Development*, 62(5), 2014, 583-600.

Ankan, E. E., and Unal H., Investigation of Problem-Solving and Problem-Posing Abilities of Seventh-Grade Students, *Educational Sciences : Theory & Practice*, 15(5), 2015, 1403-1416.

Lee, C., and Chen, M., Effects of Polya Questioning Instruction for Geometry Reasoning in Junior High School, *Eurasia Journal of Mathematics, Science & Technology Education,* 11(6), 2015, 1547-1561.

Mayer, R. N., and Wittrock, M. C., Problem solving, *In Alexander, P. A.*, *& Winnie, P. H.*, *(ed), Handbook of Educational Psychology*, *Routledge*, Vol 2, 2006, 287-303.

Passmore, T., Polya's legacy: fully forgotten or getting a new perspective in theory and practice, *Journal of Australian Senior Mathematics*, 21(2), 2007, 44-53.

Polya, G., How to solve It, *New York: Doubleday & Company*, 1957.

TERTEMIZ, N., and SULAK, E. S., The Examination of the Fifth-Grade Students' Problem Posing Skills, *Elementary Education online*, 12(3), 2013, 713-729

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A Study on Achievement Goal Model of Undergraduates in Bangkok Metropolitan

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Abstract

This research, a study on achievement goal model of undergraduate students in Bangkok Metropolitan, aims to (a) study Achievement Goal Model of Undergraduates in Bangkok Metropolitan (b) investigate the instrument, 3X2 Achievement Goal Questionnaire AGQ (Elliot, Maruyama, & Pekrun, 2011), the reliability, and the validity. The statistics used in this study is Confirmatory Factor Analysis (CFA). The population of this study consisted of undergraduate students who enrolled in Government University in 2014. The sample included 1000 undergraduate students who enrolled in Semester 2/2014 by using the multi-stage random sampling. The instrument Achievement Goal Questionnaire was translated into Thai. This questionnaire included items which used 7 point likert scales. Six factors involved (a) Task-approach goal items (b) Task-avoidance goal items (c) Self-approach goal items (d) Self-avoidance goal items (e) Otherapproach goal items (f) Other-avoidance goal items. CFA was used: The result showed that all the items loaded significantly into their respective latent factors. The fit index were 2 = 145.51, df = 82, p-value = 0.00002; 2/df = 1.77; RMSEA = .027; RMR = .057; SRMR =.023; CFI = 1.00; GFI = .98; AGFI = .97; CN = 817.90. The achievement goal variables: (a) Task-approach goal items (= .85) (b) Task-avoidance goal (= .94) (c) Self-approach goal (= .86) (d) Self-avoidance goal (= .99) (e) Otherapproach goal (= .94) (f) Other-avoidance goal (= .93).

Keyword: Achievement Goal, Undergraduates, Self-avoidance, Task-Approach, TaskAvoidance, Self-Approach

1. Introduction

Thailand's education reform has started since 1999. Educators of Ministry of Education (2004:3) defined learning reform as follows: a shift of thinking and teaching methods into the true learning and endowing learners with desirable attributes to become a complete person. According to Prawase Wasi (2002: a) learning reform is at the heart of education reform. Learning reform is a shift on focusing on subject matters to human beings or learners, in other words, a learner-centered approach. This idea corresponds to the concept mentioned by Dechakup (The Office of Academic Promotion and Registration 2012: cited in Dechakup 2007) who defined learning reform as learning management that focuses on how learners create new knowledge and innovation through cognitive process (thinking process), social process (group process). By interacting and participating with learning, learners are able to apply knowledge in their life. Teachers serve only as facilitators. In learner-centered approach, teaching shall be aligned with learners' interests and aptitudes. Emphasis is placed on a balanced integration of subject matter and use of various teaching methods and sources to achieve multi-intelligences. A variety of assessment techniques is also applied. In section 24, learning processes can be summarized as follows 1) provide training in line with learner's living and occupation 2) Incorporate learner-centered approach into daily situation and occupation 3) learning environment, sources of knowledge and learning process must be in harmony. To date, we have entered the second decade of education reform. Office of Education Council (2011) proposed to improve education and learning by focusing on improving skills of teachers. Despite the fact that universities provide complete set of training and knowledge and that teaching body is of high quality, to produce high potential graduates requires some qualifications of learners themselves. According to the National Education Guidelines in National Education Act B.E.2542 (1999) and revised version (2.edition) B.E.2545 (2002) and (3.edition) B.E.2553 (2010), Education shall be based on principle that all learners are capable of learning and self-development and are regarded as being most important. Education through formal, non-formal and informal approaches shall give emphasis to knowledge, morality, learning process. Motivation is an internal drive that propels individual to take action and defines what, when and how learners shall learn (Pintric 2003). On the other hand, unmotivated learners tend to give up easily on learning and fail to reflect upon how to improve their school performance. Often regarding activities in classrooms as burdens, unmotivated learners are unwilling to pursue understanding about complex contents **(**Schunk, Pintrich, & Meece. 2008**)**. It was apparent that motivation affects behavior, learning as well as learning determination in terms of setting goal. According to Locke and Latham's goal-setting theory **(**Locke & Latham. 1993**)** there have been fewer studies on context-based achievement goal than other theories. In other theories, context is given in forms of examinations or reports. The achievement goal model targets a broader goal, namely learning of a subject or a field. This

unspecificness brings about uncertainty about cross-situational relation of the model as it should be used to explain learning at the macro level (undergraduates' program) as well as at the micro level (subjects). In the past, it was found that achievement goal model was used to explain learning only at the school level.

The survey of Program for International Student Assessment: PISA, showed that learning commitment of Thai students was lower than average. 25.4% of Thai students had reportedly low learning commitment, putting the country the 16th from 42 countries in the program. (Willms, 2003,p. 66) Successful learners have strong commitment. According to Weiner (Weiner, 1990) committed learners are highly motivated. This idea is gaining attention in present day, as goal-setting is a major factor for achievement. Achievement Goal Orientation, in particular, is one of the theories that are employed to explain learning behavior (Pintrich, 2000). There have been studies on Achievement Goal in international journals from 2007-2012 and over 100 articles were found on Science Direct database during that period. Individual's action is directed by achievement and reasons behind the action (Ames, 1992, Urdan, 1997 and Elliot, 1999). Learning commitment, therefore, depends not only on a goal but also on the nature of the goal.

Hulleman (2010) studied 2x2 Achievement Goal Framework by Elliot & McGregor (2001) and considered it comprehensive goal framework. The Achievement Goals include 4 types: 1) Performance-Approach Goal: learners try to outperform others 2) Performance-Avoidance Goal: learners avoid performing more poorly than others do **3)** Mastery-Approach Goal: learners are focused on developing their skills **4)** Mastery-Avoidance Goal: learners strive to avoid intrapersonal or absolute incompetence. Each learner possesses a mixture of these 4 goals. However, according to Surawit Assapan (2013), 2x2 Achievement Goal Framework by Hulleman, et al. (2010) indicated some incongruence with empirical data, forcing researchers to find other achievement goal framework. Elliot Murayama & Pekrun (2011) investigated **3**x2 achievement goal framework, suggesting the distinction between mastery goal and performance goal. Goals, therefore, should be considered in three settings: Task-approach, Self-approach and Other- approach along with dichotomy of approach and avoidance. In task-approach, task serves as appraisal criteria (e.g. Do learners know the right answer and understand concepts?) Task-involved learners seek to achieve the result they expected. In Self-approach goal, present performance is compared to the past. Self-involved learners evaluate themselves by comparing their current performance with the past, based on which future potential can be predicted. Lastly, Other-approach goal entails evaluating performance by comparing oneself with others and seeing if one's own work is superior or inferior to others'.

From the above investigation, 3x2 Achievement Goal by Elliot Murayama & Pekrun **(2011)** could be defined as Mastery Goal. Elliot Murayama & Pekrun identified the dichotomy 1) task involvement 2) ego involvement. These two types of goal occur simultaneously. For example, a task-involved student is interested in understanding a subject, while ego-involved learner wants to expand his knowledge. At some points these two goals share a common ground, inasmuch as a learner perceives capacity based on his discretion. These two settings also support self-control so that learner can achieve a goal. At a closer look, task involvement and ego involvement goals affect differently; for example, while playing crossword, a child may just focus on finding the words without worrying about the past achievement, while the other strives to perform better than yesterday. In that case, the mechanisms that direct the action of these two children are naturally different, reflecting distinction between task involvement and ego involvement goals. Against this background, I took interest in exploring 3x2 Achievement Goal Model with undergraduate students in universities in Bangkok.

2. Objectives

To explore Achievement Goal Model of undergraduate students in Bangkok. 2) To investigate the quality of the instrument, 3x2 Achievement Goal Questionnaire: AGQ (Elliot, Maruyama, & Pekrun, 2011) by using Cronbach's alpha, construct validity by means of Confirmatory Factor Analysis (CFA).

3. Methodology

The subject of this study was undergraduate students who enrolled in universities under Office of the Higher Education Commission in Bangkok and vicinity in 2014.

3.1 Sample

The Sample of this research included undergraduate students who enrolled in state universities in Bangkok in Semester 2/2014 selected by Multi-Stage Random Sampling. At the first step, from 5 types of universities, 2 universities for each type were picked up randomly. Then, a faculty was selected from science, social science and humanity fields each. From each faculty, a group of 50 students was picked, totaling 1,000 students. The sample students may study different subjects.

3.2 Data Collection

Determine target universities 2. Researcher sent letters to the selected universities to ask for cooperation in data collection 3. Upon approval from deans, researcher started to collect data 4. Collect 1,000 sets of questionnaire for further analysis.

3.3 Instrument

The Instrument employed in this research was Achievement Goal Questionnaire (AGQ) by Elliot, Murayama & Pekrun (2011) English Version.

3.4 Procedure

3.4.1. The questionnaire included items with 7 point likert scales covering six factors as follows: Task-approach goal items, Task-avoidance goal items, Self-approach goal items, Self-avoidance goal items, Other-approach goal items and Other-avoidance goal items. There were 18 items.

3.4.2. Explore studies and researches in Thailand and foreign countries on Achievement Goals 3. Researcher presented the questionnaire to 5 experts for content validity 4. 100 students from Ramkamhaeng, Srinakarinwirot, Rajamangala University of Krungthep, University of the Thai Chamber of Commerce, Rajamangala University of Technology Thonburi who were not the sample pretested the approved and modified questionnaire in order to determine Cronbach's Alpha Coefficient, Test-Retest Reliability, Item- Total Correlation Coefficient as well as Parallel Test of Thai and English Version to be applied with undergraduate students in English Program, Faculty of Humanities, Srinakarinwirot. The questionnaire included 2 parts 1) General information e.g. sex, age, semester, field, faculty and university 2) Thai Version of Achievement Goals Questionnaire (AGQ) by Elliot, Murayama & Pekrun (2011) with 7 point likert scales includes strongly agree, agree, more or less agree, undecided, more or less disagree, disagree, strongly disagree. There were 18 items or 6 types of questions, of which order was not based on question types.

4. Data Analysis

Determine statistics such as mean, standard deviation of the questionnaire 2. Analyze the quality of the questionnaire 2.1 Test-Retest and Parallel test Reliability by Pearson's Product Moment Correlation Coefficient 2.2 Internal Consistency Reliability by Cronbach's Alpha Coefficient 2.3 Corrected Item-Total Correlation (CITC)

3. Hypothesis testing by Confirmatory Factor Analysis (CFA)

5. Results

5.1. Achievement Goal Model was compatible with empirical data. The fit indices were χ^2 = 145.51, df = 82, p-value = 0.00002; χ^2 / df = 1.77; RMSEA = .027; RMR = .057; SRMR = .023; CFI = 1.00; GFI = .98; AGFI = .97; CN = 817.90.

Model estimation:

5.1.1 Achievement Goals include 6 major indicators; Task-approach goal item (λ = .85) Task-avoidance goal (λ = .94) Self-approach goal (λ = .86) Self-avoidance goal (λ = .99) Other-approach goal (λ = .94) and Other-avoidance goal (λ = .93).

5.1.2 Task-approach goal consists of 3 components including desire to avoid lower scores comparing to scores in the past (λ = .44), desire to know the right answer (λ = .73) and desire to avoid misunderstanding about content of the subject

(λ = .64)

5.1.3 Task-avoidance goal comprises three components; desire to understand the content in this examination as much as possible (λ = .69)

Desire to avoid getting lower scores than those of other students in the same subject (λ = .40) desire to get scores more than other students in the same subject (λ = .48)

5.1.4 Self-approach goal entails three components; desire to get higher scores than those achieved in the past (λ = .76) Desire to get higher scores than those of classmates in the same subject (λ = .53) Desire to come up with as many right answers as possible (λ = .79).

5.1.5 Self-avoidance goal consist of 3 components; desire to avoid lower scores than in the past (λ = .62) Desire to avoid wrong answer in the test (λ = .65) Desire to avoid getting lower scores than other classmates in the subject (λ = .60)

5.1.6 Other-approach goal comprises 3 components: Desire to get as good scores as in the past (λ = .68) Desire to avoid getting lower scores than in the past (λ = .60) Desire to get higher scores than in the past (λ = .77)

1.7 Other-avoidance goal consists of 3 components; desire to get higher scores (λ = .72) Desire to avoid getting low scores (λ = .72)

Desire to avoid not-knowing the answers (λ = .51)

6. Discussion

Confirmatory factor analysis was used to evaluate construct validity. It was found that Achievement goal model fit empirical data based on chi-square $x^2/df = 1.77$, AGFI = 0.97, CFI = 1.00. Deviations of the model was shown by Standardized RMR = .023 and RMSEA = 0.27.

The 7-point-likert-scale model was found to fit empirical data providing that x^2/df should be below < 3.00 according to Mueller (Seree Chadchaem, 2004, 29; cited in Mueller, 1996). It indicates that observable variables and latent variables fit the empirical data based on GFI and AGFI > 0.90. Diamantopoulos & Siguaw (Seree Chadchaem, 2003, 29; cited Diamantopoulos & Siguaw, 2000) suggested that GFI and AGFI are supposed to be above 0.90. and CFI of each model to be above 0.95. Hu and Bentler (Seree Chadchaem, 2003, 29; cited in Diamantopoulos & Siguaw, 2000) recommended

that GFI and AGFI be above 0.90. and CFI of each model be above 0.95. Deviation of the model was shown by standardized RMR that should be below 0.08 and RMSEA below 0.06. The results met the criteria, suggesting that the model corresponded to empirical evidence.

Regarding construct validity of the model, correlation coefficients of convergent validity ranged between .262 - .571, which met the criteria of Cambell and Fiske (Sirichai Kanchanawasee, 2005, 126 from Cambell & Fiske, 1959). This kind of measurement requires a high correlation. In task-avoidance goal, where correlation coefficient should be below 0.50, its correlation coefficient ranged between 0.262 - 0.401. This was probably due to the fact that the answers were short and negative. The result corresponded to the investigation by Sirichai Kanchanawasee (2005, 89) stating that providing too little time for completing a questionnaire would prompt respondents to guess the answers, resulting in score distribution that is different from when the reasonable amount of time is provided. Correlation coefficient of discriminant validity ranged between .262 - .571

References

Ames, C. (1992). Classrooms: Goals, Structures, and Student Motivation. *Journal of Educational Psychology, 84*(3), 261-271.

Ames, C., & Archer, J. (1987). Mothers' Beliefs About the Role of Ability and Effort in School Learning. *Journal of Educational Psychology, 79*(4), 409-414.

Ames, C., & Archer, J. (1988). Achievement Goals in the Classroom: Students' Learning Strategies and Motivation Processes. *Journal of Educational Psychology, 80*(3), 260-267.

Baranik, L. E., Barron, K. E., & Finney, S. J. (2007). Measuring Goal Orientation in a Work Domain. *Educational and Psychological Measurement, 67*(4), 697-718.

Barron, K. E., & Harackiewicz, J. M. (2001). Achievement goals and optimal motivation: Testing multiple goal models. *Journal of Personality and Social Psychology, 80*(5), 706-722.

Brett, J. F., & VandeWalle, D. (1999). Goal Orientation and Goal Content as Predictors of Performance in a Training Program. *Journal of Applied Psychology, 84*(6), 863-873.

Cury, F., Elliot, A. J., Da Fonseca, D., & Moller, A. C. (2006). The social-cognitive model of achievement motivation and the 2 × 2 achievement goal framework. *Journal of Personality and Social Psychology, 90*(4), 666-679.

Dejitthirat, K. (2004). *Avoidnace Motivation: It's Manifestation in Goals across Cultures.* Unpublished Dissertation Ph.D. (Motivation and Human Development), University of Texas at Austin, Texas.

Duda, J. L., & Nicholls, J. G. (1992). Dimensions of Achievement Motivation in Schoolwork and Sport. *Journal of Educational Psychology, 84*(3), 290-299.

Dweck, C., & Elliott, E. S. (1983). Achievement Motivation. In P. H. Mussen (Ed.), *Handbook of Child Psychology* (Vol. 4, pp. 643-691). New York: John Wiley.

Dweck, C., & Leggett, E. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95*(2), 256-273.

Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist, 34*(3), 169-189.

Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology, 72*(1), 218-232.

Elliot, A. J., & Fryer, J. W. (2008). The Goal Construct in Psychology. In J. Y. Shah & W. L. Gardner (Eds.), *Handbook of Motivation Science* (pp. 235-250). New York, NY: The Guilford Press.

Elliot, A. J., & Harackiewicz, J. M. (1996). Approach and Avoidance Achievement Goals and Intrinsic Motivation: A Mediational Analysis. *Journal of Personality and Social Psychology, 70*(3), 461-475.

Elliot, A. J., & McGregor, H. A. (2001). A 2 × 2 Achievement Goal Framework. *Journal of Personality and Social Psychology, 80*(3), 501-519.

Elliot, A. J., & Murayama, K. (2008). On the Measurement of Achievement Goals: Critique, Illustration, and Application. *Journal of Educational Psychology, 100*(3), 613-628.

Elliot, A. J., Murayama, K., & Pekrun, R. (2011). A 3 x 2 Achievement Goal Model. *Journal of Educational Psychology, 103*(3), 632-648.

Elliot, A. J., & Thrash, T. M. (2002). Approach-avoidance motivation in personality: Approach and avoidance temperaments and goals. *Journal of Personality and Social Psychology, 82*(5), 804-818.

Elliott, E. S., & Dweck, C. S. (1988). Goals: An Approach to Motivation and Achievement. *Journal of Personality and Social Psychology, 54*(1), 5-12.

Finney, S. J., Pieper, S. L., & Barron, K. E. (2004). Examining the Psychometric Properties of the Achievement Goal Questionnaire in a General Academic Context. *Educational and Psychological Measurement, 64*(2), 365-382.

Grant, H., & Dweck, C. S. (2003). Clarifying Achievement Goals and Their Impact. *Journal of Personality and Social Psychology, 85*(3), 541-553.

Harackiewicz, J. M., & Sansone, C. (1991). Goals and Intrinsic Motivation: You Can Get There from Here. In M. L. Maehr & P. R. Pintrich (Eds.), *Advances in Motivation and Achievement* (Vol. 7, pp. 21-49). Greenwich, CT: JAI Press.

Hulleman, C. S., Schrager, S. M., Bodmann, S. M., & Harackiewicz, J. M. (2010). A Meta-Analytic Review of Achievement Goal Measures: Different Labels for the Same Constructs or Different Constructs With Similar Labels? *Psychological Bulletin, 136*(3), 422-449.

Lepper, M. R., Corpus, J. H., & Iyengar, S. S. (2005). Intrinsic and Extrinsic Motivational Orientations in the Classroom: Age Differences and Academic Correlates. *Journal of Educational Psychology, 97*(2), 184-196.

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, N.J.: Prentice Hall.

Maehr, M. L., & Midgley, C. (1991). Enhancing Student Motivation: A Schoolwide Approach. *Educational Psychologist, 26*(3), 399-427.

Middleton, M. J., & Midgley, C. (1997). Avoiding the Demonstration of Lack of Ability: An Underexplored Aspect of Goal Theory.*Journal of Educational Psychology, 89*(4), 710-718.

Midgley, C., Arunkumar, R., & Urdan, T. C. (1996). "If I Don't Do Well Tomorrow, There's a Reason": Predictors of Adolescents' Use of Academic SelfHandicapping Strategies. *Journal of Educational Psychology, 88*(3), 423-434.

Midgley, C., Kaplan, A., Middleton, M., Maehr, M. L., Urdan, T., Anderman, L. H., et al. (1998). The Development and Validation of Scales Assessing Students' Achievement Goal Orientations. *Contemporary Educational Psychology, 23*(2), 113-131.

Midgley, C., Maehr, M., Hruda, L. Z., Anderman, E., Anderman, L., Freeman, K. E., et al. (2000). *Manual for the Patterns of Adaptive Learning Scales* Michigan: University of Michigan

Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review, 91*(3), 328-346.

Okun, M. A., Fairholme, C., Karoly, P., Ruehlman, L. S., & Newton, C. (2006). Academic goals, goal process cognition, and exam performance among college students. *Learning and Individual Differences, 16*(3), 255-265.

Pintrich, P. R. (2000). An Achievement Goal Theory Perspective on Issues in Motivation Terminology, Theory, and Research. *Contemporary Educational Psychology, 25*(1), 92-104.

Pintrich, P. R. (2003). A Motivational Science Perspective on the Role of Student Motivation in Learning and Teaching Contexts. *Journal of Educational Psychology, 95*(4), 667-686.

Schunk, D. H., Pintrich, P. R., & Meece, J. L. (2008). *Motivation in Education: Theory, Research, and Applications* (3 ed.). Upper Saddle River, New Jersey: Pearson Education.

Schunk, D. H., Pintrich, P. R., & Meece, J. L. (2008). Motivation in education: Theory, research, and applications. Retrieved from http://www.lavoisier.fr/livre/notice.asp?id=OR2W33ASRAAOWB

Skaalvik, E. M. (1997). Self-Enhancing and Self-Defeating Ego Orientation: Relations With Task and Avoidance Orientation, Achievement, Self-Perceptions, and Anxiety. *Journal of Educational Psychology, 89*(1), 71-81.

Urdan, T., & Mestas, M. (2006). The Goals Behind Performance Goals. *Journal of Educational Psychology, 98*(2), 354-365.

Urdan, T. C. (1997). Examining the Relations among Early Adolescent Students' Goals and Friends' Orientation toward Effort and Achievement in School. *Contemporary Educational Psychology, 22*(2), 165-191.

Urdan, T. C., & Maehr, M. L. (1995). Beyond a Two-Goal Theory of Motivation and Achievement: A Case for Social Goals. *Review of Educational Research, 65*(3), 213-243.

Vandewalle, D. (1997). Development and Validation of a Work Domain Goal Orientation Instrument. *Educational and Psychological Measurement, 57*(6), 995-1015.

Weiner, B. (1990). History of Motivational Research in Education. *Journal of Educational Psychology, 82*(4), 616-622.

Willms, J. D. (2003). Student engagement at school: A sense of belonging and participation results from PISA 2000

Creating an Online EFL Class Curriculum to Increase Student Engagement

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Abstract

This paper examines how online EFL curriculum classes may be designed to increase student engagement via three concrete ways: insuring that curriculum and lessons are relevant and pertinent to the students' identities, providing opportunities to students to express any technological burnout they may be experiencing, and finally ensuring that teachers are confident in their ability to teach and use the technology utilized in the online classroom. With more and more schools choosing to add elements of an online curriculum the need for educational organizations to address the issues that coming along with it will increase. Many schools are also choosing to create hybrid English programs to teach not only language skills but also technological ones. However, problems of student disengagement, student burnout and teacher dissatisfaction create the risk of negative learning outcomes. Using the theoretical framework set forth by the contextual learning curriculum theory, this literature review paper looks at how student engagement may be increased and specific recommendations made for online EFL curriculum developers.

Keyword: Online EFL classroom curriculum, Online student engagement, Online student identity, Technological burnout, Online teacher training

1. Introduction

As technology moves forward, more and more schools are recognizing the need to implement an online component to their curriculum. Their popularity can be seen in the growth of educational apps, and online classrooms. However, with all of the positive effects that come with online technology there are also new and challenging hurdles that must be overcome. Learner disengagement in the online learning community is a tough and real problem. This disengagement, for whatever reasons, has very serious consequences. Some online classes such as those offered by a venture by NYU flopped, and some colleges report high dropout rates in classes that are completely virtual (Young, 2002). In a study by Mupinga, Nora, and Yaw, (2006) on online learning styles, the authors recognized that successful online students must fulfill at least three requirements. Students must be adequately knowledge about the hardware and software of the online classes, they must have high levels of self-motivation and self-discipline, and they must promptly speak to instructors upon having problems (Howland & Moore, 2002). In the EFL context many schools have chosen to add hybrid class styles to supplement physical classes to give students more opportunities to practice their language skills. This paper will look at how an online EFL curriculum may lower student disengagement by giving students more autonomy, increasing teacher training and support, and providing ample opportunities to students to express any technological burnout that they may be experiencing

2. Problem Statement

As mentioned earlier, there has been a boom of online education programs. This new frontier of learning also brings with it its own set of unique problems. According to Winiecki (1999) success in an online program may require students to modify and change their classroom experiences to achieve their learning goals. Also, one big mistake is that in online classes the focus is on the technology and not necessarily on the students and the learning experience (Sherry, 1996). The success of online learning programs depends on a combination of learning enhancing content and effective technology to facilitate the interactive element of the learning experience (Combe, 2005) Disengagement is often thought of as one of the major problems with online learning classes, as it relies on students to self – regulate and interact with the curriculum on their own. According to a study done by Peterson, “there is the lack of sociological interactions that occurs in a classroom which help to further deepen knowledge areas. Arguably, the academic experience of a distance learner changes dramatically because the physical space of the classroom is displaced and the primary mode of interaction is computer mediated. (Peterson 2001) Meanwhile, others are overwhelmed by the new online interface that presents them with a list of seemingly unending tasks to complete. Bombarded with a text-based

welcome page, a written syllabus, a dense print textbook or poetry anthology, a bewildering set of folders filled with written lectures and assignment instructions, a discussion board filled with other students apparently capably and confidently posting writing, and later a set of text-based instructor emails asking whether they needed assistance, the path of least resistance was to avoid interaction (Harris, Lubbes, Knowles 2014) This tidal wave of screen time shall henceforth be known as interface burn-out. Learner disengagement, and interface burn-out are two areas of online learning that have attracted a lot of research interest by scholars. Thus, an online EFL classroom can have double the stress as students are not only faced with having to learn a new language, but they also have to navigate the technological aspects in the new language.

The first challenge, discussed in this paper, associated with online learner disengagement, is that many students fail to see the curriculum as relative to their own lives. In a study done by Wilsey (2013), research online language curriculum showed that motivation in the online language classroom is commonly integrative. Students learn in order to communicate with people in the new language. Language is a tool for communication and when students feel that the curriculum and language are relevant to their lives, it helps to learn and retain the information in long-term memory. Language is also very contextual and if curriculum designers take into the context of the students' identities, there is a greater chance that the class will result in a positive learning experience. Therefore it could be argued that, it is imperative that the designers of the curriculum take into account the identities and needs of the students, which would better help students to find a bridge between their own lives and the curriculum.

Another common cause of disengagement in the online classroom stems from students not receiving enough support when they are feeling burnt out. While many of the students in online classes may note that the technological skills were not a problem, many may feel bombarded and bored with the online interface. Especially in the case of online learning, where teachers and other students are not physically there to help push concentration or focus, many students simply opt to turn off the screen and disengage in the class. Since language is so organic it may be difficult to replicate that type of natural communication in the online classroom. One could argue that this could create stress and dissatisfaction with the course. As referenced in the beginning of the paper, online classes have higher dropout rates, no doubt some of them stemming from interface burnout. By not allowing students to express their dissatisfaction, stress, or anxieties, curriculum and teachers run the risk of increasing disengagement and dropout rates. Thus, one could conclude that online class students have to be given ample opportunities to express problems or burn out that they may be experiencing to instructors.

Another striking challenge that arises in the online classroom has to do with not the students but teachers. In a paper done by Archambault & Crippen (2009), the authors examined the relationship

between pedagogy, content, and technology in an online classroom by utilizing the teachers, content, technology, and practices (TPACK) framework. Results showed that while many teachers feel very confident regarding their content and pedagogical knowledge of the course, technology is one area in which they felt less confidence. This has implications for teacher training, as teachers who do not feel confident with their technological backgrounds may hinder the online learning experience. If a teacher does not feel confident with their knowledge of the curriculum there is a greater chance that the learning outcome will be negative. Thus one can argue that another cause of learner disengagement in an online course can stem not from just learner dissatisfaction with the course, but also the instructor's dissatisfaction with the course or the technological interface.

3. Contextual Learning Curriculum Theory

The curriculum theory used to explore the problems mentioned above centers on the idea that learning is contextual. Learning is something that is influenced by the learner's identity, the teacher's identity, and the context through which it is taking place (Bramming, 2001). Learning is a complex of individual and interpersonal processes influenced by both planned and contingent factors (Nygaard, Holjt, and Hermansen, 2008). Contextual learning is grounded in the theory that learning is never static. It is changing depending on those individuals involved, especially when it comes to language learning. A curriculum based on language learning is precisely this as language is also organic and changes on the contexts it is used in. Thus when developing a language curriculum, organization have to understand that the students' and teachers' identities will influence the way a curriculum is observed or carried out. This in turn implies that teaching styles, administrative needs, testing, evaluation etc… will all need to be considered. In an online program is no different than a curriculum designed for a physical class. There are a special set of online class consequences and realities that will affect the context of the learning. It is essential that organizations understand this and respond in an appropriate manner.

4. Recommendations for Curriculum Change

In enacting an executive plan for the organization involved, three specific recommendations will be made to address each of the problems previously stated. As mentioned earlier in a study done by Archambault & Crippen (2009), for the online classroom, there needs to be a sense of confidence within teachers when it comes to content, pedagogy, and technological skills. Many teachers stated that while they are significantly comfortable with their levels of content and pedagogy savvy, when it came to technical skills many of them felt anxious, resulting in a less favorable online classroom

environment. Therefore, the first recommendation to be made will address this problem. Teachers should be given ample amounts of training on the technology. Also, just as a classroom is often a personal space for a teacher, there must be opportunities to create the online classroom in an image that they have. To combat the attrition of idealistic teachers, projects that help them gain these skills, improve their pedagogy, and take action can help them feel empowered rather than defeated (Duncan-Andrade, 2004; Picower, 2007)

Another issue that has to be addressed is the relativity the students can feel to their lives. Because of the online classroom, many students can easily disengage and turn on/turn off the classroom with the click of a mouse. A study done by Wilsey (2013) showed the language learning, whether in the classroom through online methods is often motivated by integrative goals. To offer students a more integrative opportunity to interact with the curriculum, students must be given opportunities to express themselves also navigating their way through the online medium of practice problems and exercises. Wilsey (2013) also notes that resources for self-study of languages should also include opportunities for the learners to interact as part of a virtual community, perhaps through chats and discussion boards. Not only do these give the students the opportunities to express themselves but also helps to foster a sense of community. Technology is constantly evolving and the online teaching classroom is becoming more personal as companies like Google develop more learning tools, such as those in Google Classroom. As scholar practitioners, we should also work to create more ways for students to be able to personalize their online learning experience.

The class is not just an aggregate group of students, it is a social collectivity in which sets of arrangements, conventions, and agreements govern behavior (Greenwood, 1994). The online classroom is very much the same but in a parallel context. In the classroom, there is a high level of drop out when students feel like they cannot get the help and its troublesome to deal with emailing the teacher and writing about it versus simply just going to a teacher and talking about the problem. This is a real challenge for online classes, as teachers cannot necessarily catch any beginning signs of disengagement or dissatisfaction. Likewise, Frederickson (2000) remarked that if the turn-around time on student requests for assistance is plainly communicated and consistently applied, student disappointment, anxiety, and confusion can be reduced and satisfaction and learning can be increased" (pg. 25) Because the online classroom is a relatively new medium for many teachers to conduct lessons, many of the traditional cues for disengagement and dissatisfaction are not necessarily visible. Students could feel overwhelmed and the teacher may not realize it until its too late. Thus, to combat this, teachers must remind students constantly that they are free and open to discuss any issues they are having.

5. Plan of Action

Based on the problems and recommendations above, a plan of action may take the shape in the bullet points below. The main takeaway from them is that open communication between, administration, students, and teachers is tantamount for helping to create a positive learning experience. For this to also become possible cooperation between a wide-range of those involved is also necessary. Many of the recommendations made may be difficult as they require a lot of time and openness on the parts of everyone, however by taking just some of these small steps there is a greater chance of learning for all parties involved.

- Arrange a faculty meeting to explain the online curriculum change and its implementation. Teachers and instructors should be given ample opportunities to voice their opinions without the threat of being fired or reprimanded for any opposition.
- When drafting the curriculum, student input about what kind of subjects that are interesting to them should be thought of. This should be a student-centered curriculum, not a teacher-based one.
- Once a draft of the curriculum has been made, teachers and instructors should be invited again to go over and voice their opinions.
- After a process of revising and editing, a curriculum, which has the majority of teachers' approval, should be made.
- A schedule for technological training should be made. Teachers and instructors should be given a mock trial to try the curriculum and try to solve any problems they foresee happening in the classroom.
- On the first day of classes, teachers and instructors must explain the goal and usage of the online portion of the course. An explanation about how the curriculum relates to the lives of the students should be given with ample examples.
- Students should also be given ample opportunities to voice any concerns they may have regarding the online portion of the curriculum
- Once classes have started, teachers and instructors should have the option of openlydiscussing how their classes are going and formulating any solutions they may have.
- Administration should allow for teachers to tweak their curriculums to better suit their students' needs.

- Students should be given a short questionnaire to ask them how they are getting on with the online portion of the class or to express any dissatisfaction/stress they may be feeling. Teachers should also look for signs of burnout and disengagement.
- At the end of the semester, another meeting and questionnaire should be given to teachers and students to reflect on their experiences. Any suggestions should be met with positive feedback.

6. Implications and Conclusion

Many schools and organizations are adding online portions to their curricula. As technology improves there is no doubt that this trend will also continue to grow. Just as educators have encountered physical classroom problems over the years, online curricula will also have their own set of unique problems. The contextual learning curriculum theory is one in which curriculum is treated as an organic being that presents a unique fingerprint depending on those involved. This theory is useful in its application to the online classroom as online classrooms are also different depending on their participants. The online portion of a curriculum that may be used in a curriculum could be met with many challenges. Namely, students may have a difficult time relating what is in the curriculum to their real life experiences. Second, students may also express a tiredness and sense of troublesomeness when it comes to dealing with the online portion of a course. Finally, let us not forget the teachers and instructors who may also express a great deal of dissatisfaction with the curriculum or technological aspect of an online class. From these problems, the takeaways are that an online curriculum also needs to be student-centered; it must give students ample opportunities to express themselves when they are starting to disengage, and teachers must feel confident in the technology to help them provide a positive learning experience to their pupils.

References

Alliance for Excellent Education. (2004). Tapping the potential: Retaining and developing high-quality new teachers. Washington

Archambault, L., & Crippen, K. (2009). Examining TPACK among K-12 online distance educators in the United States. Contemporary Issues in Technology and Teacher Education, 9(1), 71-88

Bramming, P. (2001). Kompetence-i-praksis, PhD Series 8.2001 (Copenhagen Business School/ Forlaget Samfundslitteratur, Frederiksberg).

Combe, C., (2005). Developing and implementing an online doctoral programme. *The International Journal of Educational Management, 19*(2), 118-127.

Duncan-Andrade, J. M. R. (2004). Toward teacher development for the urban in urban teaching. Teaching Education, 15(4), 339-3

Fredericksen, E., A. Pickett, P. Shea, W. Pelz, and K. Swan. 2000. Student satisfaction and perceived learning with online courses: Principles and examples from the SUNY learning network. Journal of Asynchronous Learning Networks 4 (2): 1-29.

Freire, P. (1993). Pedagogy of the oppressed. New York: Continuum

Greenwood, J. D. (1994). A sense of identity: Prolegomena to a social theory of personal identity. *Journal for the Theory of Social Behavior,* 24(l):25-46.

Harris, H.S., Lubbes, T., Knowles, N., & Harris, J., (2014) Translation, Transformation, and "taking back": moving between face-to-face and online writing in the disciplines. *WAC Journal*, 25. 106 – 126.

Howland, J. L., and J. L. Moore. 2002. Stu dent perceptions as distance learners in Internet-based courses. Distance Education 23 (2): 83-195.

Miech, R. A., & Elder, G. H. (1996), The service ethic and teaching. Sociology of Education, 69(3), 237-25

Mupinga, D., Nora, R., & Yaw, D. (2006). The Learning Styles, Expectations, and Needs of Online Students. *College Teaching, 54*(1), 185-189.

Nygaard, C, & Andersen, I. (2005). Contextual learning in higher education. In: R. G. Milter, V. S. Perotti, & M. S. R. Segers (Eds.), *Educational innovations in economics and business IX. Breaking boundaries for global learning. (*pp.274-299).

Nygaard, C., Hojlt, T., & Hermansen, M. (2008). Learning-Based Curriculum Development. *Higher Education, 55*(1), 33-50.

Peterson, P., (2001). The debate about online learning: key issues for writing teachers. *Computers and Composition, 18*(4). 359-370.

Picower, B. (2007). Teacher education does not end at graduation: Supporting new teachers to teach for social justice. Penn GSE Perspectives on Urban Education, (5)1.

Picower, B. (2011). Learning to Teach and Teaching to Learn: Supporting the Development of New Social Justice Educators. *Teacher Education Quarterly, 38*(4), 7-24.

Sherry, L., (1996). Issues in distance learning. *International Journal of Educational Telecommunications, 1*, 337–365.

Wilsey, B. (2013). Online Learners of Macedonian with Self-instructed CALL. *CALICO Journal, 30*(1), 105-120.

Winiecki, D., (1999). Preparing students for asynchronous computer-mediated coursework:design and delivery of a distance education bootcamp. *Proceedings of the 15th Annual Conference on Distance Learning and Teaching* (433–437). Madison, Wisconsin.

Young, J., (2002) 'Hybrid' teaching seeks to end the divide between traditional and online instruction. *Chronicle Of Higher Education.* 48(28), A33.

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Citizenship Education and Emotional Intelligence in an Evaluation Experience for the Teaching of Social and Experimental Sciences

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Abstract

In this communication, it is presented a didactic experience that attends to the construction of emotional intelligence and social and civic competence of the student. This proposal of good practice lets to students connect with relevant socio-environmental problems in coherence with active methodology and with a fair evaluation process where individual commitment in classroom work team is valued. Both the design and the teaching experience have been carried out within the framework of the R&D Project EPITEC "Heritage Education for the Emotional and Territorial Intelligence of Citizenship" (2016-2020), project funded by the Ministry of Economy and Competitiveness of the Government of Spain. Regarding the results, the proposal for evaluative justice provided tools for self-management of the groups, facilitated the teacher's review of student research projects efficiently and systemically, and provided reliable information on the work of each member within their group, ensuring the formative nature, impartiality and fairness in the field of group qualifications.

Keyword: Citizenship education, Integrated didactics, Educational experience, Research-based learning, Evaluation

1. Introduction

In this communication, it is presented a didactic experience that attends to the construction of emotional intelligence and social and civic competence of the student. This proposal of good practice lets to students connect with relevant socio-environmental problems in coherence with active methodology and with a fair evaluation process where individual commitment in classroom work team is valued. Both the design and the teaching experience have been carried out within the framework of the R&D Project EPITEC "Heritage Education for the Emotional and Territorial Intelligence of Citizenship" (2016-2020), project funded by the Ministry of Economy and Competitiveness of the Government of Spain. Regarding the results, the proposal for evaluative justice provided tools for self-management of the groups, facilitated the teacher's review of student research projects efficiently and systemically, and provided reliable information on the work of each member within their group, ensuring the formative nature, impartiality and fairness in the field of group qualifications.

Sometimes, teachers (and citizens in general) talk about Democracy[128], citizenship or justice; However, this does not seem to prevent contradictions between the discourse and the teaching action. According to Audigier (1997), to avoid this type of imbalance, the teacher must take into account the interventions of their students through interactive strategies. However, sometimes, the injustice within these processes, specifically in relation to the group evaluation, may be due to the lack of tools to evaluate the commitment of each student in their respective work groups. Although there are proposals for systemic evaluation, it is usually assumed as axiomatic that all members of a group should have the same group score.

However, before making that decision, we must answer the following questions: Did all students in a group really work the same? How can I justify that decision? If we can "know intuitively" that not everyone should have the same score, but we still accept what is inherited, are not we evaluating group activities based on a consented injustice? In the field of didactics, there is nothing more unjust than to benefit students who "parasitize" the work of their classmates and who not recognize the effort of committed students with group work. This hegemonic antipedagogy, in turn, feeds on the discursive and practical contradictions of teachers who bases his evaluative activity on a perverse conception of "justice". In general terms, as De Alba (2007) indicates that the school culture has not changed too much, the evaluation is not ever clear enough and some processes can be inappropriate.

On the other hand, if we want to educate for democratic participation, it is necessary to conceptualize Democracy and adopt a clear positioning around it. If we want to be fair with our

[128] Note that we will use the concept of Democracy in capital letters, as a specific concept within the text and in lowercase from a general point of view.

students, it is essential to specify what we mean by justice and invite the students to assume a commitment around it. Ensuring coherence between both aspects, we propose an evaluative model that seeks to avoid ambiguities and address the difficulties derived from the high volume of work to which the university faculty currently faces. All this happens in a historical moment in which, as Kusahara (2008) indicates, departmental restructuring is taking place in the university context.

Faced with the emerging conflicts of the asymmetric work of the students in their respective groups and due to the injustice derived from the homogenization of the group qualifications, in this paper, a proposal of evaluative justice is presented. This proposal has been put into practice and has evolved over five academic years; however, we focus exclusively on the design and implementation during the 2017-2018 academic year with the "Didactics of Social Sciences I" groups of the 3rd year of University Degree of Primary Education. For this, previously, a review of the epistemological bases that serve as sustenance is made, making reference to democracy, citizenship and the school understood as the engine of social change; all this without forgetting the pedagogical references.

2. Epistemological basis for democratic school

According to Article 27.2 of the Spanish Constitution "education shall aim at the full development of the personality in respect to the democratic principles of coexistence and fundamental rights and freedoms". However, according to the Tonga (2014) research with 192 new teachers, 90% of the sample has not read any scientific article or book on democracy and, in most cases, they resort to human rights, liberties, self-government and equality to refer to Democracy although they are not able to specify or define what a Democracy is. Paradoxically, despite this epistemological limitation, most indicate that Democracy is missing in schools. Obviously, you can not build a democratic school model if you do not have a clear knowledge about Democracy and democratic participation. This could explain why, according to extensive research by Bernard Trafford (2008), the democratic school continues to be a minority model today. In other words, everything seems to indicate that the rhetoric of Democracy that floods the educational curriculum and the teaching discourse would be acting as a smokescreen against a model of immobile school that reproduces conventional and hegemonic educational models.

2.1. Kinds of democracy

Conceptualizing Democracy is not easy since there is no consensus regarding its definition. The "ECSA World Conference: Europe's Challenges in a Globalized World", in Brussels on November 24 and 25, 2006, defined in a very synthetic way the main challenges and difficulties for the construction

of a democratic-based European citizenship. Among the challenges linked to Democracy we have to promote citizen participation. Regarding the latter, as Dewey (1995) indicates, the formation of a democratic citizenship for participation must be seen as a set of shared experiences. These shared experiences that shape participation are also not universally defined and will depend on the type of democracy that we face. However, according to our approach to change and social improvement through the school, we understand that Democracy implies that oppressed groups take decisions in politics, that they organize and mobilize to achieve their goals, education being a means to make possible said Democracy (Freire, 1985).

Democracy, in general, can be of 4 types: direct, representative, popular and radical. **Direct democracy** is one in which sovereignty falls directly on the people without the need for a representative to make decisions for them; In other words, each political action must be approved by direct vote. **Representative democracy** is of an indirect nature and in it the people are governed by a representative elected by themselves, so that all citizens have the right to choose and be elected. This model of democracy can be made up of four types of system: *presidential*, where the power is concentrated in the president, *semi-presidential*, where the president governs along with a series of ministers elected by himself, *parliamentarian*, in which the parliament governs can being a monarchist (the king or prince is a head of state who changes by succession) or republican (there is no figure of the monarch) and *collegial*, where several people elected by Parliament govern and take turns. **Popular democracy** is usually one-party where the state takes control of the media and production. **Radical democracy**, unlike the representative democracy, requires greater intervention by citizens apart from the election of representatives, as was indicated by Serna (2009) and Delgado-Algarra (2017), in this model, Democracy is a system in eternal construction where there are no discourses that contain absolute truths, considering conflict as something legitimate that allows the organization of groups and individuals.2.2. Diversidad ideológica en la política actual

Within Western democracies it is essential to attend to the ideologies that underlie our decision-making. These ideologies can be progressive (left) or conservative (right); However, there are extreme ideologies that are outside the functioning of Western democracies. Within moderate ideologies, we find conservatives and progressives (Casas, 2006). **Conservatives** defend economic liberalism, downplay the resolution of social injustices and pay special attention to maintaining a traditional morality; while the **progressives** defend the moderate intervention of the state in economic matters, attend to social injustices and resort to much more utopian approaches.

As shown in figure 1, within the ideologies of the **extreme right** we emphasize *fascism*, where a dictator eliminates all the freedoms and rights of citizens. Within the ideologies of the **extreme left** we emphasize *anarchism*, where self-management and individual freedom and *communism* are defended,

where the intervention of the state in all economic processes is defended and individual liberties are limited. On the **moderate right** we have liberalism and on the **moderate left**, social democracy. *Liberalism* defends private initiative and individual freedom by limiting state intervention in economic and social matters, and *social democracy* supports the intervention of the state in these matters in the face of the promotion of social justice within a capitalist economy.

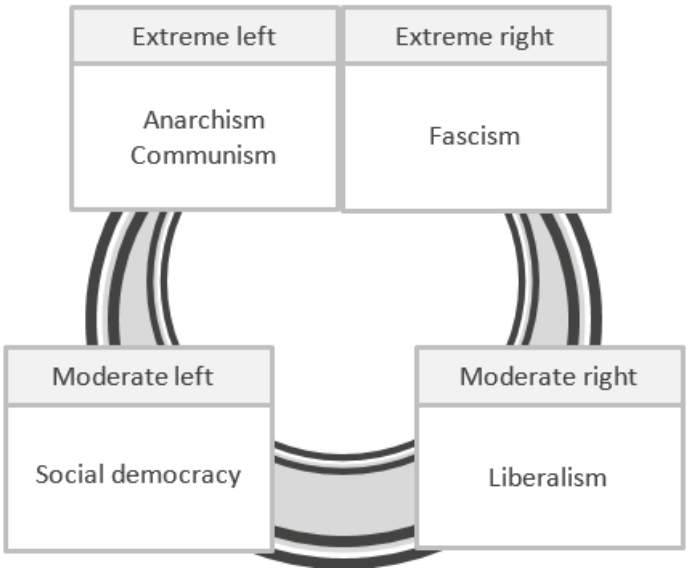

Figure 1: Main extreme and moderate ideologies

From a critical approach and based on a school understood as an engine of social change, it is assumed as desirable the assumption of a radical democracy model where everything can be debated and in which there are no elements considered immovable. There are positions that should be considered inadmissible in the classroom and in democratic societies such as, for example, the defense of racist, xenophobic or supportive attitudes to terrorism, positions that must receive an explicit rejection. From a position considered adequate (and even desirable), the teacher must show a critical attitude towards real problems; nevertheless, it is necessary that it offers students the necessary tools so that students can think for themselves, in addition to constructing their arguments with sufficient freedom so that the fact of not coinciding with those of the teacher is not a conditioning element of a negative evaluation. In that case, the classroom would be becoming a laboratory for indoctrination and

for the construction of a heteronomous morality, something completely opposed to critical thinking by which we choose and position ourselves in this proposal.

3. Proposal of evaluative justice as an answer to asymmetric work in groups

Currently, the exam remains the most widespread assessment tool (Alfageme and Miralles, 2009, Mochizuki, 2011). Nakamura (2011), on the other hand, proposes as an ideal an evaluation system where both quantitative and qualitative elements are combined. To optimize the evaluation and involve the students in the evaluation processes, in addition to an adequate teacher training, the student must have the possibility to decide and self-assess, putting in place metacognitive mechanisms and enhancing the self-management of the working groups through methodological strategies that enhance the coevaluative component. As Delgado-Algarra indicates, "this concern for evaluative diversity is due to the fact that, from the point of view of an evaluation understood as formative, there are aspects of the basic competences that run parallel to responsible decision-making and the difficult processes of criticism and self-criticism" (2014: 159).

The evaluative proposal presented in this paper seeks the systematization of evaluation, guidance and revision processes through the interaction of three instruments that, in combination, harmonize and triangulate the processes of hetero-evaluation, coevaluation and self-evaluation. This triangulation is carried out from a significantly formative point of view under which individual and collective responsibility and ethics are strengthened. In general terms, the pedagogical foundations of the proposal come from the IRES (School Research and Renewal) Project (García Pérez and Porlán, 2000) and from the methodological approaches of the INM Curriculum Project (Investigating Our World) (Cañal, Pozuelos and Travé, 2005).

3.1. Design of proposal and results of the experience

Regarding the instrument of **hetero-evaluation**, to systematize the evaluation process of the research projects, a specific category system was designed to allow quantitative qualifications and qualitative observations (the latter from the second academic year of application). The general design of this instrument, among others, is inspired by the structure of the category system used in the Project R&D EPITEC “Heritage Education Research Project for the Emotional and Territorial Intelligence of Citizenship" (2016-2020), financed by the Ministry of Economy and Competitiveness of the Government of Spain. The proposal of evaluative justice was implemented during 5 academic courses, but some elements were modified. In the fifth year of application (we analyze the version of 2017-2018 academic year), the evaluation proposal allows a fair, rational and systemic review of the group

elaboration of units of didactic units proposed from a research perspective. Although the proposal is perfectly adaptable to other specific didactics, it is analyzed the implementation in the subject "Didactics of Social Sciences I".

The specific design of the proposal starts from methodological and content aspects that are worked in the classroom and from multiple sources. Some of these sources are the proposals for the design of research projects by Latorre, Rincón and Arnal (1996), Porlán, Azcárate, Martín del Pozo and Martín Toscano (1996), Hancock and Algozzine (2006), attending to the pedagogical foundations of the IRES and Investigating Our World INM (1-12) Projects. Since the subject is based on the INM Curricular Project, 12 categories were decided, taking as main references Pozuelos and Travé (2005) and Estepa (2007) (appendix I: "Heteroevaluation sheet of the group teaching unit from the school research approach "). With regard to the instruments of coevaluation and self-evaluation, a logbook (appendix II) and an ethical-academic statement (appendix III) were designed.

According to the study carried out by Tomes, Wasylkiw and Mockler (2011), when the teacher asks the students to create a diary in which they must register aspects related to their training process, they are able to show a greater capacity to predict the results academics, plus more control over their performance. Pushed by the results of this research, it was decided to build the **logbook** with a table structure that would allow the teacher to quickly know the internal functioning of the groups and the resolution of group conflicts. To do this, the instrument consists of a series of columns:

- *Member:* the name of each student that is part of the group.
- *Attend:* students attends, does not attend and attendance time.
- *What have we worked on in this session?:* This section is completed by the group as a team and is a diagram of the contents of the project worked in the group sessions.
- *What have I contributed to the group?:* This section is completed by each student by acknowledging their contribution in the session as a member of the group.
- *What difficulties have I had?:* With a self-evaluative approach, students must reflect and make use of metacognition to specify the obstacles and difficulties they have observed during the development of the activity. This section offers the teacher valuable information to make decisions regarding the design and development of the subject.

Finally, the **ethical - academic declaration** is a document that must be signed by all the members of the group and must be incorporated into all the projects together with the logbook. With this signature, the students declare that they have not plagiarized in their research project and that the contents of the logbook have been reviewed and validated by all the members of the group. In the event that some type of plagiarism is demonstrated in the development of the project, the non-truth of

the information or inconsistencies between what was declared in the logbook and the group project; they explicitly show their agreement and assume that the project will be contemplated as fail. In line with what was proposed by Delgado-Algarra, Mengual, López Meneses and Vázquez Cano (2015) and regarding the results of the implementation, with the proposal of evaluative justice the attention to the students in the reviews gained in efficiency, significance and concretion. In addition, the hetero-evaluation instrument allowed the students to autonomously review the coherence between the quantitative values and the qualitative observations of their respective projects. On the other hand, with the triangulation of the instruments of this proposal, justice was enhanced in the group evaluations, offering us the necessary information. This solved one of the great problems of evaluating group work, achieving a systemic, fair and dependent group assessment of the effort of each member within their group, attending to the individualities of each of the students.

On the other hand, beyond the results of the study Tomes, Wasylkiw and Mockler (2011), where it was concluded that the elaboration of the logbook allowed the student to have a greater metacognitive control. In relation to the instruments of self-evaluation - coevaluation, the logbook included in the proposal has minimized the attendance of students to tutorials so that the teacher mediates or resolves their intra-group conflicts. This shows that this evaluation approach has offered students the necessary tools to support the autonomous management of conflicts arising from the work of each member. With the logbook, we could have much more reliable information about the quality of each member's participation, their individual difficulties and the evolution of the group throughout the project development process. All this information, contrasted with the hetero-evaluation of the project, made the evaluation more objective, fair and reliable. Throughout this process, the symbolic signature of the ethical-academic declaration made the students reaffirm their explicit acceptance of the academic consequences derived from the individual and group irresponsibility during the development of their activities. Obviously, in practical terms, it would not be necessary for the student to sign this statement for the teacher to make drastic decisions in cases of plagiarism or fraud, since these are included in the evaluation criteria of the subject and they are agreed from the first session of class.

4. Conclusions

García Pérez (2009) indicates that the school has possibilities for the participation of students; However, Spain has little tradition in relation to educational democratization, making many of the opportunities for students to participate miss out. Likewise, democracy in the teaching-learning process requires basic scientific knowledge about democracy, systems of government (and internal variants) and ideologies. The proposal of evaluative justice arises from a series of political-social referents whose common axis is the emancipation of the citizen with respect to the hegemonic

structures and powers in favor of change and social improvement. In this way, in coherence with the proposal of evaluative justice, the internalization of a radical democracy model, where nothing is unquestionable, and the construction of a justice-oriented citizenship, which implies acting on the original sources of knowledge, should be assumed as desirable.

Already in the 70s, UNESCO (1974) had a vision of Education where the students, as a future adult citizen, were understood as an active part of their social environment. In general, as we have seen, to educate active citizens capable of reflecting on the limits and consequences of their own participation it is necessary that metacognitive and meta-participative strategies are developed from the school. However, in order to educate a truly democratic, critical and functional citizen, it is necessary to enhance the protagonism of the students in the evaluation of their knowledge, skills and values. To do this, we must educate in (self) criticism and in the coherent assumption of rights and responsabilities (Berlanga, 2010). The proposal of evaluative justice, in its heteroevaluative facet, is based on a categories system that allows a quick and direct review of those aspects that the students must improve in two levels of concretion ("categories" and "sub-categories"); adding from the second year of application, a column of qualitative annotations that allows a better understanding of the reasons behind the quantitative scores.

The proposal has made it possible to evaluate the internal coherence of the project and has facilitated tutoring tasks by offering fast and functional information at two levels of concretion (categories and indicators). The logbook has solved the problems derived from the existence of authoritarian leaders in the groups, the existence of extremely unequal contributions among the members, the continuous absence of some of them or the impunity of students who do not contribute anything to their group despite attending to the group work sessions, many of which are carried out without the presence of the teacher to correspond with the autonomous work schedule of the students. The importance of this achievement lies in the fact that these issues affect the quality of the research projects prepared by the teachers in training and, in addition, generate internal conflicts that are usually transferred to the teacher's office during their tutorial hours. These situations, traditionally, have placed the teacher in a delicate position; since, without the right tools and without information that goes beyond the words of the students, we run the risk of being unfair by qualifying all members equally (in group matters) or by taking other measures. In short, a proposal has been designed. That proposal has let us gain in systematization and efficiency during the corrections, orientations and reviews of the group projects, adapting the group qualifications to the real contributions of each one of the class group members, and offering the students reliable tools for the self-management of the groups that, in turn,

offer the teacher the necessary information to solve the injustices associated with the qualification of works where different degrees of commitment are assumed.

References

ALFAGEME, B. y MIRALLES, P. (2009).Instrumentos de evaluación para centrar nuestra enseñanza en el aprendizaje de los estudiantes. *Íber*, 60, pp. 8-18, abril 2010.

AUDIGIER, F. (1997). Histoire et géographie: un modèle dis-ciplinaire pour penser l'identité professionnelle. *Rechercheet formation*, 25, pp. 9-21.

BERLANGA, J. (2010). Enseñar a ser ciudadanos: una experiencia didáctica sobre el sentido del deber y de la responsabilidad social. *Iber*, 64, pp. 19-28, 2010.

CAÑAL, P.; POZUELOS, F.J. y TRAVÉ, G. (2005). *Investigando Nuestro Mundo. Descripción general y fundamentos*. Sevilla. Diada Editora.

CASAS, J. (2006). Los conceptos de conservador y progresista. Un intento de aclaración. En SÁNCHEZ MACÍAS, J. I.; RODRÍGUEZ LÓPEZ, F. y CALVO, R. (coords.). *Economía, derecho y tributación; estudios en homenaje a la profesora Gloria Begué Cantón*. Salamanca: Universidad de Salamanca.

CHICA, E. (2011). Una propuesta de evaluación para el trabajo en grupo. *Escuela Abierta*, 14, pp. 67-81.

CONDE, A. y POZUELO, F. (2007). Las plantillas de evaluación (rúbrica) como instrumento para la evaluación. Un estudio de caso en el marco de la reforma de la enseñanza universitaria en el EEES. *Investigación en la Escuela*, 63, pp 77-90.

DE ALBA, N. (2007). ¿Qué es ciudadanía? ¿Qué es Educación para la Ciudadanía?. En R. M. ÁVILA; R. LÓPEZ ATXURRA y E. FERNÁNDEZ DE LARREA (Coord.). *Las competencias profesionales para la enseñanza-aprendizaje de las Ciencias Sociales ante el reto europeo y la globalización*. Bilbao: AUPDCS/ Universidad del País Vasco.

DELGADO ALGARRA, E. J. (2014). Educación para la ciudadanía en la enseñanza de las Ciencias Sociales y su vinculación con las dimensiones de la memoria: Estudio de caso en ESO. (Tesis Doctoral).

DELGADO-ALGARRA, E. J. (2017). Evolución histórica de la democracia y la participación ciudadana en occidente: bases epistemológicas para la educación ciudadana. En R.C. CUENCA-JIMÉNEZ, W. GADEA & D. ALLEN-PERKINS (eds.). *Perspectivas de investigación en Filosofía, Humanidades y Educación. Hacia un (Re) Conceptualización de la Democracia Contemporánea* (pp. 243-260). Sevilla: Fénix Editorial.

DELGADO-ALGARRA, E. J., MENGUAL, S., LÓPEZ MENESES, E. Y VÁZQUEZ-CANO, E. (2015). La justicia evaluativa en la valoración de proyectos grupales: propuesta y aplicación en el Grado de Educación Primaria. Pulso: Revista de Educación, 38, 163-177

DEWEY, J. (1995). *Democracia y educación*. Madrid: Morata.

GARCÍA PÉREZ, F. (2009). Educar para la participación ciudadana: Un reto para la escuela del siglo XXI. *Investigación en la Escuela*, 68, pp. 5-10.

ESTEPA, J. (2007). Investigando las sociedades actuales e históricas. Proyecto curricular Investigando Nuestro Mundo (6 – 12). Sevilla. Diada Editora.

ESTEPA, J. (2013) (Ed.). La educación patrimonial en la escuela y el museo: investigación y experiencias. Huelva: Universidad de Huelva.

FREIRE, P. (1985). The Politics of Education: Culture, Power and Liberation. South Hadley, MA: Bergin & Garvey.

GARCÍA PÉREZ, F.F. y PORLÁN, R. (2000). El Proyecto IRES (Investigación y Renovación Escolar). *Biblio 3W. Revista Bibliográfica de Geografía y Ciencias Sociales*, 205. (consultada en http://www.ub.edu/geocrit/b3w-205.htm)

HANCOCK, D. R. y ALGOZZINE, B. (2006). *Doing a Case Study*. New York: College Press.

草原克豪 2008. *日本の大学制度:—歴史と展望*.東京: 光文堂 . (KUSAHARA, K. (2008). El sistema universitario japonés: Historia y perspectivas de futuro. Tôkyô: Kôbundô) .

LATORRE, A.; DEL RINCÓN, D. y ARNAL, J. (1996). *Bases metodológicas de la investigación educativa*. Barcelona: Gr92.

望月由起 2011. 現代日本の私立小学校受験: ペアレントクラシーに基づく教育選抜の現状. 東京: 学術出版会. (MOCHIZUKI, Y. (2011). Exámenes de la escuela elemental privada en el Japón contemporáneo: condiciones actuales de las selecciones educativas basadas en la partentocracia. Tokyo: Gakujutsu Shuppankai) .

中村高康 2011. 大衆化とメリトクラシー: 教育選抜をめぐる試験と推薦のパラドクス. 東京: 大学出版会 . (NAKAMURA, T. (2011). Expansión educativa y meritocracia: la paradoja de la examinación y la recomendación en la selección educativa. Tokyo: Tokyo Daigaku Shuppankai).

PORLÁN, R., AZCÁRATE, P., MARTÍN DEL POZO, R. y MARTÍN TOSCANO, J. (1996). Conocimiento profesional deseable y profesores innovadores: fundamentos y principios formativos. I*nvestigación en la Escuela*, 29, pp. 23-38.

POZUELOS, F. J., TRAVÉ, G. y CAÑAL, P. (2003). Aportaciones del Proyecto Curricular Investigando Nuestro Mundo (6-12) al cambio en la educación primaria. Investigación en la escuela, nº 51, pp. 5 – 13.

SERNA, P.P. (2009). Democracia radical y ciudadanía. *Eidos: Revista de Filosofía*, 9, pp. 272-280.

TOMES, J. L.; WASYLKIW, L.; MOCKLER, B. (2011). Studying for Success: Diaries of Students' Study Behaviours. *Educational Research and Evaluation*, 1 (17), pp. 1-12.

TONGA, D. (2014). How can we get the information about Democracy?. The example of Social Studies prospective teachers. *Journal of World of Turks*, 2 (6), pp. 265-277.

TRAFFORD, B. (2008). Democratic schools: Towards a definition. En J. ARTHUR, I. DAVIES y C. HAHN (eds.). *The SAGE Handbook of Education for Citizenship and Democracy*. London: SAGE.

UNESCO (1974). Recomendación sobre la Educación para la Comprensión, la Cooperación y la Paz Internacionales y la Educación relativa a los Derechos Humanos y las Libertades Fundamentales. 19 de noviembre.

Appendix I. Hetero evaluation sheet of the graduate teaching unit from the school research approach

Teacher: **Degree:** **Course:** **Group:**

Category	Subcategory	Max.	Score	Observ.
Exposition	Organized, clear and balanced			
Formal aspects	Times New Roman 12, paragraph 1.5			
Introduction, problems and justification	Clear and complete introduction			
	Relevant problem from the area of social sciencies			
	Justification with contextualization and documented interest			
Scientific knowledge	Coherence between reference to authors and bibliography			
	Relevant and linked to problems and objectives			
	Linked to the fields of research			
Conceptions and difficulties	Syncretic, analytical and systemic levels			
	Positioning and justification			
	Possible difficulties			
	Objectives and concrete and complete school contents			

Objectives and school contents	Objectives and contents coherent with each other			
Sequence of activities	Activities coherent with objectives and school contents			
	Activities consistent with scientific knowledge			
	Activities consistent with the conceptions and difficulties			
	Development in tasks with the necessary annexes			
	Temporalization and coherent sequence of activities			
Evaluation	Evaluation instruments and percentages			
	Evaluation criteria			
	Character of the evaluation			
Conclusions and reflections	Collect the highlights of the project			
	Shows critical argumentation and aspects to improve			
Bibliography	Significant and complies with APA standards			
	Complies with the minimum amount proposed			
Evolution observed	In office time			
	In the development of the classes			
Spelling and expression	Orthography			
	Expression			
FINAL GRUPAL PROJECT (total score)				

Appendix II. Logbook

Teacher: **Degree:** **Course:** **Group:**

Date	**Members**	**Attend**	**What have we worked on in this session?**	**What have I contributed to the group?**	**What difficulties have we had?**
		__Yes; __Partial; __No			
		__Yes; __Partial; __No			
		__Yes; __Partial; __No			
		__Yes; __Partial; __No			
		__Yes; __Partial; __No			

…….

Appendix III. Ethical-academic statement

Teacher: **Degree:** **Course:** **Group:**

The undersigned declare that they have not plagiarized in their project and that the contents included in the logbook have been reviewed and validated by all the members. You announce with your signature the veracity of the information.

Sign:

First name:

_____

I consider that my rating should be (1-10):

……..

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The Future of Etextbooks: Teacher, Student and Publishing Perspectives

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Abstract

Expanding higher education dependent on the printed text is quickly changing to a digital world. A publishing industry response has been to replace traditional textbooks with digital books or etextbooks. It is not clear, however, that the textbook model in the e-format has a place in an environment flooded with content and a range of delivery platforms, not the least of which is the institutional Learning Management Systems (LMS). This paper examines the future make up and role of the etextbooks from the publisher, teacher and student perspectives. Traditional publishers and more disruptive new entrants are developing a range of fragmented products and services, looking relentlessly for business models that will sustain these new solutions. Being digitally savvy, higher education students have been quick to realise the benefits of convenience and cost savings offered by etextbooks. Students, however, remain to be guided by teaching staff who prescribe textbooks because of their wide applicability, history of quality assurance as pedagogically based resources. While teachers often view textbooks as essential to imparting discipline knowledge and facilitate learning, they are less digitally savvy than students and are less likely to embrace etextbooks than students. One of the key questions is thus what resources do staff look for from their etextbooks, given the transfer, sometimes mandated, of traditional textbook content and functionality to other platforms, including the LMS, and the enhanced capability of etextbooks over textbooks. Answering these questions will assist publishers and institutions build solutions to support the effective uptake of etextbooks but require a synthesized view of all stakeholders – publishers, students and teachers. This paper is an attempt to provide that synthesized view.

Keyword: Etextbooks, Elearning, Publishing.

1. Introduction

A textbook is often central to a course, in some cases setting out the "gold standard" of the curriculum in a subject area. For many learners, a textbook is a familiar instrument in developing their skills and knowledge, adding breadth and depth to what is covered in classes. Successful learners read text-based materials and create summaries for review purposes. Across disciplines, such as law, medicine and the natural sciences, reference texts and casebooks have traditionally provided lifelong resources (Henderson & Thai, 2014; Killingworth & Marlow, 2010; Usiskin, 2013).

Printed textbook publishing for higher education has been a very profitable business for many decades. Students have been prepared to bear the cost of quality content well beyond what could be reasonably provided by teaching staff or their institutions. Digital technology, however, has significantly disrupted traditional printed textbook publishing. Higher education is now transitioning from reliance on printed textbooks to increasing use of a range of digital products and services, of which etextbooks are just one. 2015 may have been a tipping point, when global sales of print-only texts at $US4.7 billion fell below the estimated $US5.5 billion for products with at least some digital content for the first time (Worlock, 2017). The transcendence of digital material over printed resources in higher education is clearly well advanced. The future of etextbooks, as a central component of a digital resource suite containing a variety of learning materials, however, is not as clear, in particular its impact on pedagogy and associated learning activities. This paper assesses the future of etextbooks from the perspectives of three major groups of stakeholders: teachers, students and publishers.

1.1 The Rise of Elearning

A significant change to higher education learning and teaching in the new millennium has been the emergence of elearning. Online access to digital learning material and communication facilities that support collaborative activities is the norm. Students expect to interact with digital materials across the full spectrum of learning activities. Etextbooks provide one framework for elearning, but dissemination of digital learning materials is common using other platforms, notably Learning Management Systems (LMS), which have become standard enterprise systems in higher education institutions. The LMS typically has become the primary interface for online learning material access and students' course-based academic transactions, delivering fully online courses, as well as blended courses. Digital storage and dissemination systems are commonly linked to student administration systems, such as enrolments and academic credentialing. As "owners" of the institutional LMS, universities can prescribe uniformity, not only in look and feel, but in specifying minimum requirements and functionality, sometimes restricting what is needed, or may be used from other sources, including etextbooks.

Digital technology has also led to a flood of content. There is now a plethora of material readily available from a range of platforms through the Internet. In the face of the ready availability of digital resources using any mobile device at-hand, it is surprising that printed textbooks continue to generate revenue and maintain a viable position in the marketplace. Additionally, improved authoring tools have allowed teachers to create their own digital learning material that can be placed into Content Management Systems (CMS) or Learning Object Repositories (LOR), and delivered through the LMS, across different offerings. Material is now openly available and accessible as part of Massively Open Online Courses (MOOCs), or from open repositories, such as MERLOT (https://www.merlot.org).

The LMS has developed beyond learning material distribution and academic transaction support to potentially higher value learning engagement and support, including adaptive release of material, assessment and personalised learning environments. The LMS is now central to many courses, providing much of the functionality and access to resources that overlaps with those that can be provided by etextbooks. As a response to this, established textbook publishers are also investing in learning platforms, similar to the LMS, and providing whole course solutions (Worlock, 2017). Etextbooks can be integrated into an LMS, but can also provide content and functionality as standalone products. Etextbooks and LMSs are intertwined entities, with potential to compete, but also to cooperate.

2. Etextbook Benefits

Luo & Zhang (2014) provide a useful distinction between (print only) books, ebooks and etextbooks. Ebooks build on printed books using software to support different devices and reader functions, such as search, bookmarks, multimedia content and links to other material including dictionaries. Etextbooks further extend ebooks, through added focus on learning. The benefits and challenges of etextbooks are outlined in Table 1.

Table 1: Benefits and challenges of etextbooks

Factor	Benefits	Challenges
Cost	Lower costs for students (up to 50%)	No resale value Printing may add to costs
Access & Storage	Immediate access Any location Easy to store and carry	Access can be stopped or suspended

Interoperability	Accessed through LMS	May require separate platform
Flexibility	Can be customized for different culture, jurisdictions and curriculum needs	Can diverge from standard Modified content is of less value
Functionality	Enhanced reading functionality Enhanced learning and teaching tools	Reading may be more difficult Added complexity

Etextbooks offer many of the advantages of digital technology over physically printed material. The elimination of printing costs and reduced distribution costs can be passed on to consumers, saving buyers up to 50%. On the down side, etextbooks cannot be resold like printed textbooks and costs may be incurred printing parts of the text (Bossaller & Kemmer, 2014).

Etextbooks require almost no physical storage space (Bechter & Stommel, 2014) and restricted access can be immediate from any location (Sheen & Luximon, 2016), with no waiting on back-orders. In some cases students may be frustrated by restricted access to resources, for example access can be removed at the end of semester (Bossaller & Kemmer, 2014).

Many publishers are focussing on integration, making their products and services available through different channels, including the LMS (Bossaller & Kemmer, 2014). Textbooks are also integrators of material able to link in and out of other resources and platforms from within the textbook (Killingworth & Marlow, 2011).

Digital content can be easily modified, copied and reused. One of the key advantages of the customised etextbook is the ability to avoid unnecessary or unwanted material or functionality. The text can be tailored for a particular curriculum and local cultural and jurisdictional needs. Publishers provide a range of services to support this, from a self-publishing portal (e.g., Wiley) to a service where publishing staff work with teachers to develop a specific text (e.g., Pearsons). Time to publish and update digital materials can vary from almost immediate to many weeks.

The storage of information in digital form underpins access to a full range of data and information processing tools from basic search to data mining, and the application of Artificial Intelligence (AI) to guide student engagement and learning.

2.1 The Nature of Etextbooks: Components and Functionality

While there are significant benefits of digital books over printed books, etextbooks will need to deliver resources that have advantages over that delivered by other platforms if they are to achieve a level of uptake that can sustain their ongoing use. In this paper, resources are divided into components

and functionality. Components are typically based on familiar elements of the printed textbook modified or enhanced by digital technology, what many might call content. For example, visual content will be present, but it may be animated or video, and interactive. These elements typically provide the same experience for all users, and tend to focus on the cognitive processes of the learner, rather than information processing by the software that underlies the etextbook. Functionality further exploits the view of an etextbook as digital data that can be processed, adding to the content, reducing cognitive load, saving time, and providing information to support both learning and teaching. These can replicate manual functions, such as bookmarking and highlighting, but also provide new functionality, such as to provide a personalised experience, guiding individual learners through the textbook in ways that support their idiosyncratic learning needs.

As a minimum, almost all etextbooks, include text, multimedia, and links to other materials. Most textbooks provide generic user functions, such as search, zoom in and out, and the ability to mark-up content in various ways, so that learners can organise material and manage their own learning. More advanced subject area specific resources may allow users to assess their knowledge or demonstrate skills learned, typically by posing or answering questions subsequent to completion of activities at points throughout the etextbook. As do printed texts, some extextbooks provide model answers with the added benefit of immediate feedback through automated marking, so that learners can monitor their own progress. The application of digital technology also enables support for more active learning based on collaboration through shared spaces and links to social media sites, as well as feedback to students on their progress and engagement based on learning analytics.

Etextbooks may also provide resources that are important to teaching staff. Of particular value to staff planning and delivering courses are the teaching materials that accompany texts. These may include presentations, videos, facilitator delivery guides and sample solutions. In some disciplines, the university has a major role in credentialing of professions, and works with local professional bodies to validate and developed and managed locally. For others though, etextbooks, particularly those that target complete courses, may provide material that is acceptable in establishing a final grade. This can include projects, assignments, exercises, and mid-term and final examinations. Finally, there are those tools that enable teachers to publish their own textbooks or to modify existing textbooks, to include components that they want to use. Teachers may also be able to access and use aggregated student data to see what resources students are using or not using, and to establish what areas of the curriculum need attention, through data analytics.

The components and functionality that is implemented varies across etextbooks. While there are those resources that appear in almost all etextbooks, there is no definitive list that is mandatory. Lau

et al. (2018) have analysed business textbooks identifying a range of extextbook resources, which, together with those from the literature examined in this paper, form the list of common components and functions outlined broadly in Table 2.

Table 2: Etextbook components and functionality by category

Category	Components/ Functionality
Content	Those components that make up almost all etextbooks, including text, multimedia, and links to other resources.
Generic Learner Support/ Functionality	Functionality that helps the learner access and use the textbook material, including search and mark-up functions. These functions may allow learners to manage the content and their learning to some extent.
More Advanced Learner Resources	Resources that help learners to synthesise, consolidate and assess their own learning, such as less structured learning activities, self assessment and reviews, typically targeting particular subject areas.
Assessment Items	Components that may be used as the basis for formal assessment by staff, and used in determining final grades.
Teaching Resources	Resources that may be used by teaching staff preparing and delivering classes, such as teaching guides, assessment tasks and solutions, and presentation material.
More Active Learning Support Functionality	Tools that allow for more actively support student learning, including collaboration spaces, adaptive release of material, intelligent guidance, tools often associated with the more advanced used of data analysis and information processing.
Customisation and Publishing Functionality	These tools support the creation and modification of etextbooks to meet specific requirements, to configure functionality and to refine learning designs as needed

3. Etextbook Publishing

Traditional textbook publishers first started providing additional digital resources, such as video, self-assessment, and case studies, available through CDs and web-sites to support their printed products. This has relatively quickly changed to fully digital etextbooks, with formats, such as PDF, HTML and ePub. Publishing business models (Tian, Martin & Dang, 2008), the products themselves, services and value proposition, financial aspects and value chain are being challenged. Expectedly, digital technology will continue to change and investment will be in technology, in delivery, in areas

such as AI, which accommodate individual differences and learning styles.

The rise of self-publishing, and platforms such as Open Educational Resources (OER) have potential to further erode the revenue base of traditional publishers. For commercial publishers to continue and to thrive, they need to provide products and services that are valued (Killingworth & Marlow, 2010). This may require experimentation and change. Flat World Knowledge started out providing free access to digital content with charges for print, then moving to provision of low cost texts, and now is focussing on providing a mobile first adaptive learning platform (Worlock, 2017). OER is not free to develop or deliver, but some publishers are working with OER providers, and some OER providers are seeking agreements with publishers.

Opportunities exist for educational publishers to provide a new range of integrated technology and content services (Tian & Martin, 2013). Pedagogical soundness and quality assured digital learning objects, learning analytics that enhance student engagement and learning designs, and orchestration tools that guide learners, possibly including AI, enable delivery of courseware augmentation. New products will include learning object platforms that integrate with LMS, and interoperability will be a key capability in new business models. Partnerships with complementary providers are becoming a feature of the emerging business environment.

Costs are a significant factor in student decisions to acquire textbooks. Aggregators provide cost effective access to a range of titles. Some institutions such as the University of Phoenix and the University of Michigan have explored or implemented the inclusion of etextbook costs in overall course costs (Killingworth & Marlow, 2010). Digital Age students have expectations of paying small amounts in subscriptions to individual services. It is reported that up to a third of any prescribed hard-copy text is not used in any one course (Killingworth & Marlow, 2011), and services such as buying as you go in small pieces introduced by Barnes & Noble through NOOK address this issue(Killingworth & Marlow, 2010).

The flexibility of the etextbook enables authors to self-publish. Traditional publishers provide the ability to build “custom” e-texts for particular staff and classes. Publishers such as Wiley (https://customselect.wiley.com/) and MacMillan Dynamic Books (http://www.macmillanlearning.com/catalog/Author/dynamicbooks) provide portals for authoring texts, while others provide staff to work with teacher-authors to construct customs solutions. Lead times will be important and Just-In-Time (JIT) publishing will be attractive to many teachers. Traditional publishers may hold an advantage in terms of perception of quality and utility. Bechter & Stommel (2014) found that consumers valued traditional texts and were prepared to pay less for self-published texts, and for customised versions.

The distinction between publishers and booksellers is diminishing. Aggregators, such as Vital

Source, provide a bookshelf for many titles from different publishers through their own platform and are selling etextbooks to students. Lake (2016) suggested that university bookseller's role may be to provide discovery, delivery and evaluation tools. Follett (www.follettlearning.com) is an example of a traditional bookseller that has turned a history of retail bookselling into a platform that delivers digital content. Increasingly, publishers provide direct access to their services and the development of portals that assist teachers in evaluating and selecting etextbooks will be potentially of value. Table 3 summarises the impacts, opportunities and challenges for textbook publishers (adapted from Worlock, 2017).

Table 3: Impacts, opportunities and challenges of commercial textbook publishing

Impacts	Opportunities	Challenges
Lower value of content, declining print revenues and price resistance	Provide wider range of services; Choose as many platforms as possible; Globally applicable, QA'ed content	Over-investing or extending beyond what market is ready for; continued price resistance; competition from disruptive players like Amazon
Demand for print/digital mix		
Increasing digital revenue & lower publishing costs		
Institutional bulk buying/ licensing	Improve teacher support	
Demand for interactivity/ analytics/ functionality	Offer personalised, adaptive learning; integrate assessment that is communicated to teachers	
Demographic shift of students	Offer digital first to digital generation	
The availability of OER	Harness OER	Competition from OER

3.1 New Business Models in Textbook Publishing

Traditional publishers have not been able to cover the reduction in print revenue by increases in digital revenue (Worlock, 2017). Table 4 summarise 5 types of players in the digital publishing space. Worlock (2017) identified 4 types of organisations: existing publishers building on the traditional textbook, new players also working with the traditional textbook approach, disruptors that provide new products or services, and aggregators providing many titles from many publishers, through platforms that can add value in other ways. Additional disruptors, such as OERs have been enabled by relatively cheap and easy-to-use digital technologies developed by universities or in the public domain.

Table 4: Etextbook publishing players

Category	Description	Typical Players	Business Model
Traditional Textbook Publishers	Established publishers who have derive main revenue from printed texts in past.	Pearson plc, McGraw-Hill Education, Cengage Learning, Oxford University Press.	Move to etextbook, integrate with LMS; provide expanded digital products and services.
New players using the textbook model	No tradition of print publishing, but basing products on the traditional textbook	Edbooks	Affordable, easy to use products, not radically different from existing textbooks.
Potential Disruptors	New products and services	Flat World Knowledge, Perusall, Smart Sparrow, zyBooks.	Partner with traditional publishers, full courses.
Aggregators	Provide a suite of titles available through own platform	Kortext, VitalSource	Institutional licenses. Platforms (ecommerce, library)
OER	Providers of free, open licensed etextbooks and courseware	College Open TextBooks, OpenStax	Partnerships with for profit, collaborations, member subscriptions, philanthropy and grants

Established publishers build on existing models of production and delivery. At a time of transition, the familiar (books) and the traditional with added digital functionality that make use of mobile devices have an advantage. Publishers have relationships with institutions, teaching staff and

authors, an understanding of the education sector and discipline areas, and processes and mechanisms for engaging suppliers and consumers. They have a history of delivering pedagogically based, quality content to students on a global scale. Much of the new digital material has not been of such high quality or soundness, and there may be a perception that digital material is not of consistent quality (Killingworth & Marlow, 2011). Textbook publishers have strong relationships with teachers, respecting their academic freedom, and playing very much the support role. Some new models and services, such as more extensive outsourcing are not as appealing to teachers, at this stage as they struggle to maintain ownership of the narrative and quality standards. Teachers may be particularly concerned about exclusive arrangements with particular publishers, and strongly believe that their freedom to choose and control resources should never be diminished. New digital only players are also basing their model on traditional approaches. EdBooks (http://edbookslearning.com/) launched in 2016 is based on the textbook model, focussing on learning design and flexibly presented content.

Etextbooks need not evolve from books and book publishing alone, but can be born digitally (de Noyelles & Seilhamer, 2013). Disruptors are more radical in their approach leveraging "technology rather than tradition", providing new products and services, or significantly changing existing products. Smart Sparrow (www.smartsparrow.com) has moved beyond the textbook model, exploiting digital technology to provide adaptive learning and personalised environments that use AI techniques to produce fully self-contained courses, such as BioBeyond (Worlock, 2017). ZyBooks (www.zybooks.com) targets STEM programs with interactive websites, lean on text, but heavy on visual content, animation, and activity (Worlock, 2017). Digital technology has also enabled the development of value adding tools. Perusall (perusall.com) allows students and staff to interact more closely around text (Worlock, 2017). Perusall is partnering with publishers such as Sage to enhance their etextbook offering, and to provide a bookshop interface.

Aggregators further disrupt publishing and may reduce potential revenue of publishers by their strong negotiating agreements with institutions, colleges and universities. In an industry survey, Worlock (2017) identified a number of aggregators in its ten (10) companies to watch in the digital textbook space. Kortext (http://www.kortext.com/) is the leading etextbook platform in the UK, serving over one third of all institutions. Partnerships with Samsung and Microsoft have driven it to the market lead in under 5 years. The previous market leader, VitalSource (www.vitalsource.com), provides an online shop front as well as institutional arrangements to provide etextbooks directly to students. Redshelf (www.redshelf.com) is a new player that has grown quickly in just 2 years to serve over 20% of US higher education students (Worlock, 2017). Follet Discover allows students to find and purchase course materials through their LMS including content from OER and for profit partners, such as VitalSource (Howell & O'Donnell, 2017).

Institutional OER collaborations and initiatives from established publishers have potential to erode the revenue base of traditional publishers. OpenStax (openstax.org) offers a small number of free openly licensed titles for introductory college courses (Worlock, 2017). While it has been supported by philanthropic organisations, it is partnering with a for profit publisher (Barnes & Noble) to distribute content, enhanced with other services, such as analytics (LoudCloud) as a means of building a sustainable enterprise (Worlock, 2017). College Open Textbooks, an affiliation of 200 colleges, focuses on secondary and early college course. College Open Textbooks (http://www.collegeopentextbooks.org/) include MacMillan Dynamicbooks (http://www.macmillanlearning.com/catalog/Author/dynamicbooks), a subsidiary of a commercial publishing group.

The State of Oregon is one of a number of regional and state-wide OER initiatives in the US (Chadwell & Fisher, 2016), which aims in part to improve access through reducing textbook costs to students. The Oregon approach is based on using existing textbooks for which they have, or are able to acquire, digital rights. They enhance the textbooks with interactivity, and make them available in the most common formats: HTML, PDF, iBooks and ePub. Material uses creative commons licenses (CC-BY-NY) that mean students and staff can use and modify material. Authors were paid from one off grants, and the university publishing group provided quality assurance and publishing advice. In time the initiative will be managed from the university library, taking existing material from teachers and preparing it for publishing, eventually looking to distribute these etextbooks through UNIZIN a collaboration of universities that make digital material available through the Canvas LMS.

4. The Student Perspective

The student experience and outcomes are most important in any focus on learning resources. A summary of the influences on student use of etextbooks is provided in Table 5.

In a survey of student views as to what online resources would have the most impact on engagement and learning, etextbooks ranked at 31% behind only online libraries and databases (49%) and above other technologies including LMS at less than 15% (Cengage, 2010, reported in Killingworth & Marlow, 2011). Print, however, is still popular with students and publishers respond by providing both etextbook and hard-copy versions with add on media resources. In a study of Canadian higher education students, Jhangiani & Jhangiani (2017) found that 44% of students preferred print only, 41% print and digital, and 16% digital only. Reasons given for preferring print included ease of highlighting, ease of reading and navigation.

In 2012, de Noyelles & Seilhamer (2013) surveyed 933 students from one US university that did

not have an overall etextbook initiative. 42% had used an etextbook, of which 45% were required by the instructor, 42% discovered it themselves, and only 6% heard about it from a peer. 86% of students listed costs as a main motivation for using etextbooks. 71% indicated that an instructor's ability to tag, highlight and annotate text were motivators to use etextbooks, while 76% of students reported that their instructors seldom or rarely used learning supports such as these. Encouragingly, 86% believed that they had the technical skills to use etextbooks; 72% believed that they could adapt to learning through etextbooks; 60% believed that etextbooks are as effective as printed texts; 34% believed they were motivated to use etexts; and 30% believed that etextbooks would help them work with other class members. Overall, de Noyelles & Seilhamer (2013) found relatively low use of learning support features.

While 91% of students surveyed had smartphones, 37% had tablets, and 27% had ebook readers, most students (83%) accessed their etextbooks through a laptop, with 12% using a tablet, 3% an ebook reader, and 1% a phone to access etextbooks (de Noyelles & Seilhamer, 2013). It is likely that at the time of this survey in 2012, etextbooks were less commonly prepared for hand-held devices, and that new etextbooks are more likely to be published for mobile platforms (Killingworth & Marlow, 2010), and access through smartphones and tablet devices will increase.

Total textbook costs for a student in the US can be as much as $1,200 per annum (Chadwell & Fisher, 2016) and the lower cost to students of etextbooks is a major factor in their adoption (Jhangiani & Jhangiani, 2017; van Horne, Russell & Schuh, 2016). Up to half of students do not use their printed textbook and over half did not buy a textbook in at least one course (Jhangiani & Jhangiani, 2017). Financially challenged students are less likely to buy textbooks, and a small number of students gave the cost of textbooks as a reason for dropping out. Jhangiani & Jhangiani (2017) found that students also like the benefits of immediate access, the ability to print only what is needed, portability, permanence and easy storage as reasons for favouring etextbooks. Ozdemir & Hendricks (2017), in a study across California universities and community colleges, also found that low cost was important, as was the ability to customise, to be up to date, flexibility of printing, and ease of access.

Table 5: Student Perspective on Etextbooks

Factor	Positive Influences	Negative Influences
Expectations	Student expect that etextbooks will be important in learning in future	
Media Preference	Prefer printed text, or digital	Digital only is least

	with print options; Appreciate lower cost and accessibility of digital media	preferred; Find print easy to highlight
Use of basic functionality/ components	Like multimedia, mark-up, translation and look up	Did not like time management or 3D image manipulation
Use of more advanced functionality/ components	Open to advanced learning support functions	Tend to use functions that teacher supports
Take-up	Open to usage; Source etextbooks themselves; Ahead of teaching staff in terms of readiness; Good experience lead to continued use of etextbooks	Digitally literate, but not necessarily information literate
Devices Used	High availability of handheld devices	Laptop seems to be main device used
Reading Performance	Not significantly different to reading of printed material; Digital environment is prone to disruption (reading times are longer)	Reading from of printed material may be faster and slightly better; Students may not be deep readers
Learning Performance	Good for building foundational knowledge; Support self-regulation Supports collaboration and communication; Individual engagement feedback possible & personalised learning environment possible	Low support for higher level learning; Learning support features of etextbooks are not fully exploited

Sheen & Luximon (2015) surveyed 517 design and engineering students across one Hong Kong university finding that these students liked: multimedia and text content, and the functions of bookmarking, highlighting, translation, and dictionary/ encyclopedia look up. Components and functions that students found less useful included: hiding unimportant parts, speech to/from text, time management tools, linking to expert questions, 3D representation and image manipulation. Staff views largely aligned with students, with the exception that they thought 3D representation and image manipulation would be useful (Sheen & Luximon, 2015).

Stone & Baker-Eveleth (2013) used an expectation-confirmation model to explore satisfaction (facilitation of study, fit with reading and study preferences), perceived usefulness (classroom activity, quality of work, class success and academic performance) with intention to continue to buy and use etextbooks with 469 etextbook users in one US university in 2012. Similar to the study of de Noyelles & Seilhamer (2013), they found that slightly less than 50% of students used etextbooks. Not surprisingly, Stone & Baker-Eveleth (2013) found that usefulness influenced satisfaction and that satisfaction directly influenced intention to use an etextbook.

4.1 Etextbooks and Learning

Students believe that technology provides functionality that can foster engagement and improve learning (Killingworth & Marlow, 2011). Portability, searchability and flexibility of digital technology improve the student experience (Chadwell & Fisher, 2016). Overall though, the evidence that etextbooks having a direct positive impact on learning is not strong.

There has been a considerable amount of research into the impact on student reading performance of etextbooks compared to that of printed texts. In an extensive review of the research, Ross et al. (2017) found mixed overall results. Comprehension, reading times and satisfaction under specific circumstances varied. Differences were ascribed to reader preferences, and familiarity, devices used (for example backlit devices may lead to greater eye-strain) and distractions. Etextbooks may slightly increase reading times (van Horne, Russell & Schuh, 2016).

Well motivated and conscientious students will put in the time, regardless of the media and GPA was a much better predictor than media. Daniel & Woody (2013) did find that digital media took longer to read, and that there was greater variability and longer reading times when readers were unsupervised at home. They concluded that digital technology had potential for more distractions (such as social media alerts), and unsupervised reading was likely to be interrupted more often. However, these differences in readability are not significant enough to outweigh the overall benefits of the characteristics and functionality available in etextbooks.

The ability to read, to comprehend and to analyze text are desirable graduate outcomes in many

disciplines, however, higher education students are perceived as generally being reluctant readers of textbooks (Sheen & Luximon, 2015; Henderson & Thai, 2014), preferring the Internet (Ras, 2011, quoted in Riaz et al., 2015), and rarely doing the reading before classes (Clump, 2004, quoted in Riaz et al., 2015). In a study that took place in a framework of encouragement and support for student use of etextbooks, Riaz et al. (2015) found more evidence for skimming, with scrolling (95%) and search (67%) more prevalent than downloading (31%), printing (24%), highlighting (12%) or note taking (1%), events more likely to indicate deep reading.

Lau et al. (2018) explored the relationship between etextbooks and levels of learning. They identified 21 different learning resources from 100 Business Information Technology or Logistics and Transport textbooks. These resources were clustered on the basis of complexity of content and ease-of-use. They were further assigned into a matrix with stages of learning (conceptualisation, construction and integration) in one dimension, and conversational model (narrative, Interaction, communicative, adaptive and productive). They concluded that current etextbooks provided less support for high order learning, such as integration of knowledge, and adaptive and productive use of resources, than for lower order learning. Riaz et al. (2015) supported this to some extent, finding that etextbook usage correlated with results for quizzes, that tested basic understanding, but not with results for weekly tests and final exams, which addressed higher levels of knowledge. They implied that etextbooks best supported early year college courses that built theoretical and conceptual knowledge, leaving latter year courses to focus on analysis, synthesis and evaluation, presumably with less reliance on etextbooks.

In addressing mark-up functions, van Horne, Russell & Schuh (2016) also reviewed digital technology and its potential impact on learning. They argue that digital technology can better support the cognitive process of knowledge acquisition, and can also support metacognition, an understanding of how the learner acquires knowledge. Cognitive impact is needed for learning and students are more likely to use self-regulated strategies with etextbooks than traditional printed textbooks. To achieve best use of digital technology, learning designs must consider technology, the pedagogy and content. Cognitive and metacognitive aids may not be part of etextbooks and if they are used may need to be actively encouraged by instructors.

Mark-up functions help learners review their content. Teacher annotations that elaborate content are useful, highlighting supports reviewing of moderately difficult material, bookmarking can help organise learning, and notes can be effective memory and meta-learning aids. Van Horne, Russell & Schuh (2016) observed the use of bookmarking, highlighting, annotating (defined as teachers notes added to highlighted text), making notes, and submitting questions to teachers with 274, mostly

undergraduate students from social sciences, education, business and humanities, who used etextbooks. Overall 75,748 textbook pages were read with 25,933 mark-up events. They found that adoption of mark-up tools were associated with reading of etextbooks, how early in the course learners accessed the etextbook, lack of an available paper textbook, higher cumulative GPA and the course taken. Highlights were most commonly used, and questions for the lecturer was the least commonly used mark-up function. Overall, they found that the number of bookmarks and pages read are good predictors of final grades.

Some of the new products and services provided for more active and collaborative learning support. Perusall (perusall.com) provides enhanced teacher-learner communication around text (Worlock, 2017). Law casebooks are traditionally a significant expense in law programs, and Henderson & Thai (2014) identified the ability to collaboratively build "e-" casebooks using technology.

Etextbooks are rich in capabilities and support for students and can be part of the scaffolding necessary for students making the transition from secondary education to university graduate. Many of these capabilities are not being used, either because they are provided in other platforms, such as LMS, or because they are not encouraged and supported by teaching staff.

4.2 Learning Analytics

The availability of integrated student data has led to interest in data analytics to assess student engagement and learning. Analytics has two foci, providing feedback to students on their learning engagement and their progress, and providing teachers with feedback on learning across whole classes. The consolidation of material in etextbooks and its in depth support of reading may provide a basis for a deeper lens into student activity, capturing student data not available from other sources.

Junco & Clem (2015) examined digital reading patterns of 236 students from 11 courses with 8 teachers, comparing reading time, GPA and the CourseSmart Engagement Index (CSEI) as means of predicting student success. They found total reading time to average 7 hours over 11 days (median 3 hours over 7 days), which they considered to be lower than expected, with considerable variability across courses. CSEI was a better predictor than prior GPA, and reading time was a better predictor than CSEI. Reading time was a component of CSEI suggesting that some elements of CSEI have little predictive power.

Well motivated and conscientious students know how to learn and what features and functions best support learning activities. It is likely such students "do the reading" (Dawkins, 2016). Drawing on marketing experience to provide aggregated click data that can identify content and presentations that grab attention, click rate, time on page, scroll depth, bounce and exit rates may help staff determine

if students are “doing the reading”, and resources that are working (Dawkins, 2016). Data could be captured to feed AI engines that dynamically change material and personalise the learning experience. Analytics can also quickly identify resources that are not being used, and teachers can modify their approach. Just as online news sources may trial more than one option, and gradually remove those that have less appeal, so teachers (and even publishers) may be able to fix on “hooks”, words, phrases and labels, as well as learning resources that are more effective.

An emerging application of learning analytics is the ability to personalise student learning based on attributes, such as preferred learning styles, academic preparation, background and experience, academic progress and personal circumstances (Costello & Mundy, 2009; FitzGerald et al., 2018). Learning plans can be developed automatically from the data or developed by teachers or learners to provide individual content and sequencing of content, assessment, learning tasks and resources.

There are downsides to analytics. Time on a page (as low as 10 seconds) is a proxy for reading and students aware of this can game play the system (van Horne, Russell & Schuh, 2016). While interventions have been shown to increase pass rates by up to 6%, they can also lead to negative outcomes, such as students withdrawing unnecessarily (Jayaprakash et al., 2014). Student privacy is also a concern as in some jurisdictions, student consent may be required, or use of student data restricted (Ifenthaler & Schumacher, 2015; Slade & Prinsloo, 2013). Some institutions may be wary of having staff and student data held by third parties (Bossaller & Kemmer, 2014). Etextbook analytics is an area of possible conflict with LMS. Institutions may also have their own analytics initiative, built around their own data sources and LMS, and it may be difficult to integrate new data. Providing direct access to staff and integration with institutional systems may extend the benefits of etextbook analytics.

5. The Teacher Perspective

As instructors, teachers will be key players in leveraging etextbook features that help students learn and those that manage engagement (including analytics). Through their roles in designing curriculum, teachers identify resources to be used to deliver courses. They play an important role in student uptake of etextbooks. Table 6 summarises the various influences on teaching staff adoption of etextbooks.

Teachers’ primary interest was in materials, processes and learning outcomes, and they are most demanding of content and support (Bossaller & Kemmer, 2014). Maintaining control over curriculum and courses is pivotal to adoption as teachers were sceptical about outsourcing components through fully managed courses. Some parts of outsourcing were deemed useful, but not overall learning design (Bossaller & Kemmer, 2014). Teachers are also supportive of analytics that enable feedback on their

material and recognised the importance to students of lower cost and better accessibility (Bossaller & Kemmer, 2014).

Table 6: Teaching Staff Perspective

Factor	Positive Influences	Negative Influences
Expectations	Staff see etextbooks as the future	
Preference for digital over print		Wary of use of multimedia content that may further reduce deep reading skills; Wary of outsourcing
Adoption	Good relationships with publishers; Commitment to textbook model	Resource availability through other channels
Use of functionality	Easier self-publishing and customisation	Low level of use outside of institutional initiatives; Tend not to use functions, particularly more advanced learning functions; Lack of awareness

The adoption of etextbooks in higher education has been reported to be slower than the uptake of ebooks in the community (Killingworth & Marlow, 2011), partly because teachers may not be fully aware of the possibilities of etextbooks. Ross et al. (2017) identified a need for on-going communities of practice (possibly using social media) to share knowledge in transition as etextbooks evolve. Teachers may need technical assistance, training and time to implement new functions and capabilities into learning designs, to develop resources, and to publish or at least customise etextbooks (Ross et al., 2017). Teachers will also benefit from experimentation and pilot studies in a transition to etextbooks (Killingworth & Marlow, 2010).

Teachers are also commonly authors of etextbooks. Having textbooks published generates additional income, enhances professional development, and adds to self-esteem and recognition by others (Bechter & Stommel, 2014). Etextbook authors see etextbooks as the future: cheap to produce and globally accessible (Bechter & Stommel, 2014). Even if instructors do not publish entire textbooks, they are interested in the ability to customise etextbooks to better align with curriculum (Bossaller & Kemmer, 2014). Academic freedom, and the need to deal with the particular scheduling and delivery

circumstances of any implemented curriculum means that there may be considerable divergence (Usiskin, 2013). Customisation and self-publishing allows teachers to pick and choose topics, components, functionality, even look and feel in developing a resource that closely fits their intended curriculum, approach to teaching, student cohort and particular implementation of the curriculum. Teachers are also interested in Open Educational Resources (OER), and its incarnation based on the textbook model. OERs provide a publishing platform as well as a repository of customisable resources.

Ozdemir & Hendricks (2017) studied data from the e-portfolios of 51 teaching staff who used OERs from California State University, University of California and California Community Colleges. These teachers claimed their motivation was: cost savings (80%), content quality, relevance, suitability and currency (44%), ability to modify (24%) and accessibility (20%).

In many cases, the decisions of textbook media and relationship with publishers are left to teachers (deNoyelles & Seilhamer, 2013; Stone & Baker-Eveleth, 2013), but some institutions are taking a central coordinating role in working with etextbook vendors to support staff (Killingworth & Marlow, 2010). Many universities are entering into agreements with aggregators, such as Kortext and Vitalsource, who provide single platforms and access to a wide range of titles (Worlock, 2017). At the University of Michigan, the library has proposed a program aimed at reducing student costs, and including etextbook access in overall tuition fees, and some states and regions in the US have initiatives to make greater use of etextbooks through OERs (Chadwell & Fisher, 2016).

While etextbooks are making inroads into classrooms, reluctance to move away from traditional printed text remains. Partly, traditional printed textbooks may be seen as offering deep and comprehensive, though "slow", learning, while etextbooks may facilitate "fast" learning with smaller bites (Lau et al., 2018). Some teachers may be concerned that fundamental skills will be lost in adopting etextbooks. For instance, Sheen & Luximon (2015), who interviewed a small sample of engineering and design staff, found negative sentiments on students' interest and ability to read and expressed concern that an over reliance on multimedia would further erode deep reading skills. Commenting with respect to law casebooks, Henderson & Thai (2014) used the term "nanny" books to indicate that material available through digital media may not encourage the deep reading required in law. Riaz et al. (2015) also found a higher prevalence of etextbook usage events that reflected shallow reading, rather than events that exhibited deep reading, though the impact that media has on reading behaviour remains insignificant (Ross et al., 2017).

6. Discussion

The literature suggests a continuing role for the etextbook model. Its value is in providing a globally applicable, coherent learning content with activities that can be effectively used, refined and

modified for reuse across many courses. While unlikely to match the dominance of the printed textbook, etextbooks will have a place among other digital resources. The extextbook model broadens the perspective of the teacher and the students by introducing them to what others think about a particular subject area. It provides an accepted and ready-made resource on which to base a course that other sources are not always able to do. In the best cases, it provides a global discipline view on essential subject area knowledge.

From a publishing perspective, a mix of traditional publishers and digital providers are seemingly energised around developing products and services that work in this new digital environment. There would appear to be no shortage of solutions to fit most needs. The issue for the industry players is finding products and a business model that will be a basis for sustainable development and delivery. From a student perspective, etextbooks would be valued due to their convenience and lower cost. Increasingly, students are likely to opt for the cheaper digital version where both print or digital textbooks options are available. Their basic digital literacy underpins their independent use of some functionality that helps with their learning, but they may only use more advanced functions when supported by their teachers.

Academic staff often connect with their discipline, nationally and internationally, and textbooks may support that connection through an independence from blinkered local perspectives. While the basic textbook model remains valid, its manifestation in etextbooks may be very different, enhanced with multimedia capabilities, user functionality, communication abilities, intelligence and analytics, even personal productivity tools for students. Etextbooks will be more granular and flexible than their printed predecessor, and able to be integrated with different systems and delivered through different platforms. However, it will be the quality of the content, not the add-ons that continue to provide the value of the text. While there is no clear evidence that etextbooks are directly improving learning, they have potential through underexploited functionality, and enhanced analytics to enable a better understanding of student engagement and effective learning designs. With experience, some of the features around communication will also enhance student learning engagement and outcomes.

Looking at the various challenges faced by etextbooks from the perspectives of student, teacher and publisher, there are clearly obstacles to their widespread usage. Figure 1 shows that a common challenge to the three stakeholders is the complexity of format and content of e-textbook. From the student's perspective, e-textbook must be rich in function and interactivity before it can be used for deeper learning. From the teacher's perspective, it can be a daunting task to develop etextbook resources tailored for a subject that meet the need for high-order learning (Lau et al., 2018). From the publisher's perspective, the cost of developing etextbooks with rich functionality might be too high

and not justified by the revenue received from selling etextbboks, which need to be substantially lower in price than their print counterparts in order to attract users.

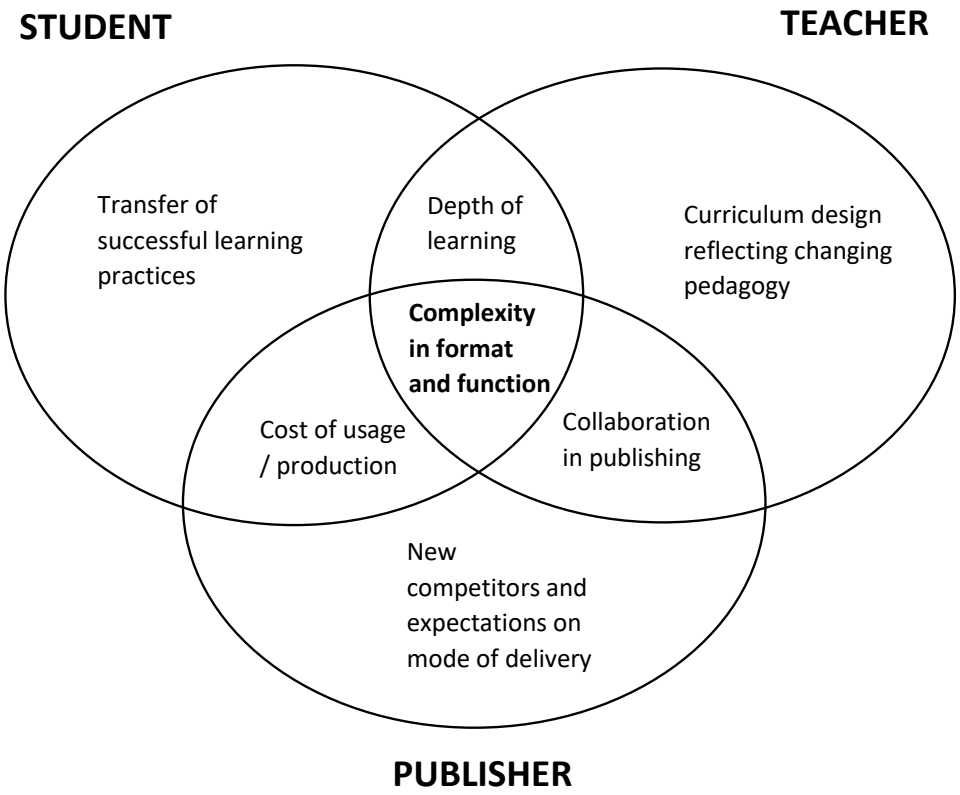

Figure 1: Challenges faced by etextbooks from the perspectives of student, teacher and publisher

Teachers are the most important players in the uptake of etextbooks, but seemingly the group that is lagging most in terms of understanding the possibilities. It is the teachers' decisions at course, program and institutional level that will drive the adoption of etextbooks and the arrangements and platforms through which they will be delivered. Staff will decide what they provide as part of their materials delivered through their LMS and what external resources are needed, and how these should be sourced. The evidence would seem to suggest that there is a lack of staff awareness of etextbooks and their capabilities.

In painting a picture of etextbook usage and potential, there is a lot more we need to know about higher education teachers and their intentions with respect to textbooks. Two factors seem to rise above others in terms of the continuing use of textbooks in their "e" form and the use of features enabled by technology. First, the emergence of institutional frameworks, such as LMS and a greater ability to develop in-house courseware, will dampen demand for third parties to provide some content and functionality. Second, the lack of staff awareness and motivation for staff to explore and use of etextbook capabilities to support learning and teaching will continue to hinder its uptake. In unpacking

this further it would be useful to understand the following.

i. What are the barriers to staff adopting etextbooks? How can awareness and support be developed?
ii. What etextbook resources for direct student use, staff support and assessment would likely be used by teaching staff? How would, and could, these resources be used?
iii. What other resources do teachers use or require that might be included in textbooks?
iv. Does use of resources and potential for use of etextbooks vary across institutions, discipline areas, or program level?
v. Does the gender, age, experience or tenure status of academic staff members influence the adoption of etextbooks?

Addressing these questions will increase the industry and institutions understanding of the staff perspective. The industry will be able to better assess its products, and institutions to provide the awareness, training and support needed to encourage staff to gain benefits of this new form of the textbook.

7. Conclusion

Digital technology has led to greatly increased availability of learning content and functionality that has transformed higher education. The traditional, erstwhile dominant printed text is being replaced by an array of digital content and platforms. The textbook model continues as an etextbook, and forecasts indicate that textbooks with some digital content will significantly outstrip printed textbook sales in the next few years (Worlock, 2017). However, it is unlikely that digitally based textbooks will ultimately achieve the success of its printed predecessor. The proliferation of material and systems has led to questions about the relevance of many traditional educational tools like the textbook.

This paper argues that the fundamental concept of a textbook is still a useful one. Through digital transformation, etextbooks provide high quality, globally applicable, pedagogically based learning resources that are valuable to wide audiences. Economies of scale lead to efficiencies and these should be passed on to learners. The fundamental question is: what can the etextbook bring to learning that is valued by teachers, students and institutions in the face of an environment where digital technology provides many alternatives? The major challenge is: how can the content, functions, and interactivity of etextbook be improved to cater for the need of higher-order learning without a significant increase in development resources and cost?

References

Bechter, C. and Stommel, Y., Customised eTextbooks, *Proceedings of the 6th International Conference on Computer Supported Education*, April 01-03 2014. (Barcelona, Spain)

Bossaller, J. and Kammer, J., Faculty Views on eTextbooks: A Narrative Study, *College Teaching,* 62, 2014, 68-75.

Chadwell, F. and Fisher, D. , Creating Open Textbooks: a unique partnership between Oregon State University Libraries and Press and Open Oregon State, *Open Praxis,* 8(2), 2016, 123-130.

Costello, R. and Mundy, D. P., The Adaptive Intelligent Personalised Learning Environment, Proceedings of *Ninth IEEE International Conference on Advanced Learning Technologies,* July 15-17, 2009. (Riga, Latvia)

Daniel, D. B. and Woody, W. D., E-textbooks at what cost: Performance and use of electronic v. print texts, *Computers & Education*, 62, 2013, 8-23.

Dawkins, R., Content Strategy: a lesson from the industry for university learning analytics, proceedings of ASCILITE, November 28-30, 2016. (Adelaide, Australia)

deNoyelles, A. and Seilhamer, R., eTextbook access, usage and beliefs: implications for adoption in higher education, *Journal of Applied Research in Higher Education,* 5(2), 2013, 189-201.

FitzGerald, E., Kuirkova, N., Jones, A. Cross, S., Ferguson, R., Herodotou, C., Hillaire, G., and Scanlon, S., Dimensions of personalisation in technology-enhanced learning: A framework and implication for design, *British Journal of Educational Technology,* 49 (1), 2018, 165-181.

Henderson, S. E. and Thai, J., Crowdsourced Coursebooks, *Alberta Law Review,* 51(4), 2014, 907-924.

Howell, S. and Brian O'Donell, B., Digital Trends and Initiatives in Education: The Changing Landscape for Canadian Content, report prepared for the Association of Canadian Publishers (ACP), 2017, retrieved from http://www.omdc.on.ca/Assets/Research/Research+Reports/Digital+Trends+and+Initiatives+in+Education/Research+Reports/Digital+Trends+and+Initiatives+in+Education.pdf on 6 April 2018.

Ifenthaler, D. and Schumacher, C., Divulging Personal Information within Learning Analytics Systems, *12th International Conference on Cognition and Exploratory Learning in Digital Age (CELDA)*, October 24-26 2015. (Dublin, Ireland).

Jayaprakash, S. M., Moody, E. W., Lauria, E. J. M., Regan, J. R. and Baron, J. D., Early Alert of Academically At-Risk Students: An Open Source Analytics Initiative, *Journal of Learning Analytics*, 1(1), 2014, 6-47.

Jhangiani, R. and Jhangiani, S., Investigating the Perceptions, Use, and Impact of Open Textbooks: A survey of Post-Secondary Students in British Columbia, *International Review of Research in Open and Distributed Learning*, 18 (4), 2017, 172-191.

Junco, R. and Clem, C., Predicting course outcomes with digital textbook usage data, *Internet & Higher Education,* 27, 2015, 54-63.

Killingworth, S., and Marlow, M., ATG Special Report - The Future of the Textbook, *Against the Grain*, 22(6), 2010, 45-48.

Killingworth, S., and Marlow, M., The Future of the Textbook - Part II: The Impact of Technology on the Development of the eTextbook Market, *Against the Grain*, 23 (2), 2011, 36-40.

Lake, Peter, 2016, The Future of the Academic Book: The Role of Booksellers, in the book *The Academic Book of the Future*, Lyons, R. E. et al, (eds), 92-97.

Lau, K., H., Lam, T., Kam, B. H., Nkhoma, M., and Richardson, J., The role of textbook learning resources in e-learning: A taxonomic study, *Computers & Education*, 118, 2018, 10-24.

Luo, Y. and Zhang, X. 2014, Electronic Textbook: Concept, Functional analysis and Its Problem of Construction, *Applied Mechanics and Material,* 496-500, 2014, 1948-1951.

Ozdemir, O. and Hendricks, C., Instructor and student experiences with open textbooks, from the California open online library for education (Cool4Ed), *J Comput High Educ.,* 29, 2017, 98-113.

Riaz, S., Bao, M., Zorn-Arnold, B., Weitl J. and Kirwan, J., Do Students Use eTextbooks Meaningfully? Lessons Learned from Four Online University Courses, *Journal of Modern Education Review,* 5(10), 2015, 951-961.

Ross, B., Pechenkina, E., Aeschliman, C. and Chase, A., Print versus digital text: understanding the experimental research and challenging the dichotomies, *Research in Learning Technology,* 25, 2017, 1-12.

Sheen, K. A., and Luximon, Y., Relationship between academic discipline and user perception of the future of electronic textbooks, in *Proceedings of 6th International Conference on Applied Human Factors and Ergonomics (AHFE 2015) and the Affiliated Conferences, ,*2015, 5845-5850.

Sheen, K. A., and Luximon, Y., 2016, Academic Professor Perception of the Future of Electronic Textbooks, in *Advances in Physical Ergonomics and Human Factors. Advances in Intelligent systems and Computing,* Goonetilleke, R. and Karwowski, W. (eds), 489, 2016, 165-173.

Slade, S. and Prinsloo, P., Learning Analytics: Ethical Issues and Dilemmas, *American Behavioural Scientist,* 57 (10), 2013, 1509-1528.

Stone, R.W. and Lori Baker-Eveleth, L., Students' expectations, confirmation, and continuance intention to use electronic textbooks, *Computers in Human Behavior*, 29, 2013, 984-990.

Tian, X., and Martin, B., Value Chain Adjustments in Educational Publishing, *Pub Res Q*, 29, 2013, 12-25.

Tian, X., Martin, B. and Deng, H., The impact of digitization on business models for publishing: Some indicators from a research project, *Journal of Systems and Information Technology,* 10 (3), 2008, 232-250.

Usiskin, Z., Studying textbooks in an information age - a United States Perspective, *ZDM Mathematics Education* 45, 2013, 713-723.

van Horne, S., Russell, J. and Shuh, K. L., The adoption of mark-up tools in interactive e-textbook reader, *Educational Tech. Research Dev,* 64, 2016, 407-433.

Worlock, K., Digital Textbooks: The Appearance of Tipping Points, *Market Size, Share, Forecast & Trend Report*, Outsell Inc, 2017, https://www.outsellinc.com/products/digital-textbooks-the-appearance-of-tipping points.

ICEL_0125

An Online Anonymous Questionnaire System

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Abstract

In generally, at the end of semester or trimester, students are required to answer in the course evaluation for each course that they took. The questions in questionnaire are usually same for all courses. Many students may not pay the attention to answer these questionnaires. Some students may be worry that the results will be affect to themselves, then they may not show the real opinions. The purpose of this project is to create a website that can implement anonymous evaluation system, which can be adapted as a teaching tools to create class participation. This project will be a real time questionnaire which can create interaction between students and teacher. This project is mainly separate into two parts, i.e.,

questionnaire owner side and participant side. On the questionnaire owner side, there is an authentication system for the user to keep their questionnaire and results. However, on the participant's side, the system will not ask any information from the participant and will not store any IP address of the user's device. Hence, the participants are more comfortable to answer in this system.

Keyword: Questionnaire System, Anonymous, Web Application, Teaching Tool

1. Introduction

Most of the university, when finish course, there will be evaluation to improve the course. Some systems, students need to answer many questions to complete the evaluation. This causes students did not pay attention to every questions. In addition, some systems use the same question set to every courses. Most of the university, there are variety of courses therefore some questions are not suitable for some courses. In some universities, the questionnaire is a part of university platform, which including time table, student profile, and grade announcement. Students need to complete evaluation to be able to check their grades, so it change attitude of student toward this evaluation.

Moreover, students may feel uncomfortable with the fact that they need to login to complete the evaluation. This may effect to the response of the students. This kind of system also do not allow teachers to create their own question. Hence, the teachers may not be able to gather information that they need to improve the course. Furthermore, in the high school, if there are quiz or class discussion, students are always afraid of getting wrong answers and always follow the majority thoughts. Therefore, there are lack of class participation and interaction. This research aims to provide website that can implement effective evaluation system.

This website can be adapted as a teaching tools to create class participation. The evaluation system allows teachers to set their own questions and makes students put more attention in lecture evaluation. This questionnaire system can be used as a tool to generate the quiz in the class. Number of participant and number of user who response to the question will display in real time so teacher will know how many students answer the questions before generating the results. As it is anonymous, students will have their own thoughts for answering the question. This questionnaire system will not ask for user information on the student user side. The system also will not store any IP address on the database to make the user become anonymous.

2. Current Questionnaire Systems

There are many questionnaire systems that can be used for the different purposes. For each questionnaire system, there are advantages and disadvantages. In this part, some questionnaire systems in different platform are reviewed.

2.1 Google Form

Google Form [1] is one of the most popular system that allows users to create their own questionnaire. These are the main features of Google Form:

- Create forms and surveys for free,
- Get a quick graph and list of results,

- Choose a photo header for an auto-generated color theme,
- Include images and YouTube videos in forms,
- Create interactive forms with logic and branching, and
- Collaboratively build forms and share date in Google Drive

To create a form, Google Form provides a template for users to choose and modify. This feature helps users to save more time when creating a survey. Examples of Google Form interface are shown in Figure 1. Moreover, users can create unlimited number of choices and there are features to duplicate the questions, therefore, users do not have to retype the choice of the next question if they want to use the same choices.

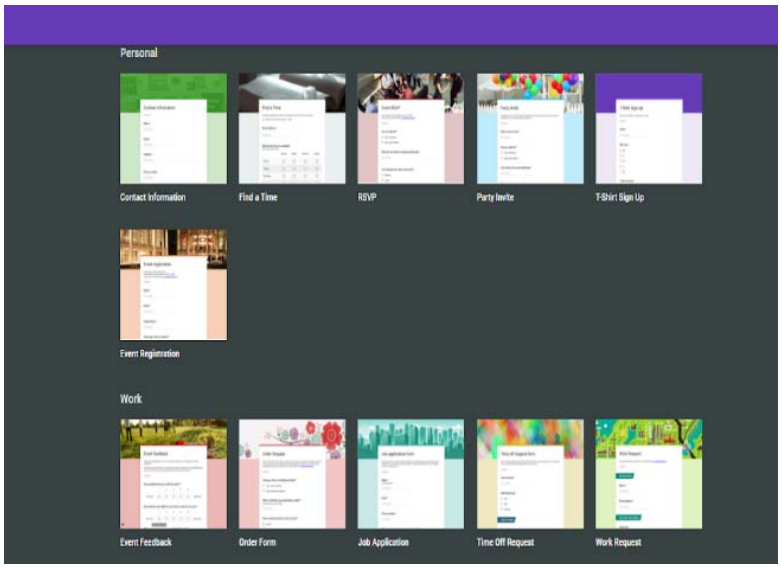

Figure 1. Google Form Template

There are many reasons that make Google Form become famous [2]. Firstly, Google allows users to run unlimited free questionnaire without charging any price [2]. Most Questionnaire system will offer a limited amount of free questionnaire or polls and then will charging for the service. Google Form stores the questions and results on Google Drive so users will require Google account and free space on their Google Drive. Secondly, when the questions and results are store in Google Drive and in spreadsheet form, users are able to share the results to other users and edit the questions and forms at the same time [2].

Thirdly, logic threading is the function that allow questions in each questionnaire to change based on the participant's answer [2]. For example, if the first question of the questionnaire asks about Coke or Pepsi, the following question will change according to the user answer based on Coke or Pepsi. This

allows the participants to only answer relevant questions. Next, Google form also offer user an email notification of results [2]. Some systems require users to revisit their systems to check on results. However, Google Form will notify user when there are new results. Lastly, users can enter Google Form in any browsers of any devices. Responsive design of Google Form and the checkboxes or other features are easy to use in every devices. This increases the number of participants of each form as it allows participants to respond to the form by using mobile devices [2].

However, there are some limitation in Google Form [3]. The design of Google Form is very limited [3]. Google does not allow users to customize the design of the questionnaire. To be able to use Google form, users must have Gmail account [3]. This takes time in the registration process, for example in verifying an account. To use all Google Form feature effectively, users must know how to use the spreadsheet to analyses the results and it also requires users to know how to use Google Drive to share files [3]. These take time to understand the process, so it is inconvenient in the beginning [3].

2.2 Clicker

A clicker [4] is an audience response device that allows users to participate actively in class lectures. Users will be able to provide real-time feedback to their instructors, who in turn, can offer graphical displays of the class' responses. Thus, users will see a good indication of progress and what they need to review. Clicker is a system that can create class participation between lecturer and students. It can collect the real time response from students and display the results on the screen in real time. Furthermore, the result will display in graphics. Then users can analyses the result via that graphical display.

The most important factor that makes Clicker efficient is that it is anonymous. Using a remote control to response is completely anonymous compared to use internet to response. It is not just the system is anonymous but student really feel it is anonymous. Therefore, student response to the question honestly without afraid of getting the answer wrong. Remote and result display if Clicker system are shown in Figure 2.

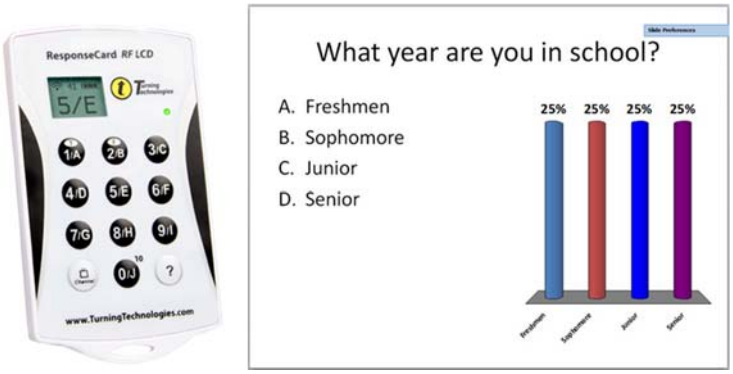

Figure 2. Remote and Result Display of Clicker System

For the limitation of Clicker, Every student requires a remote to join the system. If a student does not have a remote, there is no other option to join to the system. Even though all students have a remote, but if there is no receiver machine in that room, the teacher cannot run the clicker system. Receiver machine is the essential part of this system as it is used to convert the response from a remote to the computer and display to the class. Therefore, clicker can only run on the room that have this machine. Furthermore, if there are 100 students in one class, it require 100 remotes. This is quite expensive for running a questionnaire. In addition, the receive signal machine is also require. If any university or school wants to run Clicker in every classroom, they need this machine in every classroom. Therefore, it may cost a lot of money.

2.3 Kahoot

Kahoot [5] is one of the most popular applications that can host quiz games and can be adapted to use as a questionnaire system. Kahoot allows everyone to create their own quiz and be able to share it to other students to do it at home. Moreover, students can join quizzes that have been created by other users around the world. Kahoot is similar to clicker, but it is in an application and web application platform. Therefore, devices that have internet and have installed Kahoot application, are able to join the system. Example of Kahoot interface is shown in Figure 3.

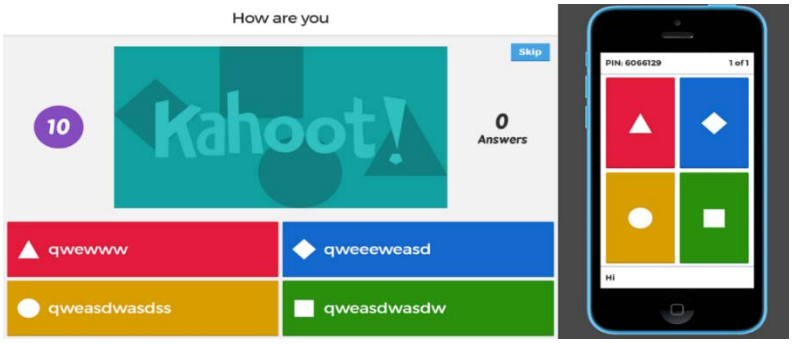

Figure 3. Kahoot Questionnaire

When teachers run the questionnaire, Kahoot's system will generate a game pin. Then, students must input that game pin to their device. After that, students need to input their name, but it does not have to be their real name. Finally, they will be able to join the questionnaire. Kahoot can provide an effective real time questionnaire system. It can create interactions between teachers and students.

Kahoot's user interface is very user friendly for student's side and with colorful design it allow young kids to enjoy the quiz game. Kahoot allows teachers to include images and videos to the questions, so this makes the questions become more of a variety.

For the limitation of Kahoot, students need to input their name. Even though it is not their real time name but teacher is be able to know that which name answers which question. This makes the system become not totally anonymous and may make students not answering the questions in an honest way. Moreover, teachers need to categories the questionnaire even though they do not want to share with anyone else. Furthermore, there are no duplicating functions. For example, if teachers want to use the same choices as previous question, they need to re-type those questions again. All of these take quite a lot of time in the creating question process.

3. Online Anonymous Questionnaire Design

In order to improve teaching techniques, we propose to develop an online anonymous questionnaire system. This system is web based application, which can be adapted as a teaching tools to create class participation.

3.1 Main Features

The main features of this questionnaire system are following.

- **Web application**: This questionnaire system will be implemented as a web application because, nowadays, most of the students have their own mobile device that can access to the internet. Therefore, students can join questionnaire system without any additional equipment.

- **Real time system**: From the research, real time questionnaire system can create interactions between teacher and students, which will affect student's response in a positive way. Furthermore, a real time questionnaire can be adapted as a teaching tools to create class participation, for example fun quiz.

- **Anonymous**: Students are always afraid of getting wrong so they do not want to share their thoughts to other students and teachers. Sometimes, they also follow the majority thoughts, this make student do not have their own decision. If the system is anonymous, it will encourage students to answer with their own decision. They will not be afraid of getting wrong as other people including students and teachers do not know who chooses the wrong answer.

3.2 Development Tools

In order to develop this system, we decided to choose some development tools that are presented in this part. Figure 4 shows tools that are used to develop this system.

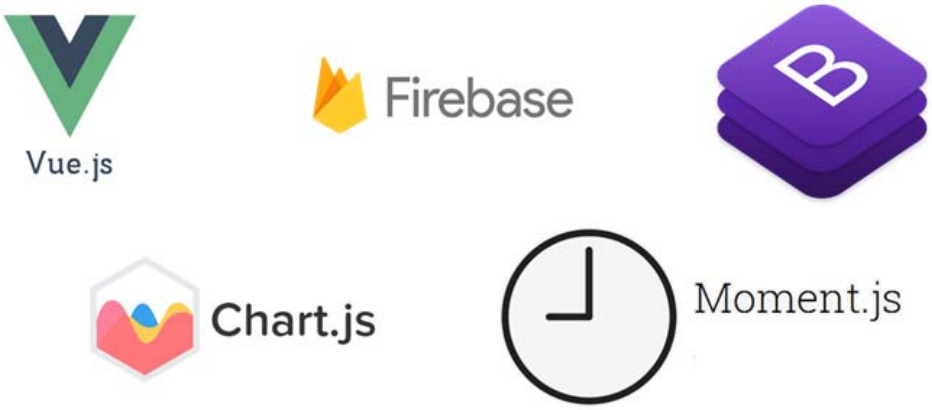

Figure 4. Development Tools

- Front End Framework: Vue.js

Vue.js framework [6] is used because it has a small size compared to other frameworks. According to my research, Vue.js is a front-end framework that is easy to understand and has a simple integration.

- Database: Firebase

Firebase [7] provides a real time database. As this system is a real time questionnaire therefore firebase should suit with this project. Furthermore, firebase also have authentication function which is very convenient. User can use their Gmail account, email or Facebook account to register to the website.

- CSS: Bootstrap

Bootstrap [8] is one of the most popular CSS framework. This framework provides CSS that can be used to decorate web application to make it become more user friendly.

- Graph Presentation: Chart.js

When teachers want to display results to the class, Chart.js [9] is used to display the results in a graphical way.

- Timestamp: Moment.js

Moment.js [10] is used in the timestamp part of this system. This tool allows us to know which question runs in during what time.

3.3 User Interface Design

This system can separate into 2 main parts, which are Teacher and Student that shown in Figure 5. In the teacher's side, teachers are going to create questions. There will be the input textboxes to let user write down the question that users want to include in the questionnaire. Then, teacher can create

choices and new questions in that question set. When the user is okay with the question in the question set, they can press done button. Then, question sets that this user has been created are shown. On each question set there will be edit and run button. When a question set is run, access code will be shown. This page of the website should display by a large screen or projector as teachers need to show the access code to all of the students. When teachers are satisfied with the number of participants, they can start the questionnaire.

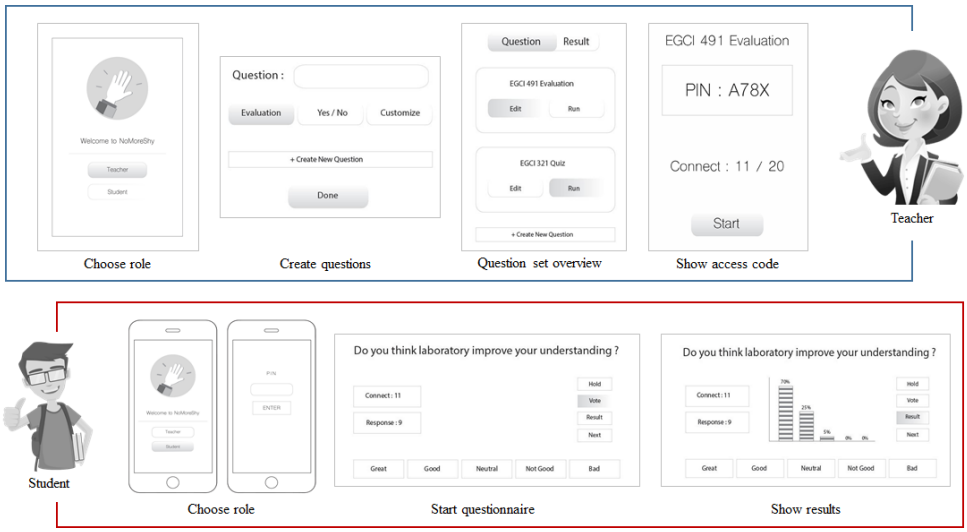

Figure 5. User Interface Design

In student's user interface, after students clicked on the student button on the first page of the website, student should write down the access code that teachers showed on the screen. This will make them join the questionnaire and this system will not ask any information of the student, which is the main objective of anonymous system. This system encourage the teacher to explain what the question is about to get attention from the students. After finish each vote, the result is shown in the form of bar chart. In this system, the teachers are encourages to analyze the results. For example, which question is correct or why this question is right or wrong. This will give a lot of knowledge to students and create interactions between teachers and students.

4. Online Anonymous Questionnaire System

As we mentioned that there are two groups of users in this system, i.e., teacher and system. When users login as teachers, they can fill in the question and choices in the input textboxes, which are shown in Figure 6. On the note input text, this information will not show to the student but will help teacher to add additional information about that question, such as name of the subject.

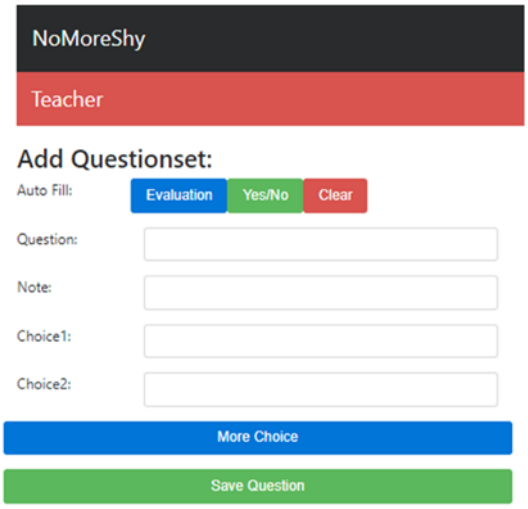

Figure 6. Add A Question

If the teachers want to have more choices in one question, they can press add choice button. If they changed their mind, they can press delete choice button to reduce the number of choices. On top of the input text, there are three buttons with label auto fill. This is function can make the system become more user friendly. If the teacher presses evaluation button, all the input text will be filled as evaluation choices such as strongly agree, agree, neutral, disagree and strongly disagree. Yes/No and clear button have similar functions to the evaluation button. After teachers finished creating questions, the questions will be displayed on the same page, as shown in Figure 7.

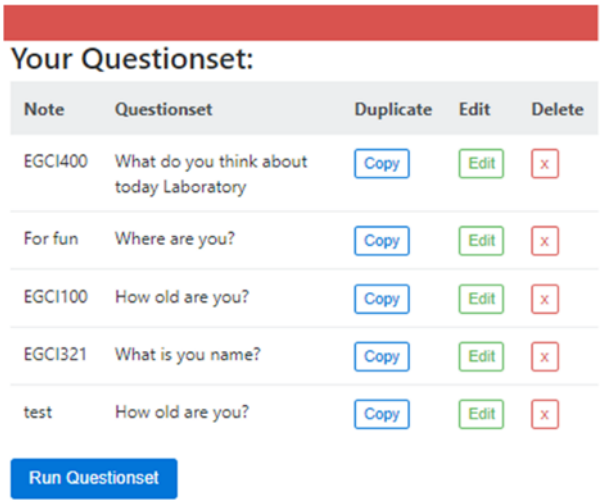

Figure 7. Created Questions

On each question, there are three buttons, i.e., copy, edit, and delete. As this system allows users to customize their own choice, there will be moments that user want to use the same choice in more than one question. This system has a copy button to allow users to duplicate the questions. Then they can edit questions and keep the same choice so user do not need to retype the choice again. Teachers can edit questions, choices, and note. The questions will be updated straight away. Teachers can delete questions if they do not want to use those questions anymore.

To run a questionnaire, the teacher needs to press run question set button. Then it will lead the teacher to another page. Figure 8 shows the run question set page, which shows the questions that are created by this user account. Teachers need to press select button to select question that they want to run on this questionnaire. After teachers selected the questions, the selected questions will be displayed on the same page, which is shown in Figure 9. There is an order of the question displays next to each questions. Users can edit the order by pressing remove last question and re-add the question.

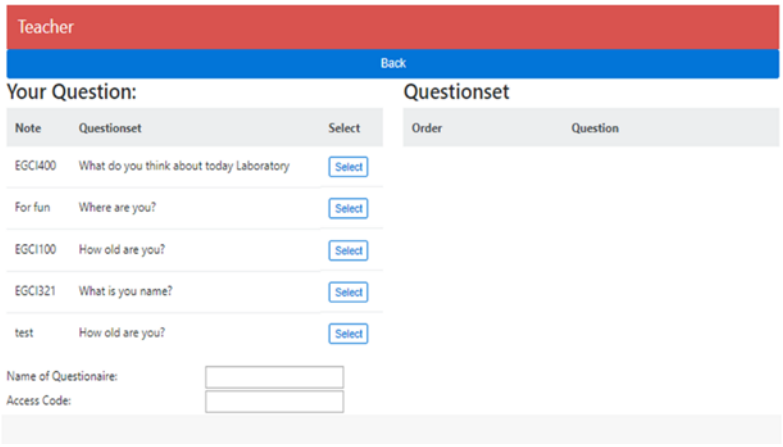

Figure 8. Run Question Set

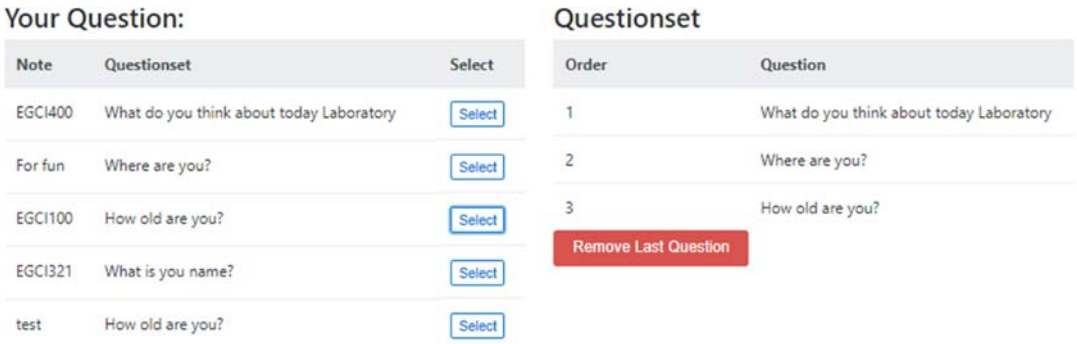

Figure 9. Select Questions to Questionnaire

At the bottom of question set page, there are two input textboxes. First input text is for the name of questionnaire. Name of questionnaire will be displayed on student's interface to allow them to join the questionnaire. Another input text is for access code. It is code that only people in the class will know. This code is used for blocking other people outside the classroom to join to the questionnaire. When users filled all the information, they can press confirm run button. Then, the web application should be displayed on the large screen to share information to the participants in the class. The information will show the number of joined users, access code and email, as shown in Figure 10.

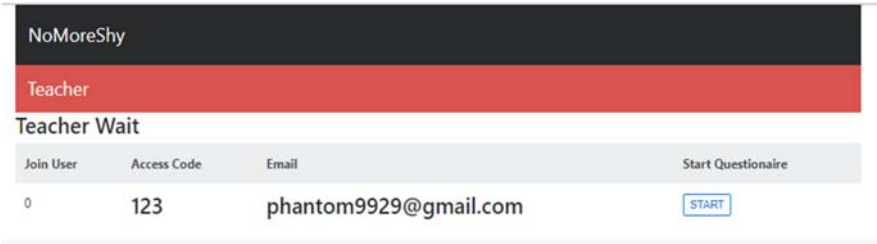

Figure 10. Teachers' Waiting Page

In student's side, students need to press the yes button to see the running questionnaire that is shown in Figure 11. That button will run an anonymous sign in.

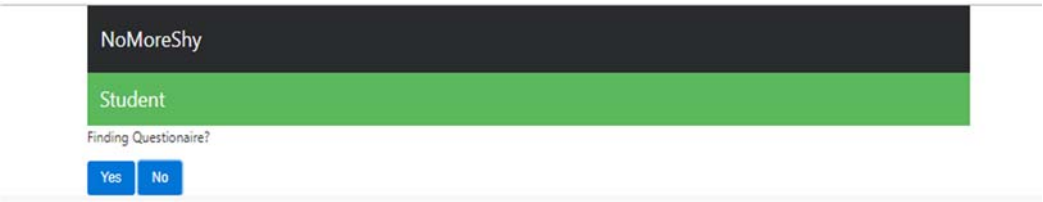

Figure 11. Student Access

There will be a table to show all running questionnaire that is shown in Figure 12. Students can select a questionnaire that runs by their teacher.

Figure 12. Running Questions

After student press join button, the system will lead to access code page. There is an input text for student to enter the access code. If access code is not match, the enter button will not appear. When students joined, the join user number will increase in real time. This system does not allow participants to join the questionnaire after the questionnaire starts. Therefore, the join button on student's interface will change to running status.

After clicking start by teachers, questions and choices will be displayed on the screen. This page is shown in Figure 13. When the teacher already explained the question and want the student to response, teacher can press the button can vote now. If teacher changed their mind and want to interrupt the response, they can press stop vote button.

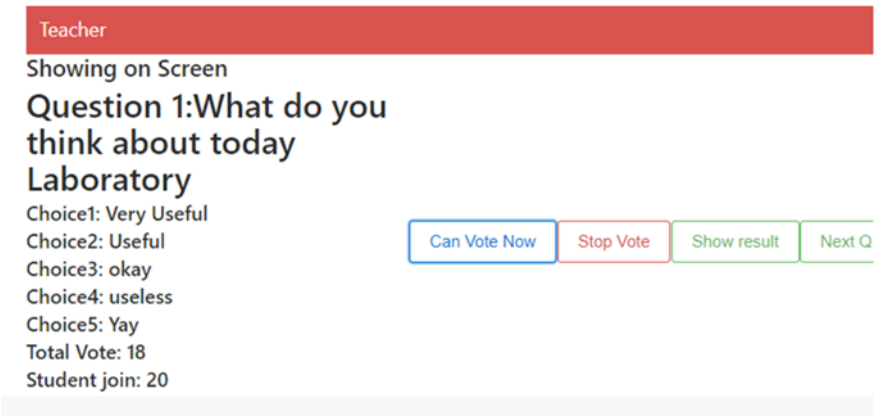

Figure 13. Teacher Asking Some Vote

If the teacher is satisfied with the total respond, teacher can press show result button. This system does not require every participant to respond to the question. In Figure 14, total vote 18 and student join 20 so teacher should be fine with the total response.

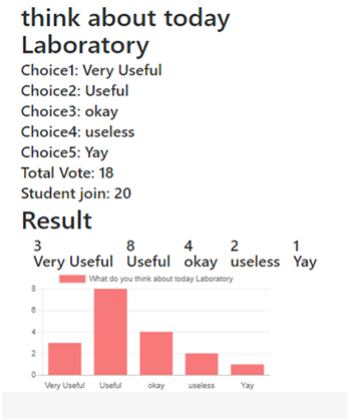

Figure 14. Display Results

5. Evaluation

In order to evaluate the proposed system, online questionnaire is created. User interface and how to use the website are showed to the users. The participant of this questionnaire will be either teacher or student. Most of the participants are students who are studying in university. Six questions are asked to the users.

1. Are you Student or Teacher?
2. Do you think the students will answer the questions in a more direct manner that the old system?
3. Do you think the function that allows the teacher to customize the questions produce a more effective evaluation?

4. Do you think the customization system is flexible?

5. Do you think it is simple to use?

6. Do you think it is presented more anonymously than the old system?

Participants can leave some comments to this system. The actual questionnaire that is use for this evaluation shows in Figure 15.

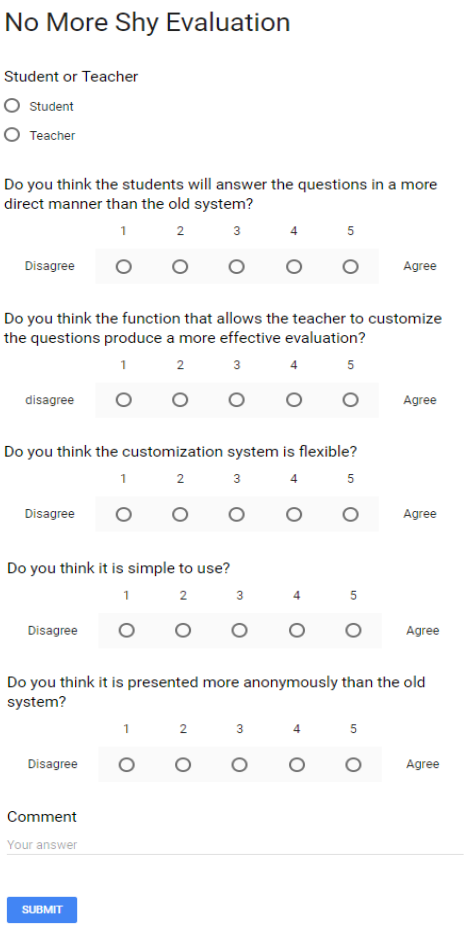

Figure 15. Evaluation Questionnaire

The number of participants are 25 people. The number of students are 20 and there are 5 teachers who responded to this questionnaire. The results of evaluation are shown in Figure 16 – Figure 20.

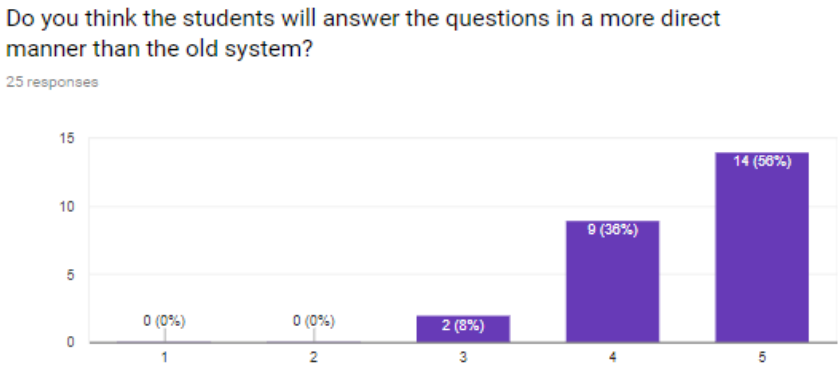

Figure 16. Evaluation Result of Question Number 2

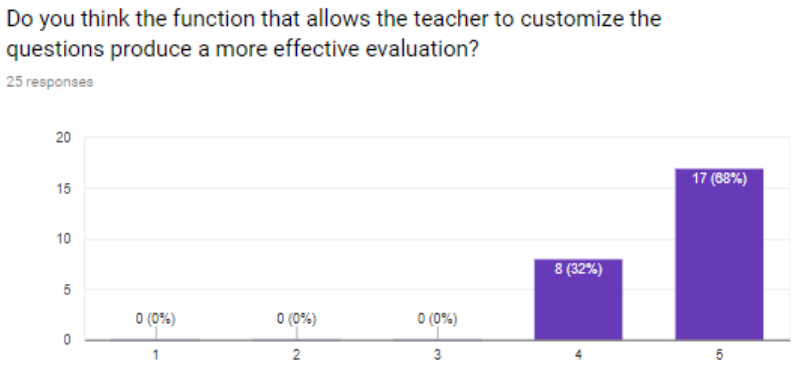

Figure 17. Evaluation Result of Question Number 3

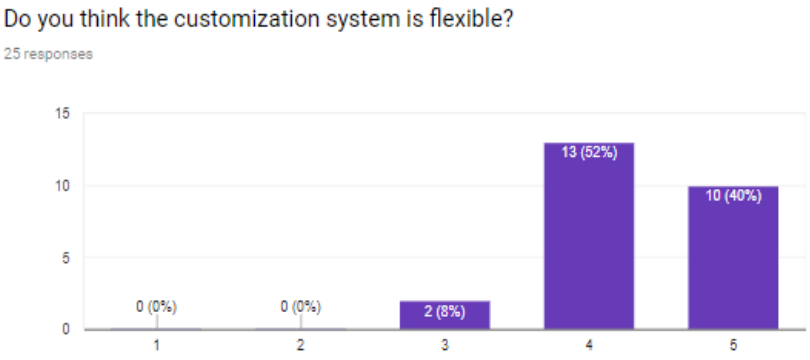

Figure 18. Evaluation Result of Question Number 4

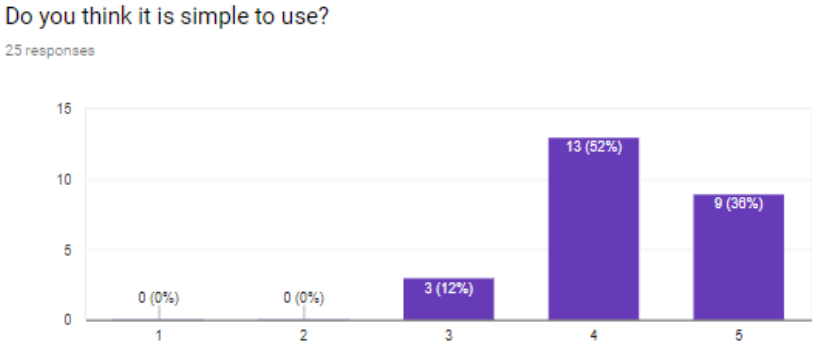

Figure 19. Evaluation Result of Question Number 5

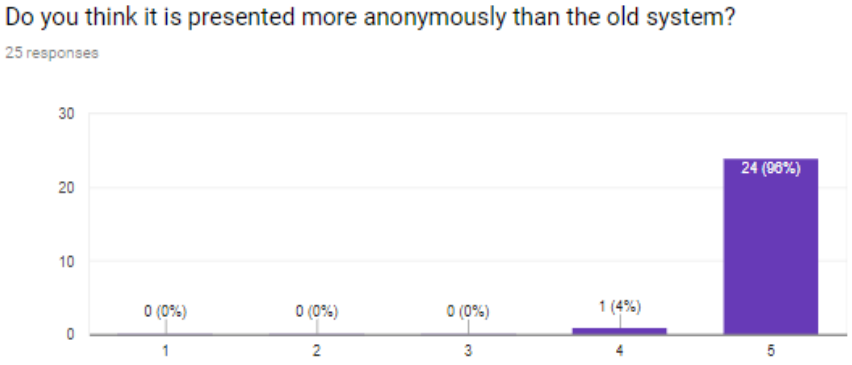

Figure 20. Evaluation Result of Question Number 6

The second question asks about students who are going to answer the question in a more direct manner than the old system or not. According to the results, most of the participants are agree to the question. They think that the real time questionnaire is able to improve the way student response to the questions. However, there are some participants who think that students may not answer the question in a more honest way. As they think that it depends on the students that they care about the question or not.

The third question asks about the functions that allow teacher to customize their own question that it will improve the course evaluation or not. Most of the participants agreed with the question as they think that this function allows teacher to get the information that they need. The fourth question asks about the flexibility of the website. Most participants thought that it is flexible as there are restrictions of the number of the questions in the questionnaire. On the other hand, some participants disagreed because this questionnaire system can generate only multiple choice type question.

The next question asks about the user interface of the system that it is simple to use or user friendly or not. Most of the participants agreed to the question. However, some of the participants disagreed as they think that on the teacher interface may be hard for some teachers to use for the first time. The last question of the questionnaire asks participants to compare about anonymous features between the old system and this system. The result is almost one hundred percent as the old system ask for student login but this system student just click one button to complete an anonymous login.

According from the comment and feedback on this evaluation questionnaire, participants are very appreciated with the anonymous feature and real time questionnaire system. However, some participants gave suggestions about generating the report function and teacher user interface that may need to be more user friendly.

6. Conclusion

This project propose a real time anonymous questionnaire online system. This system allows teacher and student participation. Teachers have chances to explain about the question and analyses the results to the students. This creates class interaction between the teacher and students. This system allows teachers to create their own question to get the information that they want for improving their course. Furthermore, data modelling method allows this questionnaire system to allow teachers to customize the choices of the question. Moreover, this real time questionnaire system allows students to sign in without asking for any information. This system will not store or set any condition on user IP address.

According to the feedback, this questionnaire can create effective evaluation system as the participant pay more attention and response to the question in a more direct manner way. However, there are some limitation in this system. To enter this questionnaire system, users must have a device that is able to connect to the internet. The inefficient in internet connection may cause error to this questionnaire system. To make this questionnaire system become effective, the teacher must have large screen to display the website to everyone in the room. This allow students to see the screen when teacher explain and analyze the questions.

References

1. Google Form. [Online]. Available: https://www.google.com/forms/about/ [Accessed: 7-April-2018]
2. Angela R. “5 Awesome Reasons to Use Google Forms”, 2013 [Online]. Available: https://www.makeuseof.com/tag/5-awesome-reasons-to-use-google-forms/. [Accessed: 10-Feb-2018]
3. Muhammad F.R. “The pros and con of Google Forms”, 2016 [Online]. Available: https://www.trustradius.com/reviews/google-forms-2016-06-30-13-52-10 [Accessed: 11-Feb-2018]
4. Carnegie Melon. “What are clickers and how can we effectively use them?”, 2018 [Online]. Available: https://www.cmu.edu/teaching/clickers/pdfs/clickers- pedagogicalvalue.pdf. [Accessed: 7-April-2018]
5. Kahoot. [Online]. Available: https://kahoot.com/welcomeback/ [Accessed: 7-April-2018]
6. Vuejs. [Online]. Available: https://vuejs.org/ [Accessed: 10-Dec-2017]
7. Firebase. [Online]. Available: https://firebase.google.com/ [Accessed: 10-Dec-2017]
8. Bootstrap. [Online]. Available: https://getbootstrap.com/ [Accessed: 5-Jan-2018]

9. Chartjs. [Online]. Available: https://www.chartjs.org/ [Accessed: 20-March-2018]
10. Momentjs. [Online]. Available: https://momentjs.com/ [Accessed: 20-March-2018]

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Designing an Induction Program to Encourage Teachers to Use Mobile Phone-based Student Response Systems

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Abstract

The Student Response System (SRS) is a powerful tool for the teachers to engage all students in the classroom in order to achieve learning outcomes effectively. The traditional SRS involves a small remote-control style device used by students to click to answer multiple-choice questions raised by their teachers. With the proliferation of mobile phones and increased digital literacy among students, the small device, also known as the clicker, can be replaced by mobile phones. The mobile phone-based SRS, call the mSRS, allows students to respond to more types of questions that can enhance active and deep learning. However, many teachers are still hesitant in using the technology. In order to let student benefit from mSRS, there is a need to understand how to motivate the teachers to use it. The authors conducted induction workshops to the teachers in a higher education institution and then an online survey in order to find out what are the perceived benefits and difficulties of using the SRS from a teacher's perspective. Data was collected from 81 teachers of a self-financed higher education institution in HK. It was found that technical training is a necessary, but not sufficient condition for teachers to use mSRS. Based on the findings from the survey and the TPACK framework, the authors designed an induction program that can help teachers to get started with using SRS. The induction program involves not only technical training, but also pedagogical considerations and classroom support.

This paper will start by an introduction to the types of SRS. Then it will provide a concise background of the institution under study. Then it will summarise and analyse the findings from the survey of teachers. Finally, it will describe the design of an induction program in which the teachers would not only learn the technical steps in using the SRS, but also some good practices.

Keyword: Audience Response System, Clickers, Pedagogy, Higher Education, E-learning, Teacher Acceptance, M-Learning

1. Introduction

In classroom teaching, it is important for teachers to get timely student feedback in order to achieve effective and efficient teaching and learning. If all students give answers to questions by speaking or raising their hands honestly, the teachers can have an accurate impression of his or her teaching effectiveness. From the student answers, the teacher may discover excellent ideas or misconceptions. Then the teacher can adjust the teaching strategy according. This is especially important in identifying and helping the students who have misconceptions. Otherwise, the weak students are often only identified at the end of the course after summative assessment when it is too late for remedial actions. However, it is difficult, if not impossible to have the majority of the students to respond to the questions raised by the teacher. When a teacher calls for a volunteer to answer a question, the student's answer may not give much useful feedback to the teacher. It is because only the most confident students will volunteer to answer questions and engage in discussions. Therefore, the teacher only obtains feedback from a few students who are likely to know the correct answers. This problem is more serious when the students are Chinese (Wang, Shen, Novak, & Pan, 2009).

In recent years, it is becoming even harder to get responses from students, as mobile phones become more affordable and popular among students. The mobile phone is often a source of student distraction in the classroom in higher education (Gikas & Grant, 2013). Therefore, there is a need for an efficient method to engage all the students in a classroom and quickly evaluate the progress of their learning, and at the same time turn the mobile phone into a useful learning tool instead of a distraction.

The use of SRS (Student Response Systems) can be an effective and efficient way to achieve the aim stated above. The next section will explain the basic mechanism of the traditional SRS and then introduce the mobile phone-based SRS.

1.1 Traditional Student Response Systems

The traditional SRS involves a small remote-control style device used by students to respond to questions raised their teachers. The clickers that is used in a traditional SRS is show in Figure 1. The whole mechanism of the SRS is show in Figure 2. With the SRS, the teacher can ask the question, and then the students can respond by selecting the number that represent their choice. The answers are collected and shown immediately on the classroom's projector screen. Students will not feel anxious to answer questions because students can only see the statistics of the answers, but not the names of students who gave the answers. However, the teacher can track the answers to individual students using reports provided by the software. There is no extra effort to count hands and handle paper. The benefits of SRS over traditional methods are summarised in 錯誤! 找不到參照來源。.

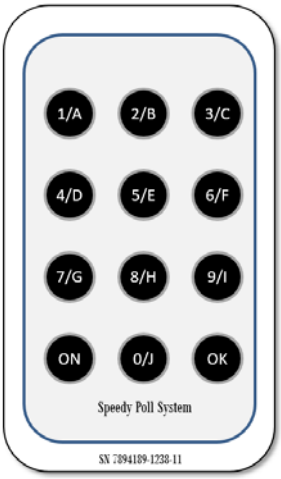

Figure 1. Student hand-held device in a traditional Student Response System.

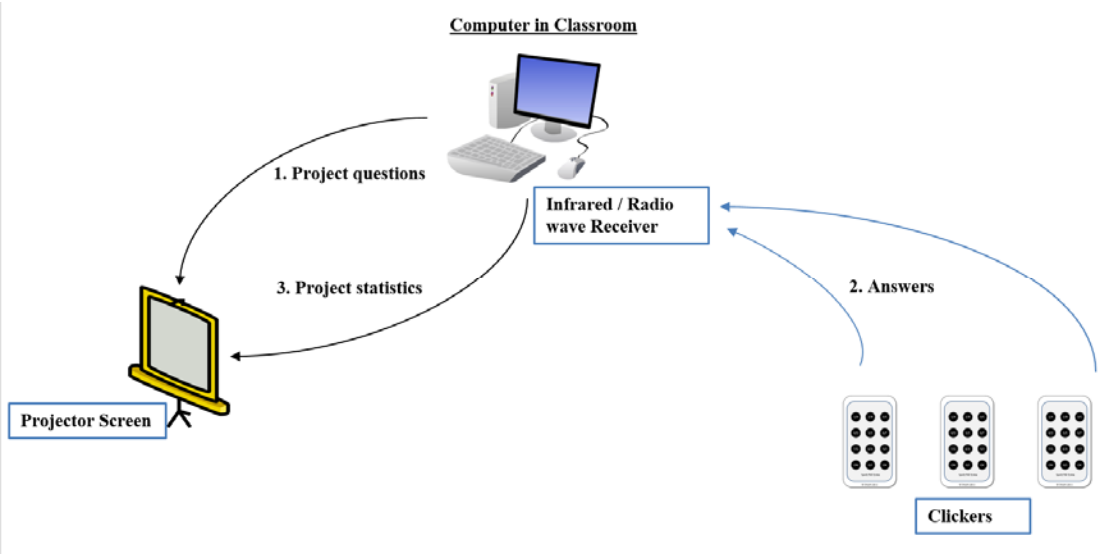

Figure 2. Mechanism of the traditional Student Response System.

Table 1. Benefits of using Student Response System (SRS) over traditional methods

Benefits	Source
Encourage shy students to share their answers	Wang et al. (2009)
Easy to measure response quantitatively and qualitatively without students being affected by their peers	Withey (2010)
Keep track of individual progress	Bae & Kim (2014); Cheung (2008)

Better Attendance	Kay & LeSage (2009)
Efficient in identifying and resolving misconceptions.	Kay & LeSage (2009)

Since the typical SRS involves the use of clickers and they can be called Clicker-based SRS. In recent years, SRS has become more feasible to many schools due to the falling prices of hardware and software. There is empirical evidence that SRS can improve student engagement (Carnaghan, Edmonds, Lechner, & Olds, 2011; McLoone, Villing, & O'Keeffe, 2015; Monk, Campbell, & Smala, 2013; Valle & Douglass, 2014). SRS are also known as Audience Response Systems (Cain, Black, & Rohr, 2009; Micheletto, 2011; Shon & Smith, 2011). However, there are some problems in using clicker-based SRS. Firstly, the school or the students have to purchase the hardware and software (Monk et al., 2013). Secondly, the clickers are usually small numeric keypads that have limited text entry capabilities (Caldwell, 2007). Using the traditional clicker, the students are limited to answering only multiple-choice questions raised by their teachers. This poses a serious limit on the question type, and therefore teaching strategy available to the teacher.

1.2 Mobile phone-based Student Response Systems (mSRS)

With the proliferation of mobile phones and increased digital literacy among students, the clicker, can be replaced by mobile phones. It is possible to replace the clickers with mobile phones, and the proprietary software with commercially available polling web site. At the applicant's institution, there is preliminary evidence that mobile phone-based SRS is well perceived by students at the applicant's institution (Wong & Wong, 2016). The mechanism of the mobile phone-based SRS, call the mSRS, is shown in Figure 3. The mSRS allows students to respond to more types of questions that can enhance active and deep learning. For example, the teacher can ask open-ended questions which stimulates the students to think more deeply about the subject than multiple choice questions. Then students can enter text messages in their own language. Furthermore, students can see on the answers provided by other students and then vote on them. The students are no longer required to purchase or pay a deposit for acquiring the clicker, which many forget to bring to the class because it has very limited usage, and often not used by all teachers. The Comparison between the Clicker-based and Mobile phone-based SRS is shown in **錯誤! 找不到參照來源。**.

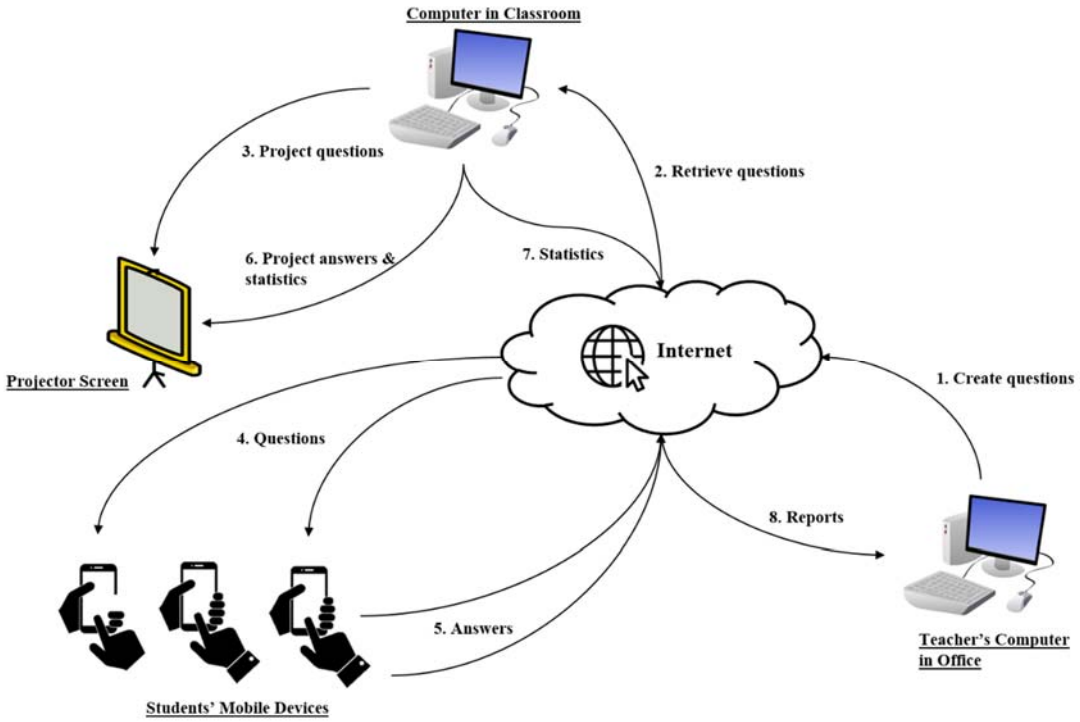

Figure 3. Components in a Mobile Phone-based SRS. The numbers represent operation sequence.

Table 2. Comparison between the Clicker-based and Mobile phone-based SRS

	Clicker	Mobile Phone
Cost	Dedicated hardware & Software	Subscription to polling software
Response	Numeric Choices	Numeric Choices, Text, Clicks on Images, Photos & Videos
Portability	Limited to the classroom	Unlimited
Anonymity	Not easy to achieve	Easy to achieve
Convenience	Small size, easy to carry, light weight	Small size, easy to carry, light weight

2. Objectives of the research

Despite the benefits of the SRS, many teachers are still hesitant in using the technology. In order to let student benefit from mSRS, there is a need to understand how to motivate the teachers to use it. However, anecdotal evidence at the applicant's institution revealed that only a few teachers are aware of the SRS, and even fewer have actually it. When a teacher considers to use mSRS in the classroom, they must overcome certain barriers (Lai, Hill, & Ma, 2015; Stowell, 2015). For example, the barriers may include the school's policy on the use of mobile phones in the classroom, the proliferation of mobile phone usage among students, the information and communications technology (ICT) infrastructure provided by the school, and the prevailing teaching & learning culture. In the secondary schools in Hong Kong, although the mobile phone ownership by students is very high, mobile phones are generally not permitted in the classroom, and the teaching & learning culture is oriented almost entirely towards preparation for public examinations. In higher education in Hong Kong, usually there are no explicit policy that restricts the use of mobile phones in the classroom, and the students don't have to focus on just public examinations. This means that teachers in higher education in HK face less barriers in the adoption mSRS than their secondary school counterparts. However, the teachers in higher education still have very low mSRS adoption. Therefore, this research aims to find out what the barriers are and how an induction program can overcome some of these barriers.

The overall aim of this research is to help teachers in a higher education institution in Hong Kong to use mSRS. The following objectives are the steps that were taken to achieve this aim.

- Objective 1: Find out the teachers perceptions towards mSRS
- Objective 2: Design an induction program based on the teacher concerns

3. Setting the scene

3.1 Background of the institutions under study

The research was carried out at the College of Professional & Continuing Education (CPCE) in HK. The CPCE was founded in 2002 by The Hong Kong Polytechnic University (PolyU). It provides self-financed higher education programmes at the through two educational units, namely the Hong Kong Community College (HKCC) and the School of Professional Education and Executive Development (SPEED). HKCC was established in 2001 under the auspices of The Hong Kong Polytechnic University (PolyU). As a self-financed post-secondary institution, if offers Associate Degree (AD) and Higher Diploma (HD) programmes spanning the domains of arts, science, social sciences, business and the specialised areas of design and health studies for secondary school leavers. At December 2017, there were 9419 students enrolled at HKCC. There were 214 full-time academic

staff teaching at HKCC. The School of Professional Education and Executive Development (SPEED) was formed by PolyU in 1999. PolyU SPEED offers a diversity of top-up honours degree programmes leading to PolyU-SPEED awards. At December 2017, there were 2522 students enrolled at SPEED. There were 76 full-time academic staff teaching at SPEED (Committee on Self-financing Post-secondary Education, 2017).

3.2 Implementation of mSRS at the institutions

The institutions subscribed to an mSRS called Poll Everywhere in August 2016. The mechanism of the mSRS is the same as described in Figure 3. The campuses of the two institutions provide free Wi-Fi to its students. All teachers and students were provided an account for using the mSRS. Teacher and students can login to the mSRS using the centralised portal that also provided access to the Moodle, the learning management system (LMS) used by the school. Both institutions purchased enough licenses to cater for the extreme case in which all teachers use the mSRS at the same time in all their classes. In its original form, Poll Everywhere allows students to answer questions without logging in. However, due to the license arrangements, all students are required to login to the mSRS through the central portal. This provides the ability for teachers to create reports that show the identities of the students. However, the login procedure is quite complicated. Firstly, the student has to load the mSRS mobile app or web page on their mobile phone. Then they have to enter their student email address. When Poll Everywhere recognises the address belong to one of two institutions, the student is redirected to the central portal. Finally the student has to enter their user name and password before they can use the application. Teachers can use the system conduct quick quizzes as part of format assessment. Figure 4 show one of the authors of this article conducting a quiz in his class. Figure 5 is an example of a question (poll) and the percentages of students responding to the different choices.

3.3 Training teachers to use mSRS

Since the implementation of the system, the Information Technology Unit (ITU) of CPCE has conducted a series of training on the use of the mSRS. There are two levels of training – Basic and Advanced. Regardless of the level, each training session is one hours and thirty minutes long, and conducted in a computer laboratory. Besides the training, the ITU regularly issued an special electronic newsletter on the system. The cover of the newsletter is show in Appendix 1. The basic training taught the teachers how to login their accounts, how to create various types of questions, and how to ask questions, which are called polls, using the mSRS. The advanced training taught the teachers to create different types of reports, and some advanced features such as segmentation. After the implementation

of the mSRS, the authors collected data about teacher and student perception on the use the polling system using focus groups and online surveys.

Figure 4. The author conducting a quiz using mSRS in his class.

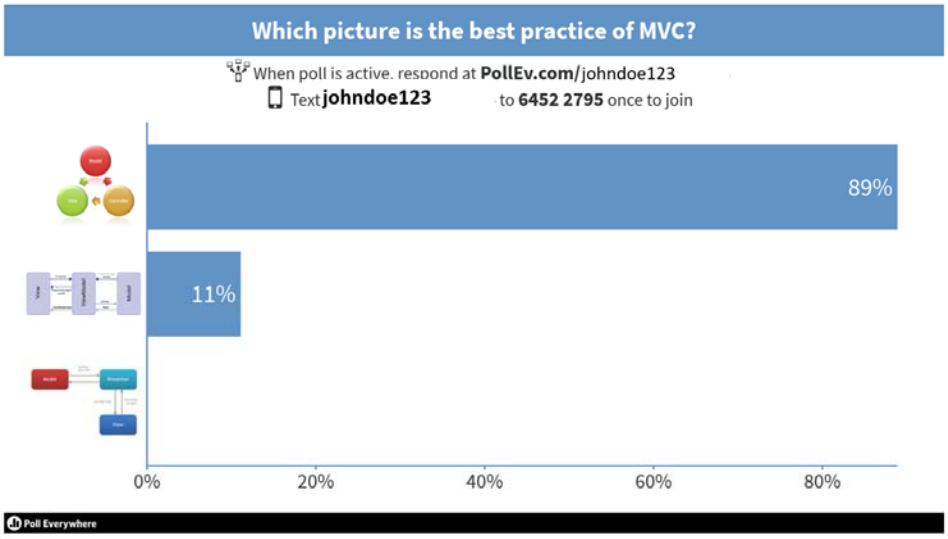

Figure 5. A multiple choice question asked using mSRS. Student responses are shown as percentages.

4. Induction Workshops

The teachers at the institutions were asked to join induction workshops if they have received the training by ITU, even if they have not used the mSRS in a classroom teaching situation. If an interviewee has only attended the trainings by the ITU, but no actual experience of using it, the researchers will let the interviewee to try the mSRS in a hands-on teaching simulation before conducting the interview. A progressive approach was adopted. The applicant's institution has organised teachers and students into four clusters. In semester two of 2016/17, the induction workshops started from the teachers and students in the Science, Technology and Health Studies Cluster. It is because this group are more likely to be tech-savvy. This should minimise the interruption to classes. As the research progresses, the experience gained would benefit the students and teachers in the next round. In semester one of 2017/18, the induction workshops were carried out for teachers in the Accounting And Finance, Management And Marketing Cluster. In semester two of 2017/18, the induction workshops were carried out for teachers in the Hotel And Tourism Cluster.

From these progressive induction workshops, it was found that most of the teachers were only aware of Poll Everywhere, the mSRS that the institutions subscribed. However, a few of the teachers also used other mSRSs such as Kahoot and Todaysmeet. The teachers preferred these two to Poll Everywhere mainly because they were easier in question setup, and more importantly, students were not required to login. The advanced features of Poll Everywhere were also introduced. These include segmentation and the built-in timer. However, most teachers mentioned they these features were not too useful to them. Two teachers also requested classroom assistance when they use Poll Everywhere in their first lessons. Classroom assistance was provided to these two teachers successfully. It was also found that the contents of the induction workshops had to include suggestions on how to use SRS effectively such as when to ask questions and how to encourage discussions.

5. Teacher Survey

At the end of semester one of 2017/18, a survey was conducted using an online tool called Survey Monkey. The teachers in the two institutions were invited to complete an online survey. The survey was anonymous and participants are not required to provide any information that can track to the individual student or staff. The authors invited academics to review the questionnaire before launching the survey. A total of 78 valid responses were received. There were a total of 290 teachers in the two institutions, so the response rate was 27%.

In all the results show in the following tables, the responses are measured in a 5-point Likert scale. In this scale, "SA" (strongly agree) has a weight of 5, "A" (agree) has a weight of 4, "N" (neutral) has a weight of 3, "D" (disagree) has a weight of 2, and "SD" (strongly disagree) has a weight of 1". The mean is the weighted average of the responses. Therefore, if a mean is above 3, it means the respondents agree to the questionnaire item in general. Conversely, if the mean is below 3, it means the respondents disagree to the questionnaire item in general.

From the first part of 錯誤! 找不到參照來源。 "I have not used SRS in some subjects because…", it can be seen that the first items all have means below 3. Only less than 25% of the teachers think they didn't use the SRS because they didn't have enough technological knowledge (TK). However, only 16% of the teachers disagree or strongly disagree that they did not already have too much material to cover in class. It is possible that the teachers need to have enough TPK in order to use SRS in a time efficient manner.

From the second part of 錯誤! 找不到參照來源。 "I think SRS is not suitable because...", all three items have means below three. It means that overall, the teachers disagree to the suggested reasons that made SRS not suitable in the classroom. It can be seen that only less than 20% of the teachers agree to the first two items, while only 26% agree to the third item.

From the third part of 錯誤! 找不到參照來源。 "I will use SRS if ...", all two items have means above three. It means that overall, the teachers agree that they will use SRS if they are given examples of classroom assistance, and if they are given examples of good practice in using SRS. It can be seen that only less than 20% of the teachers disagree to these two items.

Table 3. Responses from teachers who did not use mSRS in some subjects. (SA=Strongly disagree 5, A=Agree 4, N=Neutral 3, D=Disagree 2, SD=Strongly Disagree 1)

I have not used SRS in some subjects because...	Mean	SA	A	N	D	SD	n
I am hesitate about teaching with technology in class	2.53	0%	16%	33%	41%	10%	58
I am unclear about the functions	2.76	3%	21%	31%	38%	7%	58
I do not know what to ask using SRS	2.84	3%	21%	38%	33%	5%	58
I do not have the time to prepare questions	3.00	11%	25%	29%	25%	11%	56
I already have too much material to cover in class	3.63	21%	40%	23%	12%	4%	57
I think SRS is not suitable because...	Mean	SA	A	N	D	SD	n
Using it causes disciplinary problems.	2.60	0%	19%	34%	36%	11%	53
The system may break down.	2.68	2%	15%	38%	40%	6%	53
Using it causes classroom management problems.	2.70	0%	26%	30%	30%	13%	53
I will use SRS if	Mean	SA	A	N	D	SD	n
I have classroom assistance in the first few lessons.	3.38	9%	40%	35%	13%	4%	55
I am given examples of good practices.	3.64	13%	49%	29%	7%	2%	55

錯誤! 找不到參照來源。 show the responses from all teachers in the sample, regardless of their usage of SRS. From the first part of **錯誤! 找不到參照來源。** "I think SRS offers the following advantages...", it can be seen that the items all have means above 3. It means that overall, the teachers agree that SRS can be advantageous to their teaching. It is surprising to see only 43% of the teachers agree that SRS can help them prepare their lessons better. However, as expected, more than 70% of the teachers agree that SRS can help them get responses from all students, and that it can help them to know the students' understanding of the subject.

From the second part of **錯誤! 找不到參照來源。**"The followings will help me use SRS better.", all three items have means above three. It means that overall, the teachers agree that the suggested items can help them use SRS better. Sixty-seven percent of the teachers would like to see a lecture that

demonstrate the use of SRS. Seventy percent or more of the teachers would like to have a website that provide resources for using SRS, and examples of good practices.

From the third part of 錯誤! 找不到參照來源。"The problems I encountered when I use SRS are", all three items have means above three. It means that overall, the teachers agree that they encountered the two problems mentioned in the survey. However, since 42% of the teachers neither agree or disagree to the problem of "Students cannot enter SRS app and website", it is likely that this is not a serious problem. Half of the teachers agree or strongly agree that students cannot login to SRS during lessons, while only 12% disagree or strongly disagree. This implies that the login step poses a difficulty to students, and therefore to the teachers.

Table 4. Responses from all teachers in the sample, regardless of their usage of SRS. (SA=Strongly disagree 5, A=Agree 4, N=Neutral 3, D=Disagree 2, SD=Strongly Disagree 1)

I think SRS offers the following advantages...	Mean	SA	A	N	D	SD	n
It helps me prepare my next lesson better.	3.49	12%	31%	53%	5%	0%	78
I can get answers that I can later analyse.	3.81	12%	58%	31%	0%	0%	78
It can help me adjust my teaching.	3.82	14%	54%	32%	0%	0%	78
I can get responses from all students.	3.85	13%	62%	23%	3%	0%	78
I can know students' understanding on the subject.	3.95	17%	62%	22%	0%	0%	78
The followings will help me use SRS better.	Mean	SA	A	N	D	SD	n
Seeing a lecture demonstrating the use of SRS.	3.79	16%	51%	30%	2%	2%	61
A website of resources for using SRS at CPCE	3.81	16%	55%	24%	3%	2%	62
I need examples of good practices.	3.82	16%	54%	26%	2%	2%	61
The problems I encountered when I use SRS are	Mean	SA	A	N	D	SD	n
Students cannot enter SRS app and website.	3.26	9%	32%	42%	12%	5%	57
Students cannot log in to SRS during the lessons.	3.47	12%	38%	38%	9%	3%	58

In summary, the findings of the survey showed that the teachers had a positive perception on the usefulness of the mSRS. However, due to the tight curriculum design, the teachers must be given examples of good pedagogical approach in using technologies such as SRS. Also, the teachers need a solution to the “login” problem.

6. The TPACK framework

TPACK it is the acronym for technological pedagogical and content knowledge. It is framework that guide teachers to teach the contents of a subject through technology enhanced lessons, designed around effective pedagogical strategies. The framework is made up of three major components known as the CK, PK and TK (Koehler & Mishra ,2009). The content is the subject matter the teacher is trying to teach. Examples are mathematics, marketing and computer programming. Teachers must possess knowledge about a content area or discipline this includes facts and concepts related to the content area as well as the theoretical frameworks of that content area. This knowledge is called content knowledge (CK). Teachers also need to know how to plan lessons and use teaching strategies to help students learn the lessons. This knowledge about teaching is known as pedagogical knowledge (PK). In today's world, technology, especially information and communications technology is ubiquitous. The knowledge to use technology to enable a person to achieve his or her desired outcomes is called technological knowledge (TK). The effective teacher should combine CK, PK and TK to help students achieve the learning outcomes.

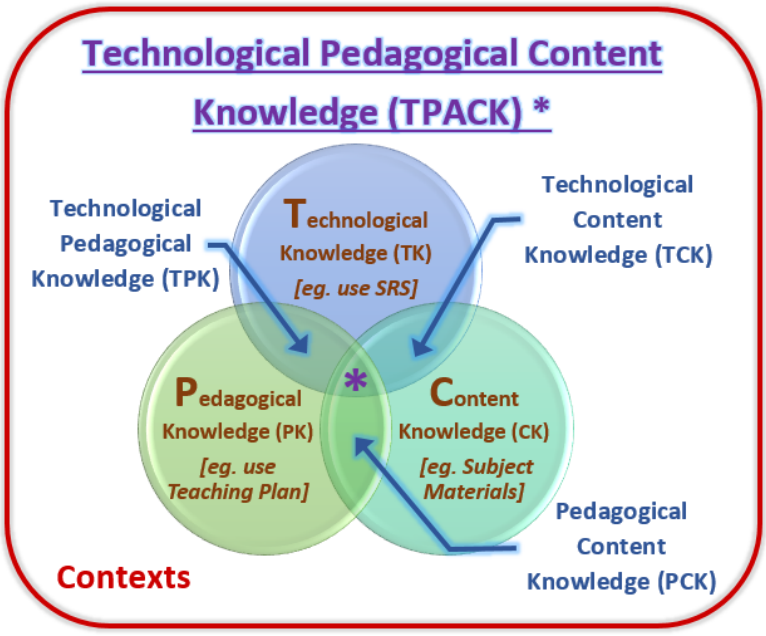

Figure 6. The technological, pedagogical and content knowledge (TPACK) framework adapted from Koehler & Mishra (2009).

Figure 6 illustrates the interrelation between CK, PK and TK to come up with TCK, TPK and PCK as well as the ultimate TPACK framework. It also depicts some specific tools used in this research, such as using subject materials in CK, using teaching plan in PK, and using SRS (Student Response System) in TK.

In the institutions, teachers teaching business subjects such as marketing and accounting, language subjects such as English, social science subjects such as sociology, as well as science subjects such as mathematics and information technology, are involved in the study. While these teachers are all professionals and possess an in-depth knowledge in their subject areas, it is undeniable that the content nature of certain subjects including most language and social science subjects make it more difficult to be used in conjunction with technology for teaching purpose. Teachers for subjects of this kind would need extra efforts to create or look for materials that can be applied to the technology used. In this study, a few technological measures are used. First, there is the use of mobile phones which serves as the primary input devices for the students to use in the SRS. Second, web technology is used and in this particular study, the polling website Poll Everywhere (polleverywhere.com) is where the teachers posted their course-related questions. Third, free Wi-Fi is available within the campus area which is essential for such SRS to function properly as it serves as the connection means that students can use. In essence, technology is employed to the content knowledge (TCK) when course-related questions are put on SRS for students to participate.

While content knowledge is different for different subject courses, pedagogical knowledge can also vary across various courses. For instance, the pedagogy in an accounting class can have an emphasis on solidifying proper entry concepts, while the pedagogy in a mathematics class may focus more on arousing students' logical thinking. Such difference in the pedagogical strategies between subject courses may result in different types of questions (e.g. multiple-choice questions, True/False questions, or even open-ended questions) posted on SRS. In addition, SRS can also be employed at different stages during the class sessions to suit the pedagogical framework used (TPK). For instance, the design of the in-class pedagogy can be such that the teacher invites students to response to one or more questions posted on SRS by using their mobile phones at the beginning of the class with the purpose of stimulating student's learning interest. Then the teacher can ask the students respond to question(s) around midway through the class to check if the pace of teaching aligns with students' pace of learning. Finally, the teacher may also put the use of SRS towards the final stage of class to see if teaching/learning outcomes have been met. There is virtually no limit for the number of times SRS is used during a particular class session as it depends entirely on the pedagogical strategies designed by individual teachers. The essence is not the number of times SRS is employed but the effectiveness of its usage to enrich the teaching/learning experience and to give coherence to the pedagogy designed.

It is equally important for content knowledge to be integrated deliberately into the teacher's pedagogical framework (PCK). Again, different subject courses may have uniqueness in their contents which can be incorporated differently in the pedagogical strategies in terms of formats, levels, stages,

and complexity. The vital point is that appropriate content knowledge is strategically consolidated into the pedagogical structure which is then to be employed in the SRS to form the centre (TPCK) of the TPACK framework to be practically implemented for classroom usage.

Referring to the TPACK framework, the induction program provides the TPK leg, which is a vital contribution to the TPCK at the centre. As such, the induction program is advantageous in helping teachers to understand the benefits of implementing SRS in teaching practices and the techniques in successfully integrating SRS in classroom environments.

7. Design of an Induction Program

Based on the experience gained from the induction workshops, the teacher survey, and the TPACK framework, the authors propose the following design of an induction program. The main components of the induction workshop are listed as below:

1. The ITU basic training should introduce other SRSs in additional to Poll Everywhere. The additional SRSs should not require students to login and easier to use by teachers
2. The teachers will be given examples of good and bad practices in using SRS. This should include the timing of the questions in a lesson, and how to use the polls to encourage students to discuss and think more critically about the subject contents.
3. The teachers will be asked to complete a worksheet on their planned usage of SRS. An teacher who is experienced in the use of SRS at the institutions will review the completed worksheet and make suggestions.
4. The teachers can sign up for classroom assistance.
5. A video of the actual use of the SRS at the institutions will be shown.
6. The examples of good practice, worksheet and video should be placed in a website which is available to the teachers in the institutions.

8. Conclusions, limitations and further research

This research has accomplished its objectives. For objective one, it was found that the teachers at the two institutions believed the SRS was useful to their teaching, but they need help to use the SRS to enhance their lessons within the limits of the heavily loaded teaching schedule. For objecive two, a design of an induction program is created based on the experience from the induction workshops and the teacher survey. The essence of the induction program is that the teacher should be introduced to more than one type of SRS, and they must be shown examples of good pedagogical approaches in using SRS. Also, the materials of the induction program should be made available in the learning management system of the institutions to make the whole process cost effective and sustainable.

Although the response rate of the teacher survey was 27%, which was quite high, the sample is limited to the two institutions at which the authors are working. It is suggested that the same research process be replicated in other higher education institutions.

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References

Bae, Ji-Hye, & Kim, Sung-Ki. (2014). Research on Educational Use of Smart-Phone Applications with Smart Clicker Technique *Advances in Computer Science and its Applications* (pp. 597-602): Springer.

Brown Steven C., (2009), Technology Acceptance and Organizational Change: An Integration of Theory, Auburn University

Burns, Shari M., & Lohenry, Kevin. (2010). Cellular Phone Use In Class:Implications For Teaching And Learning A Pilot Study. *College Student Journal, 44*(3), 805-810.

Cain, Jeff, Black, Esther P, & Rohr, Jürgen. (2009). An audience response system strategy to improve student motivation, attention, and feedback. *American Journal of Pharmaceutical Education, 73*(2).

Caldwell, Jane E. (2007). Clickers in the large classroom: Current research and best-practice tips. *CBE-Life Sciences Education, 6*(1), 9-20.

Carnaghan, Carla, Edmonds, Thomas P., Lechner, Thomas A., & Olds, Philip R. (2011). Using student response systems in the accounting classroom: Strengths, strategies and limitations. *Journal of Accounting Education, 29*(4), 265.

Committee on Self-financing Post-secondary Education. (2017, 28 June 2017). *The Hong Kong Polytechnic University — Hong Kong Community College, General Operational Information*.

Davis, F. D. (1986) 'A Technology Acceptance Model for Empirically Testing New End-User Information Systems: Theory and Results', Sloan School of Management, Massachusetts Institute of Technology.

Davis, F. D. (1989) 'Perceived usefulness, perceived ease of use, and user acceptance of information technology', *MIS Quarterly*, 13, 319–340.

DeSanctis, G. "Expectancy Theory as an Explanation of Voluntary Use of a Decision Support System," *Psychological Reports* (52), 1983, pp. 247-260.

Gikas, Joanne, & Grant, Michael M. (2013). Mobile computing devices in higher education: Student perspectives on learning with cellphones, smartphones & social media. *The Internet and Higher Education, 19*, 18-26. doi: http://dx.doi.org/10.1016/j.iheduc.2013.06.002

Hwang, Gwo-Jen, Wu, Chih-Hsiang, Tseng, Judy C. R., & Huang, Iwen. (2011). Development of a ubiquitous learning platform based on a real-time help-seeking mechanism. *British Journal of Educational Technology, 42*(6), 992-1002. doi: http://dx.doi.org/10.1111/j.1467-8535.2010.01123.x

Johnson, L., Adams Becker, S., Estrada, V. & Freeman, A. (2015). *NMC Horizon Report: 2015 Higher Education Edition*, Austin, Texas: The New Media Consortium.

Jungsun, Kim, & Kizildag, Murat. (2011). M-learning: next generation hotel training system. *Journal of Hospitality and Tourism Technology, 2*(1), 6-33. doi: http://dx.doi.org/10.1108/17579881111112395

Lai, G., Hill, V., & Ma, Y. (2015). *Clickers in the classroom: A business professor's adoption of a classroom response system* (Vol. 18).

Lindquist, David, Denning, Tamara, Kelly, Michael, Malani, Roshni, Griswold, William G., & Simon, Beth. (2007). *Exploring the potential of mobile phones for active learning in the classroom*. Paper presented at the Proceedings of the 38th SIGCSE technical symposium on Computer science education, Covington, Kentucky, USA. http://cseweb.ucsd.edu/~wgg/Abstracts/fp142-lindquist.pdf

Liu, Pei-Lin, & Chen, Chiu-Jung. (2015). Learning English through actions: a study of mobile-assisted language learning. *Interactive Learning Environments, 23*(2), 158-171. doi: http://dx.doi.org/10.1080/10494820.2014.959976

McLoone, Seamus, Villing, Rudi, & O'Keeffe, Simon. (2015). A Novel Smart Device Student Response System For Supporting High Quality Active Learning In The Engineering And Science Disciplines. *AISHE-J: The All Ireland Journal of Teaching and Learning in Higher Education, 7*(2).

Micheletto, Melinda J. (2011). Using Audience Response Systems To Encourage Student Engagement And Reflection On Ethical Orientation And Behavior. *Contemporary Issues in Education Research, 4*(10), 9-17.

Monk, Sue, Campbell, Chris, & Smala, Simone. (2013). Aligning pedagogy and technology: A case study using clickers in a first-year university education course. *International Journal of Pedagogies & Learning, 8*(3), 229-241. doi: 10.1063/1.2820913.

Park, Sung Youl, Nam, Min-Woo, & Cha, Seung-Bong. (2012). University students' behavioral intention to use mobile learning: Evaluating the technology acceptance model. *British Journal of Educational Technology, 43*(4), 592-605. doi: 10.1111/j.1467-8535.2011.01229.x

Şad, Süleyman Nihat, & Göktaş, Özlem. (2014). Preservice teachers' perceptions about using mobile phones and laptops in education as mobile learning tools. *British Journal of Educational Technology, 45*(4), 606-618. doi: 10.1111/bjet.12064

Sampson, D. G., Isaias, P., Ifenthaler, D. & Spector, J. M. (2013). *Ubiquitous and mobile learning in the digital age*, Springer, New York.

Seidman, I. (1998), *Interviewing as qualitative research: A guide for researchers in education and social sciences (2nd ed.),* New York: Teachers College Press.

Shon, Herb, & Smith, Laurie. (2011). A Review of Poll Everywhere Audience Response System. *Journal of Technology in Human Services, 29*(3), 236-245. doi: 10.1080/15228835.2011.616475

Stowell, J. R. (2015). Use of clickers vs. mobile devices for classroom polling. *Computers & Education, 82*, 329-334. doi:https://doi.org/10.1016/j.compedu.2014.12.008

Valle, Maribel, & Douglass, Carolinda. (2014). Clicking For Health: Use Of A Student Response System In A Large Interdisciplinary Health Class. *Academy of Educational Leadership Journal, 18*(3), 87-92.

Venkatesh, V., & Davis, F. D. (2000), 'A theoretical extension of the technology acceptance model: Four longitudinal field studies', *Management Science*, 46, pp.186–204.

Wang, M., Shen, R., Novak, D., & Pan, X. (2009). The impact of mobile learning on students' learning behaviours and performance: Report from a large blended classroom. *British Journal of Educational Technology*, *40*(4), 673-695.

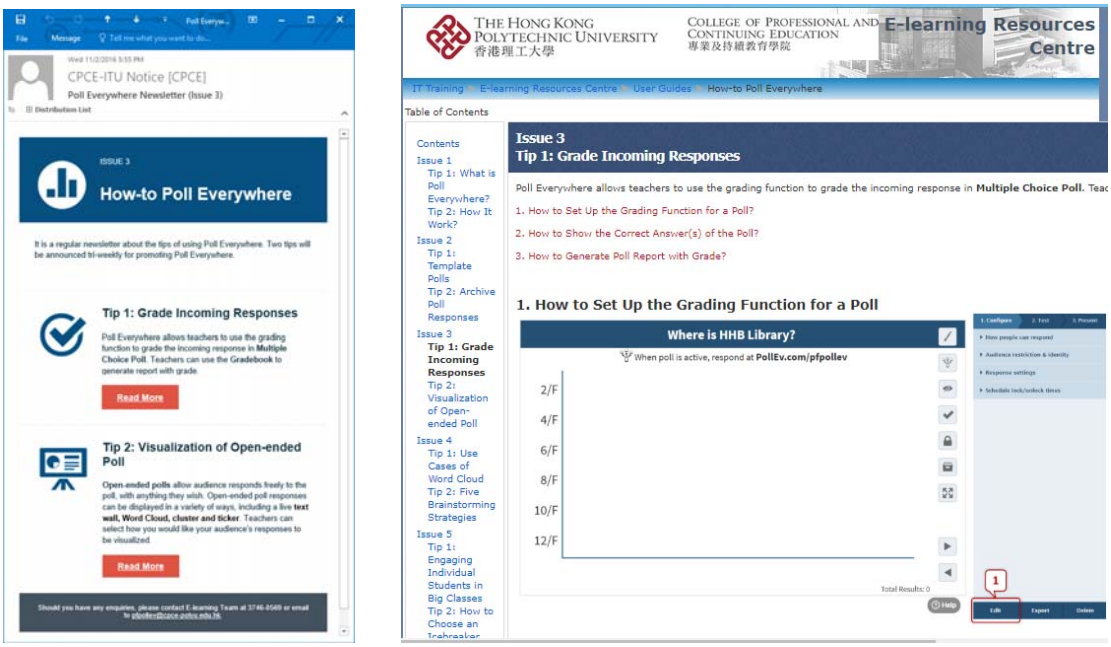
Williams, Brett, & Boyle, Malcolm. (2008). The use of interactive wireless keypads for interprofessional learning experiences by undergraduate emergency health students. *International Journal of Education and Development using ICT, 4*(1).

Withey, Carol. (2010). Engaging students through electronic voting-clickers and mobile phone systems: PollEverywhere.

Wong, A., & Wong, S. (2016). A cross-cohort exploratory study of a student perceptions on mobile phone-based student response system using a polling website. *International Journal of Education and Development using Information and Communication Technology, 12*(3), 58-78.

Wong, K.L. (2015), Student Perception on a Student Response System Formed By Combining Mobile Phone and a Polling Web Site, *SPEED Working Paper Series No. 6, Issue 3*

Appendix 1



Appendix 1. Newsletter issued by ITU on the mSRS. (Left) Cover in an email. (Right) Contents

An Exploration of Creative Problem Solving Method on College Engineering Students' Creative Disposition

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Abstract

With the proceeding of the new world, engineers are expected to accomplish technological breakthroughs, innovating new things, and solve real world problems. In addition, a growing amount of attention has been dedicated to achieving effective learning via development and application of new approach to creative thinking trainings. However, teaching creativity can be challenging, especially in engineering courses because engineering students sometimes do not associate engineering with creativity.

This study attempts to present further perspective upon the effectiveness of developing creative thinking among engineering majors in college through the incorporation of creative problem solving (CPS) method in an engineering course so as to lay the foundation for practical guidelines on trainings in creative thinking. The 18-week course plan of this research was specifically based on a context of Industry 4.0. A total of 48 participants were enrolled in the course. A creative disposition questionnaire was implemented as a tool to evaluate the creative tendencies of student participants. Prospective results were found after applying paired sample t-test to the analysis of the data received from student participants. Significant improvement in creative thinking dispositions were found among the participants. Further suggestions are also provided for instructors in this study.

Keyword: Creative Disposition, Creative Problem Solving Method, Industry 4.0

1. Introduction

With the advent of the twenty-first century, the ever-changing technology and the rapid distribution of science and technology, combined with the Internet of Things, Industry 4.0 was developed. According to Partnership for 21st Century Skills (2009), some competences required for success in 21st century have been identified by society and many workplaces. These competences include, critical thinking and problem solving, collaboration and leadership, effective communication, curiosity and imagination (Saavedra and Opfer, 2012). Among all, the qualities of creative thinking and problem solving are considered very desirable and marketable attributes for graduates entering 21st century workplace (Casner-Lotto & Barrington, 2006). In the Internet of Things (IoT) paradigm (Bandyopadhyay & Sen, 2011), the knowledge and skills required in different fields and areas are becoming more specialized and complicated. Uniform standards or indicators cannot be used to evaluate expertise of different areas. Therefore, there is a growing number of international movements focusing on the skills required for students to master in preparation for success in this rapidly changing digital society; the urge of bringing a new breath into educating our offspring becomes stronger ever than before.

Therefore, a growing number of managers, practitioners and teachers in engineering design are integrating creative thinking to stimulate innovation. Universities are increasingly expected to implement programs that foster and nurture creative problem solving in engineering students to meet business demands (Baillie, 2002; Barett, 2013, Jackson, Oliver, Shaw, & Wisdom, 2006). What teachers are facing is the need to develop new curriculums engaging a creative pedagogical approach. However, there is a lack of explicit guidelines to help incorporate creativity into the curriculums and ways to assess the effectiveness of these creative trainings (Puccio, Firestien, Coyle, & Masucci, 2006; Spencer, Lucas, & Claxton, 2012; Wood & Bilsborow, 2014). This present study targets to offer comprehensive understanding of high-order learning outcomes by exploring engineering students' creative disposition based on a creative problem solving (CPS) approach.

2. Literature Review

2.1 Creative Problem Solving (CPS) Approach

The creative problem solving is a framework that individuals or groups can use to formulate problems, opportunities or challenges. The importance of creativity in problem solving has been widely acknowledge, and the effectiveness of specific idea-generating techniques, exercises and courses (Dodds, 1998; Gilbert, Prenshaw & Ivy, 1992) have been discussed and designed to enhance creative thinking. It can generate and analyze varied and novel options, and plan for effective implementation of new solutions or courses of action (Treffinger, 1995). In the research conducted within two groups of people in an engineering department (Basadur, Graen & Green, 1982), the results showed that the group of people who were trained under a complete process of creative problem solving showed a significantly higher work performance in problem ideation, problem solving and problem finding. Therefore, it seems to be a suitable pedagogy that manages to apply in educational settings (Isaksen, Dorval, & Treffinger, 2000).

2.2 Problem Solving and Creativity

According to Torrance (1977), the emergence of creativity involves observing, seeing possibilities, finding problems, taking risks, making mistakes, failing, contemplating, re-contemplating, trying new ways, solving problems and sharing the process and product. It shows that creativity and problem solving are complementary concepts. Creative individuals tend to display their abilities of solving problem in an innovative, high qualities and appropriate manner (Kaufman & Sternberg, 2007). In a further discussion, a problem solving process involves the divergence and convergence of creativity. Creativity potentially exists among all people (Taylor & Sacks, 1981; Torrance, 2000), so anyone might be creatively productive in meaningful ways. When centrally pervasive, creativity becomes exemplified and enhanced for every student. Also, when students attain greater success and satisfaction through creative efforts, problem solving becomes the driving pedagogy (Livingston, 2010). Therefore, based on the relation of creativity and problem solving, we suppose that, through a CPS approach, students' thinking can be activated, helping them to generate more solutions and new ideas to face the challenges they may meet in class or, in life.

2.3 Creative Disposition

Creativeness is an aptitude of self-actualization and potential development (Rogers, 1959). Creative people are governed by internal factors, especially personality. Hallman (1963) considers that the individual who has the requisite abilities will actually produce creative results that depends on his motivational and temperamental traits, such as attitude, emotions, interests and so on. Williams (1972)

points out creative individuals usually display four natures on their feeling behavior, which are courage to take risks, enthusiasm to seek challenges, inquisitiveness, and imagination. Sternberg and Lubart (1995) note one nature that creative individuals exhibit is to defy the crowd. They resist swimming with the stream and merely going after what others are thinking or doing. They tend to go off in their own direction, seeking to propose ideas that are both novel and useful. In the research of Lou, Chung, Dzan and Shih (2012), the researchers also described people possessing higher creativity tend to show independent determination, their own views, a personal style, high confidence and perseverance.

3. Research Method

3.1 Participants

The research was carried out in *Theory and Practice with Industry 4.0*, a course where students studied the trend and implication of industry 4.0 for learning. The experimental period of this research was in the fall term 2017, in a total of 18 weeks. In this research, there were 48 participants, 42 who majored in mechanical engineering and 6 from other departments, attending this 18-week course at a national university in Taiwan in 2017. To meet the requirement of this course, students were categorized into 12 groups.

3.2 Course Design and Content

The research used one-group pretest-posttest application and carried out under the course framework of Industry 4.0. The curriculums of Industry 4.0 are composed of two parts: creative thinking trainings and professional knowledge lectures. For the creative training side, the instructor inculcated students with a six-stage creative problem solving process through three CPS sessions in 18 weeks. In each session, different stages of CPS process were introduced. Besides, creative thinking techniques such as Brainstorming, Six Hats Thinking, SCAMPER and Bug-list Techniques were taught and practiced. To build up students' professional knowledge, professionals gave lectures and introduced theories in Industry 4.0. Then, with the foundation of Industry 4.0 knowledge, students were asked to create a creative group project. Finally, to further explore student participants' perceptions toward the overall experiences of the Industry 4.0 course, and gain deeper understanding in perceptions of proposed CPS approach, a semi-structured interview was employed in the end of the course.

3.3 Research Tools

3.3.1 Creative Problem Solving Process

Incorporating the concept of CPS and assigning different CPS stages in accordance with contents of the course, *Theory and Practice with Industry 4.0,* we adapted a CPS process proposed by Titus (2000). There were totally three CPS sessions, three hours per session. Among these sessions, six stages of CPS process were introduced. According to the framework of Industry 4.0 course, CPS sessions separately focus on different aspects, which are getting the problem ready, generating ideas and planning for action. Besides, six stages of CPS process, including problem identification, problem delineation, information gathering, idea generation, and idea evaluation and refinement, and idea implementation were gradually introduced in these sessions.

3.3.2 The Scale of Creative Disposition

The scale of creative disposition is modified from the Creativity Assessment Packet (Lin and Wang, 1994). It represents the creative tendencies of the students (e.g., I like to ask something that no one has imagined before). The scale consists of twenty-six items. This instrument is based on five-point Likert scale, ranging from "1" for "Strongly Disagree" to "5" for "Strongly Agree". " The Cronbach's alpha value of the scale is .86.

4. Experiment Results

The present research incorporated a CPS method into an engineering course and explored the effect of CPS process on college students' creative disposition. The present study adopted pair sample t-test. The result of pair sample t-test showed that there was a significant difference between participants' pre and post creative disposition ($t=-2.34$, $p<0.001$).

Table 1. The Pair Sample T-test between Pre & Post Total Scores of Creative Disposition Scale

	Mean	N	SD	*t*	*p*
Total scores(pre)	3.38	48	0.49	-2.34***	0.023
Total scores(post)	3.57	48	0.47		

***p<0.001

5. Discussions and Conclusions

Regarding the results, we could see that there was a significant improvement in the score of students' creative disposition, which implied the application of CPS process had a positive influence on students' creative disposition. The significance of this may be related to the design of the course; the application of CPS process in the course may have successfully provided students with sufficient

space to imagine and generate solutions from thinking out of box. In students' interviews, many students gave credit to the stages of CPS process, which could help them to think more systematically; one of the students mentioned that, "the structure of the course help me organize our ideas."

Furthermore, in the interview, when students were asked the question, "do you think the strategies we taught during the whole CPS process? Do you think they are useful for you?" Most of them gave positive feedbacks. Some of the students said, "yes, I remember the Six Hats Thinking is helpful in motivating my thinking" or "yes, Brainstorming helps me generate more ideas, even though some are unrealistic." Their answers may be corresponded to the results of the changing on their ways of thinking.

In the present study, a six-stage CPS process was applied in a project-based learning course, Industry 4.0, to help students enhance their creativity. We could find that the CPS process had enormous effects on student participants' creative disposition, which might indicate that CPS process may provide participants with more possibilities on human thinking. However, even though CPS process in this research brought a positive result on creative disposition, different facets of creativity such as product creativity should be taken into account. Thus, it is suggested that future studies employ CPS methodology to test a more comprehensive range of creativity.

References

Baillie, C. (2002). Enhancing creativity in engineering students. *Engineering Science & Education Journal*, *11*(5), 185-192.

Bandyopadhyay, D., & Sen, J. (2011). Internet of things: Applications and challenges in technology and standardization. *Wireless Personal Communications*, *58*(1), 49-69.

Barrett, D. (2013). The creativity cure. *Chronicle of Higher Education*.

Basadur, M., Graen, G. B., & Green, S. G. (1982). Training in creative problem solving: Effects on ideation and problem finding and solving in an industrial research organization. *Organizational Behavior and Human Performance*, *30*(1), 41-70.

Casner-Lotto, J., & Barrington, L. (2006). *Are They Really Ready to Work? Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century US Workforce*. Partnership for 21st Century Skills. 1 Massachusetts Avenue NW Suite 700, Washington, DC 20001.

Dodds, W. B. (1998). Bringing creativity and innovation into the marketing classroom. In *1998 Western Marketing Educators' Conference Proceedings* (Vol. 22, pp. 63-66).

Gilbert, F. W., Prenshaw, P. J., & Ivy, T. T. (1992). Creativity through education: A process for enhancing students' self-perceptions. *Journal of Marketing Education*, *14*(1), 35-40.

Hallman, R. J. (1963). The commonness of creativity. *Educational Theory*, *13*(2), 132-136.

Isaksen, S. G., Dorval, K. B., & Treffinger, D. J. (2000). *Creative approaches to problem solving: A framework for change*. Kendall Hunt Publishing Company.

Jackson, N., Oliver, M., Shaw, M., & Wisdom, J. (Eds.). (2006). *Developing creativity in higher education: An imaginative curriculum*. Routledge.

Kaufman, J. C., & Sternberg, R. J. (2007). Resource review: creativity. *Change*, *39*(4), 55-58.

Lin, C., & Wang, M. (1994). The creativity assessment packet. *Taipei, Taiwan: Psychological Publishing*.

Livingston, L. (2010). Teaching creativity in higher education. *Arts education policy review*, *111*(2), 59-62.

Lou, S. J., Chung, C. C., Dzan, W. Y., & Shih, R. C. (2012). Construction of a creative instructional design model using blended, project-based learning for college students. *Creative Education*, *3*(07), 1281.

Rogers, C. R. (1959). *A theory of therapy, personality, and interpersonal relationships: As developed in the client-centered framework* (Vol. 3, pp. 184-256). New York: McGraw-Hill.

Saavedra, A. R., & Opfer, V. D. (2012). Learning 21st-century skills requires 21st-century teaching. *Phi Delta Kappan*, *94*(2), 8-13.

Sternberg, R. J., & Lubart, T. I. (1995). *Defying the crowd: Cultivating creativity in a culture of conformity*. New York: Simon & Schuster Inc.

Taylor, C. W., & Sacks, D. (1981). Facilitating lifetime creative processes—a think piece. *Gifted Child Quarterly*, *25*(3), 116-118.

Titus, P. A. (2000). Marketing and the creative problem-solving process. *Journal of Marketing Education*, *22*(3), 225-235.

Torrance, E. P. (1977). Creativity in the Classroom; What Research Says to the Teacher.

Torrance, E. P. (2000). *Research review for the Torrance Tests of Creative Thinking figural and verbal forms A and B*. Scholastic Testing Service.

Treffinger, D. J. (1995). Creative problem solving: Overview and educational implications. *Educational Psychology Review*, *7*(3), 301-312.

Williams, F. E. (1972). *A Total Creativity Program for Individualizing and Humanizing the Learning Process: Identifying and Measuring Creative Potential* (Vol. 1). Educational Technology.

Problem-solving Exploring Mathematical Structures through Consideration in Diverse Contexts

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Abstract

In mathematics education today, it is an important task to foster mathematical literacy not only for STEM students but also for non-STEM students. What is important is to think quantitatively about affairs closely attached to the students, to extract the essence and think logically. In this paper, I will introduce examples of enhancing the ability to see through the essence and structure, by analyzing the problem structurally, to explore the solution approach from various angles, to find out the mathematical relevance between seemingly unrelated problems. It seems that learning like this case is fresh for students, stimulating student's views of (learning) mathematics, and group work leads to arousing and accepting diverse viewpoints. Such learning may be a new form in introduction education in the university and first year education, among others. To that end, it is also an important task to develop a framework related to class design and evaluation while accumulating teaching materials and practical examples.

Keyword: Problem-solving, Mathematical literacy, Context, University education

1. Introduction

Today, in mathematics education, mathematical literacy is an important subject. According to PISA, mathematical literacy is an individual's capacity to formulate, employ and interpret mathematics in a variety of contexts. It includes reasoning mathematically and using mathematical concepts, procedures, facts and tools to describe, explain and predict phenomena. It assists individuals to recognize the role that mathematics plays in the world and to make the well-founded judgements and decisions needed by constructive, engaged and reflective citizens (OECD, 2016).

PISA is aimed at evaluating the ability to utilize mathematics, mainly as a point of arrival at the secondary education stage. However, mathematical literacy is intended as a framework concept that can be applied to expertise of all ages and all stages (Stacy, 2012), and even when considering university-level mathematical literacy, the core of the problem is very similar (Hodgson, 2014). Therefore, the idea of literacy in the PISA survey (framework of analysis) can be the basis of consideration also in university education.

Then, what kind of education can be considered in mathematics education, mainly for students who do not major in mathematical science (non-STEM students), in order to increase the power of utilizing mathematics? As frequently pointed out by various surveys such as PISA, Japanese students can solve basic mathematical problems, but they are not so good at solving problems that utilize mathematics in everyday situations.

Currently, students' learning history of mathematics at the time of entering university is diverse, due to "dropout" of mathematics learning at elementary and junior high schools and course selection at high schools. Reflecting the learning experience at school, students' narrow and negative views on mathematics can be seen regardless of the school stage (Lester et al., 1982; Schoenfeld, 1983; Garofalo, 1989). This has been mentioned for a long time, but not been so improved.

However, due to the progress of advanced information-oriented society and knowledge-based society, scenes that need mathematics are increasing even if they are not experts in mathematics. It is important to make students recognize that mathematics is involved in various situation and that the usefulness of mathematically thinking.

In the first place, mathematics is an ancient academic discipline, as well as "citizen's mathematics" as a basic language of various sciences and as a tools of communication and problem solving (Science for All Japanese, 2008). And mathematics is also a word to consider quantitatively, extract the essence, and think logically (Science Council of Japan, 2013).

This indicates that, by learning mathematics, it is expected to nurture abilities and attitudes to be able to capture the essence of the problem, express it quantitatively (mathematically), think logically and solve (including interpretation and exploration).

Especially, mathematics learning-history of non-math majors students is diverse, and education that puts emphasis on mastery of knowledge and strategies under uniform premise, is not so easy. Rather, as Steen(2003) mentioned, accumulating experience in "using elementary mathematics in a sophisticated form" rather than using sophisticated mathematics immaturely is desirable.

It is an education that emphasizes to develop the ability to see through the essence and structure of the problem by thinking mathematically through the use of relatively simple mathematics. In other words, the goal of the education is to recognize the utility of mathematics and reasons for existence, grasp the essence of the problem about natural phenomena and social phenomena around them, express it mathematically (quantitatively), think logically, and solve it mathematically.

2. Lesson design

In the following, I will introduce cases of enhancing the ability to see through the essence and structure, by analyzing the problem structurally, to explore the solution approach from various angles, to find out the mathematical relevance between seemingly unrelated problems.

Analyzing the problem structurally will examine the essence of the problem. In the process of capturing the essence of the problem, while trying to grasp the purpose of the problem, consider the relationship of the problem (event) roughly and try to figure out mathematically.

In that case, there are several methods (strategies) to apply mathematical resources (concepts, knowledge etc.) suitable for solving the problem. And, by comparing and examining them, we focus not only on the procedural (operational) outlook of mathematical resources (the way of applying), but also on the structural outlook (the conceptual nature inherent in the problem) (Sfard & Linchevski, 1994).

Solving problem is not always the end. After solving the problem, we can also explore the problem. Finding many (similar) solutions of the problem is sort of like "quantitative flexibility". And if so, finding mathematically different solutions even in the same context is like "qualitative flexibility", and the latter is more fundamental and structural. By noticing that there are mathematically common characteristics even in different contexts, it is important to become able to apply mathematical resources without being bound by a specific context and to think flexibly.

3. Case Example

First, in the example of "number of pathways", the relationship between solution methods is examined, and led to find mathematical properties and commonality. Next, in the example of "ingenuity of calculation", posing problems of various contexts, and comparing them to obtain procedural and structural outlook of mathematical resources included in these problems.

3.1 Number of pathways

Problem

As shown below, there are four streets in the east and west and five streets in the north and south.

Then, how many pathways (directions) can you have without taking a detour from point A to point B? (Figure 1)

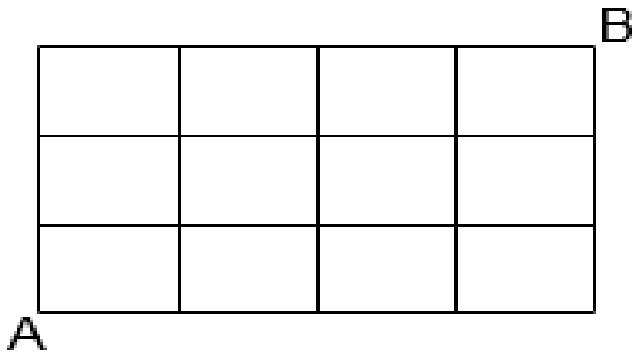

Figure 1. Pathways

Question

Let's solve it by using knowledge over junior high school.

"What problem is this problem?"

Then, solve by arithmetic method.

"Solve using basic arithmetical operations and diagrams, fractions, ratios, etc. Characters can be used, but keep to a minimum."

Solution (Combination)

Let "a" for moving to the east 1 block, "b" for going to the north 1 block.

And then, the total number of pathways is the total number of permutations of such seven characters as follows; a, a, a, a, b, b, b.

Therefore, $_7C_3 = \frac{7!}{4!3!} = \frac{7\times6\times5\times4\times3\times2\times1}{4\times3\times2\times1\times3\times2\times1} = 35$

Solution (Counting)

The number of directions to the intersection on the way from the point A to the point B is shown in the figure. (Figure 2)

Therefore, the total number of pathways is, 20 + 15 = 35.

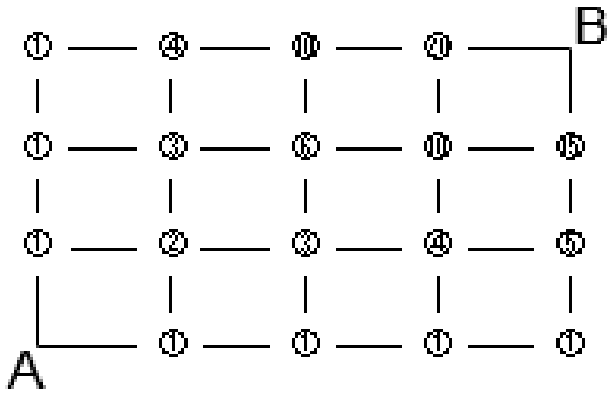

Figure 2. Counting pathways

Relationship between two solution methods

In the figure below (Figure 3), without taking a detour from point A to point B, if you want to arrive R, you have to go through P or Q.

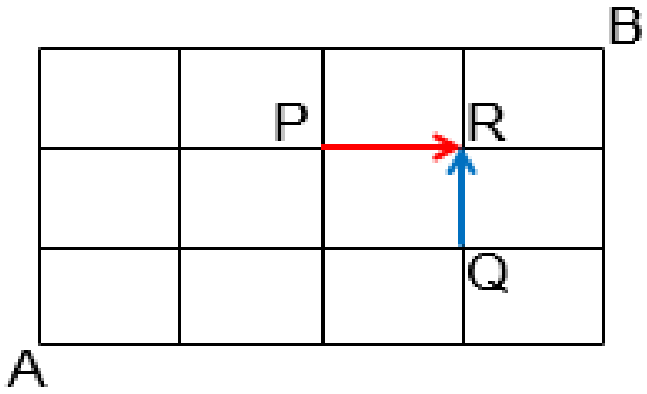

Figure 3. Counting pathways

So, let "p" is the number of routes from point A to point P, and "q" is the case from point A to point Q, then, the number of pathways from point A to point R is (p + q).

Further investigation

Generalize the above, if there are "r" streets in the east and west and "n-r" streets in the north and south, the following relationship is obtained.

$${}_nC_r = {}_{n-1}C_{r-1} + {}_{n-1}C_r$$

Also, the number of pathways at each intersection corresponds to Pascal's triangle. (Figure 4)

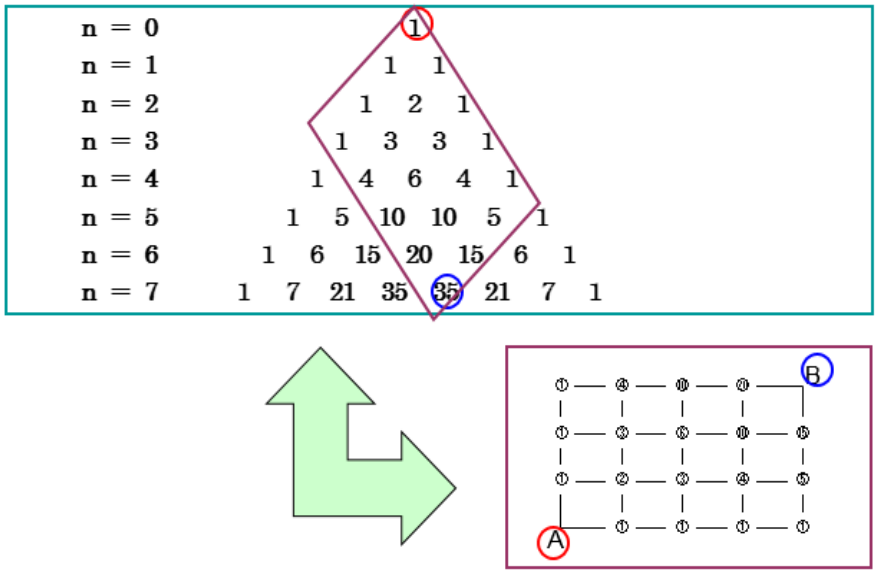

Figure 4. Pascal's triangle

< Student's comments (excerpt) >

- What I learned in my high school days led to new discoveries. I felt the depth of mathematics. Pascal's triangle is wonderful.
- I only used Pascal's triangle to remember the coefficients of the polynomial, but I was surprised to see unexpected relation.
- I knew two ways to count the number of pathways, but I felt very fresh because I was quite unaware that these were related each other. Since I knew these knowledge, I realized that knowledge and knowledge were fitted into like a puzzle.
- By discovering the relationship between these solutions, I noticed that the solution procedures I memorized became intertwined and that leads to deep understanding. I felt that this was one of the amusingness in mathematics. And I became strongly motivated to pursuit of this.

3.2 Ingenuity of calculation

Problem

Let's create simple problems related to ingenuity of calculations with reference to the example and practice we worked on. As a procedure, first write an idea (subject matter) and write a problem (set a scene) that will lead to that formula. Anything is OK as long as it relates to ingenuity of calculation.

Example:

[Subject] factorization; $a^2 - b^2 = (a + b)(a - b)$

[Expression you want to derive] $65^2 - 35^2 = (65 + 35)(65 - 35)$

[Problem statement] …

[Answer] …

Flow of activities

- First of all, let's consider what kind of problem you can make yourself.
- Next, in the group, share opinions and create one problem.
- And please present the problem your group created.
- Finally, on the problems other groups created, please write what you think is good or what you think is better to improve.

< Example of problems created by students (excerpt) >

- Stairs

  There are ten steps of stairs, that gradually increased by 3 cm each time. If the height of the first staircase is 3 cm, find the sum of the heights of each stage.

- Bowling pin

  I am going to arrange 100 rows of bowling pins. How many in total are needed?

  (The solution of these problem is sum of arithmetic progression.)

- The face of Anpanman*

  Anpanman gives half of the face to the child whenever he meets a child. If he met 10 children, how much face he has remained?

  (The solution of this problem is setting up and calculation of formula of geometric progression.)

  * Anpanman is Japanese anime character; the head is made of bread containing bean paste, and gives part of face (bread) to hungry person.

- The volume of sphere

When removing a sphere with a radius of 3 cm from a sphere with a radius of 8 cm, what is the volume of the remaining part?

・The volume of the earth crust

Find the volume of the earth crust, by excepting the volumes of the mantle from that of the earth. Let the radius of the earth is 6000 km, the radius of the mantle is 4000 km, and the circumference ratio is π.

(These problem are to calculate these volumes and the difference.)

< Student's comments (excerpt) >

・I thought that most groups created problems pertaining to everyday life, and that their idea were amazing.

・There was humor in the problem sentence and it was fun.

・It was good to change the example well and create problems.

・It was fresh to tackle a problem by replacing them with concrete ones.

・The idea of changing example from square to cube or changing it for everyday life was good.

・It is good to pick up real things (like Earth and mantle), but I think that there are many people who do not know the value, too large number.

4. Considerations

In this paper, examples were showed that aims to enhance the ability to see through the essence and structure, by analyzing the problem structurally, to explore the solution from various angles, to find out the mathematical relevance between seemingly unrelated problems. These case were tried in the mathematics class of general education in university. The students' comments mentioned above suggest that learning as in this case is fresh for the students, stimulating the students' view of mathematics, group work leads to arousing diverse perspectives, and for the students to accept these perspectives.

Such learning is an effort to change their attitude towards learning mathematics and to improve practical knowledge utilization skill, in particular, there is a possibility that it will become one of the new contents of introductory education or first-year education in university. For that purpose, it is also an important task to develop a framework related to class design and evaluation while accumulating teaching materials and practical examples.

Acknowledgments

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References

Garofalo, J. (1989). Beliefs, Responses, and Mathematics Education: Observations from the Back of the Classroom. *School Science and Mathematics*, *89(6)*, 451-455.

Hodgson, B. R. (2014). Mathematics teaching and learning at the university level: Comments from a 'secondary-tertiary transition' viewpoint. *Proceedings of the International Workshop on Mathematical Literacy at the University Level: Connections with the Secondary-Tertiary Transition,* pp.40-49.

Lester, F. K., & Garofalo, J. (1982). Metacognitive Aspects of Elementary School Students' Performance on Arithmetic Tasks. *Paper presented at the Annual Meeting of the American Educational Research Association.* New York.

OECD (2016). *PISA 2015 Assessment and Analytical Framework: Science, Reading, Mathematic and Financial Literacy*, PISA, OECD Publishing, Paris.

Schoenfeld, A. H. (1983). Beyond the Purely Cognitive: Belief Systems, Social Cognitions, and Metacognitions As Driving Forces in Intellectual Performance. *Cognitive Science*, *7*, 329-363.

Science Council of Japan. (2013). *Reference standard on curriculum development for quality assurance in university education: mathematical sciences*. [In Japanese]

Science for All Japanese. (2008). *Science and technology literacy statue for the 21st century*. [In Japanese]

Sfard, A. & Linchevski, L. (1994). The gain and the pitfalls of reification - The case of algebra. *Educational Studies in Mathematics, 26, 191-228.*

Stacey, K. (2012). The International Assessment of Mathematical Literacy: PISA 2012 Framework and Items. *Regular lecture presented at the 12th International Congress on Mathematical Education*. Seoul.

Steen, L. A. (2003). Data, shapes, symbols: Achieving balance in school mathematics. In B. L. Madison & L.A. Steen (Eds.), *Quantitative literacy: Why literacy matters for schools and colleges* (pp.53-74). Washington, DC: The Mathematical Association of America.

Transliteration Issues of Idealization and Inconsistencies of Spelling in ESL Classes

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Abstract

This study investigates the process of comprehending English text in Thai and Japanese ESL classes. In reading English text, ESL students whose native language employs a non-Latin script often struggle with comprehending the text. Through a series of reading experiments assigned to Thai and Japanese students, it is found that the struggle often starts from the students' effort to map the native language's consonant and vowel sounds to Latin alphabets, which in itself raises transliteration issue of the idealization of phoneme and the inconsistency of spelling. Post-experiment semi-formal interviews and questionnaires are used to observe the students' attitude towards reading English text. The finding suggests that the success of comprehending English text depends on the students' ability to treat the text's words' formal properties and to treat the words not necessarily as representative of sounds.

Keyword: Transliteration, Reading comprehension, Thai students, Japanese students

1. Introduction

This study is preliminary in nature. In its initial stage, it was meant to compare the class profile of that of the first author to that of the second author. The comparison was mostly exploratory. The first author's EFL class in Nakhon Si Thammarat in the upper-southern Thailand and the second author's EFL class in Yokohama, Kanagawa Prefecture, Japan share several demographic features. Firstly, the students of both classes are all non-native speakers of English, with Thai and Japanese as their L1 respectively. Secondly, the students are all in their first year in college. Finally, both classes share the same pedagogy background in which English serves as the medium of instruction for academic purpose.

The Thai and Japanese EFL classes share the characteristic of having an L1 that is used throughout each country. Although pockets of dialects and other indigenous languages exist in each respective country, Thailand and Japan are largely, linguistically monolingual, which does not necessitate a neutral lingua franca for domestic use (Koanantakool, Karoonboonyanan, & Wutiwiwatchai, 2009; Zehner, 2017). Both countries also command exceptionally high literacy rate and possess long literary tradition, and Thai and Japanese as the national language are used in every aspect of life (country profile from *Ethnologue*, accessed Jun 2018). In addition, both Thai and Japanese, unlike English, use non-Latin scripts in their writing system—abugida or segmental alphasyllabaric for Thai and a mix between logographic Chinese characters and syllabaric kana for Japanese.

Consequently, in both countries English learning falls within a formal framework, mainly learned and used in school studies (Kahn-Horwitz, Sparks, & Goldstein, 2012). Both authors discovered another similarity when finding the published 2016 country-by-country TOEFL ITP scores by the Educational Testing Service (ETS). Although methodologically flawed and therefore should be analyzed with caution (Zehner, 2017), the 2016 TOEFL ITP raw scores reveal that Thai and Japanese test-takers perform less excellently in the standardized proficiency test compared to those from Asian countries which are in particular also largely, linguistically monolingual such as South Korea and Vietnam (*Ethnologue*, accessed Jun 2018) and in general where English is regularly and formally taught at schools as part of the national curriculum.

Table 1. Raw scores and percentiles of Asian countries

Country	Mean Score	Percentile	Percentile rank
Singapore	570	90.0	1
Philippines	535	79.5	2
Malaysia	532	78.0	3

Pakistan	517	72.0	4
Hong Kong	513	71.0	5
India	499	62.7	6
Taiwan	494	62.7	7
Bangladesh	490	58.5	8
Burma/Myanmar	489	58.0	9
Nepal	487	56.0	10
South Korea	486	55.7	11
Indonesia	480	54.0	12
People's Republic of China	480	54.0	13
Vietnam	467	46.0	14
Thailand	**466**	**45.7**	**15**
Cambodia	463	44.0	16
Japan	**460**	**43.0**	**17**
Macau	458	41.3	18
Laos	412	19.0	19

(Source: ETS, in Zehner, 2017)

Lastly, both authors observed classroom practice in Thailand and Japan in which L1 use was in fact heavily encouraged to supplement the English learning. For example, the second author observed that many Japanese teachers encouraged junior high school students to write English words that had been transliterated in katakana on the margin of the students' textbook. Meanwhile, Thai instructors were quick to let their students resort to consulting online dictionaries available on their smart phones when the students approached unfamiliar English words in their textbook and wrote their Thai equivalent or transliteration on their notes. These showed that students tended to isolate words and prized transferring the English phonemes into the closest equivalent in Thai and Japanese respectively. Both practice noticeably slowed down the reading pace and did a great disservice to pronunciation (Berninger & Alsdorf, 1989; Gray, Ehri, & Locke, 2018; Ocal & Ehri, 2017; Rosenthal & Ehri, 2011). Considering what Thai and Japanese EFL classes have in common, both authors were interested to inquire whether both classes also shared similar class practice, pedagogical issues, and learning challenges.

2. Research Questions

1. What challenges do Thai and Japanese EFL students encounter when reading English text? What reading errors do they make that are related to those challenges? Are the errors specifically or partially related to the transliteration of English sounds and written words into L1 and vice versa?
2. What are the students' strategies to address those problems? How effective or sucessful are the strategies in helping them building reading comprehension of English text?

3. Method

Eleven (11) first-year college students from an upper southern province of Nakhon Si Thammarat, Thailand participated in this study, for which they received lunch coupons as a reward. Their age ranged from 19 to 20-year old, and only one (1) of them had ever taken a standardized English profiency test. All of them were female, with the exception of one transgender male-to-female student. Before college, they all had learned English at school studies for 8-10 years, starting in elementary school. In college, none of them majored in English.

The second group of students who participated in this study were twenty-three (23) students in Yokohama, Kanagawa, Japan, aged 18-20-year old. One of the students was half-Filipina whose mother spoke to her in both English and Tagalog. They all had been studying English for at least seven (7) years in junior high school, high school, and freshman year in college. Most of them majored in local government, and a few majored in economy. Eight (8) of them had taken a standardized English proficiency test.

The material for the reading test were selected to reflect on the students' reading habit outside class: comic books, popular magazine, and Instagram posts. For the first part of the test, the students were asked to read two pages of a comic book with a different style of panelling and write and discuss the sequence of the panels. The second part asked them to scan information from a graph on print and online medium. For the purpose of this paper, however, only the results of the first part of the reading test is discussed. A questionairre and a semi-formal interview preceeded and were conducted again as a follow up to the reading test.

4. Results and Discussions

Since the Thai and Japanese EFL classes in this study range from 2 to 4 hours per week, it is only wise that home literacy is considered an important contributor to a learner's progress in reading (Otaiba et al., 2010). In fact, students nowadays are exposed to more non-academic written materials than ever to the point that not only spelling and reading develop synergistically and reciprocally, but do they also become more increasingly demanding of multilingual literacies (Byrum & Madison, 1995; Jonsson & Muhonen, 2014; Kelman & Apel, 2004). Students who told both authors that they read comic books more often than they did textbooks would benefit from being exposed to pedagogical material in comic book form (see for example Davidov, 2013). However, in using comic books as pedagogical materials instructors should also prepare additional supports alongside the instructions to effective practices and the encouragement of L1 use (Goldenberg, 2013). In the same breath, through reading comic book students not only practiced recognizing the orthography of the words, but also did they practice understanding vocables, sound effects, and spatial movement of narrative information.

Image 1. (DiMartino, 2017)

To begin with, the Thai students in this study understood that the panel in which the two characters were standing in front of a stone clif was the first panel to read on the page. This is facilitated by how the Thai writing system works: Thais write from left to right. Therefore, Thai books open the same way English books do—open to the left hand side. However, in deciding which speech balloon came first in the top row of panels, the students decided that the most left speech balloon came first, regardless the fact that the speech balloon “You thinking what I’m thinking?” was vertically closer to the top margin.

Some of the Japanese students expressed confusion as to which of the three top panels should be the first on the page; this is mainly because Japanese comic books, or *manga*, open to the right hand side. Moreover, the Japanese writing system allows an top-to-bottom arrangement. Indeed, the page is still readable if it starts with the panel on the top right hand side. This, however, is negated by the pictorial information that explains the actions sequentially. The Japanese students’ realization that the narrative must start with the panel where the characters stand before a stone cliff, not from the one

where the characters are already climbing the cliff shows that they are able to predict the movement of narrative information by understanding the context clues (Ehri in Metsala & Ehri, 1998).

Ehri also argues that before recognizing context clues, graphophonemic decoding and making analogy of the written expressions help students understand text (in Metsala & Ehri, 1998). For instance, for the orthography <krk> in the top midle panel, a vowel epenthesis helps the Thai students understand the action in said panel.

<krk> + /æ/ = /kræk
= <crack>
= "onomatopoeic sound of a stone cracking under the pressure of the character's foot"

The Thai students also use the vowel epenthesis strategy for the orthography <rrmmbbll> in the last panel on the page.

<rrmmbbll> + /ʌ/ = /grʌmbl/ or /grʌmbəl/
= <grumble>
= "onomatopoeic sound of a continuous, deep, resonant tremor"

For this second onomatopoeic sound effect, the students were also aware of the lack of consistent grapheme-phoneme connection in English written expression (Ziegler & Goswami, 2005), which leads to students figuring out that <rr>, <mm>, <bb>, and <ll> do not necessarily represent double consonantal sounds.

On the other hand, the realization of having to apply the epenthesis strategy in the written form proves to be a challenge in pronunciation. From the post-test interview, the second author found that Japanese students, especially students who maintain the habit of writing the transliterated English words in katakana next to the English words on the text, showed an inconsistency in applying the epenthesis strategy. The rationalized progression is as follows.

/strɔŋ/ = ストロング
= <sutorong>
= "strong"

In producing the syllabaric transliteration of the English word , Japanese students heard its pronunciation /strɔŋ/ first from the second author before they wrote the katakana as a note. Following the consonant constraint rules in Japanese (Itô, Mester, & Kubozono, 1993; Kubozono, Itô, & Mester, 2003; Ohata, 2004; Vance, 1987), the ideal transliteration of the /strɔŋ/ is su.tu.ro.n.gu, in which the <u> after <s>, <t>, and <g> denotes the lack of a vowel. However, there is no <tu> in

katakana, so Japanese students make use of the closest syllabary to <tu>, which is ト <to>. Hence, ストロング <sutorongu> is now present in the students' notes. Since most students have learned the katakana of loanwords such as pre-college, they would have been more familiar with the katakana version than the Latin alphabet one. This carries to their pronunciation of , in which the /to/ is almost a full syllable epenthesis.

Another issue that the second author highlights from the Japanese students in this study is that the students themselves underlined the challenge of distinguishing English /l/ and /r/ sounds. An open-ended question in the questionnaire is answered by Student J1 as follows.

2nd author : Do you experience any problems with the inconsistency of the English spelling?

Student J1 : No plogrem.

The second author provides a Japanese translation for the written questionnaire, so students have the options to answer either in Japanese or English. Student J1's answer is in English.

N o p l o g r e m*

N o p r o b l e m

From this example, Student J1's issue is mainly graphemic as seen from the first <l/r> set after p in <plogrem> and the second <l/r> set after <g/b> in <plogrem>* and <problem> . However, a number of studies have suggested that the issue is in fact graphophonemic (Lively, Pisoni, Yamada, Tohkura, & Yamada, 1994; Mcclelland, Fiez, & Mccandliss, 2002; Ohata, 2004). These studies also suggest that students who produce errors similar to that of Student J1 have a high probability to make it in speech as well as speech recognition.

The first reading test also investigates whether using context clues to understand the text allows students to retell the actions on the page in their own words more freely. In one of the interviews, Thai student T1's retelling of Image 1. is as follows.

They talk together about climbing race >>> a girl tald to boy that beware >>> and then a boy like to saw something "Whoa!!" >> maybe he fall down

Student T1 is able to use the sequence word "and then" in addition to the triple arrowhead symbols in her answer to mark the progression of the narrative. On the other hand, her answer also shows spelling errors and the absence of tense markers. These errors are suspected to be the consequence of an increasing use of the amount of information and the increasing use of both contextual and graphic clues I the text (Berninger & Alsdorf, 1989).

together

talk about [ ] climbing race

a girl tald to

boy that beware
a boy like
to saw
= “They talk together about climbing (the cliff). Then, the girl tells the boy to beware, but the boy sees something and shouts ‘Whoa!!’ as he falls.”

The use of the expression “they talk together” shows that the Student T1 is aware of a reciprocal action that is ongoing. However, since it is reciprocal, the use of <together> is redundant. Secondly, Student T1 is not the only one who produces multiple errors of using definite and indefinite articles. However, in the post-test interview Student T1 admits that she knows where she did wrong and repeat what she has said in the corrected version. In this case, errors then should not be seen as a deficit, but rather as conscious attempts made towards the production of accurate expressions.

The absence of tense markers from Student T1’s retelling of Image 1. also reflects the challenges Thai students face with the phonological aspect of transliteration. While the absence of tense markers is most commonly found in writing (Khumphee & Yodkamlue, 2017), in this study it carries over to the students’ pronunciation. When asked to read aloud, Student T1’s speech exhibits the absence of tense marker on the verbs.

a girl tald	[ə gɜrl tɔk]
a boy like	[ə bɔɪ laɪk]
Correction:	[ə gɜrl tɔlks]
	[ə bɔɪ laɪks]

This issue is not uncommon for Thai students in general who, like their Japanese counterpart, are used to transliterating English sounds into written Thai in their notes. There are three script representations of the Latin alphabet <s> in Thai abugida:

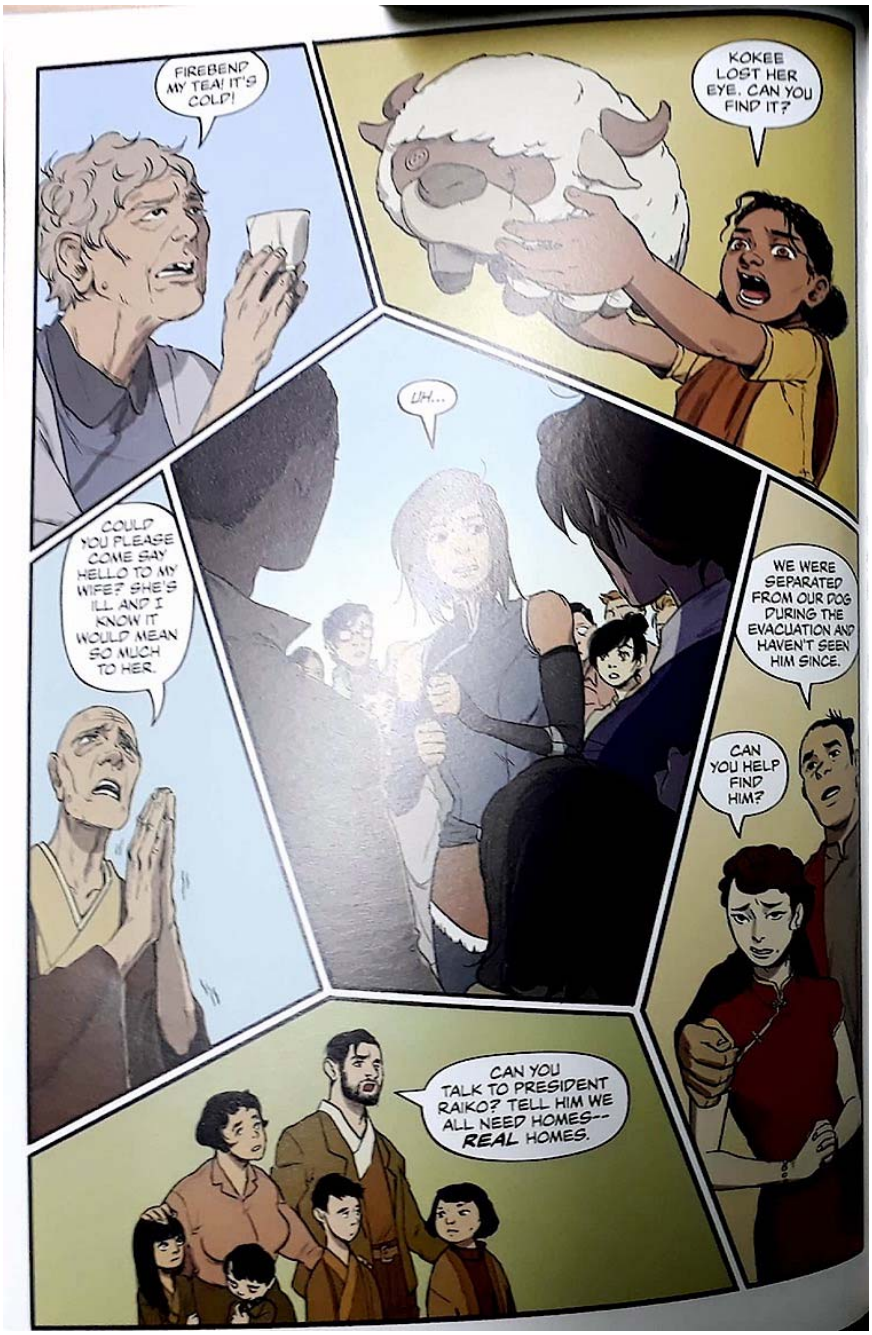
ศ ษ ส

Following the Royal Thai General System of Transcription, these three *saw* characters are to be written in Latin-alphabet as <s> when they appear in the initial position in a loanword and as <t> when they appear in the final position in a loanword. In other words, since in written Thai the Latin alphabet <s> cannot appear in the final position, this rule carries over to the pronunciation where /s/ in the final position of a word is ommitted. A similar phenomenon occurs with another sibilant in the final position of a loanword, such as:

English	[ɪŋglɪt] or [ɪŋglɪtɕʰ]
Correction:	[ɪŋglɪʃ]

It is worth mentioned that Student T1 misgenders the characters to be a boy and a girl when in fact they are both girls. In this case, Student T1 misses clues that are more culturally distant, such as one of the girls' short haircut and non-feminine clothing worn by both characters.

Image 2. (DiMartino, 2017)



While most students are succesful in understanding and retelling Image 1. in their own words, applying similar strategies do not produce similar results for Image 2. Image 2. garners much more variation in the response and therefore more variation in the errors made. For example, although the top two panels from Image 2. get chosen most as the starting panel, there is an increase in the number of students who choose the top right panel compared to the number from the same test for Image 1. As

addressed by Berninger & Alsdorf (1989), students' production of oral responses will vary when there is an increasing provision of both contextual and graphic clues in the text. Excluding the center panel, the narrative information in Image 2. are designed to appear as circular; therefore, while there is a greater liberty to choose any outside panel as the starting panel, there is also no exact clue that tells students from which panel they can or should start. In the post-test interview, some students told the first author that they felt they could have done better if they were informed of where to start. Their opinion is in agreement with Goldenberg (2013), who proposes that English learners, especially those who learn it as a foreign language as adults, need more additional learning supports.

Another finding that is highlighted in the students' response to Image 2. is that there is a greater variation in the overall retelling compared to the retelling response of Image 1. For example, Student T2's retelling of Image 2. is as follows, but there are also students who start from the panel "Kokee lost her eye."

1. Firebend my tea! it's cold!
2. Kokee lost her eye, can ou find it?
3. could you please come say hello to my wife? she's ill and I know it would mean so much to her
4. UR...
5. We were separated from our dog during the evcliation and havent seen him since. Can you help find him?
6. Can you talk to president raiko?tell him we all need homes real homes.

While in general Student T2 is able to retell the page, she also makes more errors compared to Student T1 for Image 1.

Table 2. Image 1 and 2 response error comparison

Types of errors	Student T1 for Image 1.	Student T2 for Image 2.
Redundant words	They talk together	
Article use	a boy, a girl	
Tense markers		
Misspelling	a girl tald	can ou find it? the evcliation
Capitalization		UR... my wife? she's ill president raiko

Punctuation use		Havent we all need homes real homes
Space use		president raiko?tell him

It should be noted that the absence of errors in terms of redudant words, article use, and tense markers is a direct consequence of Student T2's copying the speech balloon directly from each panel. Kreiner et.al. argue that direct copying stems from learners' perception that their ability is in decrease when they make errors frequently (in Ocal & Ehri, 2017). Hence, to avoid getting the confirmation of their decreacing ability, they opt to copy the source directly. Moreover, since errors are seen to be able to distract one's interlocutor from getting the communicated messages, most struggling learners avoid making errors at all—especially those of mechanical concerns—by copying directly from the source (Martin & Ranson, 1990).

As seen in Table 2., Student T2's most common errors are in fact related to mechanical concerns. When interviewed, Student T2's response suggests a connection between those mechanical errors and her inability to recognize the phoneme-grapheme correspondences (Kelman & Apel, 2004). To illustrate, when Student T2 is interviewed and is asked to read aloud "We need homes, REAL homes." she misses the stress that should be evident in the word <REAL>, whose grapheme is marked (bolded) in the speech balloon.

Stressing a word in an oral sentence as to stress its importance of hosting new information is also a common to find in popular media, such as in "My name's Bond, JAMES Bond."—which the first author gave to Student T2 as another illustration of sentence stress in Student T2's interview. As Student T2 fails to stress both <REAL> and <JAMES> in her reading aloud, it is possible to claim that her grasp of metalinguistic aspects, such as sentence stress and intonation, is not well suplemented by Image 2.

For Thai students, whose L1 is largely monosyllabic and therefore stresses every word, word stress and sentence stress are stress-inducing enough to the point that three (3) students out of eleven did not attend the post-test interview with the first author, citing reluctance to be speaking on a one-on-one basis with the first author, thus being yet another example of Kreiner's avoidance theory.

Interestingly, only seven (7) out of the 23 Japanese students in this study believe that they encounter challenges with sentence stress. Swan & Smith state that pronunciation errors are "not just random attempts to produce unfamiliar sounds, but rather reflections of the sound inventory, rules of combining sounds, and the stress and intonation patterns of L1" (in Ohata, 2004). Compared to their Thai counterparts, the sixteen (16) Japanese students who believe they do not, or at least struggle less,

with sentence stress exercise reflecting their Japanese inventory, rules of combination, and stress and intonation patterns.

Ohata also argues that the success in identifying and producing correctly patterned sentence stress depends on Japanese EFL learners' ability to make sense of handling a stress-timed language (English) and a syllable-timed language (Japanese) (Ohata, 2004). Limited vocabulary and grammatical structure knowledge notwithstanding, the stress-timed/syllable-timed balance further complicate the students' effort to form reading comprehension. Whether the claim from the 16 Japanese students in this study is valid or not must be confirmed by yet another series of tests that focus on sentence stress and intonation patterns.

5. Limitations and Implications for Future Research

This study is preliminary and because of this nature is limited in its design to sample a larger number of participants or conduct a longer series of tests. Therefore, the results may not acurately represent the population of both Thai and Japanese EFL students. Both authors are also concerned with the limited access to analytically comprehensive and valid country-by-country raw and median scores of standardized proficiency tests as put in conversation with the development, as well as success and/or lack of it, EFL/ESL learning in Asian countries. Echoing Zehner (2017), for this kind of study it is imperative that it makes use of published standardized proficiency test scores that are independent of financial gain and potential professional recruitement.

For the first author, this study is also part of a course material development project at the university where she teaches. Participating students were paid with lunch coupons, which might exclude other demography groups of students who were not interested in the reward but who might generate different, more radical results for this study. This study is also limited by its duration and group comparisons. Having a control group would have also been beneficial. Finally, as a preliminary study, both authors hope that future follow-up contrastive studies will be conducted in a higher frequency and with better time duration and number of samples.

6. Conclusions

The results suggest that the success of comprehending English text depends on the students' ability to treat the formal properties of the words in the text and to treat the words not necessarily as representative of sounds. Students who are able to recognize the formal properties of grammatical categories, for example, perform better in speech and text recognition and speech and text production. In reading English text, comprehension do not come as readily to EFL adult learners who are struggling with graphophonemic decoding and making analogy of the written expressions in the text, especially when the written expressions employ an orthography dissimilar from the learners' L1's orthography.

References

Berninger, V. W., & Alsdorf, B. (1989). Are there Errors in Error Analysis? *Journal of Psychoeducational Assessment*, *7*(3), 209–222.

Byrum, J. D., & Madison, O. (Eds.). (1995). *Multi-script, Multilingual, Multi-character Issues for the Online Environment: Proceedings of a Workshop Sponsored by the IFLA Section on Cataloguing*. Istanbul, Turkey: K.G. Saur, Muenchen.

Davidov, V. (2013). 'Pedagogical' and Ethnographic Fictions and Meta-narratives of Development: *1 World Manga*. *Journal of Development Studies*, *49*(3), 398–411.

DiMartino, M. D. (2017). *The Legend of Korra: Turf Wars Part One*. Dark Horse Books.

Goldenberg, C. (2013). Unlocking the Research on English Learners. *American Educator*, *37*(2), 9.

Gray, S. H., Ehri, L. C., & Locke, J. L. (2018). Morpho-phonemic analysis boosts word reading for adult struggling readers. *Reading and Writing*, *31*(1), 75–98.

Itô, J., Mester, A., & Kubozono, H. (1993). Japanese Phonology Constraint Domains and Structure Preservation, 23.

Jonsson, C., & Muhonen, A. (2014). Multilingual repertoires and the relocalization of manga in digital media. *Discourse, Context & Media*, *4–5*, 87–100.

Kahn-Horwitz, J., Sparks, R. L., & Goldstein, Z. (2012). English as a foreign language spelling development: A longitudinal study. *Applied Psycholinguistics*, *33*(02), 343–363.

Kelman, M. E., & Apel, K. (2004). Effects of a multiple linguistic and prescriptive approach to spelling instruction: a case study. *Communication Disorders Quarterly*, *25*(2), 56–66.

Khumphee, S., & Yodkamlue, B. (2017). Grammatical Errors in English Essays Written by Thai EFL Undergraduate Students. *Journal of Education*, *11*(4), 16.

Koanantakool, H. T., Karoonboonyanan, T., & Wutiwiwatchai, C. (2009). Computers and the Thai Language. *IEEE Annals of the History of Computing*, *31*(1), 46–61.

Kubozono, H., Itô, J., & Mester, A. (2003). Consonant Gemination in Japanese Loanword Phonology, 21.

Lively, S. E., Pisoni, D. B., Yamada, R. A., Tohkura, Y., & Yamada, T. (1994). Training Japanese listeners to identify English /r/ and /l/. III. Long-term retention of new phonetic categories. *The Journal of the Acoustical Society of America*, *96*(4), 2076–2087.

Martin, C. L., & Ranson, D. E. (1990). Spelling skills of business students: an empirical investigation. *Journal of Business Communication*, *27*(4), 377–400.

Mcclelland, J., Fiez, J., & Mccandliss, B. (2002). Teaching the /r/–/l/ discrimination to Japanese adults: behavioral and neural aspects. *Physiology & Behavior*, *77*(4–5), 657–662.

Metsala, J. L., & Ehri, L. C. (Eds.). (1998). *Word Recognition in Beginning Literacy*. Mahwah, NJ: Erlbaum.

Ocal, T., & Ehri, L. C. (2017). Spelling pronunciations help college students remember how to spell difficult words. *Reading and Writing*, *30*(5), 947–967.

Ohata, K. (2004). Phonological Differences between Japanese and English: Several Potentially Problematic Areas of Pronunciation for Japanese ESL/EFL Learners. *The Asian EFL Journal*, *6*(4).

Otaiba, S. A., Puranik, C. S., Rouby, D. A., Greulich, L., Sidler, J. F., & Lee, J. (2010). Predicting kindergarteners' end-of-year spelling ability based on their reading, alphabetic, vocabulary, and phonological awareness skills, as well as prior literacy experiences. *Learning Disability Quarterly*, *33*(3), 171–183.

Rosenthal, J., & Ehri, L. C. (2011). Pronouncing new words aloud during the silent reading of text enhances fifth graders' memory for vocabulary words and their spellings. *Reading and Writing*, *24*(8), 921–950.

Vance, T. J. (1987). *An Introduction to Japanese Phonology*. Albany, NY: State University of New York Press.

Zehner, E. R. (2017). Improving English educational outcomes in Thailand's semi-rural upper south: toward getting better results. Presented at the The 7th Kuala Lumpur International Communication, Education, Language, & Social Science Conference, Kuala Lumpur.

Ziegler, J. C., & Goswami, U. (2005). Reading Acquisition, Developmental Dyslexia, and Skilled Reading Across Languages: A Psycholinguistic Grain Size Theory. *Psychological Bulletin*, *131*(1), 3–29.

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Understanding Academic Performance from the Role of Self-control and Learning Strategies

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Abstract

Self-control and learning strategies are essential for achieving academic success. By controlling one-self and optimizing learning strategies, the student would have more benefit in attaining academic demand. This study intends to find out the role of both variables on academic performance. Two hundred and thirty-eight undergraduate students enrolled in this study. They were administered two self-report questionnaires: brief self-control scale and self-regulation learning scale. The results indicate a positive association between self-control and academic performance, as well as learning strategies subscales: rehearsal, elaboration, organization, effort-regulation, and metacognitive self-regulation, but it was a weak correlation. A multiple regression analysis showed that effort-regulation and organization could predict academic performance. Another analysis yield, there is a difference in self-control and learning strategies by comparing low and high GPA groups, except elaboration.

Keyword: Academic performance, Self-control, Learning strategies, Undergraduate student

1. Introduction

Self-control has a substantial role in enhancing our life outcome. Its cover on wide domain of life, such as doing exercise (Gillebaart & Adriaanse, 2017), well-being (Cheung, Gillebaart, Kroese, & De Ridder, 2014), health behaviour, criminal and unemployment rates (Diamond, Jennings, & Piquero, 2018), and also income, job satisfaction, relationship and parenting satisfaction (Converse, Beverage, Vaghef, & Moore, 2018).

Many researchers have pointed out the benefit of self-control on academic performance. As Galla and Duckworth (2015) demonstrated, self-control could predict positive outcomes on the academic issue. Students with high self-control had better habits for studying, instead of difficult circumstances. Also, it reported had stronger homework habits and class engagement. Other empirical study underlined the mediator agency of academic self-discipline between academic self-efficacy and GPA (Jung, Zhou, & Lee, 2017). It has equal influence on GPA comparing with the cognitive factor.

Interestingly, the critical role of self-control on academic performance not only equal to the cognitive factor such IQ. Evidence has suggested that self-control could predict academic performance over and above IQ. As Duckworth and Seligman (2005) study on adolescents has shown, self-discipline could predict better more than twice as IQ did in school attendance, final grade, time spent doing homework, and hours spent watching television. Self-discipline positively associated with final GPA ($r=67$, $p<0.001$).

The effect of both cognitive and non-cognitive factor on academic performance, corroborated by Duckworth, Quinn, and Tsukayama (2012). They have underlined the difference role of both variables in predicting academic performance. IQ had better in predicting standardized achievement test than self-control did ($r=0.29$, $p<0.001$). On contrary, self-control did better when predicting report card grades than IQ did ($r=0.22$, $p<0.001$). Recent work by Stadler, Aust, Becker, Niepel, and Greiff (2016) also give an impression on self-control influence on undergraduate academic performance. Self-control not only could predict GPA, but also a subjective academic achievement. Whilst IQ only predict GPA.

Another non-cognitive factor influencing academic performance is learning strategies. Because learning is taking place in an active process, paying attention is needed. Especially in challenging circumstances such as distraction in class. Consequently, the student needs to manage the way they learn. The strategy used by the student would determine the academic outcome. In this situation, self-control would serve as a foundation to engage academic demand in long terms goal by using learning strategies.

Previous research has investigated the link between learning strategies and academic performance. Ruffing, Wach, Spinath, Brünken, and Karbach (2015), has established that grade average was positively related with effort, attention, and learning environment. A gender difference was emerge dealing with the use of learning strategies. The association between the academic performance and learning strategies also reported by Zhou, Graham, and West (2016).

The relationship between self-control and academic performance is clear, as well as learning strategies. However, research which taken together both variables in predicting academic performance is limited, especially in the Indonesian context. This present study attempt to address that issue. First, we would determine whether self-control and learning strategies have any correlation. Furthermore, we rule out the possibility of both variables in predicting academic performance.

2. Method

2.1 Participant

A total number of 238 psychology students enrolled this study. They were 48 males (20%) and 190 females (80%) from the cognitive psychology course of private university in Yogyakarta, Indonesia.

2.2. Instruments

Two questioners were administrated to obtain the data, the brief self-control scale and learning strategies scale. Academic performance was represented by using grade point average (GPA).

The Brief Self-Control Scale is a self-report scale, developed by Tangney, Baumeister, and Boone (2004). It is used to assess unidimensional trait self-control. The Brief Self-Control Scale contain of 13 items, which Cronbach's α in this sample is 0.78. Likert model with five alternative responses were given, ranging from strongly disagree (1), disagree (2), hesitation (3), agree (4), and strongly agree (5).

Learning strategies were adopted from Motivated Strategies for Learning Questionnaires (MSLQ) subscales, developed by Pintrich, Smith, Garcia, and McKeachie (1993). It is comprise of two group subscales and may administrate by each subscales. There are motivation subscales and learning strategies subscales. For this present purpose, we use learning strategies subscales which consist of five subscales: rehearsal, elaboration, organization, metacognitive self-regulation, and effort regulation. Five alternative responses was given, ranging from strongly disagree (1), disagree (2), hesitation (3), agree (4), and strongly agree (5). Cronbach's α reported from this current sample were: rehearsal

(0.73), elaboration (0.80), organization (0.69), metacognitive self-regulation (0.79), and effort regulation (0.63).

2.3. Procedure

All of the questionnaires were administrated to the students attending cognitive psychology class at the beginning course. Researcher introduced him or herself and asked the participants for their cooperation to fulfil this self-report. Before that, they were informed that there were no wrong or right answers and all of their answers would be confidential.

2.4. Data Analysis

The correlation analysis was employed to seek out the relationship between self-control, learning strategies, and academic performance. A stepwise multiple linear regression analysis was calculated in predicting academic performance.

3. Results

The descriptive analysis given in the table 1 shows the mean, standard deviation, and percentile categorization. Student's GPA mean reported relatively high (M=3.37).

Table 1.

Descriptive Statistics

	rehearsal	elaboration	organization	effort reg	metacog reg	self-control	GPA
N	238	238	238	238	238	238	238
Mean	15.47	22.79	16.64	15.54	44.17	45.04	3.37
Std. Dev	2.52	3.38	2.38	2.28	5.55	6.36	0.31
Min	10	14	8	10	31	29	2.59
Max	20	30	20	20	60	62	4.00
20th perc	13	20	15	14	39	40	3.09
40th perc	15	22	16	15	42	43	3.34
60th perc	16	24	18	16	45	47	3.45
80th perc	18	26	19	17	49	50	3.62

Based on the correlation analysis from table 2, we can conclude that all of five learning strategies and self-control were positively correlated and significant with GPA. Rehearsal ($r = .18$, $p < .01$),

elaboration ($r = .13$, $p < .05$), organization ($r = .18$, $p < .01$), metacognitive self-regulation ($r = .16$, $p < .05$), and effort regulation ($r = .19$, $p < .01$). Also, self-control was correlate significantly with GPA ($r=.17$, $p <.01$). But, unfortunately all of the correlation was weak.

Table 2.

Correlation between self-control, learning strategies and academic performance

	Academic performance (GPA)			Self-control	
	r	R2	N	r	R2
self_control	.17**	2.8%	238	-	-
Rehearsal	.18**	3.2%	238	.34***	12%
Elaboration	.13*	1.7%	238	.31***	9.6%
Organization	.18**	3.2%	238	.21**	4.4%
Effort regulate	.19**	3.6%	238	.54***	29%
Metacognitive regulate	.16*	2.6%	238	.49***	24%

*$p < .05$, **$p < .01$, ***$p < .001$*

A stepwise multiple regression (Table 3) was reported significant in predicting student academic performance. The data analysis indicated that the two predictors from Model 2 could explained only 6% of the variance (R2 =.06, F(2,235)=6.32, p <.05). Organization significantly predicted GPA (β = .17, p <.05), as well as effort regulation (β = .17, p <.05). The strongest predictor of the GPA was organization (R2 =.05, F(1,236)=11.50 p <.01), which can explain 5% of variance. Self-control was not significant in predicting academic performance.

Table 3

Summary of Hierarchical Regression Analysis for Variables Predicting GPA (N = 238)

	Model 1			Model 2		
	B	*SE B*	*β*	*B*	*SE B*	*β*
Organization	.03	.01	.22**	.02	.01	.17*
Effort regulation				.02	.01	.17*
R^2	.05			.06		
F	11.50**			6.32*		

*$p < .05$, **$p < .01$.*

In order to seek out whether there is any difference self-control and learning strategies based on GPA, we split the data into two groups: low and high GPA. Grouping were done with 40th percentile for lower GPA (N=91) and 60th percentile for higher GPA (N=95). Independent t-test yield that self-control and learning strategies of student were significantly differ between the low and high GPA, except elaboration. The most different were self-control and metacognitive self-regulation, medium effect size was reported.

Table 4.
Self-control and learning strategies differences between low and high GPA group

	Low GPA (N=91)		**High GPA (N=95)**		**df**	**t**	**Cohen's d**
	M	**SD**	**M**	**SD**			
Self-control	44.07	6.67	45.95	5.86	1	2.05*	0.30
Elaboration	22.35	3.41	23.07	3.40	1	1.45	0.21
Metacognitive regulation	43.11	5.60	44.86	5.70	1	2.11*	0.31
Rehearsal	15.00	2.56	15.83	2.36	1	5213*	0.21
Organization	16.11	2.48	17.13	1.96	1	5281**	0.22
Effort regulation	15.09	2.46	15.98	2.154	1	5191*	0.20

*$p < .05$, **$p < .01$

4. Discussion

The current study was designed to investigate the link between self-control, learning strategies and academic performance. Also, this study aimed to seek out predictor of academic performance. Data analysis has shown, that both of the variables were positively correlate and significant with academic performance, but it was small correlation. Regression analysis result failed to support that self-control as a predictor of academic performance.

Consistent with previous study, self-control (Stadler et al., 2016) and learning strategies had influence on academic performance (Dent & Koenka, 2016). As proposed by Duckworth, Gendler, and Gross (2016), self-control has two key features. First, existing conflict of intertest between immediate

gratification and long-term important goals. In the academic context, student with high self-control tends to resist or delay immediate gratification when it doesn't meet the personal goal such as playing games or just hang up with friends. Secondly, self-control must be self-initiated, not just by accident behavior. High self-control student from the beginning has awareness what need to be done due the personal and important goals. This awareness helps him to override any temptation. It is plausible then, high self-control student could overcome procrastination (Kim, Hong, Lee, & Hyun, 2017).

However, this study failed to demonstrate that self-control could predict academic performance. From regression analysis suggested there were only two part of learning strategies which could predict GPA, effort regulation and organization. A possible explanation of this finding may be the variance of the data itself, especially in GPA. GPA Mean tends to be high (M=3.37). Despite of this finding, there is any significant difference on all learning strategies (with an exception of elaboration) and self-control based on high and low GPA. Effect size of self-control and metacognitive self-regulation were reported medium (d=0.3). This result may reflect the difference learning strategy use and self-control. High GPA student tends to use more learning strategy and could overriding temptation or delay gratitude than low GPA student.

Limitation of this study must be take into account. Because this research was correlational, any causal interpretation should not be given. Also, generalization of these result should be taken cautiously. Sample of this study were administrated only to psychology student.

6. Conclusion

The aim of this present study was to investigate the role of self-control and learning strategies on academic performance. Findings has identified that all of the variables were positively correlate. The second major finding was that only two parts of learning strategies (organization and effort regulation), and not self-control, were significant predict academic performance. The third finding has shown that self-control and learning strategies (except elaboration) were significant difference according to high and low GPA. The current data highlight the important role of self-control and learning strategies on academic performance. Despite the insignificant of the self-control prediction, any program which promote student use of learning strategy and self-management would benefit for academic success in long-term goals.

References

Cheung, T. T. L., Gillebaart, M., Kroese, F., & De Ridder, D. (2014). Why are people with high self-control happier? The effect of trait self-control on happiness as mediated by regulatory focus. *Frontiers in Psychology*, *5*, 722. https://doi.org/10.3389/fpsyg.2014.00722

Converse, P. D., Beverage, M. S., Vaghef, K., & Moore, L. S. (2018). Self-control over time: Implications for work, relationship, and well-being outcomes. *Journal of Research in Personality*, *73*, 82–92. https://doi.org/10.1016/j.jrp.2017.11.002

Dent, A. L., & Koenka, A. C. (2016). The Relation Between Self-Regulated Learning and Academic Achievement Across Childhood and Adolescence: A Meta-Analysis. *Educational Psychology Review*, *28*(3), 425–474. https://doi.org/10.1007/s10648-015-9320-8

Diamond, B., Jennings, W. G., & Piquero, A. R. (2018). Scaling-up self-control: A macro-level investigation of self-control at the county level. *Journal of Criminal Justice*, *56*, 81–85. https://doi.org/10.1016/J.JCRIMJUS.2017.08.003

Duckworth, A. L., Gendler, T. S., & Gross, J. J. (2016). Situational Strategies for Self-Control. *Perspectives on Psychological Science*, *11*(1), 35–55. https://doi.org/10.1177/1745691615623247

Duckworth, A. L., Quinn, P. D., & Tsukayama, E. (2012). What No Child Left Behind Leaves Behind: The Roles of IQ and Self-Control in Predicting Standardized Achievement Test Scores and Report Card Grades. *Journal of Educational Psychology*, *104*(2), 439–451. https://doi.org/10.1037/a0026280

Duckworth, A. L., & Seligman, M. E. P. (2005). Self-Discipline Outdoes IQ in Predicting Academic Performance of Adolescents. *Psychological Science*, *16*(12), 939–944. https://doi.org/10.1111/j.1467-9280.2005.01641.x

Galla, B. M., & Duckworth, A. L. (2015). More than Resisting Temptation: Beneficial Habits Mediate the Relationship between Self-Control and Positive Life Outcomes. *J Pers Soc Psychol*, *109*(3), 508–525. https://doi.org/10.1037/pspp0000026

Gillebaart, M., & Adriaanse, M. A. (2017). Self-control Predicts Exercise Behavior by Force of Habit, a Conceptual Replication of Adriaanse et al. (2014). *Frontiers in Psychology*, *8*, 190. https://doi.org/10.3389/fpsyg.2017.00190

Jung, K.-R., Zhou, A. Q., & Lee, R. M. (2017). Self-efficacy, self-discipline and academic performance: Testing a context-specific mediation model. *Learning and Individual Differences*, *60*, 33–39. https://doi.org/10.1016/J.LINDIF.2017.10.004

Kim, J., Hong, H., Lee, J., & Hyun, M.-H. (2017). Effects of time perspective and self-control on procrastination and Internet addiction. *Journal of Behavioral Addictions*, *6*(2), 229–236. https://doi.org/10.1556/2006.6.2017.017

pintrich, P. R., Smith, D. A. F., Garcia, T., & McKeachie, W. J. (1993). reliability and predictive validity of the motivated strategies for learning questionnaire (MSLQ). *Educational and Psychological*

Measurement, *53*(september), 801–813. https://doi.org/10.1177/0013164493053003024

Ruffing, S., Wach, F.-S., Spinath, F. M., Brünken, R., & Karbach, J. (2015). Learning strategies and general cognitive ability as predictors of gender- specific academic achievement. *Frontiers in Psychology*, *6*, 1238. https://doi.org/10.3389/fpsyg.2015.01238

Stadler, M., Aust, M., Becker, N., Niepel, C., & Greiff, S. (2016). Choosing between what you want now and what you want most: Self-control explains academic achievement beyond cognitive ability. *Personality and Individual Differences*, *94*, 168–172. https://doi.org/10.1016/J.PAID.2016.01.029

Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High Self-Control Predicts Good Adjustment, Less Pathology, Better Grades, and Interpersonal Success. *Journal of Personality*, *72*(2), 271–324. https://doi.org/10.1111/j.0022-3506.2004.00263.x

Zhou, Y., Graham, L., & West, C. (2016). The relationship between study strategies and academic performance. *International Journal of Medical Education*, *7*, 324–332. https://doi.org/10.5116/ijme.57dc.fe0f

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Importance-Performance Analysis Matrix for the Primary Education Service Based on the Voice of Customer in Yogyakarta, Indonesia

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Abstract

Primary education is an essential pillar for character education of children that will affect their future success. On the other hand, the changing of the learning environment influenced by technological, social and cultural changes parents' expectations of educational services. Schools need to anticipate this expectation with the best education performance. This research aimed to analyze the relationship between parents' expectations and the performance of school education services on the excellence school aspects. It is quantitative research with descriptive analysis method using the matrix of importance-performance analysis on determinants of the excellent school. The sample is 548 parents from eight elementary schools in Yogyakarta city, Indonesia taken using stratified random sampling. The instrument was a questionnaire of importance and performance items. Its data was gathered through the voice of customer technique consisting of eleven items. Parents sorted the items from the highest priority (score 1) to the lowest priority (score 11). Next, the Pareto diagram techniques are used to develop alternative strategies. The results of this study are used to create plans to improve the education quality of education services.

Keyword: Importance-Performance Analysis, Excellence School, Primary Education, Pareto Diagram, Voice of Customer

1. Introduction

The development of information, communication and transportation technology has influenced various life sectors in the globalization framework. The development also changes how social attitudes develop in the society. In the education sector, the concept of 21st-century learning has been being adopted by various countries in the world to make learning revolution to create a better generation. This concept encourages the presence of a learning environment where students master teaching material while producing, synthesizing and evaluating information from various sources with the awareness of respecting cultural diversity. Education system radically changes in forms of multiple management types and ways of transferring knowledge and competencies. The changing of the learning environment influenced by technological, social and cultural changes parents' expectations of educational services (Christensen, Johnson, & Horn, 2010; Means, 2010).

The government of Indonesia has orientated the curriculum of national education to the concept of the 21st-century learning. This concept was introduced by UNESCO in anticipating the shift of the implementation of education (Longworth, 2003; Trilling & Fadel, 2012). The policy on the implementation of education curriculum with this new approach has been started for five years since 2013. The perception of the qualified education nowadays that change social, cultural, and economic environment influenced by technology has also affected on how parents view education for their children. The challenges faced are relatively different from the previous generation, and they need strategic responses from education management to give education service which meets the student's future needs. The information on the connection or relation between parents and the performance of education service will be fundamental to deciding on the excellent education implementation.

Suggestion from parents on the excellent education will be fundamental for factors which need to be developed by schools. It is possible that what is considered significant by parents is not experienced on the service provided by the school; and vice versa. The importance-performance analysis (IPA) can be used for understanding this phenomenon (Ashley, Oliver & Rosen, 2015; Mikulić, 2016). A lot of implementation of importance-performance analysis uses the Likert scale. Generally, this method only applies score average for each number or factor. By using this method, the expected priority order from parents' perception of the excellent education service could not be viewed. Also, on performance measurement, the measurement generally uses the same measurement with importance level measurement. Performance in this analysis needs to be viewed based on parents' experience in receiving education services provided by schools. Also, even though IPA is a simple technique and easy to be applied to situation analysis (Sever, 2015; Pak, 2016; Chen, Chiang, Hsu & Hsia, 2016), this technique is relatively rare to be used in education situation analysis (Seo, Ahn, Lee & Oh, 2015;

To, Lung, Lai & Lai, 2014). The use of this technique in the education service analysis will be one alternative for mapping factors which need to be developed in improving educational service quality. In the effort to build the future generation, the role of primary education is immensely valuable. The values of life which are harmonious with students' future could be built on this developmental stage. Parents' high expectation on their children's success on this education level is relatively different to when their children are in higher education level. Thus, the effort to develop the supporting strategy on student's competency achievement in this education level will significantly influence the student's success in the future.

This research aims to find out the relationship between factors which are prioritized by parents and the performance level of school education service based on parents' perception of primary education. By using customer-based oriented, parents are placed as education service customers who can suggest school service improvement. By knowing importance priority of each factor and performance level achievement on each excellent education factor, various strategies can be developed by schools.

2. Method

2.1 Research Design

This research is qualitative research by using importance-performance analysis (IPA) framework. Data for IPA was obtained based on voice and experience of customers. In this research, essential data was taken from parents of lower grade students (from grade 1 to 3). The assumption used was that expectation of lower grade students' parents was still relatively bare since it had not been influenced by school services. Meanwhile, performance data was taken from parents of higher grade students (from grade 4 to 6). The performance was measured based on parents' perception of their experience of receiving school service during their children's study at school.

2.2 Participants

This research was conducted at primary schools in Yogyakarta, Indonesia. The research sample was taken from eight primary schools in two different districts. The minimum number of sample was 510 parents. The sample was made by using stratified random sampling. By rounding off the number of participant in each school, 810 questionnaires were distributed to two groups those are parents from lower grade students (405) and higher grade students (405). The sample distribution is shown in table 1 as follows.

2.3 Instruments

Determinant factors for an excellent school were based on the discussion with parents' representatives from all sample schools. Parents are the customer of the education services (Lam & Mayer, 2014). Focus Group Discussion (FGD) was conducted to obtain this data. During FGD all factors discussed were grouped into new factors by using affinity diagram technique. These factors became the basis for designing voice of customer questionnaire to find out the priority of each factor and experience of customer questionnaire to find out the performance of education service experienced by parents (Tontini, Picolo & Silveira, 2014).

Table 1. Sample schools distribution

No	Primary schools	Lower Class	Upper class	Sum
1	School A	75	75	150
2	School B	50	50	100
3	School C	50	50	100
4	School D	15	15	30
5	School E	15	15	30
6	School F	120	120	240
7	School G	40	40	80
8	School H	40	40	80
Total		405	405	810

2.3 Technique of Analysis

In filling out the questionnaire, parents from lower grade students filled out the importance questionnaire by putting each factor priority in order from one to last. Number one shows the highest priority and so on. Meanwhile, parents of higher grade students filled out the performance questionnaire by putting in order factors they experienced best given by the school. Number one shows the best experience of school service, and so on until the lowest quality of school service they experienced.

Data of importance and performance level was next used to arrange a matrix connecting these two things. In the matrix, number 5 was determined as a separating axis both for importance and performance. Based on the graph, a qualitative analysis with Pareto technique (Karuppusami & Gandhinathan, 2006) was carried out to identify the factors which need to be improved or strengthened.

3. Result and Discussion

3.1 Determinant Factors of Excellence Education

Representatives parent from schools were gathered for the focus group discussion activity or FGD to obtain determinant factors. The number of parents of school representatives who were involved in the FGD was 11. Parents are selected who are considered to have a reasonably good understanding of quality education. The experiences, ideas, opinions that emerged in the FGD were collected. The various elements derived from the FGD were grouped for the similarity to obtain new factors as a combination (affinity diagram technique).

There were eleven new factors from arranging the elements. These new factors were used as being the determinant factors in this study. For data processing purposes, each factor is coded F1 to F11. The order of numbering does not indicate a priority order, so this data is the nominal data type. The determinant factors are shown in Table 2. In the next stage, these factors are used for the development of parental perception measurement instruments related to the importance and performance of schools.

Table 2 Determinant factors of excellence school

Codes	Description of factors
F1	Piety Character Building
F2	Environmental and Social Care Habituating
F3	Teacher Competency
F4	Extracurricular Variety at school
F5	School Support for Students' Talent and Interest development outside of school
F6	Learning difficulty assistance/ student to student problem assistance
F7	Learning achievement activity development
F8	Learning and teaching facilities and infrastructure
F9	School and parents communication
F10	Teachers and school's staff as the role model for students
F11	The educative interaction between teacher and students

3.2 Importance-Performance Analysis

From questionnaire distribution, some questionnaires were not returned, or the data could not be processed because it was not complete. Total questionnaire prepared was 548 with distribution as shown in table 3 as follows

Table 3. Number of valid data

No	Primary schools	Lower Class	Upper class	Sum
1	School A	47	52	99
2	School B	45	39	84
3	School C	45	37	82
4	School D	11	14	25
5	School E	12	7	19
6	School F	87	56	143
7	School G	33	18	51
8	School H	25	20	45
Total		305	243	548

Data obtained from the valid questionnaire is shown in table 4 as follows. This table shows the mean, the modus, the median of each instrument; and also the importance and experience rank.

Table 4. Data of Importance and Performance

No.	Factors	Importance				Performace			
		Mean	Modus	Median	Priority	Mean	Modus	Median	Experience
1	F1	1.16	1	1	1	1.42	1	1	1
2	F2	3.76	2	2	2	4.44	2	4	2
3	F3	3.66	3	3	3	4.41	3	4	3
4	F4	8.77	11	9	11	7.28	11	8	11
5	F5	7.13	10	7	10	6.75	5	7	5
6	F6	6.05	4	6	4	7.12	10	7	10
7	F7	7.45	8	8	8	7.89	9	8	9
8	F8	6.68	7	7	7	6.63	8	7	8
9	F9	7.28	9	7	9	6.63	7	7	7
10	F10	5.80	4	6	5	5.63	4	5	4
11	F11	7.82	11	8	6	7.86	6	8	6

Next, based on table 4, the graph of the relationship between importance and performance is arranged as shown in figure 1 as follows.

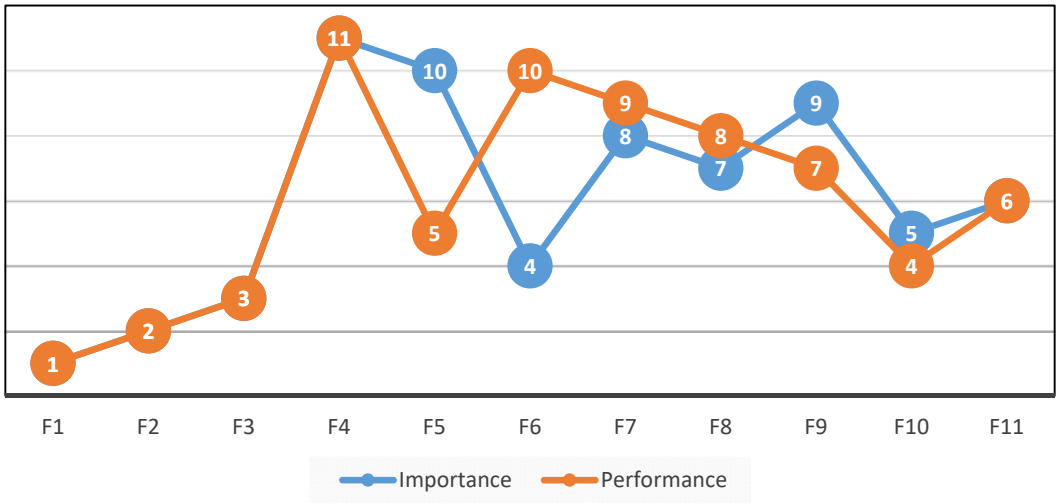

Figure 1. The relationship between Factors and importance or performance

From figure 1, it can be seen that some factors have the close relationship between importance and performance experienced by parents. Factors which have a quite high difference (over 2 points, which are F5, F6, and F9) are factors which need to be studied. There are factors which parents

consider unimportant, but parents experienced excellent service on those factors (F5 and F9). On F5, schools have excellent performance on supporting extracurricular activity outside the school (score 5), but parents consider this factor not crucial in education service at school (score 10). On F9, the school has excellent performance on communication with parents (score 7), but parents consider this factor not important in education service at school (score 9). On the contrary, there is a factor which parents consider important, but they felt poor experience on that factor (F6). In this factor, learning difficulty assistance/ student to student problem assistance is deemed to be important by parents (score 4), but schools seem to have less support in this factor (score 10).

Even though from the graph the gap between factors from both importance and performance sides can be known, to focus on improving it needs to view the higher priority factors. Pareto technique was used to get the information that factors are put in order based on the priority. From this phenomenon, the matrix of the relationship between importance and performance are then arranged as shown in figure 2 as follows.

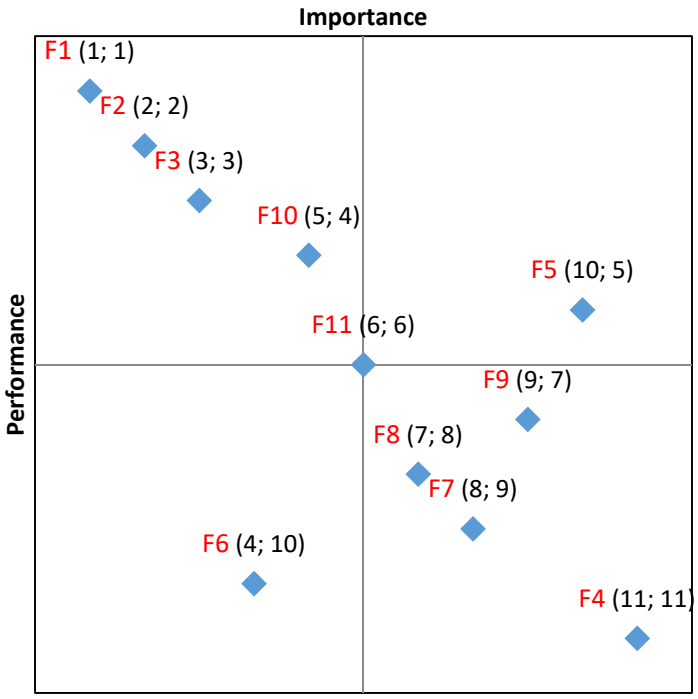

Figure 2 Importance-Performance Analysis Matrixes

From figure 2, it can be seen that five factors which have high priority are F1, F2, F3, F6, F10 in order. Meanwhile, five factors which have high performance are F1, F2, F3, F10, F5 in order. Seen on the graph, the factor which needs to be improved is F6 that is considered important by parents (score 4), but service experience on this factor is relatively low (score 10).

3.3 Implication to the School Quality Improvement

Education at primary school has the fundamental role for student's future. It aims at giving students basic capability, knowledge, and skills which are beneficial based on the developmental stage and prepare them to attend higher education level. Primary education in Indonesia is managed by government and implemented for six years from grade 1 to 6. In the implementation, it is given the number of material thematically in the learning process. The themes are arranged based on the developmental stage of primary school students consisting of various fields such as religious education, civic education, Indonesian language, natural science, social science, math, physical education and sport, art and culture, and local subjects. Subject material which contains local wisdom aims at preserving culture and tradition in the students' living area. Thus, local culture in every region in Indonesia can be preserved, and its originality can be kept as cultural diversity in Indonesia. Primary education is a start to build student's character. They begin to know various knowledge, how to socialize, religion, independently, creativity, skills, and motoric skills. Education in Indonesia views that morale building towards students is a strategic effort.

From the data analysis of this research, there are the five most important factors are Piety or Goodness Character Building, Environmental Habituating, Teacher Competency, Learning and Student's Role as the role model for students. These five factors look very closely related. One factor will be related to other factors. In many studies, character building is an essential factor in education in Indonesia which is also expressed in the goals of Indonesian education (Rokhman & Syaifudin, 2014; Saripudin & Komalasari, 2015). One strategy to build this character is to provide the environment and care for the emerging habits of good student character (Kamaruddin, 2012; Dougherty, 2007). This right environment will be formed of course if the school has a teacher with reasonable competence in assisting students. Teacher as a facilitator who can be a good example or be a role model because of his good behavior. This competency is currently a problem in education in Indonesia (Rahman, Abdurrahman, Kadaryanto & Rusminto, 2015; Sulisworo, Nasir & Maryani, 2017).

Five factors that are considered to have the best performance are Piety or Goodness Character Building, Environmental and Social Care Habituating, Teacher Competency, Teachers and School's staff as the role model for students, and School Support for Students' Talent and Interest development outside of school. Four of these five factors have matched the level of importance of parental perceptions. Of these factors that need attention because of the discrepancy between importance and performance is the factor of learning difficulty assistance/student to student problem assistance. Parents consider this factor important, but school performance is not good enough. Student facilitation by teachers requires the teacher's skills to do so (Judge, 2015, Hannafin, Hill, Land & Lee, 2014). The

impression that learning is the need for teachers needs to be replaced that learning is for students (Jonassen, 2000; Jonassen & Easter, 2012), become more focused as a facilitator in assisting students.

The results of IPA analysis is the basis for the development of a strategy to become a superior school in the city of Yogyakarta. Technological developments have also changed perceptions of good schools (Christensen et al., 2010). The focus of learning that has been on the teacher needs to be transformed into student-centered learning to be able to provide student learning assistance. This teacher's skills also an obstacle to the implementation of Curriculum 2013 (Gunawan, 2017; Hartono, 2017; Sulisworo & Toifur, 2016). Several different learning strategies need to be tried to apply so that the factors that remain an obstacle can be improved integrally with other factors (Kolb & Kolb, 2009; Oakland, 2005; Sulisworo, 2016).

4. Conclusion

The development of information, communication, and transportation technology has changed how social attitudes develop in the society especially in education sector. Education at primary school has the fundamental role for student's future. It aims at giving students basic capability, knowledge, and skills which are beneficial based on the developmental stage and prepare them to attend higher education level. Therefore the parent's voice on the school service quality is significant. There are eleven factors that determine the school's quality. The five most important factors are Piety or Goodness Character Building, Environmental Habituating, Teacher Competency, Learning and Student's Role as the role model for students. Five factors that are considered to have the best performance are Piety or Goodness Character Building, Environmental and Social Care Habituating, Teacher Competency, Teachers and School's staff as the role model for students, and School Support for Students' Talent and Interest development outside of school. Four of these five factors have matched the level of importance of parental perceptions. Of these factors, i.e., the factor of learning difficulty assistance/student to student problem assistance need to be addressed because of the discrepancy or gap between importance and performance.

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References

Ashley, C., Oliver, J. D., & Rosen, D. E., Using the voice-of-the-customer to determine the connection between service and relationship attributes, satisfaction, and retention, In *Marketing, Technology and Customer Commitment in the New Economy* (pp. 46-46), 2015, Springer, Cham.

Chen, C. A., Chiang, Y. H., Hsu, T. K., & Hsia, J. W., Strategies to increase the competitiveness of Taiwan's free trade ports based on the fuzzy importance-performance analysis. *Asian Economic and Financial Review*, 6(11), 2016, 681-691.

Christensen, C. M., Johnson, C. W., & Horn, M. B., *Disrupting class*. McGraw-Hill, 2010.

Dougherty, K. P., Habituation and character change, *Philosophy and Literature*, 31(2), 2007, 294-310.

Gunawan, I., Indonesian Curriculum 2013: Instructional Management, Obstacles Faced by Teachers in Implementation and the Way Forward. In *Proceeding 3rd International Conference on Education and Training (3rd ICET)* (pp. 56-63), 2017.

Hakim, A., Contribution of competence teacher (pedagogical, personality, professional competence and social) on the performance of learning. *The International Journal of Engineering and Science*, 4(2), 2015, 1-12.

Hannafin, M.J., Hill, J. R., Land, S. M., Lee, E., Student-centered, open learning environments: Research, theory, and practice. In*Handbook of research on educational communications and technology*, 2014 (pp. 641-651), Springer, New York, NY.

Hartono, M., Model of supervision based on primary school teacher professional competency in thematic learning in curriculum 2013, *Journal of Education Research and Evaluation*, 1(3), 2017, 162-167.

Jonassen, D. H., Revisiting activity theory as a framework for designing student-centered learning environments. *Theoretical foundations of learning environments*, 2000, 89-121.

Jonassen, D.H., & Easter, M. A., Conceptual change and student-centered learning environments, *Theoretical foundations of learning environments*, 2012, 95-113.

Kamaruddin, S. A., Character education and students social behavior, *Journal of Education and Learning*, 6(4), 2012, 223-230.

Karuppusami, G., & Gandhinathan, R., Pareto analysis of critical success factors of total quality management: A literature review and analysis, *The TQM Magazine*, 18(4), 2006, 372-385.

Kolb, A. Y., & Kolb, D. A., Experiential learning theory: A dynamic, holistic approach to management learning, education, and development, *The SAGE handbook of management learning, education and development*, 2009, 42-68.

Lam, C. F., & Mayer, D. M., When do employees speak up for their customers? A model of voice in a customer service context, *Personnel Psychology*, 67(3), 2014, 637-666.

Longworth, N., *Lifelong learning in action: Transforming education in the 21st century*, Routledge, 2003.

Means, B., Technology and education change: Focus on student learning, *Journal of research on technology in education*, 42(3), 2010, 285-307.

Mikulić, J., Prebežac, D., & Dabić, M., Importance-performance analysis: common misuse of a popular technique, *International Journal of Market Research*, 58(6), 2016, 775-778.

Oakland, J., From quality to excellence in the 21st century, *Total Quality Management and Business Excellence*, 16(8-9), 2005, 1053-1060.

Pak, R. J., Combination of importance-performance analysis and response surface methodology for enhancing satisfaction, *International Journal of Quality & Reliability Management*, 33(6), 2016, 792-802.

Rahman, B., Abdurrahman, A., Kadaryanto, B., & Rusminto, N.E., Teacher-Based Scaffolding as a Teacher Professional Development Program in Indonesia, *Australian Journal of Teacher Education*, 40(11), 2015, 67-78.

Rokhman, F., & Syaifudin, A., Character Education For Golden Generation 2045 (National Character Building for Indonesian Golden Years). *Procedia-Social and Behavioral Sciences*. 114, 2014, 1161-1165.

Saripudin, D., & Komalasari, K., Living Values Education in School Habituation Program and Its Effect on Student Character Development, *The New Educational Review*, 39(1), 2015, 51-62.

Seo, Y. M., Ahn, Y. J., Lee, Y. J., & Oh, C. G., The Study on the Perspective of Design Education Quality for Young Child using Importance-Performance Analysis-Focused on the Design Education for Enlightenment of Creativity in Young Child, *The Journal of the Korea Contents Association*, 15(8), 2015, 598-610.

Sever, I., Importance-performance analysis: A valid management tool?. *Tourism Management*, 48, 2015, 43-53.

Sulisworo, D., The Contribution of the Education System Quality to Improve the Nation's Competitiveness of Indonesia, *Journal of Education and Learning (EduLearn)*, 10(2), 2016, 127-138.

Sulisworo, D., & Toifur, M., The role of mobile learning on the learning environment shifting at high school in Indonesia, *International Journal of Mobile Learning and Organisation*, 10(3), 2016, 159-170.

Sulisworo, D., Nasir, R., Maryani, I., Identification of teachers' problems in Indonesia on facing global community, *International Journal of Research Studies in Education*, 6(2), 2017, 81-90.

To, W. M., Lung, J. W., Lai, L. S., & Lai, T. M., Destination choice of cross-border Chinese students: an importance-performance analysis, *Educational Studies*, 40(1), 2014, 63-80.

Tontini, G., Picolo, J. D., & Silveira, A., Which incremental innovations should we offer? Comparing importance–performance analysis with improvement-gaps analysis, *Total Quality Management & Business Excellence*, 25(7-8), 2014, 705-719.

Trilling, B., & Fadel, C., *21st century skills: Learning for life in our times*, John Wiley & Sons, 2012.

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Strengthening the International Network of Millennial Generation as a Part of ASEAN Economic Community Pillar

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Abstract

Globalization is a consequence of human cultural development, especially in the field of technology. One of the characteristics of globalization is the increasing integration, especially in the economic area, in various regions through the activities of trade and financial flow, human mobility and technology across countries. These activities will have an impact on the growth of a nation's competitiveness. The today's educational system will profoundly determine future progress. The issue to be discussed in this paper is how to strengthen the international network of millennial generation as a pillar of the ASEAN Economic Community. The purpose of this paper is to find effective strategies to prepare the millennial generation, which has a positive outlook on ensuring the sustainable welfare of the ASEAN community in future. This strategy needs to include measures that are clear, measurable, and applicable to be carried out in the present by taking into account the characteristics of the millennial generation in each ASEAN countries. There are three suggestions for activities that can improve the perspective the millennial generation. Activities undertaken are activities that accommodate the characteristics of millennial generation especially related to today technology development. The three proposals are: increase the mobility of students and college-students among ASEAN countries, the utilization of

schools and colleges networking, and the utilization of technology in strengthening the community. Implementation of the strategies will provide indirect benefits on the sustainability of interdependence among ASEAN countries, especially in maintaining sustainable prosperity. The short-term advantage of the activities being proposed is the younger generation has a common understanding as a global citizen who contributes to ASEAN.

Keyword: ASEAN Economic Community, College-Students Mobility, Information and Communication Technology, National Competitiveness, Sustainable Development

1. Introduction

1.1 Background

Globalization is a consequence of human cultural development, especially in the field of technology. One of the characteristics of globalization is the increase of integration, especially in the economic sphere, in various regions through the activities of trade and financial flow, human and technology mobility across countries. These activities will have an impact on the growth of a nation's competitiveness. Although the national competitiveness is an issue of nationalism, the increase in competitiveness cannot be separated from the establishment issue of regional economic forces; one of them is the ASEAN Economic Community in Southeast Asia.

World economic experts have predicted on how a shift of world power will take place in 2050. It can be seen from that analysis that there is an essential role of regional economic reinforcement in nurturing the national competitiveness. Some of the determinant factors are the ASEAN economic grow about 5.3% per year in Gross Domestic Product (GDP) and the population with the highest productive workforce in the world's top 3 (Lamy, 2017). Some of these indicators are evidence on the importance of preparing today young generation as a pillar of future competitiveness. The positive characters being invested in education today will give a real impact on how ASEAN countries role in providing direction to the development of the world's people. Figure 1 shows the economic position and population of ASEAN region in the world.

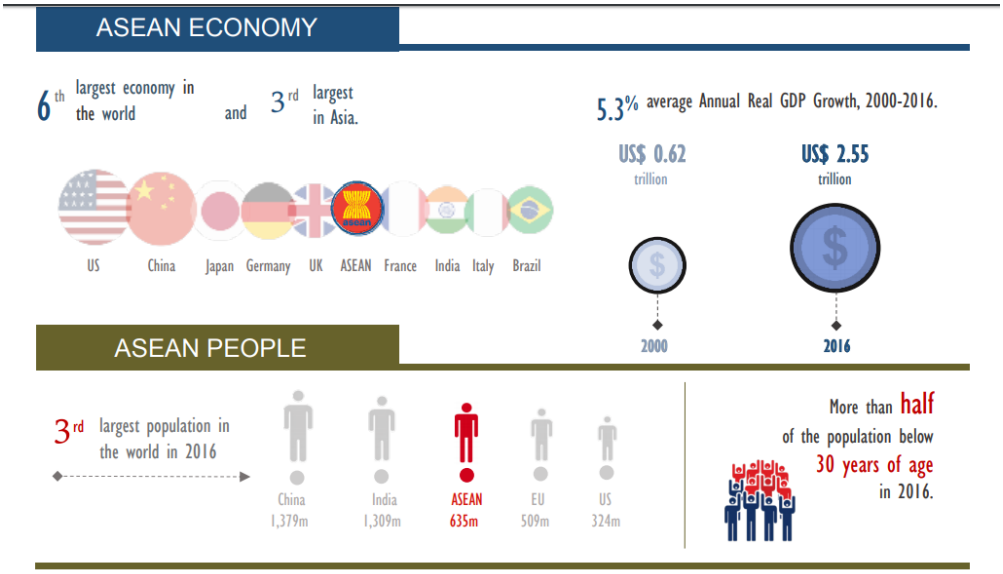

Figure 1 Determinant Factors of ASEAN Region (Lamy, 2017)

The today's educational system will determine the future national environment. The most critical factor in predicting the children next education level is the parent's education (Gray, 2017). Young

people tend to study more high by seeing their parents success. From the analysis of future outlooks, it remains that high education still promises many advantages for individual careers, but the current education system needs to build better innovations to provide most excellent opportunity explanation to live well for future generations. This educational innovation can be seen in how much a country allocates GDP to education. The positive thing is that nowadays in ASEAN region, 85% of young adults (aged 25 to 34) have reached high school education, which usually begins at around 15 or 16 years old. This generation is an excellent future asset.

With the position of ASEAN countries as the influential group on global policy by 2050, the formation of the future generation that has appropriate abilities and skills is of paramount importance. Large market size by 2050 will have a positive impact on the sustainable welfare of ASEAN people if the prime economic power is from the native workers of ASEAN rather than foreign expatriates.

This paper based on the experience of participating in various international activities in several countries (Hong Kong, Thailand, and Malaysia); and also some indirect involvement in the empowerment of people in Indonesia (Purworejo, Raja Ampat, Gayo Lues) and Korea. There is a shared optimism among the participants who are the mostly millennial generation (age less than 25 years). The future together as global citizenship for sustainable prosperity needs to be fought from now on, by the variety of contributive activities among countries.

Within the ASEAN region, it is realized that there are various common problems that the resolution is in a long-term activity. The viewpoint of becoming an inclusive ASEAN citizen in facing the issues of each country casuistic manner will have an impact on today generations in the future actions. The key to this matter is how to build a common regional understanding. ASEAN's interest in creating a prosperous society needs to be supported by utilizing its potential. There are three disparity problems faced by community in the ASEAN region today: the socio-economic disparity, the educational quality disparity, the technological disparity. On the other hand, there is a global threat that will affect the cohesiveness of the ASEAN region, which is Chinese dominance reinforcement in various sectors, the entrance of foreign workers and investment in ASEAN, and the fading of nationalism.

Three activities can reduce the disparities in the future for the anticipation of the conditions in ASEAN, These activities will in fact not have a direct impact on the disparity cases, but moderating actions by reinforcing the current worldview of the young generation as policymakers in the future. By improving the perspective of this generation, in the future, there will be supportive policies on togetherness reinforcement in this region through the ASEAN Economic Community.

There is three activities proposal that can improve the perspective of the current generation as the millennial generation. Activities undertaken are activities that accommodate the characteristics of

millennial generation mainly related to the today technology development. The three proposal are: strengthening the mobility of students and college-students among ASEAN countries, the utilization of schools and colleges networking, and the utilization of technology to enhancing the community.

1.2 Problem Formulation

Thisue paper will discuss how to strengthen the network of millennial generation among countries as a pillar of ASEAN Economic Community reinforcement.

1.3 Objective

The purpose of this paper is to find an effective strategy for preparing the millennial generation that has a positive outlook on ensuring the sustainable prosperity of the future ASEAN community. This strategy needs to include measures that are clear, measurable, and applicable to be carried out at this time by noting the characteristics of the millennial generation in each ASEAN countries.

1.4 Benefits

Implementation of the resulting strategy will provide indirect benefits on the sustainability of interdependence among ASEAN countries especially in maintaining sustainable prosperity. The short-term advantage of the activities is that young people have a common understanding as global citizens who contribute to ASEAN. The immediate impacts of these activities are:

- Increased mobility of students and college students in the ASEAN region in various types of events.
- Distribution of knowledge resources through networking activities of schools and universities among ASEAN countries.
- Higher cohesiveness among youth in ASEAN countries through the utilization of information and communication technology.

2. Method

Personal experience in discussions at several international events was the background for the awareness on the importance of preparing the current generation for the future global community. This paper was written with a qualitative descriptive analysis approach by deductive and inductive analysis techniques. Various secondary sources obtained mostly from the internet were used to reinforce the analysis.

3. Result

3.1 Issues in Southeast Asia Region

International developments in the future will be colored by stronger interdependence. This development makes international relations become more sensitive and even give birth to vulnerability perception to external changes. It means that relationships between nations are not always permanent.

Aspects of national interest will be able to influence the bonds that have been built up so far. As a result, domestic problems cannot be isolated from international problems. Geographic-spatial boundaries become irrelevant in the face of interdependence and openness.

Furthermore, it cannot be denied that the economy faces significant shocks associated with higher prices for energy and food, energy constraints, and natural disasters. These matters affect the national economic development rate with its innate impacts. This issue also becomes the concern in the ASEAN Charter. The global phenomena that will continue to color, influence, and implications to various Indonesian policies are fluctuations in world oil prices, climate changes, economic crisis, the domination of developed countries, and changes in world power.

At the 1997 ASEAN Summit, leaders of the countries in Southeast Asia stated "ASEAN Vision 2020". Through that vision, ASEAN countries agreed to strengthen economic unity and integration, and also decided to enhance economic cooperation by "applying the ASEAN Free Trade Area and accelerating trade liberalization." To strengthen the effort to achieve this vision, Indonesia at the 9th ASEAN Summit which took place in Nusa Dua, Bali, 7-8 October 2003 with the establishment of ASEAN Security Community (ASC). The conclusion of the Bali Concord II at the 9th Summit contains three ASEAN community concepts consisting of three pillars, the ASEAN Security Community (ASC), the ASEAN Economic Community (AEC) and the ASEAN Socio-Cultural Community (ASSC). The anticipation of global change, at the 12th Summit, accelerated the formation of the ASEAN Community from 2020 to 2015 and agreed by the Heads of ASEAN Countries. ASEAN Community 2015 was divided into three pillars, namely: ASEAN Security Community, ASEAN Economic Community, and ASEAN Socio-Cultural Community. Figure 2 shows how the progress and evolution of the ASEAN Economic Community progresses.

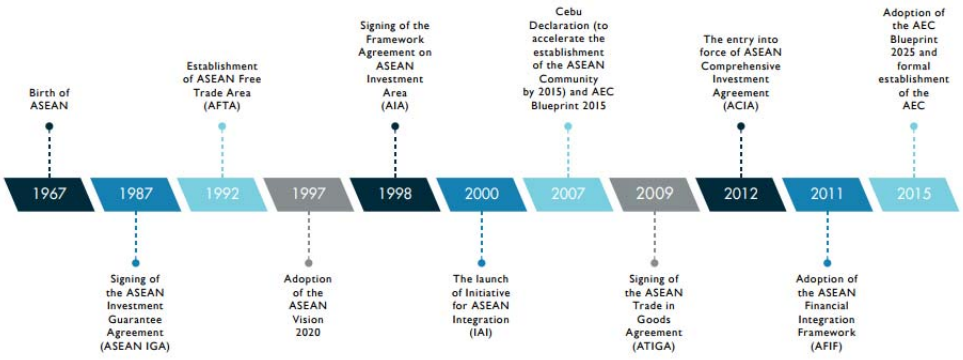

Figure 2 Evolusion of ASEAN Economic Community Development

3.2 ASEAN Economic Community and Shifting Domination of Regional Forces

The establishment of the ASEAN Community by 2015, among others, was through the establishment of the ASEAN Security Community. The ASEAN Security Community, which was later changed to the ASEAN Political-Security Community, under the ASEAN Charter aims to accelerate security policy cooperation in ASEAN to bring peace to the region, including with the international community. In achieving the ASEAN Political-Security Community, steps were set out in the ASEAN Political-Security Community Blueprint (APSC) as a continuation of the ASEAN Security Community Plan of Action and the Vientiane Action Programme (VAP). In this regard, various Indonesian proposals have been accepted such as promoting the principles of democracy, promotion and protection of human rights, promoting good governance by fighting corruption, cooperation in handling illegal fishing, synergizing the steps to establish the Commission on the Promotion and Protection of the Rights of Women and Children, and encouraging the preparation of ASEAN instruments for the promotion and protection of the rights of migrant workers.

The dominance of the world's most influential nations in ASEAN is something that needs to be accepted as a reality. The economic interests of ASEAN region are the root of their influence in this region. The power of China and America will make safeguards for their economic path. The increasingly complex multipolar dimension contours require each ASEAN members to anticipate the geopolitical and geostrategic dynamics of the region. As with the improvement of China's military capability that can be a threat, and also the forces of the United States, Australia, and Japan. On the other side, internally ASEAN also have problems with efforts to improve the economy together.

At first glance, concerning defenses, the Southeast Asian region will be able to determine their future without foreign intervention that often comes and affect the development of the area. On the other hand, all this time ASEAN was able to subside the turmoil that will arise in each country that has the potential conflict. This commitment at least proves that ASEAN members are said to have succeeded in maintaining regional peace and security. This favorable condition can be seen in the structure of functional economic development of ASEAN, as in Figure 3.

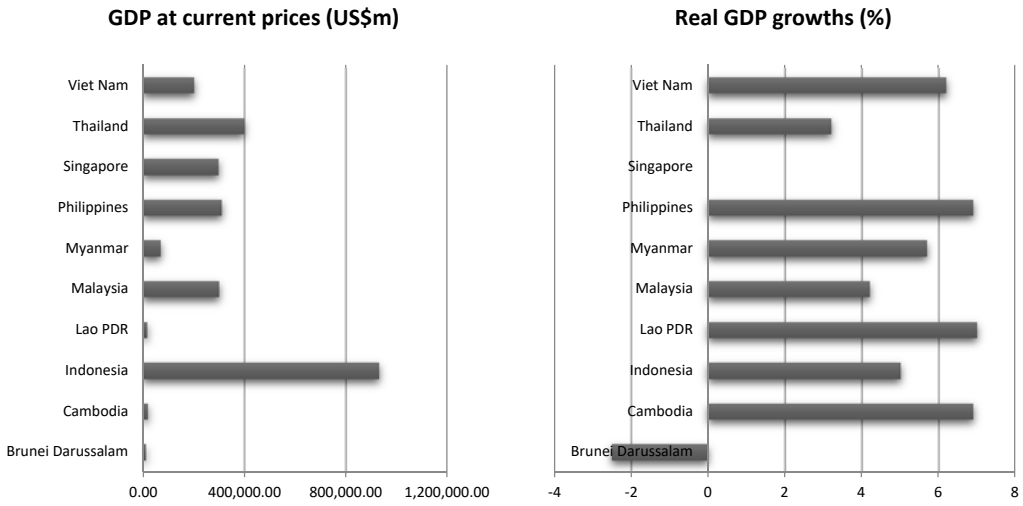

Figure 3 The economic structure of ASEAN countries 2017

These conditions need to be seen as a shift in power. Some of the things that indicate power shift in the ASEAN region are: Japan's economic and military enhancement with their interests of regional stability, the emergence of China as new power that become main competitor to the United States, the ambition of Australia in the weapons race in the region, the influx of Russian influence although tends to be limited, the escalating economy and the rise of the India military by actively participating in various multinational and regional activities, as well as the continued hegemony of US superpower in terms of balance of power in the region.

Table 1shows the socio-demographic structure of ASEAN countries 2017. The number of the urban population can figure out the possibility for any activities between countries. The awareness to collaborate can also be analyzed from the magnitued of the literacy rate. Almost all of the people of each country have high literacy. It can be a good pillar for increasing the understanding between ASEAN people. Combining the literacy rate and the labour force participant rate, there is a promising situation in ASEAN country to do many activites.

Table 1 Socio-demographic structure of ASEAN countries 2017.

	Population ('000)	**Population growth (%)**	**Labour force participation rate (%)**	**Urban population (%)**	**Adult literacy rate (%)**
Brunei Darussalam	423	1.4	65.6	77.5	97.2

Cambodia	15,158.20	1.2	82.7	20.9	80.7
Indonesia	258,705.00	1.3	66.3	54.5	95.2
Lao PDR	7,163.00	10.3	66	39.7	79
Malaysia	31,660.70	1.5	67.7	75.4	94.2
Myanmar	52,917.00	0.9	64.7	34.6	89.5
Philippines	103,242.90	1.7	63.5	44.3	95.4
Singapore	5,607.30	1.3	58	100	96.8
Thailand	67,454.70	0.3	69.8	51.5	96.1
Viet Nam	926,950	1.1	77.3	34.2	94.8
ASEAN	635,026.80	1.3	68.2	48.2	94.2

Concerning information technology and tourist mobility in ASEAN also shows an outstanding figure. These phenomena will be an adhesive factor among ASEAN citizens. Through a variety of virtual mobility, activities will be able to give a positive impact on economic development (Kenyon, 2006). Figure 4 shows the connectivity and mobility structure of ASEAN countries in 2017.

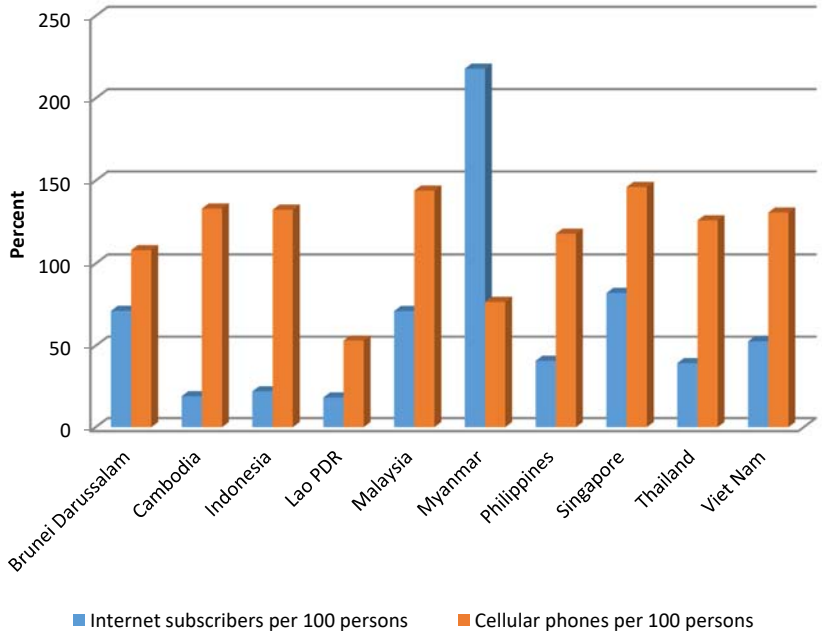

Figure 4 Structure of connectivity and mobility of ASEAN countries in 2017

4. Discussion

Samans et al. (2017) mentioned that to support the global sustainability is necessary to expand the development and the usefulness of a nation to other countries. This mechanism (pre-distribution mechanism) needs to be built from now on. Three activities can guarantee this, which are financing,

investment in people, and improving the policy environment (Farole & Winkler, 2014). Focus on the investment in people, several strategies that can be done are through the mobility of students and college-students, utilize technology in strengthening the community, and utilize networking schools and universities.

4.1 The mobility of Students and College-Students

From various global economic analyzes, the labor mobility is an essential factor in economic development (Zhang & Lucey, 2017; World Bank, 2015). It means that skilled labors that have the awareness to engage in inter-country mobility tend to contribute positively to economic development. Economic development is closely related to the distance that humans can travel. The ability of people to travel will affect the economic activity and wealth of society. The development of transportation technology supported by other technologies has resulted in a facility of mobility that is faster and cheaper.

Preparing up today generation with the mentality to mobile will indirectly improve future economic development. If the young generation does not have this mentality the ASEAN region, that will be a considerable market for various commodities in the future, will only be filled by people from outside ASEAN. Benefit from ASEAN with market size that will be felt by expatriates. So it is critical to equip this mentality of mobility in the young generation.

The positive impact activities in students and college-students mobility programs include cultural exchanges, campus visits, cultural visits, performing arts, sports events, short training, sit-in lessons, living in residence or other students families, research, and so on (De Wit, 2015; Ortiz et al., 2015; Wei, 2013). These programs each have their uniqueness but also have varying levels of management. The key benefits of this program are to improve mutual understanding as a global citizen, a better sense of confidence, and networking with students from different countries. These changes will influence participants who are in the future will make sure strategic decisions in various fields.

4.2 Technology for community strengthening

The term virtual mobility is known as a cross-country activity for various purposes that utilize the virtual world and the internet. The high level of information and communication technology penetration in the ASEAN region has become opportunities for virtual mobility. Various communication services in various forms have enabled virtual communities (WhatsApp, Line, Facebook, Instagram, etc.). On the other hand, the concept of Open Educational Resources where knowledge becomes more comfortable to access online has significantly changed the learning practices

today. These things ultimately also change the behavior of communication and interaction between students among countries.

Economically, transportation is mostly a derivative demand to achieve goals. The transport system acts as an enabler for the desired activity. Sometimes a person can and cannot do something because of transportation. This action also can increase the cost of an effort. The development of transportation and communications technology that is happening now has changed this concept radically, including with the emergence of virtual mobility concept. Virtual mobility changes the nature of the relationship among economic development on the one hand, and the use of time and energy resources on the other. It makes the economic growth can be achieved with lower levels of energy consumption. These changes make disruptive in the various sectors of the economy.

College-students, who are the millennial generation, with high levels of information technology literacy will feel more comfortable in building a virtual community to perform virtual mobility activities. Characteristics of this generation, which tend to be multicultural, favor on short reading, and multitasking, will have different levels of needs with previous generations. Generational empowerment through these characteristics will be able to forge a generation ready for their future lives (Choi et al., 2015).

4.3 Colleges Networking as an Enabler

Students and college-students nowadays are getting relatively more comfortable in accessing the best science and technology. The existence of information and communication technology becomes enabler factor in this case. Networks owned by inter-country universities can be critical factors to initiate students activities (Devlin, 2013). With networking between universities, it can be developed various activities for development of science and technology. Proper distribution of science can be done through this partnership.

The facilities provided by colleges in this access will make the college-students get more natural and eager to be able to perform various activities. The critical thing in giving this facility is the attention to the characteristics of the young generation or students so that the goal can be achieved. The intensity and extension of these networks and programs will be the driving force for increased interest (Hazelkorn, 2015). The collaborations that have been written in the Memorandum of Understanding need to be followed to create various activities among universities. The resulting actions will be able to increase the cohesiveness among students. Thus in the future, the college-students will build a shared network and awareness as citizens in the region.

5. Conclusions

To ensure sustainable prosperity in the ASEAN region in the future, the preparation of the young generation becomes very important. Three activities determine the success, which are:

- Increasing the mobility of students and college-students among ASEAN countries
- Utilization of technology to strengthen virtual communities
- Usage of schools and colleges networking for cohesiveness

The proposed activities of this paper can only work well when the Government through the Ministry of Education and Culture and the Ministry of Research and Technology and Higher Education commit to issue related policies. The colleges and schools, at the implementation level, provide program facilities for students and college students to them be more eager to participate.

Acknowledgement

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References

Amianti, G., *Top five ASEAN economies to grow over 5%: IMF outlook*. The Jakarta Post, October 11, 2017. http://www.thejakartapost.com/news/2017/10/11/.

Bandoro, B., *Masalah-Masalah Keamanan Internasional Abad 21 [Problems of International Security at 21st century]*, Badan Pembinaan Hukum Nasional Departemen Kehakiman dan Hak Asasi Manusia Denpasar, 14-18 July 2003.

Choi, J. W., Lee, J. H., & Kim, K. Y., Exploring Millennial generation behavior of gamification contents converging with ICT and sharing economy: Hierarchical clustering analysis. In *Computer Science and Its Applications* (pp. 789-794), 2015, Springer Berlin Heidelberg.

Cingano, F., Income inequality, social mobility, and economic growth, Paris: OECD Publishing, 2015. https://www.oecd.org/eco/growth.

Devlin, M., Bridging socio-cultural incongruity: Conceptualising the success of students from low socio-economic status backgrounds in Australian higher education, *Studies in Higher Education*, 38(6), 2013, 939-949.

De Wit, H., Recent trends and issues in international student mobility, *International Higher Education*, (59), 2015.

Gray, A., These countries come top for education. World Economic Forum, 2017. https://www.weforum.org/agenda/2017/09/countries-with-best-education-system/.

Hazelkorn, E., *Rankings and the reshaping of higher education: The battle for world-class excellence*, 2015, Springer.

Indonesia Investments, *Indonesia Will Be the World's Fifth most Populous Country by 2050*, 2017. https://www.indonesia-investments.com.

Kenyon, S., Reshaping patterns of mobility and exclusion? The impact of virtual mobility upon accessibility, mobility and social exclusion, *Mobile technologies of the city*, 2006, 102-120.

Lamy, P., *The ASEAN Economic Community: Preparing for Tomorrow in Today's World*, 2017, http://asean.org/storage/2017/06/AEIB_No.01-June-2017_rev.pdf.

Myers, J., *5 maps on the state of global inequality,* World Economic Forum, 2015. https://www.weforum.org.

Ortiz, A., Chang, L., & Fang, Y., International student mobility trends 2015: An economic perspective, 2015.

Prasetyono, E., *Masalah-Masalah Bidang Pertahanan dan Keamanan [Problems on defence and security]*, 2009, Centre for Strategic and International Studies (CSIS): Jakarta.

Samans, R., Blanke, J., Hanouz, M. D., & Corrigan, G., The Inclusive Growth and Development Report 2017. *World Economic Forum,* 2017. http://www3.weforum.org.

Farole, T & Winkler, D.,The Role of Mediating Factors for FDI Spillovers in Developing Countries: Evidence from a Global Dataset. in Making Foreign Direct Investment Work for Sub-Saharan Africa: Local Spillovers and Competitiveness in *Global Value Chains*, eds. T. Farole and D. Winkler: 56-86, 2014, Washington: World Bank.

Wei, H., An empirical study on the determinants of international student mobility: a global perspective, *Higher Education*, 66(1), 2013, 105-122.

World Bank Group, *The Contribution of Labour Mobility to Economic Growth*, 2015, Ankara: World Bank. http://www.ilo.org.

Zhang, Q. A., & Lucey, B. M., Globalisation, the Mobility of Skilled Workers, and Economic Growth: Constructing a Novel Brain Drain/Gain Index for European Countries, *Journal of the Knowledge Economy*, 2017, 1-23.

Weight Cognitive Influences Night Eating Behavior for Taiwanese-Implicating Theories of Planned Behavior and Impulse Buyin

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Abstract

Night snacking has been a well-known eating behavior in Taiwan. Accompanied by changes in sleeping patterns, night workers, and night eating places progressively develop such as night markets, the impact of Taiwanese night snacking cannot be ignored. Therefore, to explain the complex food decision-making, the theories of planned and impulse buying were integrated in this study to provide a more reasonable analysis of human behaviour in terms of food consumption. The questionnaires of this study were delivered between March 20, 2013 and April 20, 2013 by means of disproportionate stratified random sampling. Eventually, 759 valid questionnaires were retrieved. The results indicated that, when the weight cognitive is negative (participants thought that night eating will not cause them to put on weight), their behaviour was related to the planned behaviour. On the other hand, when the weight cognitive is positive (participants thought that eating late night snacks will cause them to put on weight), they were related to impulsive late night snacking behaviour. Finally, practical and specific suggestions were brought up accordingly.

Keyword: Theory of Planned Behaviour, Theory of Impulse Buying, Weight Cognitive, Night Eating

1. Introduction

Night snacking is a well-known eating behavior in Taiwan. The Taiwanese lifestyle increasingly focuses on recreation and traveling, and the city government's advocacy of tourism and culture festivals lead to domestic tour market's growth, and a huge improvement on the hospitality industry. According to the statistical information of the Taiwan Tourism Bureau (2006), the Taiwan hospitality industry has recently aimed more 40 billion dollars compared with 2001. From this aspect, we can figure out that the Taiwan hospitality industry is now growing rapidly, accompanied by tourism development. On the other hand, there is a more competitive environment existing in the hospitality industry. As the result, managers extend their open hours and provide night snacks. For example, global fast food chain store, Mcdonald's, declared that more than 150 stores had 24 hours opening from 2007, in the biggest cities including Taipei, Taichung and Kaohsiung provides they now provide 24 hours delivery (Mcdonald's, 2012). From this perspective, the benefit of Taiwanese night snacking gets more and more attention.

The habit of sleep cycles to Taiwan residents might also influence night snacking activities. According to statistics from the Taiwan Tourism Bureau (2005), the time of sleep cycles before midnight for Taiwanese appears negative (8 pm to 10pm is -0.59% and 10pm to midnight is -2.58%), on the other hand, the time of sleep cycles after midnight for Taiwanese appears positive (midnight to 02 am is +1.64% and 02 am to 04 am is +0.62%). Still, night workers and shift workers may indirectly influence night snacking consumption, the meal content and the time of eating are important to them and further effect postprandial metabolic rates (Al-Naimi, Hampton, Richard, Tzung and Morgan, 2004; Assis, Nahas, Bellisle and Kupek, 2003; Waterhouse, Buckley, Edwards and Reilly, 2003). Above all, influenced by a strict competition environment in the hospitality industry, delayed sleeping cycles, and the numbers of night workers, demonstrate that the potential effect of night snacking cannot be ignored.

The conception of a night snack is 'a meal between dinner and breakfast'. The common places for night eating in Taiwan are often linked to night markets. There are more than 300 night markets in Taiwan and they have attracted more and more visitors in recent years (Zhao and Lin, 2010). Especially Japanese visitors, there are 97.5% re-visiting tourists, attracted by novelty-seeking motivation. (Chang, Min, Lin and Chiang, 2007). For Taiwanese, a night market is a conglomeration of native culture and a place for local people to eat and to shop (Hsieh and Chang, 2006). Chang and Hsieh (2006) point out that the frequency of eating out at night markets is approximately once a month for Taiwanese because there are a wide variety of food choices, such as peddler's noodles (danzaimian), rice cakes (migao), and rice with stewed pork sauce on top (luroufan)(Chen, 2010).

In general, food choices consist of two relative styles, planned and impulse behavior (KÖster, 2009; Bublitz, Peracchio and Block, 2010). In planned behavior, previous research implicated the theory of planned behavior, to reported consumer reason reaction food choice. (Hewitt and Stephens, 2007; Bissonnette and Contento, 2001). On the other hand, theories of impulse buying have also been widely used on the food consumption area (Honkanen, Olsen, Verplanken, and Tuu, 2012). But there is still no research combining both of them, especially on night eating topics.

Above all, analogous night eating behavior is exsisting everywhere. The time for nighttime eating is more special. Previous studies on night eating were focus on a eating patterns, (Assis et al., 2003; Foti adou and Babajimopoulos, 2006) or a clinical night eating syndrome, (Allison, Lundgren, Moore, O'Reardon, and Stunkard, 2010) is seen as a night eating disorder (Grilo and Masheb, 2004; Howell, Schenck, and Crow, 2009; Lundgren, Mccune, Spresser, Harkins, Zolton, and Mandal, 2011). Therefore, there is an important topic that needs to be discussed in the night eating area, weight cognitive. Weight cognitive is usually linked to weight control and restrained/unrestrained eating. That is, when people think that having night snacks may increase their weight, or may influence their weight control ability, and levels of restraint become higher. For example, Chen (2007) pointed out that weight control is one of the food choice motives that positively influences Taiwanese attitudes to organic foods. Still, Grilo and Masheb (2004) pointed out that compared with no night eating participants, having night eating showed a higher BMI. However, those with higher BMI's showed more concern on dietary restraint, eating, shape and weight (Grilo and Masheb, 2004). That is to say, night eaters originally know that night eating may violate their dietary restraint and cause weight gain, and have even more influence their body shape. But, even though their weight cognitive is positive (weight gain), they have themselves to do the same thing as those negative weight cognitive participants (no weight gain) do. Furthermore, to clarify, the relationship between weight cognitive and planned /impulse behavior is needed. Also, night eating in Taiwan is not one of the usual meals for the general population, that is, people may choose night eating, or not to have it. This characteristic is appropriate to this study in order to examine, whether night eating is a planned behavior, or an impulse behavior. And still, past behavior is such an important variable in food the consumption area, and implicated in the theories of planned and impulse behavior (Ji and Wood, 2007; Kidwell, and Jewell, 2008; Smith, Terry, Manstead, Louis, Kotterman, and Wolfs, 2008; Wong and Mullan, 2009). Past behavior can predict intention and behavior in the TPB model (Conner and Armitage, 1998; Kidwell and Jewell, 2008; Smith et al., 2008). Conner and Armitage (1998) pointed out that past behavior can increase the explanatory power of intention arrived 7% and behavior arrived 13%. In drink consumption research, Smith et al. (2008) pointed out that when there is more past frequency on one brand, the higher intention and behavior may appear. But, in night eating consumption, the influence of past behavior is still unknown. On the

other hand, the influence of past behavior in the theory of impulse buying was quite different. Strack, Werth, and Deutsch (2004) pointed out that impulse buying was accompanied by awareness of past experience. Especially, there are three types of consciousness. The first one is related to the physiology like colour, sound and taste. The second was one's feelings on both positive and negative. And the last is one's knowledge on similarity, or ease. And all these feelings are the consequence of one's consciousness. Therefore, when there is repetition, for example, when a person sees the same cake in one cake store and buys it, according to the above conditions, they may easily buy impulsively in the same situation. On the contrary, UPPS (urgency, lack of premeditation, perseverance and sensation seeking) was used to show the impulse behind drinking behavior (Magid and Colder, 2007; Whitside, Lynam, Miller, and Reynolds, 2005) and binge eating behavior (Kane, Loxton, Staiger, and Dawe, 2004). Sensation seeking includes two conditions, pursuit of stimulating activities, and being open to try new experiences (Whitside et al., 2005). Even more, the one with variety seeking is related to the impulse buying (Sharma, Sivakumaran, and Marshall, 2010). In short, some consumers may have impulse buying because in the same situation they have the same stimulation, and others with less frequencies of past behavior to new experience, and change. To fill up this gap, this study tries to explore the influence of past behavior on planned and impulse behavior.

2. Hypothesis development

Cognition is an important beginning to influence intention and behavior on food consumption (Adami, 2001). Cognition includes one's belief, worship and respect for one thing (Kellett and Bolton, 2009). In eating behavior, the difference between fatness and thinness depends on the weight control and weight loss cognitive (Adami, 2001). When our weight gets used to one standard of hunger, appetite, and satiation it differs from the social standard and cannot be accepted. The cognition of eating constraint may occur. Therefore, different levels of eating constraints may cause diversity behavior traits (Adami, 2001). As Kidwell and Jewell (2003) pointed out that, different consumers may have distinct levels of abilities to control their eating behavior, for example, under a joyful situation, one's cognitive control ability may be changed by emotional reflection (Kidwell and Jewell, 2003). In general, the frequencies on night eating may have correlated with body weight (Anderson, 2004). As the above-mentioned, consumer's weight cognition may cause different behavior traits. Weight cognition may differ in positive and negative ways. The more negative weight cognition presents, that the lower importance of weight may be perceived. The weight is typically seen as under personal control (Vartanian, 2010), therefore, this study considers, that when one could control their weight, it may be under a reasonable situation. As Louis, Chan, and Greenbaum (2009) discuss

healthy/unhealthy eating under pressure, the TPB modal may be assumed, and those participants being under a reasonable situation.

H1: When Taiwanese consumers' do not pay attention to weight, (weight cognition is negative) night eating behaviors will have a positive correlation with planned behavior (intention).

In general, consumers' may engage their rationality system to avoid indulging their desire, and consciousness with their choices, still to avert from a tendency to impulse buying (Hofmann, Strack, and Deutsch, 2008). Dietary restraint eaters (pay attention to weight) compared with non-dietary restraint eaters (no attention to weight) may easier yield to their hunger or satisfaction (Bublitz et al., 2010). That's because those dietary restraint eaters may reduce their cognitive ability (Bublitz et al., 2010). Especially when the restraint level becomes higher and may lead them eat even more, because that interference may disperse to their concentration on targets (Ward and Mann, 2000). That's to say, restraint eaters used cognition to control their diet aspirations for a short-term period, but how to use their cognition to monitor all day long, or even longer periods might be questionable (Bublitz et al., 2010). Besides, Cheema and Soman (2006) pointed out that even if under an appropriate situation (positive cognition) consumers may construct one legal reason to violate original intention, and indulge in their desire. For example, in fast-food consumption, although consumers considered that fast-food is not healthy, they easily ignore its potential harm when under a pleasure situation (Dunn, Mohr, Wilson, and Wittert, 2011). In short, impulse buying is the result of cognitive conflict with behavior. That's to say, when the one's cognition is positive (pay attention to weight) and still has night eating. One reason is that dietary restraint could not control how much they should eat, and debate with the hunger (Nederkoorn, Guerrieri, Havermans, Roefs, and Jansen, 2009).

H2: When Taiwanese consumers' pay attention to weight, (weight cognition is positive) night eating behavior will have a positive correlation with impulse behavior (tendency on impulse buying).

Theory of Planned Behavior (TPB) has been extensively and successfully applied to fruit and vegetable consumption (Bogers, Brug, Assema, and Dagnelie, 2004), fast-food consumption (Dunn et al., 2011), organic food consumption (Arvola, Vassallo, Dean, Lampila, Saba, Lähteenmäki, and Shepherd, 2008), and breakfast consumption (Wong and Mullan, 2009). Marketing psychologists have noted that the TPB modal is a useful framework not only for understanding consumer conduct, but also for influencing it (Smith et al., 2008). TPB postulates three conceptually independent determinants of intention. The first is the attitude towards behavior and refers to the degree to which a person favorably or unfavorably evaluates or appraises the behavior, (Arvola et al., 2008) and a person's overall evaluation of performing the behavior that includes assessing the consequence of the behavior (Bhuyan, 2011). Attitude plays an important role in influencing the intention. In previous food

consumption research, Arvola et al., (2008) integrating measures of affective and moral attitude to the TPB modal in predicting purchase intention of organic foods. The results showed that, in a case in the UK and Italy, moral attitude rather than subjective norms had a stronger explanatory power (Arvola et al., 2008). Still, Bhuyan (2011) pointed out that, negative attitudes toward food, away from home, reduced consumers' frequency of eating out. As Ajzen (1991) inferred, attitude in the TPB modal is the most important variable in influencing intention.

H3: Taiwanese consumer's attitude towards night eating behavior will have a positive influence on their intention.

The second conceptual variable is social norm. It refers to the social pressure influenced by values, such as considering what others, who are important to the individual may think of such behavior (Bhuyan, 2011). Easy to say, a person's belief about whether significant others think they should adopt a given behavior (Hewitt and Stephens, 2007). Hewitt and Stephens (2007) examined parental influence in predicting healthy eating intention and behavior among 10-13 year-old children. The result suggested that reinforcing to parents and caregivers the importance of promoting healthy food to children should be endorsed, and further influence children's perceptions of what they should do.

H4: Taiwanese consumer's social norms towards night eating behavior will have a positive influence on their intention.

The third conceptual variable is perceived control. It refers to the individual's perceptions of their ability to perform a given behavior (Bhuyan, 2011). That is, reflecting the individual's perception of how easy or difficult to perform a behavior (Hewitt and Stephens. 2007). Furthermore, perceived behavior control is conceptualized to influence behavior directly, in that, even if one intends to do something, one may be unable to do so if the behavior is not under volitional control (Vermeir and Verbeke, 2008). For example, one who wants to buy night snacks, but is without any money. According to Ajzen, (1991) perceived control is composed of facilitating condition and past experience. Futhermore, Verbeke and Vackier (2005) take habit into account; that habit has a highly significant positive impact on intention. Total perceived control has a more or less intermediate score, which means that there were no large anticipated difficulties.

H5: Taiwanese consumer's perceived control towards night eating behavior will have a positive influence on their intention.

Past behavior might include a stable habit in dietary behavior and influence intention and behavior (Smith et al., 2008), as Ajzen (2002) pointed out, past behavior can be an accurate guidance to lead people's intention. Therefore, past behavior may compose of past habits and learning and actually predict behavior (Köster, 2009).

H6: Taiwanese consumers past behavior towards night eating behavior will have a positive influence on their intention.

Impulse buying is a common behavior in our life. Previous studies implicated impulse buying on marketing management (Rook, 1987), psychology dimension (Adelaar, Chang, Lancendorfer, Lee, and Morimoto, 2003; Kellett and Bolton, 2009), social dimension (Strack, Werth, and Deutsch, 2004； Sharma et al., 2010), and focus on consumer behavior (Hofmann Friese, and Wiers, 2008; Ji and Wood, 2007; Nederkoorn et al., 2009) and furthermore, on food consumption areas (Honkanen, Olsen, Verplanken, and Tuu, 2012).Impulse buying factors may be distinguished in three dimensions for discussion. First, consumer's potential impulse buying traits, like spontaneous urges to buy (Rook, 1987), lack of control (Wood, 1998), variety seeking (Peck and Childers, 2006) and self-control (Honkanen et al., 2012). Second, internal cues, participants themselves perceived hunger (Tomiyama and Comer, 2009) and emotion (Betty and Ferrell, 1998). Third, external cues, participants having the money (Youn and Faber, 2000) and, or time (Betty and Ferrell, 1998).

H7: Taiwanese consumer's impulse buying traits will be a positive influence tendency on impulse buying.

H8: Internal cues include hunger and emotion will influence Taiwanese consumers' tendency to impulse buying.

H9: External cues including money and time will influence Taiwanese consumers' tendency to impulse buying.

Ji and Wood (2007) pointed out that even if consumers have intention for specific products, the behavior will be in line with the habit (past behavior). Also, the frequencies of past behavior have a positive correlation with some specific products and cause a tendency to impulse buying (Verplanken and Herabadi, 2001)

H10: Taiwanese consumers past behavior towards night eating behavior will have a positive influence on tendency of impulse buying.

3. Method

Data were collected through a self-report consumer questionnaire survey. The questionnaires were modified from the food consumption area into night eating related topics. To establish the representativeness of the population in Taiwan, this study includes recent research for participants' age in the food consumption area. Under Taiwan's law, participants under 18 years of age may have difficulty buying night food from outside. As a result, only those who are between 18-65 years old in Taiwan are included in the target population. A stratified sampling, based on the area classification, (there are four regions and 22 cities in Taiwan) and demographic variable, (e.g., gender, age…) and

night eating related questionnaire (e.g., who is your partner at the last night eating). In order, to accurately predict the consumer night eating experience and avoid getting a vague answer, this study also includes recent research for predicting time in the food consumption area. The data collected in table 2, showed that previous studies predict their time from next week to next month. As a result, this study selects our predicted time by an eclectic method, that's the next two weeks and expects to get an accurate prediction time.

Table2. Predict time for recently food consumption researches

Authors	Year	Research Area	Predict Time
Seo, Lee and Nam	2011	Fast Food Consumption	Next Month
Dunn et al.	2009	Fast Food Consumption	Next Month
Wong and Mullan	2009	Breakfast Consumption	Next Week
Smith et al.	2008	Drink Consumption	Next Week
White et al.	2007	Low Fat Food Consumption	Next Month

Measure

Weight cognition is measured by cognitive restraint that is widely adopted in a three-factor questionnaire (TFEQ). The TFEQ is a self-assessment questionnaire developed to measure cognitive and behavioral components of eating (Karlsson, Persson, SjÖstrÖm, and Sullivan, 2000). Weight cognition refers to the control of one's body weight and further influence night eating choice. For example weight cognition questionnaires were assessed by asking the participants to answer the following questions, for example: "I consciously hold back on how much I eat at meals to keep from gaining weight". Items were measured using a seven-point semantic differential scale as anchored with corresponding statements.

TPB variables were measured by Wong and Mullan (2009), Dunn. et al. (2011) and Verbeke and Vackier (2005) with a seven-point semantic differential scales. The questionnaires were assessed by asking the participants to answer the following question: I think night eating regularly, is (good-bad) (attitude), people who are important to me think I should engage in night eating everyday. (social norm), I engage in complete control over the number of times I will go night eating over the next two weeks. (perceived control), the chance that I eat fish in the next two weeks is high. (intention).

Impulse buying variables were measured by Rook and Fisher. (1995), Cappelleri, Bushmakin, Gerber, Leidy, Sexton, Lowe, and Karlsson, 2009, Kacen and Lee (2002), Betty and Ferrell (1998) Honkanen et al. (2012) with a seven-point semantic differential scales. The questionnaires were assessed by asking the participants to answer the following questions: I often buy things spontaneously (Impulse buying trait), sometimes when I start eating, I just can't seem to stop. (Hunger), concerning a recent spontaneous night eating event, my feeling is... (Annoyed- Pleased). I have limited time available for me to go night eating. (Time Available), I am on a tight budget while on this shopping trip. (Money Available), I sometimes cannot suppress the feeling when having night eating. (Tendency on Impulse Buying).

4. Result

There were two main stages to the data analysis. In stage one, correlation analysis was used to test whether weight cognition was correlated with plan average and impulse. In second stage, every variable in TPB or impulse buying was tested in a dependent variable and an independent variable by simple linear regression model.

Thirty-eight percent of the respondents were male (n=294) and 61.3% percent were female (n=465). The main age of respondents was between 21 and 29 years of age and most of them were single (65%). The sleep time for night eating persons was mostly between 10 pm and 12 am and the expense of night eating was mostly under 100 NT dollars. There were two main night eating resources, take away and eat at home, and eat outside. The data were shown in Table 1 and Table 2.

Table1. Statistical information (n= 759)

Characteristic	Percentage
Men	38.7%
Women	61.3%
Age	
18-20	1.6%
21-29	60.3%
30-39	29.8%
40-49	2.6%
50-59	5.1%
60-65	0.5%
Single	65.5%
Married	34.5%
Night snack expenditure	
under 100 (NT) dollars	40.7 %

101-200	
34.3%	
201-300	
12.3%	
301-400	
2.6%	
401-500	
5.8%	
above	500
4.4%	

Table2.Characteristics of subjects (n= 759)

Characteristic	
percentage	
Night snack participants	
Family	
17.1%	
Friends	
53%	
Lovers	
26.9%	
Alone	
1.8%	
Time of night snack eating	
0600	p.m.~0800 p.m..
0.9%	
0800	p.m.~1000 p.m.
7.4%	
1000	p.m.~0000 a.m.
73.5%	
0000	a.m.~0200 a.m.
17.9%	
0200a.m.~	
0.3%	
Night eating resource	
Cook at home	
27.3%	
Take away and eat at home	
36.2%	
Eat outside	
35.8%	
Other	
0.7%	
BMI	
Men	
22.77	
Women	
22.65	
Average	
22.69	

The result of correlation analysis has shown that negative weight cognition had a negative correlation with planned behavior, (p= -0.797***) and positive weight cognition had a correlation with impulse behavior (p=0.740***). The results of simple linear regression analysis between variables were shown in Table3.

Table 3. Simple Linear Regression Analysis

Independent Variable	Dependent Variable	R^2	F-Value	P-Value
Attitude	Intention	0.026	11.902	0.001**
Social Norm	Intention	0.120	56.148	0.000***
Perceived Control	Intention	0.007	4.067	0.044*
Past Behavior	Intention	0.171	84.521	0.000***
Impulsivity	Tendency On Impulse Buying	0.416	251.493	0.000***
Positive Emotion	Tendency On Impulse Buying	0.253	119.847	0.000***
Hunger	Tendency On Impulse Buying	0.372	209.097	0.000***
Money	Tendency On Impulse Buying	0.440	277.062	0.000***
Time	Tendency On Impulse Buying	0.217	98.013	0.000***
Past Behavior	Tendency On Impulse Buying	0.427	262.648	0.000***

5. Conclusion

This study was aimed at employment of the theory of planned behavior and the theory of impulsive behavior to develop a framework in order to make up for the limited predictability of a single theory and further explain a wider range of human food consumption behavior. Both theories were used to explain the positive and negative weight cognition of identical late night snacking behavior, for discovering the influence of the frequency of previous late night snacking behavior on intention in the theory of planned behavior, as well as impulse buying tendencies in the theory of impulsive behavior.

For the group having a negative cognition of weight, it was found in this study that participants who thought that eating late night snacks would not cause them to put on weight, were more likely to plan late night snacking behavior. In addition, it was verified in this study that the framework of the theory of planned behavior had significant predictive power over the intention of late night snacks. However, the influence of past behavior was the most explanatory variable in the framework, which increased the explanatory power of intention in the original framework from 23.1% to 31.3%. This result also supports Wong and Mullan (2009) in which planned behavior was used as a framework for predicting the consumption behavior at breakfast. According to the research result, past behavior can increase the explanatory power over intention by 23.2%.

Furthermore, it was found in the model of planned behavior that the predictive power of social norms is greater than that of attitude and perceived behavioral control. Indicating that for the late night snacking participants, it was critically decisive as to whether other people who were important to them, thought they should eat late night snacks or not. Hence, it was shown in the conclusion of late night snacking partners, that the ratio of one person having late night snacks was only 1.8%, indicating that late night snacking consumption is usually based on group activities with friends, colleagues, or family members, and the late night snacking intention of the participants was decided by whether the friends, colleagues, or family members supported their late night snacking behavior or not. This supports Seo, Lee, and Nam, (2011), in which the theory of planned behavior was employed to study fast-food consumption. According to the study, the influence of attitude is not significant in planned behavior, and instead, the intention of fast food consumption is decided by social norms and perceived behavioral control. Moreover, Dunn et al. (2011) also used the theory of planned behavior to investigate fast-food consumption, and the result also indicated that social norms are a better predictor variable for intention. The reason lies in that the participants eating fast food had a fear of negative evaluation from the surroundings. In terms of late night snacking behavior in Taiwan, the concept is that late night snacks are a normal part of the diet after dinner, that is, an extra meal after three meals. Thus, although one thinks that eating late night snacks will not cause them to put on weight, it becomes a decisive factor whether or not people around them would like to participate in the activity or how they evaluate it. Similarly, late night snacks and fast-food are different from three daily meals, and they are usually for

special events, meetings with friends, or celebrations (Seo et al., 2011), which also corresponds to the research result of this study, that is, the participants of late night snacking activities are usually friends or colleagues.

In terms of perceived behavioral control, the participants thought that the expenses incurred from eating late night snacks were 'micro' obstacles. The result conforms to the expenses of late night snacks. Based on the result of this study, 40.7% of people spend less than NT$100 for late night snacks in Taiwan, and 34.3% of them spend NT$101~NT$200. Therefore, people in Taiwan perceive this as a relatively low obstacle.

For the group with a positive cognition of weight, it was found in this study that when the participants thought that eating late night snacks would cause them to put on weight, they were related to impulse late night snacking behavior. Based on this study, three main reasons caused the impulse buying tendency of the participants for late night snacks. First, it was related to one's impulsive characteristic. That is, an individual may unconsciously eat late night snacks although they perceive that eating late night snacks will cause them to put on weight. The reason can be linked with one's late night snacking partners. It was shown in this study that late night snacking partners are usually friends or family members. Namely, the participants with a more impulsive characteristic tended to more easily ignore the chances of putting on weight when being invited by friends or family members. It was also found in this study that the second reason causing the impulse buying tendency of the participants with positive perception of weight was the frequency of previous behavior. That is, the higher frequency of past behavior a consumer has, the more impulsively they purchase late night snacks. This also supports Strack et al. (2006), in which it was discovered that an individual would generate impulsive behavior when perceiving similar situations. Furthermore, money also caused the participants to impulsively purchase late night snacks, namely a consumer tends to buy late night snacks more easily when seeing specially priced or cheap commodities. This corresponds to one of the findings in this study, namely the amount of the consumed commodities was mostly less than NT$100.

In summary, the negative and positive cognitive of weight were successfully combined with two important academic theories, namely the theories of planned behavior and impulsive purchase, in this study to explain the late night snacking behavior of Taiwanese. Furthermore, weight management was used for explaining that previous research indicating that different cognitions of weight result in different types of behavior was insufficient. Moreover, the influences of previous behavior on the consumers with premeditated planned behavior and impulsive behavior were stated clearly in this study. It was found that past behavior significantly influences not only the consumers with planned behavior, but also the consumers with impulsive behavior, and it was also verified that previous behavior significantly influences consumers with planned behavior (Ji and Wood, 2007). In addition, the influence of previous behavior on consumers with impulsive behavior was thoroughly verified focusing on previous academic contradictions. It was discovered that the more previous behavior there is, the more significant the influence is on consumers with impulsive behavior. This conforms to the argument of Strack et al. (2006), indicating that consumers generate impulsive behavior in similar

situations. That is, one will have impulsive behavior if their feelings are repeatedly stimulated. However, it overthrew other arguments, such as the argument of Whitside et al., (2005), indicating that one will generate impulsive behavior easily, due to new experience or changes when their behavior was less repeated in the past.

In this study, the negative and positive perceptions of weight were clarified academically, and two relative theories were combined for providing academic references, and further clarifying questions brought up in previous studies, such as "Is nighttime diet a precise diet disease or common diet behavior that is meaningless in pathology?" (Adami, 2001). This study aimed to interpret nighttime dieting behavior from the perspective of the late night snacking culture in Taiwan and explain late night snacking behavior as a common diet behavior and habit of the Taiwanese. Practically, this study will be provided for decision makers in marketing, as well as food and beverage as a reference to marketing and planning. For example, when one designs a menu, they should consider the models of friends dining or family dining as the sales model of late night snacking to further increase the consumption will of the Taiwanese. They should also consider the prices, since for Taiwanese, late night snacks are an extra meal over the standard daily three meals. The Taiwanese regard late night snacks as a portion of desserts or snacks and do not consider them as a meal, so decision makers should price them from the perspective of snacks to correspond to the consumption pattern of Taiwanese for late night snacks. The limitations of this study are in the approach of self-report used to examine the late night snacking behavior of consumers. It is usually difficult to know whether an answer is precise or not, when this approach is applied to personal questions (Scott, Deborah, Christy, Doryce, and Heather, 2011), such as personal height and weight. Future study can first be aimed at particular groups, such as an overweight group, in order to increase the number of the samples and further investigate whether the behavior of overweight people is planned, or impulsive and compare the nighttime diets of them and ordinary people to explore whether or not there are differences between them and ordinary people in terms of sleeping time, calorie intake, or emotions. The result can be provided for clinical practitioners, or obese people as a reference to nighttime diet. Secondly, in terms of consumers with planned behavior, future research can be aimed at the consumption habits of the Taiwanese to investigate whether or not a habit is developed and further investigate academically whether or not there are differences between habitual late night snacking consumers, namely consumers with highly planned behavior, and late night snacking consumers with generally planned behavior, such as the situation of ignoring dinner, or delaying sleep. Thirdly, variety-seeking people are also related to impulsive behavior (Sharma, 2010). Future research can be aimed at investigating this type of impulsive consumer and compare the differences between traditional markets with changing displays and hypermarkets with fixed displays in Taiwan.

6. Reference

Al-Naimi, S., Hampton, S. M., Richard, P., Tzung, C., and Morgan, M., Postprandial metabolic profiles following meals and snacks eaten during simulated night and day shift work, *Chronobiology International*, *21*(6), 2004, 937-947.

Adami, G. F., The influence of body weight on food and shape attitudes in severely obese patients, *International Journal of Obesity*, 25(1), 2001, 56-59.

Adelaar, T., Chang, S., Lancendorfer, K. M., Lee, B., and Morimoto, M., Effects of media formats on emotions and impulse buying intent. *Journal of Information Technology*, 18(4), 2003, 247-266.

Theory of planned behavior, retrieved from http://people.umass.edu/ajzen/tpb.html on 15 September, 2012.

Ajzen, I., The theory of planned behavior, *Organizational Behavior and Human Decision Processes*, 50, 1991, 179-211.

Allison, K. C., Lundgren, J. D., Moore, R. H., O'Reardon, J. P., and Stunkard, A. J., Cognitive behavior therapy for night eating syndrome: A pilot study. *American Journal of Psychotherapy*, 64(1), 2010, 91-106.

Andersen, G. S., Stunkard., A. J., Sørensen, T. I. A., Petersen, L., and Heitmann, B. L., Night eating and weight change in middle-age men and women. *International Journal of Obesity*, 28, 2004, 1338-1343.

Assis, M. A. A. D., Nahas, M. V., Bellisle, F., and Kupek, E., Meals, snacks and food choice in Brazilian shift workers with high energy expenditure, *Journal of Human Nutrition and Dietetics*, 16(4), 2003, 283-289.

Arvola, A., Vassallo, M., Dean, M., Lampila, P., Saba, A., Lähteenmäki, L., and Shepherd, R., Predicting intentions to purchase organic food: The role of affective and moral attitudes in the Theory of Planned Behavior, *Appetite*, 50(2-3), 2008, 443-454.

Betty, S. E., and Ferrell, M. E., Impulse buying: Modeling its precursors. *Journal of Retailing*, 74(2), 1998, 169-191.

Bhuyan, S., Do consumers' attitude and preferences determine their FAFH behavior? An application of the theory of planned behavior, *Agribusiness*, 27(2), 2011, 205-220.

Bissonnette, M. M., and Contento, I. R., Adolscent's perspectives and food choice behaviors in terms of the environmental impacts of food production practice: Application of a psychosocial model, *Journal of Nutrition Education*, 33(2), 2001, 72-81.

Bogers, R. P., Brug, J., Assema, P. V., and Dagnelie, P. C. Explaining fruit and vegetable consumption: The theory of planned behaviour and misconception of personal intake levels, *Appetite*, 42(2), 2004, 157-166.

Bublitz, M. G., Peracchio, L. A., and Block, L. G., Why did I eat that? Perspectives on food decision making and dietary restraint, *Journal of Consumer Psychology*, 20(3), 2010, 239-258.

Cappelleri, J. C., Bushmakin, A. G., Gerber, R. A., Leidy, N. K., Sexton, C. C., Lowe, M. R., and Karlsson, J., Psychometric analysis of the Three-Factor Eating Questionnaire-R21: Results from a

large diverse sample of obese and non-obese participants, *International Journal of Obesity*, 33, 2009, 611-620.

Chang, J., and Hsieh, A.-T., Leisure motives of eating out in night markets, *Journal of Business Research*, 59(12), 2006, 1276-1278.

Chang, J., Min, J. C. H., Lin, Y.-H., and Chiang, C. H. Profiling Japanese tourists visiting night markets in Taiwan*, Journal of Quality Assurance in Hospitality and Tourism*, 8(2), 2007, 25-44.

Chen, M. F., Consumer attitudes and purchase intentions in relation to organic foods in Taiwan: Moderating effects of food-related personality traits, *Food Quality and Preference*, 18(7), 2007, 1008-1021.

Chen, Y.-J. (2010). Bodily memory and sensibility. Taiwan Journal of Anthropology, 8(3), 163-196.

Conner, M., and Armitage, C., Extending the theory of planned behavior: A review and avenues for further research, *Journal of Applied Social Psychology*, 28, 1998, 1429-1464.

Cheema, A. and Soman, D., Malleable mental accounting: The effect of flexibility on the justification of attractive spending and consumption decisions*, Journal of Consumer Psychology*, 16-1, 2006, 33-44.

Dunn, K. I., Mohr, P., Wilson, C. J., and Wittert, G. A., Determinants of fast-food consumption: An application of the theory of planned behavior, *Appetite,* 57(2), 2011, 349-357.

Fotiadou, E., and Babajimopouos, M., Snack patterns of Greek adults 20-50 years of age, *Journal of Foodservice*, 17(5-6), 2006, 197-204.

Grilo, C. M., and Masheb, R. M., Night-time eating in men and women with binge eating disorder, *Behavior Research and Therapy*, 42, 2004, 397-407.

Hewitt, A. M., and Stephens, C., Health eating among 10-13-year-old New Zealand children: Understanding choice using the theory of planned behaviour and the role of parental influence, *Psychology, Health and Medicine*, 12(5), 2007, 526-535.

Hofmann, W., Friese, M., and Wiers, R. W., Impulsive and reflective influences on health behavior, A theoretical framework and empirical review, *Health Psychology Review*, 2(2), 2008, 111-137.

Hofmann, W., Strack, F., and Deutsch, R., Free to buy? Explaining self-control and impulse in consumer behavior, *Journal of Consumer Psychology*, 18, 2008, 22-26.

Honkanen, P., Olsen, S. O., Verplanken, B., and Tuu, H. H., Reflective and impulsive influences on unhealthy snacking. The moderating effects of food related self-control, *Appetite*, 58(2), 2012, 616-622.

Howell, M. J., Schenck, C. H., and Crow, S. J., A review of nighttime eating disorders, *Sleep Medicine Reviews*, 13(1), 2009, 23-34.

Hsieh, A.-T., and Chang, J. Shopping and tourist night markets in Taiwan, *Tourism Management*, 27, 2006, 138-145.

Ji, M. F., and Wood, W., Purchase and consumption habits: Not necessarily what you intend, *Journal of Consumer Psychology*, 17(4), 2007, 261-276.

Kacen, J. J., and Lee, J. A., The influence of culture on consumer impulsive buying behavior, *Journal of Consumer Psychology*, 12(2), 2002, 163-176.

Kane, T., Loxton, N., Staiger, P. K., and Dawe, S., Does the tendency to act impulsively underlie binge eating and alcohol use problems? An empirical investigation, *Personality and Individual Differences*, 36(1), 2004, 83-94.

Karlsson, J., Persson, L.-O., Sjöström, L., and Sullivan, M., Psychometric properties and factor structure of the Three-Factor Eating Questionnaire (TFEQ) in obese men and women. Results from the Swedish Obese Subjects (SOS) study, *International Journal of Obesity*, 24(12), 2000, 1715-1725.

Kellett, S., and Bolton, J. V., Compulsive buying: A cognitive-behavioral model, *Clinical Psychology and Psychotherapy*, 16(2), 2009, 83-89.

Kidwell, B., and Jewell, R. D., The influence of past behavior on behavioral intent: An information-processing explanation, *Psychology and Marketing*, 25(12), 2008, 1151-1166.

Köster, E. P., Diversity in the determinants of food choice: A psychological perspective, *Food Quality and Preference*, 20(2), 2009, 70-82.

Louis, W. R., Chan, M. K. -H., and Greenbaum, S., Stress and the theory of planned behaviour: Understanding healthy and unhealthy intentions, *Journal of Applied Social Psychology*, 39(2), 2009, 472-493.

Lundgren, J. D., Mccune, A., Spresser, C., Harkins, P., Zolton, L., and Mandal, K., Night eating patterns of individuals with eating disorders: Implications for conceptualizing the night eating syndrome, *Psychiatry Research*, 186(1), 2011, 103-108.

Mcdonald's retrieved from http://www.mcdonaldscom.tw/#/companyinfo/about/?page=milestone on 9 November, 2012.

Magid, V., and Colder, C., The UPPS impulsive behavior scale: Factor structure and associations with college drinking, *Personality and Individual Differences*, 43, 2007, 1927-1937.

Nederkoorn, C., Guerrieri, R., Havermans, R. C., Roefs, A., and Jansen, A., The interactive effect of hunger and impulsivity on food intake and purchase in a virtual supermarket, *International Journal of Obesity*, 33, 2009, 905-912.

Peck, J., and Childers, T. L., If I touch it I have to have it: Individual and environmental influences on impulse purchasing, *Journal of Business Research*, 59(6), 2006, 765-769.

Rook, D. W., The impulse buying, *Journal of Consumer Psychology*, 14(2), 1987, 189-199.

Rook, D. W., and Fisher, R. J., Normative influences on impulsive buying behavior, *Journal of Consumer Research*, 22(3), 1995, 305-313.

Scott, B. M., Deborah, J. R., Christy, A. G., Doryce, E. J., and Heather, O. C., Weight control beliefs, body shape attitudes, and physical activity among adolescents, *Journal of School Health*, 81(5), 2011, 244-250.

Seo, H.-S., Lee, S.-K., and Nam, S., Factors influencing fast food consumption behaviors of middle-school students in Seoul: An application of theory of planned behaviors, *Nutrition Research and Practice*, 5(2), 2011, 169-178.

Sharma, S., Sivakumaran, B., and Marshall, R, Impulse buying and variety seeking: A trait-correlates perspective, *Journal of Business Research*, 63(3), 2010, 276-283.

Smith, J. R., Terry, D. H., Manstead, A. S. R., Louis, W. R., Kotterman, D., and Wolfs, J., The attitude-behavior relationship in consumer conduct: The role of norms, past behavior, and self-identity, *The Journal of Social Psychology*, 148(3), 2008, 311-333.

Strack, F., Werth, L., and Deutsch, R., Reflective and impulsive determinants of social behavior, *Personality and Social Psychology Review*, 8(3), 2004, 220-247.

Taiwan Tourism Bureau retrieved from http://www.dgbas gov.tw/mp.asp?mp=1 the website of Taiwan's Ministry of Directorate-Generate of Budget, Accounting and Statistics, Executive Yuan, R.O.C. on 9 November, 2012.

Taiwan Tourism Bureau retrieved from http://www.dgbas.gov.tw p? mp=1. The website of Taiwan's Ministry of Directorate-Generate of Budget, Accounting and Statistics, Executive Yuan, R.O.C on 9 November, 2012.

Tomiyama, A. J., Mann, T., and Comer, L., Triggers of eating in everyday life, *Appetite*, 52(1), 2009, 72-82.

Vartanian, L. R., Disgust and perceived control in attitudes toward obese people, *International Journal of Obesity*, 34, 2010, 1302-1307.

Vermeir, I., and Verbeke, W., Sustainable food consumption among young adults in Belgium: Theory of planned behaviour and the role of confidence and values, *Ecological Economics*, 64(3), 2008, 542-553.

Verplanken, B., and Herabadi, A., Individual differences in impulse buying tendency: Feeling and no thinking, *European Journal of Personality*, 15(S1), 2001, S71-S83.

Ward A, Mann T., Don't mind if I do: Disinhibited eating under cognitive load, *Journal of Personality and Social Psychology*, 78(4), 2000, 753–763.

Waterhouse, J., Buckley, P., Edwards, B., and Reilly, T., Measurement of, and some reasons for, differences in eating habits between night and day workers, *Chronobiology International*, 20(6), 2003, 1075-1092.

Whitside, S. P., Lynam, D. R., Miller, J. D., and Reynolds, S. K., Validation of the UPPS impulsive behavior scale: A four-factor model of impulsivity, *European Journal of Personality*, 19(7), 2005, 559-574.

Wong, C. L., and Mullan, B. A., Predicting breakfast consumption: An application of the theory of planned behavior and the investigation of past behaviour and executive function, *British Journal of Health Psychology*, 14(3), 2009, 489-504.

Wood, M., Socio-economic status, delay of gratification, and impulse buying, *Journal of Economic Psychology*, 19(3), 1998, 295-320.

Youn, S., and Faber, R. J., Impulse buying : It's relation to personality traits and cues, *Advance in Consumer Research*, 27(1), 2000, 179-185.

Zhao, P., and Lin, C.-C., Air quality at night markets in Taiwan, *Journal of the Air and Waste Management Association*, 60, 2010, 369-377.

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The Influence of Art and Design Students' Aesthetic Experience on Creative Self-Efficacy and Creativity

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Abstract

This study explores the influence of students' aesthetic experience on creative self-efficacy and creativity. Creative self-efficacy is used as the intervening variable; the componential theory of creativity and self-efficacy theory are the theoretical basis of this study, using SEM to analyze. The participants in the study were Art and Design students: 10 colleges were selected by purposive sampling, 35 questionnaires were received from each school and 317 valid questionnaires were collected. The result showed that the aesthetic experience of Art and Design students has a positive effect on creative self-efficacy and creativity; however, creative self-efficacy has no mediating effect between aesthetic experience and creativity.

Keyword: Aesthetic Experience, Creative Self- efficacy, Creativity

1. Research Motives and Purposes

According to the literature on creativity, the creation of personal creativity is related to the sense of beauty, and the sense of beauty has a certain influence on the development of creativity (Maquet, 1986; Dewey, 1988; Lussier, 2010; Richards, 1997, 2007). "Aesthetic Experience" means the individual gains conscious and subconscious experience through art appreciation and admiring beauty of things (Maquet, 1986; Lin, 2009). However, aesthetic experience has been likely to be conceptually discussed; there is little literature on the empirical verification of aesthetic experience and creativity. For example, Richards suggests that the daily creativity relates to the sense of beauty; the combination of conscious and subconscious potential through art appreciation became the source of creativity (Richards, 2007). Moreover, Edinger (1968) argues that art is the expression of beauty; the subconscious mind responding to all of our psychological connections through the use of the original imagery is part of the performance of creativity (Edinger, 1968; Jung, 1973). In other words, aesthetic experience connects psychologically and reacts subconsciously while creativity is being created, which is the performance of creativity. Hence, scholars believe that the acquisition of aesthetic experience can cultivate and inspire students' creativity (Maquet, 1986;; Lin, 2009; Chou, 2011; Chen, 2013; Richards, 2007). Furthermore, Bandura (1994) and Kear (2000) point out that the more aesthetic experience that the individual has, the higher that creative self-efficacy the person has. Aesthetic experience is not only an important factor in the development of creativity, but also the main causes of creative self-efficacy. People can enhance their self-confidence and face challenges through the absorption, accumulation and internalization of aesthetic experience. Aesthetic experience is also a crucial factor in opening the door of self-creativity. As a result, people can improve their self-efficacy and develop their creativity through aesthetic experience (Lin, 2009; Dewey, 1988; Maquet, 1986).

Therefore, this study aims to explore creative self-efficacy as a mediator variable by Empirical research method, to explore whether aesthetic experience will further affect students' creativity through the creative self-efficacy intermediary. The participants in the research were Art and Design students and the research purposes are as follows:

1.1 To study the effect of students' aesthetic experience on creativity

1.2 To study the effect of students' creative self-efficacy on creativity

1.3. To study whether students 'aesthetic experience can indirectly affect students' creativity through creative self-efficacy

2. Literature Review

2.1 Aesthetic experience and creativity

Averill, Stanat and More (1998) explain aesthetic experience by attributes. They consider aesthetic experience is not only a pleasurable or enjoyable experience, but may also be unpleasant and happy feelings. For instance, a drama may arouse its audience's sad and happy emotions; an upcoming storm may arouse the audience's fear and attractiveness. Consequently, aesthetic experience is not necessarily pure pleasure, but it may also be mixed with sadness, fear, shock and other emotions. Furthermore, aesthetic experience is an absorbing state. It also means concentration and achieves the realm of ecstasy, but not all the states are full of aesthetic experience. Aesthetic experience must be intrinsically motivated and not practical. According to Frijda (1986), "challenge and control (mastery) can play a role in aesthetic appreciation, may also be used for personal cognitive assimilation ability, or in the aesthetic distance of the security conditions to deal with reality and personal emotional efforts (Lin, 2009), so the attributes of aesthetic experience include four attributes: pleasure, concentration, motivation and challenge.

Seel (2008) points out that aesthetic experience is an enhanced form of aesthetic perception, and beauty sensation is only concerned with what is happening now, is a feeling of the moment, and produces an emotional strengthening and transfer, such as a crazy football match, or The momentum of the natural landscape can be beautiful events, as long as the individual will be emotional into the event, aesthetic experience may occur anytime, anywhere, and beauty experience can be the most common experience of most people in the daily life everywhere The opportunity to get the experience of beauty.

In the view of aesthetic experience theory and creative cognition, when the viewer and the beauty of the object intersection, the viewer through the process of contemplation of beauty, absorption, and into the personal thinking and feedback experience, become a beauty Experience, has also become a personal perception of beauty (Lussier, 2010), these experiences through the subconscious and conscious combination, will become the potential energy to open the creativity, and may be in the next creativity Play a role in the performance (Lin, 2009; Richards, 2007).

Individuals like to appreciate the beauty of the object, easy to unconsciously attracted by the object of the United States, and individuals will be so happy words, the appreciation of things will have a deep impression on the future creativity will help, that is, the pleasure of personal beauty Contribute to the development of creativity; to accept the diversity of culture and different ideas, from the bad things to find its beautiful side and value, can help develop personal vision and thinking, to stimulate personal creativity (Banks, 2007; Runco, 2007), And scholars in the study of creativity that the acquisition of aesthetic experience has a significant impact on the cultivation and enlightenment of students' creativity (Maquet, 1986; Chou, 2010; Lin, 2009; Chen, 2013). Therefore, this study deduces

the acquisition and accumulation of students' aesthetic experience and has a positive effect on student creativity.

Hypothesis A: Students' aesthetic experience has a positive effect on creativity.

2.2. Aesthetic Experience, Creative Self-efficacy and Creativity

Kaufman & Sternberg (2010) pointed out that individuals can absorb the knowledge of the field and its internalization, and in this process will produce awareness, experience, motivation, etc., will also make individuals have confidence in the creativity is expressed as a student's creative self-efficiency, as noted by Bandura (1997), requires a firm sense of efficacy, insisting on creative effort, which is creative self-efficacy. And many scholars also use creative self-efficacy as an important factor in the development of personal creativity (Lin & Chiou, 2008; Hsu Hou & Fan, 2011; Hung, Huang & Lin, 2008; Hsu et al., 2011) According to the theory of Bandura (1994) and Kear (2000), the more personal experience is, the higher the self-efficacy, and the skilled experience is the main prerequisite for self-efficacy, which means that if the individual experience is richer, the self-efficacy will be High, we can see that experience is an important factor in self-efficacy.

Individual through previously experienced from the visual arts, the experience of other memories and personal development out of contemplation skills which not only become a link of the core of aesthetic experience, can achieve, unify and make the object of the infinite potential to be expressed, but also to build confidence in potential consciousness. (Maquet, 1986). When the individual in the appreciation of art, through the process of contemplation to access a new aesthetic experience, get the art of some of the potential and combine with the previous experience; therefore, individuals can show the potential of art, which have grown in the subconscious and then enhance self-confidence in the arts. Moreover, Girod Twyman and Wojcikiewicz (2010) found that the aesthetic experience not only showed in the learning effect, but also appeared on the further exploration of the self-efficacy beliefs. Thus, to increase the aesthetic experience of students will help inspirit their creative self-efficacy.

Hypothesis B: Students' aesthetic experience has a positive effect on creative self-efficacy.

The creativity of self-efficacy plays an important role in the Mediating Mechanism. From the self-regulation of social cognitive theory, self-efficacy plays a key role in it; in addition, self-efficacy also mediates the relationship between individual cognitive experience and behavioral performance (Bandura, 1986, 1994). Davies, Higgins, Hopkins, Stecker & Cooper (2009) also pointed out that by attend aesthetic courses to increase students 'aesthetic experience, since esthetic experience can lead to students' intrinsic motivation and self-belief, and thus strengthen the learner's daily imagination. Summarized the above theories, the individual through the aesthetic experience of the pleasure of beauty, aesthetic attitude, understanding of the beauty and the full experience of the process, absorb the beauty of things that are seen, accumulate and internalize into personal potential experience, and

then enhance personal confidence in creative thinking, creative products, counterattack negative evaluation, and then can face the challenge to enrich personal creativity. Scholars also agreed that aesthetic experience will be through the individual's self-efficacy, meanwhile to develop the personal creativity (Lin, 2009; Maquet, 1986; Dewey, 1981). Therefore, this study deduces that aesthetic experience will have an indirect effect on creativity through *mediating effect* of self-efficacy, which is assumed as the following.

Hypothesis C: Students' aesthetic experience can have indirect effects on creativity through the intermediary effect of creative self-efficacy.

3. Research Method

3.1 Research Structure

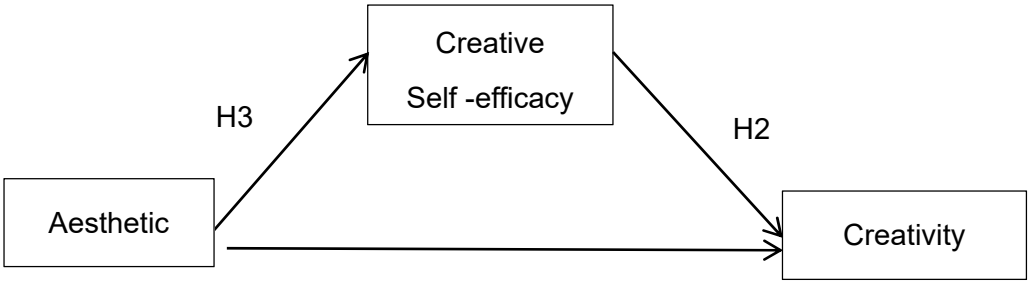

Figure 1. Research Structure

3.2 Research Object and Sampling

The participants in the study were Art and Design students. Ten colleges were selected by purposive sampling, and 35 students were selected in each college. A total of 350 students were selected. After the recovery of the questionnaires deducting the invalid questionnaires, the valid questionnaires were 317.

3.3 Research Tools

3.3.1. Aesthetic Experience Scale

An original source of Aesthetic Experience Scale is from Student Aesthetic Experience Scale by Chang and Hsiao (2016), which consist of four dimensions: the "pleasure of beauty", "aesthetic attitude", "understanding of beauty" and "full experience"; and the total of topics is 21. This study was carried out by Confirmatory Factor Analysis, the factor loadings of the recovery of questionnaires was between .66 and .92, which was higher than the proposed value, .45 and had a convergent validity (Bentler & Wu, 1993). The Composition reliability (CR) of the latent variable was in the range of .869 ~ .941 which was more than the standard .60 evaluation; and the average variable extraction (AVE) was above 0.75, which met the standard more than 0.50 evaluation. Moreover, the overall of The Composition reliability (CR) of the latent variable of the aesthetic experience was .892 ; the average variable extraction was .820 which also met the standard. Therefore, which showing the Goodness-of-Fit of Aesthetic Experience Scale was generally good.

3.3.2. Creative Self-efficacy Scale

According to the study of Creative Self-efficacy Scale for Students by Hung, Huang & Lin (2008), which is divided into "creative thinking beliefs", "creative product faith", "the faith of against the negative evaluation" three dimensions and a total of 12 topics. The results of the confirmatory factor analysis, the load of the factor between .64 ~ .90, the potential part of the composition of the reliability of the part of the surface are more than 0.75 evaluation criteria, the average extraction of variants are

in .73, and The self-efficacy of the overall variability of the overall performance of the self-efficacy is .885, the average extraction variation is .847, also meet the standard.

3.3.3. Creativity Scale

This study was used to measure the creativity of the Abbreviated Torrance Test for Adults (ATTA), which is divided into language responses and graphical responses. The Creativity Test includes fluency, Originality, precision and flexibility of four levels, a total of six parts to assess student creativity. Cronbach's Alpha was highly reliable in terms of reliability analysis, consistency test and scale-up validity. Cronbach's Alpha had high reliability. In the case of consistency test, each structure was high and low, and T-test ($P < 0.001$), and the correlation coefficient was in the range of .317- ($p < 0.001$), and the correlation coefficient was in all aspects. 616 is not highly correlated between the coefficient, so the Creativity Test Scale has a good letter and validity.

4. Research Result

4.1. Study the Sample Distribution

In this study, we wanted to know the distribution of demographic variables in the study samples. First, the narrative statistical analysis of the samples was carried out. On the gender side, there were 98 boys and 219 girls. In the grade, the number of students in grade 4 was 232, 51 people, 2 grade 34 people; the best game experience to the national competition up to 126 people, 93 games in the school, 51 international games, 20 out of school competition, no experience 27 people.

4.2. The influence of aesthetic experience and creative self-efficacy on creativity

The modality of the modality of the model is shown in Fig. 1, and the theoretical formula of the present study is consistent with that of the observational data. The significant level of .05 is $NC = \chi^2 / df = 3.92$, which is in the acceptable range. And the χ^2 value fluctuates with the number of samples. Therefore, the adaptation of the evaluation model should be judged from different angles and with reference to various indexes, and the adaptability of the theoretical model and observation data can be evaluated by RMSEA, GFI, AGFI and SRMR. RMSEA is .089 <.09 for reasonable adaptation, SRMR is .067 <.08 for good fit, GFI and AGFI are .72 and .63, acceptable range (Bagozzi & Yi, 1988; Kline, 2005). In terms of value-added adaptability, the fitness index NFI, NNFI, CFI, IFI, RFI, which are compared with the reference model, are in the order of .91, .92, .93, .93, .90, respectively. 90 standard (Bagozzi & Yi, 1988; Kline, 2005) shows that the conceptual model constructed by this institute is consistent with the overall fit of the observed data.

From Figure 2, the overall structure of the model showed that the aesthetic experience to the creative path coefficient of .59 up to $p < 0.01$ significant level, that the aesthetic experience of students have a significant positive effect on creativity, which consist with the views of scholars (Maquet, 1986;

Chou, 2010; Lin, 2009; Chen, 2013) Aesthetic experience to creative self-efficacy path coefficient of .65 up to p <0.01 significant level, indicating that student aesthetic experience has a significant positive effect on creative self-efficacy, which was met with scholar's research theories (Biswas Jeong, Kinnebrew, Sulcer & Roscoe, 2010; Girod, Twyman & Wojcikiewicz, 2010; Kinnebrew & Biswas, 2011). In terms of mediating effect, students' creative self-efficacy has no mediating effect between aesthetic experience and creativity; the path coefficient is -5.05, p> .05. Therefore, students' Creative self-efficacy does not indirectly influence on student creativity through creative self-efficacy, which is different from the scholars' research results (Lin, 2009; Dewey, 1981), H1 and H2 set up, H3 is not established.

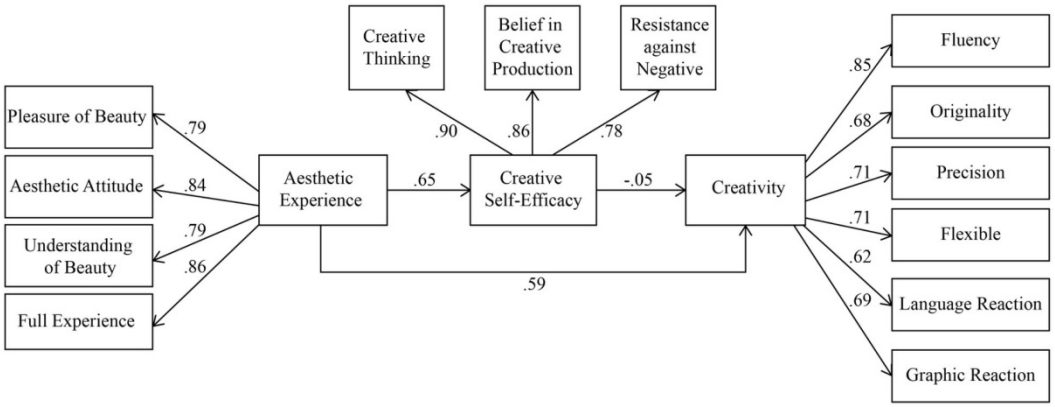

Figure 2. SEM (Structural Equation Modeling) Path Coefficient Diagram

5. Conclusion and Suggestions

5.1. Conclusion

This study explores the influence of students' aesthetic experience on creative self-efficacy and creativity; meanwhile, uses the self-efficacy as the mediating effect, and SEM to analyze. According to the results of the study, students' aesthetic experience has a positive effect on creativity. If students are positive or unconsciously discovering beautiful things, they will have a pleasant feeling and then share good experiences with others; In the creative period, they will recall the previous contacted with the relevant things such as good experience to become a potential experience which not only contributes to the future performance of creativity but also can enhance their performance.

Furthermore student's aesthetic experience has a positive effect on the creative self-efficacy; that is, when the students appreciate the things that sense of pleasure and happiness, can accept the idea of accepting multiple, in the creation can recall the work related to things, and The higher the perceived and analytical ability of the United States, the students will have more new solutions in the face of problems, and do not worry about the negative evaluation of their work, but also more confident to make a different, refreshing s work.

But the results also found that students' aesthetic experience does not indirectly affect the creativity of them through creative self-efficacy. Although the aesthetic experience of students contributes to the development of creative self-efficacy and creativity, that will not by creative self-efficacy Creativity, which also means that the aesthetic experience for the importance of art design students, students' aesthetic experience will not be added to the creative self-efficacy and then be reduced the impact on creativity. In other words, it does not diminish the impact of aesthetic experience on creativity because of the improvement of creative self-efficacy of students. Therefore, students' aesthetic experience is an important factor in the performance of creativity, we must value the development of theirs aesthetic experience.

5.2. Suggestions

5.2.1. Encourage art design students to gain aesthetic experience in order to enhance students' creativity and creative self- efficacy

5.2.2. Aesthetic experience is as an antecedent for creative self-efficacy and creativity research.

According to the research results, aesthetic experience has a positive effect on creative self-efficacy and creativity. As a result, when the future research explores the students' creative self-efficacy and creativity, aesthetic experience can also be studied as an antecedent.

5.2.3. To explore whether students' creative self-efficacy is between students' aesthetic experience and creativity.

The results show that creative self-efficacy is not an intermediary effect. However, according to some literature, it pointed out that creative self-efficacy was a crucial factor in creativity. Hence, creative self-efficacy may have a regulatory effect. In other words, the students having higher aesthetic experience and higher creative self- efficacy have better creativity; conversely, the students having lower aesthetic experience and lower creative self- efficacy have less creativity.

References

Averill, J. R., Stanat, P. and More, T. A., Aesthetics and the environment, *Review of General Psychology,* 2(2), 1998, 153-174.

Bagozzi, R. P. and Yi, Y., On the evaluation of structural equation models, Journal of the Academy of Marketing Science, 16(1), *1988,* 74-94.

Bandura, A ., *Social foundations of thought and action: A social cognitive theory*, London: Prentice-Hall, 1986.

Bandura, A., Self-efficacy, *Encyclopedia of human behavior*, 4, 1994, 71-81.

Bandura, A ., *Self-efficacy: The exercise of control,* New York: W. H. Freeman and Company, 1997.

Banks, J. A., *An introduction to multicultural education (4th ed.).* Boston: Allyn & Bacon, 2007.

Bentler, P. M. and Wu, E. J. C., EQS/Windows user's guide. Los Angeles: BMDP Statistical Software, 1993.

Biswas, G., Jeong, H., Kinnebrew, J., Sulcer, B. and Roscoe, R., Measuring self-regulated learning skills through social interactions in a teachable agent environment, *Research and Practice in Technology-Enhanced Learning*, 5(2), 2010, 123-152.

Chang, Y. C. and Hsiao, C. C., Students' sesthetics experience, creative self-efficacy and creativity: Is creativity instruction effective?, *Journal of Educational Practice and Research*, 29(2), 2016, 65-104.

Chen, L. J., An exploratory study of the implications of holistic aesthetic experience for teaching, *Research in Arts Education*, 25, 2013, 137-139.

Chou, S. C., The quality of aesthetic experience in learning: An inquiry into art and science classes, *Curriculum and Instruction Quarterly*, 14(1), 2011, 19-40.

Davies, S., Higgins, K., Hopkins, R., Stecker, R. and Cooper, D., *A companion to aesthetics.* Malden, MA: Wiley-Blackwell, 2009.

Dewey, J., Experience and nature, In the book of *The later works of John Dewey, Volumn1, 1925-1953:1925*, Boydston, J. A. (ed), Carbondale, IL: Southern Illinois University Press, 1988.

Edinger, E. F., An outline of analytical psychology, Quadrant, 1, 1968, 1-12.

Frijda, N. H., *The emotions*, New York: Cambridge University Press, 1986.

Girod, M., Twyman, T. and Wojcikiewicz, S., Teaching and learning science for transformative, aesthetic experience, *Journal of Science for Teacher Education*, 21(7), 2010, 801-824.

Hsu, M. L. A., Hou, S. T. and Fan, H. L., Creative self- efficacy and innovative behavior in a service setting: Optimism as a moderator, *Journal of Creative Behavior*, 45(4) , 2011, 258-272.

Jung, C., *Experimental researches*, In the book of *The Collected works of C. G. Jung, Volumn 2*, Adler, G. (ed), Princeton, NJ: Princeton University Press, 1973.

Kaufman, J. C. and Sternberg, R. J. (ed), Cambridge handbook of creativity, New York: Cambridge University Press, 2010.

Kear, M., Concept analysis of self-efficacy, *Graduate Research in Nursing*, 2(2), 2000, 33-45.

Kline, R. B., Principles and Practice of Structural Equation Modeling (2nd ed), New York: Guilford Press, *2005.*

Kinnebrew, J. S. and Biswas, G., Modeling and measuring self-regulated learning in teachable agent environments, *Journal of E-Learning and Knowledge Society*, 7(2) 2011, 19-35.

Lin, P. F. and Chiou, H. J., Construction and related study of the inventory of self-efficacy for creative teaching, *Journal of Educational Research and Development,* 4(1), 2008, 141-169.

Lin, S. C., The inquiry of aesthetic experiences and the implication for the construction of curriculum aesthetics, *Tunghai Educational Review*, 3, 2009, 43-70.

Lussier, C., Aesthetic literacy: The gold medal standard of learning excellence in dance, *Physical and Health Education*, 76(1) , 2010, 40-44.

Maquet, J., The aesthetic experience: An anthropologist looks at the visual arts, New Haven: Yale University Press, 1986.

Richards, R. *(ed)*, *Everyday creativity and new views of human nature: Psychological, social, and spiritual perspectives*, Washington, DC: American Psychological Association, 2007.

Runco, M. A., Creativity: Theories and themes: research, development, and practice, Boston: Elsevier Academic Press, *2007.*

Seel, M., On the scope of aesthetic experience, in the book of *Aesthetic experience*, Shusterman, R. and Tomlin, A. (ed), New York: Routledge, 2008, 98-105.

The Impact of Extroversion in Second Language Acquisition

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Abstract

As a growing body of empirical studies concerning on the impact of individual differences in learning, especially in second language learning, more scholars and teachers nowadays start to pay their attention on such differences. One of dimension of individual differences is extroversion. Some agree that extroversion affects learners' achievement while others against this claim. In fact, there is still no agreement claiming the impact of extroversion in learning because this issue is still highly debated. Therefore, through this study, a kind of conceptual study, aims to explain the impact of extroversion on students learning in English as a second and foreign language context. By analyzing, comparing, and contrasting the finding of a number of previous researches, a number of impact of extroversions in second language learning have been highlighted. Firstly, it could be explained that the concept of extroversion is basically continuum. It is because none of learners who is totally extrovert or introvert. Individuals may have both of these traits when they are learning. They can be introverts or extroverts depending on the learning context that is exposed to them. Moreover, none of these traits is better than another because each dimension of such personality trait has its own strengths and weakness. Secondly extroversion does not directly impact on learning performance but it affects learners preferred learning styles and strategies. Meanwhile the implication for teaching is that teachers should create a better learning context which can facilitate both extroverts and introvert learners in learning by varying their teaching methods. In addition, combining both extroverts and introverts who learn collaboratively can also help them in addressing their weakness and in strengthening their learning.

Keywords: Conceptual study, Extroversion, Second language acquisition, Learning styles and strategies, Teaching implication

Recently individual differences have gained much attention in second language (L2) teaching (Dörnyei, 2005) because it plays important role in second language acquisition (Brown, 2000; Zafar & Meenakshi, 2012; Ellis, 1994). Besides the individual differences also becomes one of factors in determining successful language learning (Alavinia & Hasanlou, 2014). One of dimension of the differences is personality (Lightbown and Spada, 1999). In fact people may have different personality traits which distinguish them from one to another (Sharp, 2008). Oxford (2003) stated that one set of personality traits comprised in an individual is called extroversion - introversion (EI). Thus this set of basic elements play a significant factor in second language acquisition (Dörnyei, 2005). Regarding this importance, this essay would discuss the impact of EI on L2 learning. Besides the teaching implication also would be outlined.

Before going further discussing the impact, it seems necessary to clarify clearly the concept of the extroversion and introversion. Extroversion is individuals' trait which make them become more aware of their surroundings than their inner emotion and thought (Zhang, 2008). Similarly Brown (2000) emphasizes on a sense of togetherness and inclusion because according to him, people having this trait would feel good and included when they socialize with other people. Moreover the extroverts would also recharge their energy when they interact with other (Oxford, 2003) and they are likely to ask help from other people if they encounter with learning problems (Kezwer, 1987). In other words it could be said that extroversion is one of learners' characteristics encouraging them to keep in touch with other people in order to help them build communication and overcome their problem in the face of strengthening their learning.

By contrast introversion is personality trait causing individual to avoid interaction with other people (Richard & Schmidt, 2002). They tend to gain energy from their inner world (Oxford, 2003; Zafar & Meenakshi, 2012). This is probably because they prefer to use their own thought and feeling to deal with problem (Zhang, 2008). Indeed without help from other, "they might perform best as long as they have studied and observed the similar situation that they have experienced before", (Dewaele, 2013). It could be mean that introverts do not depend on others to empower themselves in learning. Therefore they prefer alone and do the activities individually (Ellis, 1994).

However each dimension of personality type represent a continuum (Nikoopour and Farasani, 2011), in particular EI (Ellis, 1994). It means that each individual may have both of these traits (Wakamoto, 2000). In fact Dewaele (2013) believes that there are more people in between extroversion and introversion. It can be assumed that there might be none of individual who is totally extrovert or introvert. Regarding this phenomenon, Dörnyei (2005) said that although EI is as a trait, it can be influenced by the situation. In other words each of individual learner can be more introverted or introverted, depending on the context of their learning (Ellis, 1994). Reflecting on my experience, I tend to be extroverts when the context of my learning is more to do with collaborative learning, discussion and work group activities for example. However I can also be more introverted when the mode of teaching is lecturing and the tasks are done individually.

Furthermore there is still a debate among researchers discussing the impact of learners' personality differences on L2 learning (Kezwer, 1987; Dewaele, 2013). This happens because the findings of different researches looking at this area are varied (Zafar &Meenakshi, 2017). Several studies found that that the extroverts are better learning outcome than the introverts (Dörnyei, 2005). Pitchard (1952) and Dewaele and Furnham (2000) through their studies claimed that there was a positive correlation between extroversion and speaking fluency. It could be said that the more extroverted of individual, the more fluent they are in speaking or vice versa. Indeed the extroverts have a low level of anxiety (Ellis, 1994) which makes them to be a risk taker (Dörnyei, 2005) in learning. Thus they are more confident in using the language and not be afraid of making mistakes (Furnham, 1991). As a result they might become more fluent in speech production. In addition, they also tend to have more opportunity to use the language through their active communication (Ellis, 1994). " All this in turn may lead extraverts to obtain higher grades in second language classrooms and to achieve better learning outcomes in the long run", (Ortega, 2009, p. 197).

Nevertheless some other researchers seem to reject the previous claim saying that the extroverts are better than introverts at learning performance. In a number of studies the introverts are found to be better at reading and grammar (Busch, 1982), writing (Boroujeni, Roohani and Hasanimanesh, 2015) and listening (Alavania and Samaeei, 2012) compared to the extroverts. The possible reason is that the introverts have a better problem solving, inferring and concertation skills (Brown, 2000). Moreover they are also more reflective in their learning (Bidherano and Dai, 2007) compared to the extroverts. In fact these skills are more likely to help them in performing reading, listening, and writing better (Ellis, 1994). Moreover introverts are also believed to spend more time alone by doing intensive reading (Giriffths, 2013) and this would help them in reading performance as well as to assist them in generating ideas while they are writing (Robinson, Gabriel and Katchan, 1993).

However, there are also researches claim that there is no correlation between EI and L2 learning performance. Mansouri Nejad, Bijami, and Ahmadi (2012) and Alavinia and Hassanlou (2014) failed to see any relation between EI and learners' writing performance. Furthermore Chen, Jiang, and Mu (2015) also studied 117 Chinese students majoring in English. They examined whether extroverts are really better in oral production or not, as what has been claimed by Pitchard (1952) and Dewaele and Furnham (2000) earlier. By dividing up learners into extrovert, introvert, and extrovert-introvert group, they highlighted that the percentage of learners who get a good score in speaking performance were almost similar among those groups. Then they concluded that there was no correlation between EI and English speaking performance. Thus it could be assumed that these studies do not believed that there is a correlation between EI and learning performance.

Regarding these different claims, it can be said that there is still no agreement about impact of EI on language learning achievement (Liyanage & Bartlett, 2013; Komarraju et al., 2011). Responding to such issue, Cook (2011) assumed that personality traits may give impact on learning indirectly. It could be mean that EI may not directly contributes to learners' achievement but it can affect learners' preferred learning styles (Furnham, 1991) and strategies (Ellis, 1994; Boroujeni, Roohani and

Hasanimanesh, 2015). The styles are the general actions while the strategies are the specific action that work best for learners to help them approaching their learning (Oxford, 2013). Indeed the learning style itself is reflected in the strategy used (Sadeghi, Kasim, Tan & Abdullah, 2012) and learners are likely to choose the learning styles and strategies which switch on their personal characteristic (Zafar & Meenakshi, 2012; Oxford & Nyikos, 1989).

To be more specific extroverts more enjoy and feel better in using socio-affective strategies (Ehrman & Oxford, 1990). It might be because they feel comfortable to socialize with others and they also need other people to help them managing their feeling or emotion (Wakomoto, 2000). Therefore to deal with extroverts, it is suggested to the teachers for employing communicative teaching techniques such as English conversations, role play, and discussion (Oxford, Hollaway and Murillot, 1992). By contrast, Griffiths (2013) said that the introverts prefer to use cognitive and metacognitive strategies such as memorizing, infrencing, and problem solving. It is because they are more reflective and evaluative toward their own thoughts to approach learning (Zhang, 2008).Therefore they prefer to work individually or in pair with somebody they close with (Oxford & Anderson, 1995).

Furthermore regarding the different claims whether extroverts or introverts are better at learning, Dewaele (2013) argues that there is no single trait is better than another. It is because each of these traits has its own strengths and weaknesses (Dörnyei, 2005). Indeed both of extroverts and introverts would gain benefits depend on learning context or situation they are exposed to (Ellis, 1994).The learning context that mean here is learning tasks given to learners (Collentine & Freed, 2004). The extroverts might gain more advantages in communicative learning environment because this context requires them to be active and talk active in building dynamic interaction (Littlewood, 1981). On the other hand Wokomoto (2000) says that the introverts might gain more benefits when the tasks given do not require them to engage with high level of interaction with others, lecturing and individual work for instance.

Catering these differences, it seems important for teachers to create learning situation benefitting both extroverts and introverts. To do this, firstly, teachers could vary their teaching method (Zafar & Meenaksi, 2017). They should not use methods which merely focus on fluency but also on accuracy (Oxford, 2003). Alternatively, Oxford also suggested that if teachers want to employ communicative approach, they can select the technique which can ideally facilitates both extroverts and introverts for learning, think-pair-share, for the example. According to her this technique seems to enable extroverts to keep socializing with other people although it is not in a big group. On the other hand, this technique would give them more time to think before they speak. Besides working in pair can also “create a low-risk classroom climate” (Wakomoto, 2000) for introverts because it would not make them nervous talking to many people. Thus it could be assumed that through small group tasks, both of extroverts and introverts could benefits one to another.

Secondly, it has been also recommended to combine introverts and extroverts to work together (Oxford, 2003). This practice might enable them take benefits between one to another. To illustrate in

a discussion, the extroverts would learn problem solving skills from the introverts while the introverts will be also encouraged to participate more in the classroom while they are working with extroverts. However Oxford alerts that it is possible that the extroverts might dominate classroom interaction. Thus teachers are suggested to give a balanced opportunity and attention to contribute between extroverted and introverted students (Hedge, 2000). Unless the teachers manage the balance contribution, it may only benefits for extroverts and less benefitted for introverts.

In conclusion, the impact of EI in language learning is still unclear (Kezwer, 1987). However it could be said that it does not directly impact on academic performance (Cook, 2001) instead of learners' preferred learning styles and strategy (Furnham, 1991) and the impact is also depended on learning context (Ellis, 1994). Therefore it seems very important for teachers to recognize both of extroverts and introverts learning styles and strategies in order to help teachers themselves to create learning context benefitting for both types of learners (Oxford & Nyikos, 1990). Besides, both of extroverts and introverts have their strengths and weakness and combining them to work together could strengthen their learning as long as teachers can give a balanced chance to contribute in the classroom (Oxford, 2003).

References

Alavinia, P., & Hassanlou, A. (2014). On the Viable Linkages between Extroversion/Introversion and Academic Iranian EFL Learners' Writing Proficiency. *English Language Teaching*, *7*(3), 167-175.

Alavinia, P., & Sameei, A. (2012). Potential bonds between extroversion/introversion and Iranian EFL learners' listening comprehension ability. *English Language Teaching*, *5*(5), 19.

Bidjerano, T., & Dai, D. Y. (2007). The relationship between the big-five model of personality and self-regulated learning strategies. *Learning and individual differences*, *17*(1), 69-81.

Boroujeni, A. A. J., Roohani, A., & Hasanimanesh, A. (2015). The impact of extroversion and introversion personality types on EFL learners' writing ability. *Theory and Practice in Language Studies*, *5*(1), 212.

Brown, H. D. (2000). *Principles of language learning and teaching*. New York: Pearson Education Limited.

Busch, D. (1982). Introversion-extraversion and the EFL proficiency of Japanese students. *Language learning*, *32*(1), 109-132.

Chen, Y., Jiang, Y., & Mu, Z. (2015). A survey study: The correlation between introversion/extroversion and oral english learning outcome. *Journal of Language Teaching and Research*, *6*(3), 581-587.

Collentine, J., & Freed, B. F. (2004). Learning context and its effects on second language acquisition: Introduction. *Studies in second language acquisition*, *26*(2), 153-171.

Cook, V. (2013). *Second language learning and language teaching*. (3rd Ed.). New York: Oxford University Press

Dewaele, J. M. (2013). Personality in second language acquisition. *The Encyclopedia of Applied Linguistics*.Blackwell Publishing Ltd.

Dewaele, J. M., & Furnham, A. (1999). Extraversion: The unloved variable in applied linguistic research. *Language Learning*, *49*(3), 509-544.

Dewaele, J. M., & Furnham, A. (2000). Personality and speech production: a pilot study of second language learners. *Personality and Individual differences*, *28*(2), 355-365.

Dörnyei, Z. (2005). *The psychology of the language learner: Individual differences in second language acquisition*. London. Routledge.

Ehrman, M., & Oxford, R. (1990). Adult language learning styles and strategies in an intensive training setting. *The modern language journal*, *74*(3), 311-327.

Ellis, R. (1994). *The study of second language acquisition*. Oxford: Oxford University Press.

Furnham, A. (1991). Personality and learning style: A study of three instruments. *Personality and individual differences*, *13*(4), 429-438.

Griffiths, C. (2013). *The strategy factor in successful language learning*. Bristol: Short Run Press.

Hedge, T. (2000). *Teaching and learning in the language classroom.* Oxford: Oxford University Press.

Kezwer, P. (1987). The extroverted vs. the introverted personality and second language learning. *TESL Canada Journal*, *5*(1), 45-58.

Komarraju, M.et al., (2011). The Big Five personality traits, learning styles, and academic achievement. *Personality and individual differences*, *51*(4), 472-477.

Lightbown, P. M. & Spada, N. (1999). *How languages are learned*. USA: Oxford university press.

Littlewood, W. (1981). *Communicative language teaching: An introduction*. Cambridge: Cambridge University Press.

Liyanage, I., & Bartlett, B. (2013). Personality types and languages learning strategies: Chameleons changing colours. *System*, *41*(3), 598-608.

Nejad, A. M., Bijami, M., & Ahmadi, M. R. (2012). Do personality traits predict academic writing ability? An EFL case study. *English Linguistics Research*, *1*(2). 145.

Nikoopour, J., & Amini Farsani, M. (2011). On the relationship between languages learning strategies and personality types among Iranian EFL learners. *Journal of English studies*, *1*, 81-101.

Ortega, L. (2009). *Understanding second language acquisition*. New York: Routledge.

Oxford, R. L. (2003). Language Learning Styles and Strategies: An Overview. GALA, 1-25. Retrieved from hfp://web.ntpu.edu.tw/~language/workshop/read2.pdf.

Oxford, R. L., & Anderson, N. J. (1995). A cross cultural view of learning styles. *Language teaching*, *28*(4), 201-215.

Oxford, R. L., Holloway, M. E., & Horton-Murillo, D. (1992). Language learning styles: Research and practical considerations for teaching in the multicultural tertiary ESL/EFL classroom. *System*, *20*(4), 439-456.

Oxford, R., & Nyikos, M. (1989). Variables affecting choice of language learning strategies by university students. *The modern language journal*, *73*(3), 291-300.

Pritchard, D. F. L. (1952). An investigation into the relationship between personality traits and ability in modern languages. *British Journal of Educational Psychology*, *22*(2), 147-148.

Richards, J. C., & Schmidt, R. W. (2002). *Dictionary of language teaching and applied linguistics.* New York: Longman.

Robinson, D., Gabriel, N., & Katchan, O. (1994). Personality and second language learning. *Personality and Individual Differences*, *16*(1), 143-157.

Sadeghi, N., et al., (2012). Learning styles, personality types and reading comprehension performance. *English Language Teaching*, *5*(4), 116.

Sharp, A. (2008). Personality and second language learning. *Asian Social Science*, *4*(11), p.17.

Wakamoto, N. (2000). Language learning strategy and personality variables: Focusing on extroversion and introversion. *IRAL-International Review of Applied Linguistics in Language Teaching*, *38*(1), 71-81.

Zafar, S., & Meenakshi, K. (2012). Individual learner differences and second language acquisition: A review. *Journal of Language Teaching and Research*, *3*(4), 639-646.

Zhang, Y. (2008). The role of personality in second language acquisition. *Asian Social Science*, *4*(5), 58.

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The Improvement Process of Publishing a Journal

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Abstract

The purpose of "Improvement process of publishing a journal" is to reduce operational steps for faster and more efficiently. The analyses of operational activities are Operations Manual of Research and Academic Services Development Faculty of Humanities and Social Sciences Fiscal year 2016-2019, Job Description, Flow Chart and Work experience. The improvement of the operational activities continuously from the process is expected to cause a delay in implementation by Deming Cycle PDCA. The results showed that: Once operational improvements can be minimized procedures, timing and redundancy of operations. As follows: 1) call for papers, it can reduce the operating time of 58 days 2 hours, equivalent to 90.65%. 2) Contact the experts to review the article (1 article / 2 persons). It can reduce operating time of 3 days 5 hours, equivalent to 63.64%. And 3) the notification of the acceptance. It can reduce operating time of 1 hour, 40 minutes, equivalent to 56.25%.

Keyword: Process, Process Improvement, Journal

1. Introduction

The Journal is printed out on a regular basis. It looks and resembles a magazine but unlike magazines, where content is more academic than entertainment. Use colors and illustrations less than. Journalism is organized to meet the needs and policies of organizations, associations, organizations or institutions. The purposes are to disseminate knowledge, technical articles, research works, academic knowledge, technological advances and an academic reference. The Journal is important as a medium for the dissemination of ideas and development of education and research, as well as movements in the various aspects of science range. The reading journals is important to keep track of new knowledge in research, dissemination to the academic community as well as the target population to use the results of the research. **(**Suwanporm, W., 1988)

According to the policy of Suan Sunandha Rajabhat University has plans to operate the university to be ranked No. 1 of Rajabhat University, No. 15 of the country and No. 150 of the Asia. The way to go to the top of the country must have the university operations many ways and publishing a journal is one of it. Faculty of Humanities and Social Sciences of Suan Sunandha Rajabhat University realizes this mission. The publishing a journal gathers and disseminates knowledge in the form of academic articles, research papers and reviews and disseminate of academic knowledge in the humanities and social sciences. As well as encourage and support the study research, collection and dissemination of these results to the reader is a broad public. Public relations get academic articles, research articles for published in journal of the Faculty. A name of journal is Journal of the Humanities and Social Sciences that publish twice a year (January - June, July - December). So, previously, the faculty that published human and social journals for a period time of three years and ended the publishing process because the journal takes too long to publish. It was inconsistent with the needs of the researcher who wrote the article. The publication of some published journals does not meet the schedule and the quantitative criteria for assessing the quality of the journal (Thai Journal Citation Index : TCI). (Phuangthong, S., 2017). The researcher would like to improve the process of publishing the journal to be more convenient and faster for more efficient operation.

2. Research Objectives

2.1 To reduce the process of implementation and get more efficient.

3. Methodology of Research

3.1 Population and Sample

The population and sample in this study were process of publishing two journals per year. There are 20 articles in total.

3.2 Research Methods

3.2.1 Analysing of the process of publishing the journal from the workload guide of Department of Research and Academic Services Development, Faculty of Humanities and Social Sciences Fiscal year 2016-2019.
3.2.2 Synthesizing the expected activity steps will result in delayed operation problems from the work experience, Job description and Flow Chart.
3.2.3 Improving the process of implementing the PDCA process step that is caused delays.
3.2.4 Evaluating the performance of success from the Time length publication.

4. Research Result

The synthesis of steps is expected to cause delays in operations from the workload guide and work experience found that 3 steps that resulted in delays. Improving process operations as follows:
4.1 Public relations get articles for publishing in journal from unlimited change to set date about 90 days per published one time. (First January to March, Second July to September)
4.2 Consider a separate article and check the accuracy of the content.

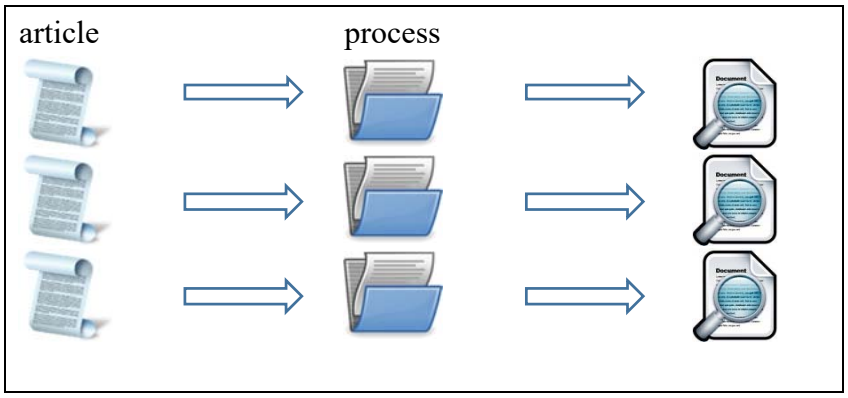

Figure 4.3 Public relations get articles for published in journal original process
Figure by: Phuangthong, S., 2018

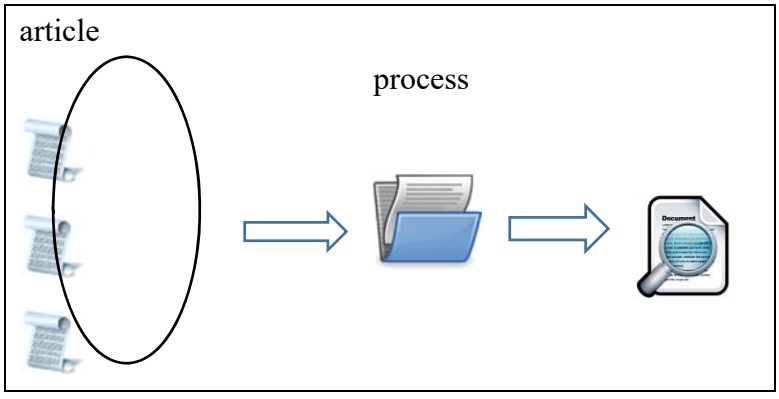

Figure 4.4 Public relations get articles for published in journal new process
Figure by: Phuangthong, S., 2018

4.3 Contact the article reviewer (1 article per 2 reviewers) and submit article acceptance. For original process, When the editorial board received 1 article they will consider a separate article, check the accuracy of the content and contact 2 reviewers to review the 1 article for publishing in journal and submit article acceptance next time. So, this operation is made redundant when the article added at a later time. These results in a delay in operation and take too long time for this process because Public relations get articles in journal not limited date. Editorial work has to be redundant at all times, Work not progress, Inefficient and delayed journal publishing. The researchers have defined the new procedures in this section have the public relations get articles for published in journal limited 90 days per published one time. In the next step, the editorial board will consider a separate article, check the accuracy of the content and contact all reviewers to review the all article for publishing in journal and submit article acceptance next time. Receive evaluation documents back within 15-20 days approximately.

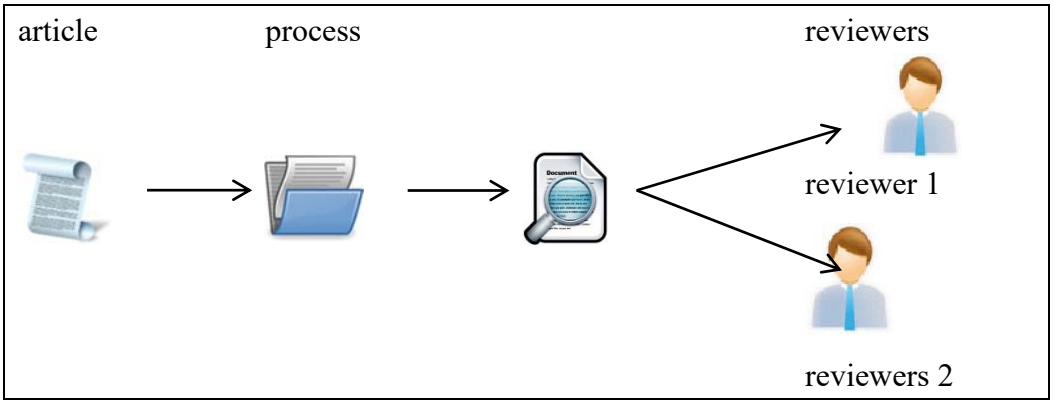

Figure 4.5 Contact the article reviewers (1 article per 2 reviewers) and submit article acceptance original process
Figure by: Phuangthong, S., 2018

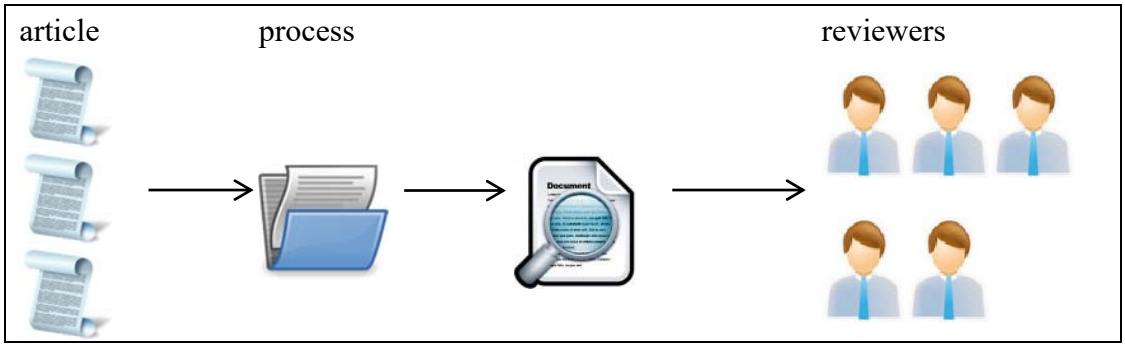

Figure 4.5 Contact the article reviewers (1 article per 2 reviewers) and submit article acceptance new process
Figure by: Phuangthong, S., 2018

From the study the improvement process of publishing a journal can reduced operational steps and time of redundancy as the following table 4.1.

Table 4.1. Comparison of operating periods before and after implementation.

process	Frequency	Old time			Frequency	New time		
		min	hr	Days		min	hr	Days
public relations get articles for published in journal	45		3	1	6			1
contact the article reviewers (1 article per 2 reviewers)	40		1		2			1
submit article acceptance	20	15			20	5		

1) Public relations get articles for published in journal original process take the time to operate about 1 day and 3 hours / 1 time of total 45 time, the total time of this activity is 64 days and 2 hours. When improving operations new process can reduce operational time about 1 day / 1 time of total 6 times, the total time of this activity is 6 days. Reduce time to 58 days and 2 hours or reduce time to 90.65%.

2) Contact the article reviewer (1 article per 2 reviewers). Original process take the time to operate about 1 hour / 1 article of total 40 articles, the total time of this activity is 5 days and 5 hours. When improving operations new process can reduce operational time about 1 day / 1 time of total 2 times, the total time of this activity is 2 days. Reduce time to 3 days and 5 hours or reduce time to 63.64%.

3) Submit article acceptance. Original process take the time to operate about 15 minutes / 1 copies of total 20 copies, the total time of this activity is 3 hours and 20 minutes. When improving operations new process can reduce operational time about 5 minutes. / 1 copies of total 20 copies, the total time of this activity is 1 hour 40 minutes. Reduce time to 1 hour and 40 minutes or reduce time to 56.25%.

Table 4.2. Conclude the comparison of operating periods before and after implementation.

process	**Frequency**	**Old time**	**Frequency**	**New time**	**Reduced time**	**Percentage reduction**
public relations get articles for published in journal	45	64 days 2 hours	6	58 days 2 hours	58 days 2 hours	90.65%
contact the article reviewers (1 article per 2 reviewers)	40	5 days 5 hours	2	3 days 5 hours	58 days 2 hours	63.64%
submit article acceptance	20	3 hours 20 minutes	20	1 hour 40 minutes	58 days 2 hours	56.25%
Reduce time to						**70.18%**

5. Conclusion

From the study the improvement process of publishing a journal can reduce operational time as the following: 1) Public relations get articles for published in journal can reduce operational time about 58 days and 2 hours or reduce time to 90.65%. 2) Contact the article reviewer (1 article per 2 reviewers) can reduce operational time about 3 days and 5 hours or reduce time to 63.64%. and 3) Submit article acceptance can reduce operational time about 1 hour and 40 minutes or reduce time to 56.25%. That are reduce operational time all to 70.18%. Because the process can be adapted to the situation of the organization to make the job more effective by using the Kaizen Principles[129]. This concept will help maintain the existing standards and improve even further. Determine the PDCA cycles that are P: Planning is the goal for improvement. It should be covered and clearly separated in order to achieve its goals. D: Do the work as planned. C: Check for working to improve the plan. A: Acting to take it a standard. It sets the standard of how to prevent the same problem or set as a target for the renovation. This is the knowledge of the ability of the staff to think of improvement. Use a little investment, resulting in small incremental incremental improvements. (Sukhum Mankhong, 2011). The process improvement is a concept that can be applied to other tasks. Siritongthaworn, S. and Khumsuwan, K. (2016) Study on “Process Improvement on Procurement Operation”. Before this, there was a complaint about 1) the procurement service from the customer. Document processing delayed by 37.50% 2) the service process is complicated by 18.75%. 3) The service providers Invalid check document on one time by 25%. And 4) Request to modify the procurement document later by

[129] “Kaizen (改善)” It’s means improving in Japanese. The making changes that improve the way things are done by working less.

18.75%. After the improvement of the process, it was found that: The assessment results of the redesigned processes showed that the outcomes serve the objectives and 8 key quality indices, such as the period of procurement request by 5 days, the percentage of producing the procurement report, the percentage of making the disbursement documents, and the percentage of the success procurement report process were all 100 percent.

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References

[1] Suwanporm, W., Journal, Periodical, 1988, retrieved from http://kanlayanee.ac.th/wbiprinting/WBI/wbi_7/Lesson/compos_7.htm on 8 March 2018.

[2] Deming, W. Edwards, Out of the Crisis. MIT Center for Advanced Engineering Study, 1986, ISBN 0-911379-01-0, retrieved from https://th.wikipedia.org/wiki/PDCA on 3 March 2018.

[3] Sukhum Mankhong, KAIZEN Criticism Review, KAIZEN (改善), 2011,retrieved from https://translate.google.co.th/#en/th/retrieved%20from on 3 March 2018.

[4] Phuangthong, S., Closing documents for the preparation of the journal Sunandha of Humans and Society, *Research and Academic Services Development of Faculty of Humanities and Social Sciences in Suan Sunandha Rajabhat University,* 2018.

[5] Siritongthaworn, S. and Khumsuwan, K., Process Improvement on Procurement Operation, *Research and Development Journal Suan Sunandha Rajabhat University,* 8(1), 2016, 148-165.

Professional Learning and Practice in an Open Classroom Environment

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Abstract

Professional learning and practice in an open classroom environment

This study about professional learning and practice investigates and explores practice and learning approaches within an open classroom setting at Torrens University Australia (TUA). The findings are based upon reflective and observational data of professional face-to-face teaching practice for second year undergraduate students. Menu Engineering & Design is a three-hour tutorial class over twelve weeks and is a core subject in the Bachelor of Culinary Management program.

The central premise of this study concerns active learning pedagogy and the way in which lecturers impart knowledge, and how students learn in an open classroom environment. Examples such as the flipped classroom model, collaborative learning and activity-based learning have effective outcomes. Importantly, the study addresses the interaction, practical actions, and thinking between lecturer and student within an open classroom. The role of a lecturer is a highly personal activity; each has their own unique style of designing and delivering courses, based upon their experience, personality, academic discipline and student cohort. The practice lens perspective of this study focuses on the body, space and materiality within the open classroom. The findings are discussed in relation to practice theory (Schatzki, 2012) and spatial theory (Lefebvre, 1992).

Keyword: Open classroom, Practice theory, Spatial theory, Student performance, Positive outcomes

1. Introduction

The open classroom learning environment in which I practise as a lecturer at Torrens University Australia (TUA) during the past 3 years is unlike the conventional learning environment where I previously taught. This environment was characterised by enclosed four-walled classrooms, with emphasis on textbooks and examinations rather than interactive activities, critical thinking and collaborative group work.

This study about professional learning and practice investigates and explores practice and learning approaches within an open classroom setting. It is a reflective ethnographic study during a trimester of 12 weeks teaching *Menu Engineering & Design* to undergraduate Culinary Management students. The first part of this paper reviews the literature of research theorists and their approaches to learning and practice. The following section outlines the methods used to research and identify change since teaching in an open classroom environment. Through personal analysis, discussion, introspection and reflection, the findings are categorised and evaluated.

2. Literature Review

The term 'practice' is defined as "an organised constellation of different people's activities" (Schatzki, 2012, p. 13). Such activities can be supported by rules, structures, and facilitate understanding by "temporally evolving open-ended set of doings and sayings linked by practical understandings" (Schatzki, 2002, p. 87). Until recently, many educators from tertiary institutions have had limited formal education in methods of teaching. It is assumed that, once an academic holds a PhD in their discipline, they can share their knowledge and teach students effectively. Many, though, do not hold a formal teaching qualification.

> *The most important development in university teaching over the past few years has been the shift from teaching seen as an individual responsibility to one that the institution should assume in matters of assessment practice and overall teaching design in accordance with the scholarship of teaching and learning.* (Biggs, 2013, p. 19)

To facilitate an effective learning environment especially with a diverse student cohort, consideration is needed of the essential requirements for professional practice, which include adopting a pedagogical focus, developing a deeper understanding of individuals' learning preferences, and dealing with learning issues. According to the practice theory perspective developed by Schatzki (2002), how people learn is based upon a practical approach that enacts 'doings and sayings'. Practice facilitates the understanding of learning. Since teaching in an open classroom, the focus concerns development of my own unique skills and practice methods that facilitate a learning environment that is resourceful, relevant, captivates, and engages the interest of the students.

One of the most intriguing theories within the theme of professional learning and practice involve the relationship of practice and space. "Spatiality embraces arrays of places and paths anchored in entities, where a place is a place to perform some action and a path is a way among places" (Schatzki, 2012, p. 13). Schatzki describes practices and the activities that comprise them as spatial and temporal, conversely Lefebvre's theory of space focuses on order, structure and social interaction and the notion that spatial practice is what people do. "Social space 'incorporates' social actions, the actions of subjects, both individual and collective" (Lefebvre, 1992, p. 33). Lefebvre suggests that space is socially produced and both space and time is held in place through social conventions, technology, and administrative procedures and exist as much as in the everyday spaces of the home, office and school. Although openness can disrupt teaching conventions, it is the social activity of the inhabitants that define the possibilities of a learning space (Lefebvre, 1992). The literature indicates that space produces social relationships including learning, and that in turn teacher pedagogies and school organisation impact on the usage of space.

3. Methodology and Critical discussion

This study aims to investigate practice and learning approaches within an open classroom setting. The focus of the study concerns active learning pedagogy and the way in which lecturers impart knowledge and how students learn in an open classroom environment. The research design employed in the study is observation and reflective practice on the *Menu Engineering & Design* class of 18 students that I instruct for three hours. The study occurred over a period of 12 weeks during the 1st trimester in 2018. The class meets once a week for a duration of twelve weeks. The students, both domestic and international are aged between 19 and 25. Small class sizes are preferable for tutorials; these are workshop style flipped class sessions, which involve a significant degree of student involvement and engagement. Additionally, tutorials facilitate understanding of concepts, shared ideas, problem solving skills and greater awareness of different perspectives. The major focus of this class is to discuss and demonstrate the concept of Menu engineering & design.

The purpose of observation and reflective practice is to identify the level of participation and student engagement with the aim of improving professional practice. A combination of journals, lesson evaluations, observations and student dialogue has facilitated this approach. The methodology objective of reflective practice provides insight, self-awareness and contributes to new and improved approaches to pedagogic practice. The context in which reflection (practice or teaching) takes place can have a powerful influence. Boud and Walker (1998) suggest that context has been a "seriously underdeveloped" dimension of discussions on reflection, partly because it is "so all-pervasive that it is difficult to recognise its influence". They argue context is "the single most important influence on learning and reflection" (Boud and Walker, 1998, p. 196). Throughout the past decade of teaching in Higher Education, often the notion of context is undervalued, educators need to make the extra effort to explore the contextual influences, which both foster and inhibit the learning of reflective practice.

> *It is necessary for teachers to be clear about whether they are really interested in fostering reflection and whether they are prepared to take a sufficiently contextualist view of it into account. If they are, they must confront themselves, their processes, and their outcomes. An honest self-appraisal conducted in conjunction with peers is one of the hallmarks of an effective promoter of reflection. (Boud and Walker 1998, p. 205)*

According to Schön (1983), *reflection-in-action* acknowledges the tacit processes of thinking which accompany doing, and which constantly interact with and modify ongoing practice in such a way that learning takes place. *Reflection-on-action*, on the other hand, is viewed as teachers' consideration and retrospective analysis of their performance in order to gain knowledge from experience. The model of reflection is an active, aware process based upon questioning my approach to teaching within the open classroom. I have applied consideration of the strengths and areas of development in my own practice, questioning why learning experiences might be this way and considering how to develop them, contextualise, and evaluate an experience in order to make improvements. Schön suggests a reflective practitioner is one who not only plans before taking action and looks back over events to consider alternatives but who also is capable of reconsidering a course of action midstream.

In reference to practice, "Bodily doings and sayings are actions that people directly perform...and constitute further actions" (Schatzki, 2002, p. 72). This theory is understood further when applied within the *Menu Engineering & Design* class at Torrens University Australia (TUA) that has an unconventional collegiate setting for learning and development. The university is in a prominent location in the historic Rocks area on the northern outskirts of the Sydney central business district. The Anglo-Dutch style heritage building was constructed in 1885 as a warehouse for the Australasian Steam Navigation Company. The building situated in the Circular Quay - Overseas Passenger terminal precinct offers a waterfront location with iconic views of Sydney Harbour, the Opera House and the Harbour Bridge.

The open classroom environment at The Rocks campus has altered the learning landscape. It can accommodate a range of teaching and learning approaches, including flipped, collaborative and activity based learning. The open classroom environment at TUA breaks from institutional traditions and offers a flexible modular use of space. The use of space and design features within the multifaceted classrooms with 18" foot ceilings include furniture that is configured easily and used flexibly in various layouts. The exposed roof beams, wooden pillars and brick walls are a reminder of the historic nature of the building. In an open learning space there can be elevated noise internally from adjacent classes and disruption because of external activities, including the departure of cruise ships, occasional live fireworks displays during evening classes and the amazing yearly 'Vivid' lights festival event. The building has heritage restrictions on internal modifications, which means only temporary dividers in between classrooms are permitted.

The physical layout of the rectangular classroom has freestanding mobile tables that each accommodate up to six students. The open classroom extends into student communal study areas. Students have the option to sit on soft furnishings such as lounge chairs, beanbags and large cushions, they have the flexibility of a learning space where they can choose where to sit, how to sit and who to sit with. Students have the option to rearrange and place the furniture to best suit their specific lesson requirements. This flexible layout is the expression of a self-directed philosophy that promotes a high level of autonomy for teachers and students. Often the table configuration will change based upon the lesson plan such as a 'U' shape for presentations or clusters for group work, alternatively a student can choose to retreat to a lounge chair or beanbag for individual work. There is natural and sufficient lighting externally from an open sliding door and two large windows and fluorescent lighting internally. The integrated wireless open classroom space has two interactive smart whiteboards, which facilitates 'live' learning with accessible video conferencing and online resources that maximises student engagement.

The open classroom space allows for maximum observation of 'doings and sayings' and 'looking and listening'. The open classroom caters to various styles of learning such as inquiry based learning, differential learning, activity based learning, problem based learning, experiential learning and collaborative social learning activities that include circuit classes, case study workshops, debates, active presentations, role-plays, simulation exercises, and games used as icebreakers to stimulate and energise the class. I bring a laptop and a box of resource implements such as menus and a variety of icebreaker activities including games; most students bring their bags, which contain their written note taking material and a laptop. The class commences with a 'menu of the week' feature from a current student workplace. This involves an active critique from the student audience and is followed by an energetic discussion on developing menus for dietary requirements. The classroom atmosphere is congenial and students are actively engaged in discussion. The interaction with students is enhanced with a student-centered approach using brainstorming, questioning and problem solving techniques.

These problem-solving questions were presented differently throughout the tutorial, for example:

i. Working interactively on a task to jointly achieve a solution. We contributed ideas, tried things out, responded to suggestions of others and finally invited comments, opinions and reflection.
ii. Focusing on a specific gap such as a concept or strategy that students need to progress. We maintained a joint collective focus and I provided an opportunity for students to bridge the gap themselves.
iii. Setting the scene with a 'what if question', presenting a problem, establishing a context, invoking relevant prior knowledge and experience and finally providing a rationale.

These instructions are examples of 'scaffolding'. Tailored to the individual requirements of the learner, scaffolding can promote effective learning by building knowledge platforms. As a teaching method, scaffolding enables a student to solve a problem, carry out a task or achieve a goal by gradually shedding external assistance. Scaffolding consists largely of questioning, but also includes body

language, encouraging comments and active listening. Based upon research by Vygotsky (1978), the zone of proximal development is the difference between the actual and potential developmental level. Scaffolding is based on the individual needs of the learner; the changes of a student's zone of proximal development will change as the student acquires knowledge.

Scaffolding is a useful teaching strategy as students are guided and supported through learning activities that serve as interactive bridges to get them to the next level. Thus, the learner develops or constructs new understandings by elaborating on their prior knowledge through the support provided by those more capable. Scaffolding is used to break tasks into smaller, manageable parts where thinking is applied when completing a task such as a menu design problem or creating a nutritious and balanced boarding school cyclical menu. I use scaffolding to model implicit and explicit desired behaviours; I offer explanations, invite students to participate and clarify their understanding. Scaffolding empowers students to cope with future challenges.

As discussed, practice theory according to Schatzki (2012) is demonstrated when an individual is active and performs activities that are structured with shared intentions and can be depicted in body movement commonly known as 'doings and sayings'. Often such activities, which include knowledge, skills and behaviours, are accompanied by verbal explanations such as introducing new menu terminology, or gestures; when I demonstrate a food tasting activity when discussing specific food flavour descriptions for menus or body movements, when I face towards the whiteboard to write menu terminology or demonstrate a practical icebreaker activity such as the one-minute food ingredient table topic. Tone of voice is used to express enthusiasm for a correct response or react to a negative response. Sometimes 'not' doing or saying is modelled, such as ignoring late students entering the classroom or ignoring students playing with their iPhones.

The students have informed knowledge of gastronomic terminology used in the classroom, such as *jus, confit and degustation* and tools to support and extend their study on menu engineering and design. Such tools are varied and include standard recipe cards, costing formulas, menu design software, recipe books, food publications and journals, images, analogies, metaphors, stories, textbooks, marketing trends, social media and technology. I foster the use, as well as the understanding, of appropriate menu terms, tools and expressions. The classroom is the central area where the space corresponds with learning, practice and pedagogy. The students construct their space, which is casual, social and active. Pedagogic practices and tools within the open classroom dominate and are manifested in materials located and used within the space such as hanging vertical charging brackets, audio-visual equipment and smartboards.

The learning approach through seeing and listening is written on the smartboard. This knowledge transfer of the observed information is shared and understood by the students. The information is written in a logical progression exclusively on the smartboard throughout the tutorial. The logical progression approach when writing on the smartboard suggests we are collectively trying to solve a problem such as constructing a 12-course degustation menu or formulating a wedding banquet menu.

Furthermore, the interactive smartboard simulates problem solving in real time such as the construction of a fine dining menu with various dietary considerations. I am able to explain the thought process better when writing a menu and using a separating line between each menu course thus illustrating the way I am actively thinking, this thought process is simultaneously verbalised to the students in a clear articulated and loud voice. The smartboard is used as a visual aid to answering questions. After the problem is solved, the written area is rarely gestured at unless a student requests further explanation.

Kemmis (2009) discusses the concept of 'practice', which often constitutes relationships of various types between people. The practice of asking questions allows the students to expand their knowledge; most students spoke out when asking questions and some raised their arms. Throughout the tutorial, I respond to questions and provide expertise, support and guidance. After the tutorial, I can be flexible and extend the time in the class to answer some of the students' individual concerns.

The spatial surrounding within the open classroom is not passive; rather it is dynamic, mobile and active. Massey (2005) claims that space is socially constructed and is the product of inter-relations. "Space presents us with the social in its widest sense" (Massey, 2005 p. 195). This concept is manifested within the open classroom where there are moving bodies; there is rhythm, fluidity, temporality and openness. The concept of 'spatiality' within the tutorial class setting involves the use of space combined with various practices, which are integral to the pedagogical process. The combined writing on the board and gesturing allows me to maintain the student's attention and improve their interactivity. Additionally, I use active eye contact and address students by their name to facilitate student engagement by capturing their attention. I move frequently throughout the classroom, as opposed to being predominantly in the front and centre, which can signify dominance and authority. The non-verbal behaviours like standing with open arm gestures, smiling and nodding, circuiting the classroom, such body postures are important for reducing the physical and psychological distance between the students and the lecturer.

4. Findings

Teaching & Learning

The open classroom has fostered a teaching style that is responsive which supports and encourages students and their stages of development. There is greater knowledge about the student and their strengths given the opportunity to view them in varied learning contexts and in smaller class sizes. Students are responsible for their own learning; this is demonstrated in utilising flexibility by providing options in subject matter and instruction.

Flexibility is ubiquitous and can accommodate a range of teaching and learning approaches. Flexibility facilitates students and their self-directed learning through increased creativity and use of

instructional time, critical thinking, and collaboration among students as well as lecturers. Students are empowered to make choices about activities and how to respond to tasks.

Lecturers and students are more informal, interactive and accessible. With a flexible working space, there is a de-emphasis of hierarchy and a focus on improved communication and empowerment.

Students are becoming more responsible for their own learning progress and the lecturers are there to help facilitate and make corrective changes as needed.

The open classroom has reoriented ideas of practice that have become collective and shared amongst the teaching cohort. The open classrooms are observable by those passing by the learning space. With increased visibility and scrutiny there is a heightened awareness and consciousness regarding performance. There is constant communication and interaction amongst staff and students. Visibility and accessibility are omnipresent with campus staff; they coexist in shared open spaces such as the library, and break out areas.

Accountability has heightened amongst faculty staff and manifests through shared ideas, experiences and skills, by allowing for team-teaching to create a more cooperative and supportive environment. There is a sense of community among teachers who can easily engage in conversation with other staff entering the fluid and open class space making it more inviting and less invasive.

There is increased reflection on individual and collective teaching practices; this extends to learning from and with colleagues about students and about teaching and learning. There is collective expertise resulting in greater effectiveness with a variety of international and domestic students. With increased visual transparency, there is decreased teacher isolation, a sense of value among colleagues and a greater level of support from colleagues.

Environmental factors (space, seating, noise, decor and lighting)

The open plan classrooms are less rigid with the use of space. The room is transparent, safe and inviting, by creating a culture of openness, spaces are reconfigured for large and small group projects and individual work. Movable furniture allows spatial organisation to be controlled, which facilitates small group collaborative and cooperative learning activities. Tables are mounted on lockable rollers so they are easily re-positioned to form new configurations as students work together on different projects.

The open classrooms are interconnected with defined activity settings. For example, sitting students in a 'U shape' for class presentations is effective as this leads to better eye contact and a feeling of equality amongst students. There is flexibility to have small presentation areas set aside with couches and a computer monitor that allow small groups to present to the lecturer. In other cases, large format presentation screens allow students to present to a wider audience.

Furniture plays an active role in communicating the way that an open class space can be used. All open classrooms have comfortable seating areas for reading where students can curl up on a soft couch or on unconventional seating, such as a beanbag chair or low cushion. Soft furnishings and curved designs create a place of comfort and warmth for the students. This empowers students to take an

active part in their learning environment, collaborating with the teacher regarding the best classroom format for a specific learning outcome.

Noise can be an issue with open-plan classrooms, especially the high noise levels coming from the other classes sharing the same level. Open classrooms are best suited to smaller class sizes of up to twenty students. Break out areas with many people talking at once can be noisy, making it hard to concentrate on tasks such as reading. Quieter areas are extended from the open classroom that allows students to concentrate on projects or their reading materials.

The colour palette includes two-three main colours: a neutral base colour and two accent colours that 'pop' and create vibrancy and alertness. This contributes to a reduction in 'visual' noise and allows students to feel calm and comfortable with improved focus.

The design feature of the northeast facing building with open sliding doors and oversized windows allow for maximum natural light combined with ultra-violet enhanced broad-spectrum fluorescent lighting which provide optimal learning conditions. Natural light brightens up the open classroom and can be minimised with roller blinds to reduce glare when using visual monitors.

5. Conclusion

As highlighted in this study, pedagogy and theories of learning and practice have been discussed within the context of an open classroom environment. Theories concerning learning and practice have highlighted the importance of what we say and do, how behaviours are modelled, scaffolded and enacted, and how the rhythm and multiplicity of space actively bring meaning to understanding our spatial learning environment. Learning and practice by doing, participating and being active is now recognised as part of the professional practice and archetype at TUA.

The lecturer achieves the lesson objectives, encourages students' participation and brings about overall enjoyment of the tutorial, as signaled by the frequent occurrences of student laughter. Allowing students flexibility and giving them ownership of their learning spaces fosters open-minded, creative, independent learners and ultimately creating an enriching experience. Open classrooms are synonymous with open workspaces and may well better prepare graduates for future employment in diverse and open workplaces. The sense of community that open plan classrooms create are then leveraged to encourage conversation, co-operation and collaboration. The learning approach as part of everyday practice has a positive effect on the lecturer and the students. It also allows lecturers to deal with daily challenges and maximise their interaction and engagement with students now and in the future.

References

Biggs, J. B. (2013). Changing universities: A memoir about academe in different places and times, Melbourne, Australia: Strictly Literary.

Boud, D. and Walker, D. (1998). Promoting reflection in professional courses: The challenge of context, Studies in Higher Education, 23(2), 191-206.

Kemmis, S. (2009). Understanding professional practice: A synoptic framework. In Understanding and researching professional practice, Rotterdam, The Netherlands: Sense publishers.

Lefebvre, H. (1992). The production of space, Oxford, United Kingdom: Wiley.

Massey, D. (2005). For space, London, United Kingdom: Sage.

Schatzki, T. (2002). The site of the social: A philosophical account of the constitution of social life and change, University Park, PA: Pennsylvania State University Press.

Schatzki, T. (2012). A primer on practices. Practice-based education: Perpectives and Strategies, Rotterdam, NY: Sense Publishers.

Schön, D. (1983). The reflective practitioner: How professionals thinking action, New York, NY: Basic Books.

Vygotsky, L. (1978). Mind in society, Cambridge, MA: Harvard University Press.

Appendix

Figure 7. Aerial view Open classroom

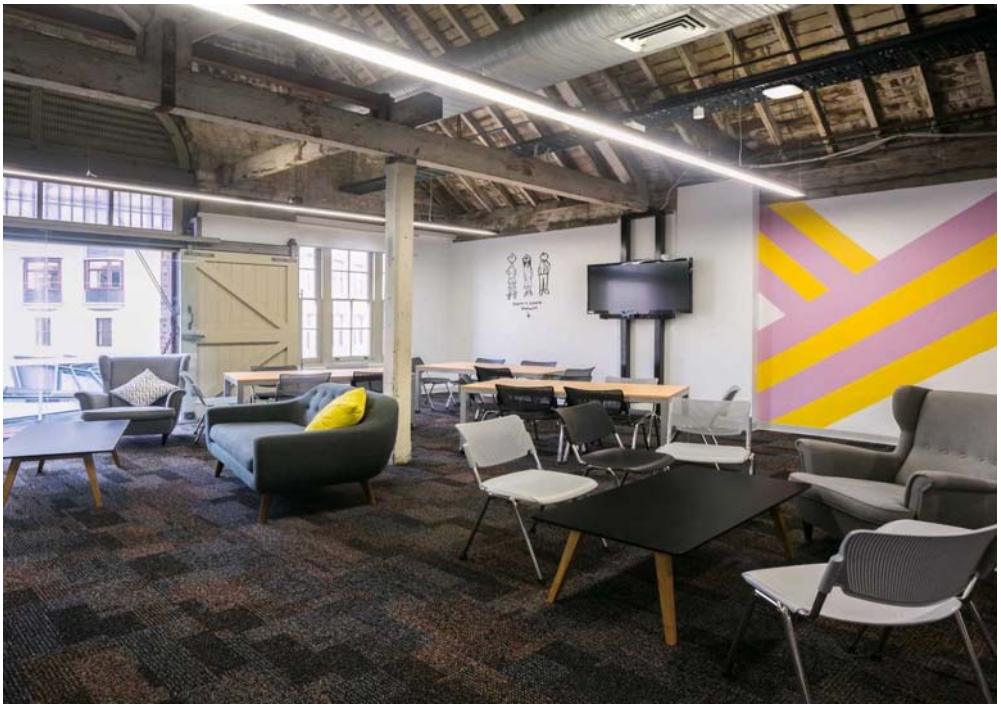

Figure 8. Various seating options

Figure 9. Open Library

Figure 10. Class with Opera House view

Figure 11. Class in action

Figure 6. Menu Engineering Students having a tea break

The Rise, Organizational Pattern, and Developmental Characteristics of Shuyuan System in Taiwan in the 21th Century

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Abstract

The Taiwanese higher education system has successively promoted various programs, such as the General Education Reform Plan and Program for Promoting the Teaching Excellence of Universities, with the expectation that universities develop their own characteristics and find specific market niches. Therefore, since 2008, many universities have begun gradually integrating internal resources and accommodation facilities to establish a shuyuan, the collegiate system, in order to improve students' learning experience, cultivate their self-learning abilities, and enrich learning content. Although the foundation of establishment and vision of each shuyuan varies, the majority aim to enhance general education and attach importance to students' basic capabilities and allround development. This study categorized the development of the shuyuan system in Taiwanese universities into four groups, based on types of university, year of establishment, and operational patterns. Then it applied a 3W1F framework to summarize their operational patterns and developmental characteristics; lastly, it discussed the multidimensional significance of implementing shuyuan systems in Taiwanese universities. The findings show that, in general, the multidimensional significance of developing a shuyuan system in Taiwanese universities lies in its innovative strategy, which enhances the all-round development of students. In addition, the shuyuan system reflects a future learning trend, which prioritizes learning communities and self-learning behaviors, experiential learning, and interdisciplinary learning

Keyword: Residential College, Shuyuan, College of liberal arts, College education, Students' learning

1. Introduction

With the macroscopic changes caused by globalization since the start of the 21st century, many countries' higher education systems have been challenged by international competition and demand for optimization. Meanwhile, higher education in Taiwan has also experienced drastic changes.

1.1 New Education Trend in Taiwan

Taiwan's higher education has changed from being only accessible to the elite to being more affordable to the public; one may even say it has become universalized. With the impact of declining fertility, the government and universities have realized that innovation, transformation, and reform are requisite processes for higher education in Taiwan. During the past years, the government has put forward various policies to create a blueprint for higher education with a diversified form, including the General Education Reform Plan and Program for Promoting the Teaching Excellence of Universities, aiming to encourage universities to develop their own characteristics and define a clear market position.

After five years of promoting these programs, many universities have thus realized the importance of cultivating undergraduate students' key abilities, soft skills, and extensive interdisciplinary knowledge to compensate for students' insufficient awareness of social trends and resolve the problem of lack of qualified talent. The goals were to meet the requirements of globalization and satisfy social needs. Thus, since 2008, universities have begun to synthesize internal resources and improve accommodation facilities, or establishing a *shuyuan* system, the collegiate system. The purpose is to utilize the hidden curriculum generated from such a system needed to create an all-round learning environment, cultivate students' self-learning abilities, and enrich their knowledge base.

As pioneering universities in this practice, these five universities—National Chengchi University, National Tsing Hua University, Tunghai University, National Chung Cheng University, and Kaohsiung Medical University—have a relatively more sophisticated and well-developed *shuyuan* system. Most of their *shuyuan* serve as colleges of liberal arts. Other universities also began to establish subsequent *shuyuan* systems. This led to an unstoppable innovation and transformation trend for universities. Although the foundation and operational philosophies of each university is dissimilar, they all focus on the enhancement of general education and development of students' all-round abilities.

1.2 Research Questions

With this new educational trend in Taiwan, the following questions merit further investigation: (1) What are the origins and developmental characteristics of the *shuyuan* system in today's Taiwanese universities? (2) What is the purpose of establishing a *shuyuan* system? Is it the promotion of a liberal arts education? Is it a general education with a hidden curriculum, an enhanced version of residential education, or a multi-functional academic affair? (3) What does the rise of *shuyuan* systems in Taiwan

imply? (4) What is the practical significance of each operational pattern? This work attempts to address the above questions. Then, we utilized a *Why-What-Who-Finance* (*3W1F*) framework to investigate the development patterns of the *shuyuan* system in Taiwan. Lastly, we discussed the significance of the system in improving student learning in higher education.

2. Methodology

In this study, the related data and information of *shuyuan* in 19 universities are collected from books or online. The *syuyuan*, regardless of its full term, in these universities was established between 2008 and 2015. In addition, one or two interviews in each school were conducted and 32 interviews in total were finished. Interviewees consisted of deans, teachers and/or students. The whole fieldwork lasted for one year. In the process, the researcher played the role of not only a researcher but also a learner. Based on the relationship which had been built up between interviewees and the researcher in various occasions, the interviews were done well and effectively. Finally, the features of these universities studied are summarized via a 3W1F framework.

3. Growth of Modern Shuyuan in Taiwan (2008–2016)

Since 2010, the present author has been studying the development of the modern *shuyuan* system in universities in Taiwan. Based on information collected over the past six years, the trend of developing the modern *shuyuan* system has not stopped over the eight years since it was introduced to Taiwan. Moreover, there seems to be a tendency of further diversification among the systems. Based on different features and patterns of *shuyuan* and universities, the modern *shuyuan* in Taiwan can be categorized into four groups.

3.1 Five Pioneering Universities

The first group consists of the first five modern *shuyuan*: Chengchi College of National Chengchi University (NCCU) (2008), Tsing Hua *Xueyuan* of National Tsing Hua University (NTHU) (2008), Po-Ya School of Tunghai University (THU) (2008), Tsu-Ching *Shuyuan* of National Chung Cheng University (CCU) (2009), and KMU Academy of Life of Kaohsiung Medical University (KMU). These five *shuyuan* have frequent exchange in academic achievements and administrative practice, and represent the first wave in Taiwan's development of the modern *shuyuan* system. Hence, they are categorized by this study as a collaborative learning alliance between all the five *shuyuan*.

3.2 *Shuyuan* in Private Universities

The second group implies modern *Shuyuan* in private universities: *San-Pin Shuyuan* of Asia University (AU) (2009), Huafan *Shuyuan* of Huafan University (HFU) (2009), Chung Hua *Shuyuan* of Chung Hua University (CHU) (2010), Si-Ken *Shuyuan* of Da-Yeh University (DYU) (2010),

ChanYue College of Dharma Drum Institute of Liberal Arts (DILA) (2011), Pei-Kang College of China Medical University (CMU) (2011), Mu-Shan *Shuyuan* of Taipei Medical University (TMU) (2012), Hsing-Yun College of Nanhua University (NHU) (2013), and Colleges of Fo Guang University (FGU) (2013). It is worth noting that in Taiwan there are more private universities than public universities.

3.3 *Shuyuan* in Science and Technology Universities

The third group consists of modern *Shuyuan* in science and technology universities: Ming Chi Academy of Ming Chi University of Technology (MCUT) (2009), San-Tzu College of Southern Taiwan University of Science and Technology (STUST) (2012), MingSho Academy of National Chin-Yi University of Technology (NCUT) (2013), and Leadership College of National Taiwan University of Science and Technology (NTUST) (2013).

3.4 *Shuyuan* in Public Universities:

The last group implies modern *Shuyuan* in public universities: Ching-Ying *Shuyuan* of National Taiwan Normal University (NTNU) (2015), San-Chuang *Shuyuan* of National Cheng Kung University (NCKU) (2015), Orientation Camp of National Taiwan University (NTU), and Chung-Tzu College of National Hsinchu University of Education (NHCUE) (2015).

4. Organizational Pattern and Developmental Characteristics of Shuyuan System in Taiwan

Given that the organizational patterns of modern *shuyuan* are dissimilar, the following part attempts to summarize the features of each pattern utilizing a 3W1F framework (*why*: the purpose of establishment and *shuyuan* motto; *what*: the coverage of educational content; *who*: the targeted participants or students; and *finance*: the source of financial funding).

4.1 Why: Purpose of Establishment and *Shuyuan* Motto

In both the residential colleges in the UK and the US and the *shuyuan* in mainland China and Hong Kong, the philosophy behind the curriculum is highly significant toward students' holistic education, character development, thinking capacity, and general knowledge. The Western collegiate system places special emphasis on the development of students' personal interests and aspirations. There are many open facilities and spaces in the colleges that encourage students from all departments to interact and exchange with peers for knowledge and skills acquisition (Task Force on New Colleges, the Chinese University of Hong Kong, 2006; Yale College, 2010; Liu [eds.], 2004 & 2005; and Lu, 2009a).

By contrast, in Taiwan, the foundation and purpose of establishing a *shuyuan* system, as well as their motto, varies by university. At present, the *shuyuan* systems in Taiwan all aim for the promotion of general education, among which Chengchi College, Tsing Hua *Xueyuan*, Po-Ya School, and Tsu-Ching *Shuyuan* emphasize on the development of students' basic skills, self-learning ability, career planning ability, and positive values (Center of General Education, National Chengchi University, 2010; Tsing Hua *Xueyuan*, 2010a; Cheng, 2009; and Center of General Education, National Chung Cheng University, 2012).

Take the first five *shuyuan* as an example. Firstly, Chengchi College aims to cultivate students' wisdom in life, hoping to guide students to become familiar with their living environment, adapt to university life, and thereby make suitable future plans through positioning activities and self-exploration. In addition, the *shuyuan* also applied an action plan to develop implementation and reflection mechanisms that would nurture students' problem-solving and active-learning abilities through eight educational elements: Chinese, general education, creativity, multi-inclusiveness, social care, career orientation, and promotion of health (Chengchi College, 2010b; Office of Planning, Chengchi College, 2012).

Secondly, Tsing Hua *Xueyuan* aims to develop students' self-talk, independent thinking, and teamwork abilities, as well as social ideals and global vision. Based on the same educational goal of "first, learn how to be a man; next, how to be a citizen, and then, how to be a professional," each sub-*shuyuan* has developed its own motto and character. The Tsing Hua *Xueyuan* proposes *suhsueh wukung* (five "togethers" of residential colleges) principles to guide the implementation of the residential system, namely, living together, playing together, eating together, studying together, and producing together (Tsing Hua *Xueyuan*, 2010b).

Thirdly, the curricular philosophy of Po-Ya School places emphasis on character education and learning from life. The fundamental spirit of learning from life is an extension of the founding spirit of Tunghai University, which stresses combining knowledge with practice. Therefore, its curricula start from knowledge-based courses, followed by life-based practical courses so that students can practice the *liuyi* (six arts) they have learned (Po-Ya School, 2008b).

Fourthly, Tsu-Ching *Shuyuan* College attempts to achieve the initial purpose of university education, namely, to provide a realm for thinking and self-learning. Its curricula focuses on cultivating students' basic skills and abilities, adopting a career knowledge and skill-oriented framework to enhance the competitiveness of students in their career path through training, such as career planning, self-exploration, emotional management, career exploration, interpersonal relationships and communication skills, leadership and motivation, presentation skills, teamwork, and conflict management (Center for General Education, National Chung Cheng University, 2008b).

Finally, the KMU Academy of Life is established based on the core values and characteristics of medical university: "Respecting life and pursuing the truth." "Exploring life" is the key focus of the *shuyuan*, which means to enrich one's view through a multi-layered exploration of life, including exploring one's own life, the life of others in society, and the lives of the entire ecological system. In

addition, the *shuyuan* has designed programs that are characterized by feasibility, proactivity, altruism, and a balanced combination of theory and practice (KMU Academy of Life, 2012).

Among the *shuyuan* of private universities, Ming Chi Academy and San-Pin *Shuyuan* stress moral education. Particularly, San-Pin *Shuyuan* is the first *shuyuan* that promotes *san-pin* (three morals) education since the implementation of the "Moral Restoration Movement" initiated by the Ministry of Education (Teaching and Learning Excellence Project, Ming Chi University of Technology, 2010; Counseling Office, Deguang Catholic High School, 2009). Chung Hua *Shuyuan* emphasizes a balanced focus on moral education, career navigation, and international vision. Hence, the *shuyuan* promotes a *nei sheng wai wang* spirit (spirit of inner sage in the shell of a king, which means: internally possessing the virtue of a sage and externally executing benevolent governance) and "unity of knowledge and action" in teaching; it provides classic reading courses, activities that teach appreciation of art, lectures on exemplary learning and career navigation planning, as well as guidance in developing students' international vision and enhancing their understanding of "sustainable Earth" (Center of General Education, Chung Hua University, 2010).

Regarding other private universities, the goal of Si-Ken *Shuyuan* is to develop four types of willingness (*si ken*): willingness to learn, willingness to do, willingness to spend effort, and willingness to take responsibility (Da-Yeh University, 2012). ChanYue College of DDILA uses "nurturing all-round talent" as its motto, focused on humanistic development and character education, and aims at nurturing elites with a whole-world vision through concrete participation and experience (Dharma Drum Institute of Liberal Arts, 2012). Taipei Medical University has specialized a new area to establish Mu-Shan *Shuyuan*, in which students can make full use of the accommodation space to communicate with one another. Students are also expected to take a subtle and active approach in learning to develop both medical and artistic skills (Student Affairs Office, Taipei Medical University, n.d.a).

Besides universities mentioned above, several science and technology universities have also joined the trend of establishing *shuyuan*. Ming Chi Academy is a learning movement organized by the academic affairs office of Ming Chi University of Technology. The movement includes two types of learning activities: discussions led by "instructors of book clubs" and discussions led by "instructors of liberal arts." Instructors of book clubs are expected to promote students' reading skills by providing them with diversified books, whereas instructors of liberal arts are expected to conduct small-scale seminars so that students can exchange thoughts and viewpoints related to life, liberal arts, and the world outside textbooks (Ming Chi University of Technology, 2016).

NCUT's MingSho Academy targets vocational education, recognizing the value of craftsmanship, and guides students to explore themselves so as to develop talents that promote thinking, are skillful in communication, are "daring to dream," and have "willingness to practice"; in other words, talents that not only focus on self-development but can also contribute to society (Management Office of NCUT MingSho Academy, n.d.a).

National Taiwan University of Science and Technology established the NTUST Leadership College to train students in leadership skills, international vision, and innovative qualities, as well as contribute to society through humanistic care and social responsibility (NTUST Leadership College, 2013).

Moreover, the Orientation Camp of National Taiwan University mainly focuses on creating a dynamic learning experience for new students so that they can start their university life with a rich and interesting experience (Orientation Camp NTU, n.d.a). However, thus far, the Orientation Camp only covers freshmen counseling and instruction.

In 2015, National Cheng Kung University set up San-Chuang *Shuyuan*, targeting students of "innovation, originality, and entrepreneurship." In addition to accommodation areas, the *shuyuan* also provides theoretical and practical programs, such as "evening talks with the master" and "evening workshops," thereby utilizing the convenience created by living together to generate more discussion and learning opportunities, promoting team cooperation, and develop entrepreneurial talent (National Cheng Kung University, 2016).

National Taiwan Normal University established Ching-Ying *Shuyuan* in 2015 in the hope of combining the features of a *shuyuan* system, such as centralized accommodation, care from instructors, and exchanging opportunities with experts, to create a nascent learning environment (National Taiwan Normal University, 2016).

4.2 What: Coverage of Educational Content (Curriculum)

Currently, the educational content developed by *shuyuan* in Taiwan (considered content coverage in a general sense) can be categorized into three directions: The formal, informal, and interdisciplinary curricula.

4.2.1 Formal Curriculum: Philosophy, Compulsory and Elective Courses, and Direction

In Chengchi College, each sub-shuyuan of the has different courses: general education courses developed by Freshman *Shuyuan* emphasize the concept of "cultivating the wisdom of life." Currently, two projects have been developed: "freshman positioning" and "practice and implementation." The "freshman positioning" project consists of two courses: "self-positioning as a student" and "introduction to university life" (Planning Office, Chengchi College, 2012; Chengchi College, n.d.b). The Residential College of International Development has developed special activities and service learning-related courses, as well as experience-sharing courses, such as "International Development and Taiwan," "The Urban Development Forum," "Heritage and Innovation of the Residential College of International Development," "The World Discovery Team," and "Learning Family." The "World Discovery Team" is an internal certified practice course, in which students need to complete an application process before they are able to participate in proposed activities (Residential College of International Development, n.d.a). The compulsory courses of X College include "Problem, Innovation, and Implementation," "Project X," and "Service-Learning Program: Create a Learning

Circle of College Life," whereas elective courses include "Communication, Cooperation, and Leadership" (NCCU X College, n.d.).

In Tsing Hua *Xueyuan*, the distinctive courses include "Service-Learning," "Social Inquiry," and "Cross-border Exploration." The main purpose is to inspire students to learn from life, accumulate practical experience, and position themselves through self-exploration (National Tsinghua University, 2009). Po-Ya School in DHU emphasizes liberal arts education, in line with the founding philosophy of the university. The school's curriculum is dedicated to the promotion of liberal arts education, emphasizing learning from life and students' character development. Its special courses include "Six Arts (*Liu Yi*)" and labor service (Cheng, 2008).

As to CCU's Tsu-Ching *Shuyuan*, it focuses on action and problem solving, and developing students' core competence. The "Explore the *Daxue*" course teaches students the essence of the book *Daxue* (The Great Learning); "Pluralistic Society" utilizes multi-media devices and words to stimulate students' reflection on society; "Creative Thinking and Implementation" trains students in the importance of both thinking and doing; "Service-Learning" teaches students leadership, communication, cooperation, contemplation, presentation, reflection, and problem analysis and solving; and "Chung Cheng Lecture" provides students with interdisciplinary knowledge, promoting communication skills and creativity through group discussions, group reports, and presentations (Tsu-Ching *Shuyuan*, 2012).

Besides, Ming Chi Academy adopts a variety of lectures, reading clubs, and other activities to promote experience sharing and establish a specific learning context for students' character development. San-Pin *Shuyuan* employs a three-layer (activities, lectures, and classroom studies) inter-cross guidance framework to provide a multi-dimensional education system, deepening the promotion of "Character, Grace, and Taste" on campus and in the community (Center of General education, Asia University, n.d.). Huafan *Shuyuan* invites prominent scholars, distinguished community members, and outstanding alumni to give lectures; these lectures are collated into a liberal arts course for the college, called "Liberal Arts Reading Club," where students are expected to share their learning experiences, thoughts, and viewpoints, as well as submit reflection reports after activities. The purpose is to facilitate students' self-awareness (Huafan University, 2012).

Also, Chung Hua *Shuyuan* designs a combined teaching model that unifies knowledge and practice, and the curriculum covers career navigation, the classics, innovation and creativity, and "the sustainable Earth." Si-Ken *Shuyuan* emphasizes on practical industrial needs to guide students to explore their own aspirations. The courses include an introduction to the university, industry-oriented theory and practice, and related activities (Si-Ken *Shuyuan*, 2012).

ChanYue College sticks to the founding spirit of the university, aiming at learning from life, meditation comprehension, talking with masters, international communication, and development of international citizens. The *shuyuan* organizes a large variety of lectures, discussions, and dialogs with experts (Dharma Drum Institute of Liberal Arts, 2012).

In KMU's Academy of Life, the featured courses of are "Medicine and Devotion," "Figures and Events of the KMU," martial arts, and "Art and Life Exploration"; other courses include a book club of the classics, lectures, scholarly assemblies, academy workshops, and other activities (KMU Academy of Life, 2012).

In addition, Orientation CAMP NTU focuses on assisting freshmen to adapt to university life. Hence, the course mainly includes "Introduction of NTU," "The Treasure Map," "War Against Randomly Parked Bicycles," "Turn Left, Turn Right: Career Preparation," and "The World is My Classroom." The sources integrated into campus resources are designed to assist freshmen to become swiftly familiar with the environment and resources (Orientation CAMP NTU, no date b).

In Mu-Shan *Shuyuan*, the courses are divided into various series, namely, "Self-Exploration," "Life of Heart," "Growth," and "Healthy Life" series. The courses are presented in various forms, such as films, handicraft making, sharing sessions, body language development, and lectures. The *shuyuan* pays great attention to students' personal health and mental growth (Student Affairs Office, Taipei Medical University, n.d.b).

With regard to NCUT's MingSho Academy, the curriculum is composed of four stages: Eye-Opening (freshman), Dream-Creating (sophomore), Skill-Practicing (junior), and Prepare-For-Sailing (senior) stages. The courses include "Explore the Earth," "Civic Literacy," "The Classics," "Social Service," "Craft Appreciation and Creation," and "Inheriting the Craftsman Spirit." After completing these courses in the first and second year, students are expected to practice what they have learned in the third and fourth year, such as "action plans to realize my dream" and "implementation and records of dream-realization action plans." In addition, each student is expected to select a teacher with corresponding industrial knowledge and perform a formal *baishi* (a ceremony to express one's sincerity and ask a master to become his/her apprentice). Toward the end of the fourth year, students are asked to work in enterprises as interns. The purpose is to utilize "self-exploration, spiritual elevation, and hands-on practice" to stimulate students' problem awareness, strengthen their self-learning ability and cultural-connotation perceptive abilities, form their characters and traits, as well as expand their horizons. In addition, courses such as "Craft Appreciation and Creation" and "Inheriting the Craftsman Spirit" are designed to develop students' dedication and professionalism, a trait that craftsmen are expected to possess (Management Office of NCUT MingSho Academy, n.d.e).

Finally, NTUST's Leadership College concentrates on the experience of sophistication and transmission, leadership-related knowledge and skills, humanistic care, and other practical courses, such as presentation design and expression skills. The *shuyuan* also organizes activities including self-managed discussions, group creative sessions, book clubs, talks with experts, tutor counseling, and study of designated books, independently (NTUST Leadership College, 2013).

In summary, modern *shuyuan* have their own compulsory and elective courses, which are designed by the managing team of the *shuyuan* and considered as credits, as a type of general education program.

4.2.2 Informal Curriculum of Modern Shuyuan in Taiwan

The Freshman *Shuyuan* of NCCU has attached great importance to assisting the development of students, as well as organizing various activities, such as service learning, evening of *shuyuan* instructors, group meals, *shuyuan* talent elections, Chinese reading evenings, and Chinese writing camps (Planning Office, Chengchi College, 2012; Chengchi College, 2014). Residential College of International Development also provides courses in service learning, as well as "Learning Family," featured activities, and dormitory life activities (NCCU Residential College of International Development, n.d. a, b, & c).

In addition to service learning and general learning, X College also promotes an "Innovation Experience Camp" (NCCU X College, n.d.). The activities organized by Tsing Hua *Xueyuan* are the service-learning center "Learning Family," for students in the third semester, and themed groups. Regardless of the organizer, the activities can give students ample inspiration (National Tsing Hua University, 2009).

Other *shuyuan* (Tsu-Ching *Shuyuan*, Ming Chi College, San-Pin *Shuyuan*, Huafan *Shuyuan*, Chung Hua *Shuyuan*, Si-Ken *Shuyuan*, ChanYue College, and KMU Academy of Life) also offer lectures given by celebrities and experts from in and out of the college. Students are generally allowed to select activities according to their personal interests. Students are also encouraged to initiate similar activities, supported by the college, so that they can practice the planning and execution of an entire project, and ultimately learn valuable experiences that cannot be acquired through textbooks (Tsu-Ching *Shuyuan*, 2012; Center of General Education, Asia University, n.d.; Huafan *Shuyuan*, 2012; Si-Ken *Shuyuan*, 2012; Dharma Drum Institute of Liberal Arts, 2012; and KMU Academy of Life, 2012). In addition, Ming Chi College, San-Pin *Shuyuan*, Huafan *Shuyuan*, Si-Ken *Shuyuan*, and KMU Academy of Life all provide service-learning programs (Center of General Education, Asia University, n.d.; Huafan University, 2012; Si-Ken *Shuyuan*, 2012; Dharma Drum Institute of Liberal Arts, 2012; and KMU Academy of Life, 2012).

In Orientation Camp NTU, the informal curriculum of includes camp activities led by senior students, so as to help new students familiarize themselves with the campus environment; there are available resources and opportunities for them to get to know one another, thereby facilitating interpersonal communication (Orientation Camp NTU, n.d.b).

Also, Mu-Shan *Shuyuan* offers various lectures and service-learning programs to promote in-depth communication and interaction between teachers and students (Student Affairs Office, Taipei Medical University, n.d.b). NCUT MingSho Academy and NTUST Leadership College utilizes theme-based discussions and problem-solving activities to nurture students' dedication and professionalism through volunteer activities, as well as the *baishi*, practice courses, and working as interns in companies (Management Office, NCUT MingSho Academy, n.d.e; NTUST Leadership College, 2013). In summary, the majority of modern *shuyuan* arrange additional lectures and service-learning opportunities.

4.2.3 Interdisciplinary Courses of Modern Shuyuan in Taiwan.

Residential colleges in the UK and US do not provide a formal curriculum; students are encouraged to initiate or take part in activities in or outside campus. The purpose is to encourage students from different fields of study to exchange in different mentalities, viewpoints, and knowledge, through living and learning together (Task Force on New Colleges, the Chinese University of Hong Kong, 2006; Yale College, 2010; Liu [eds.], 2004 & 2005).

Similarly, Chengchi College, Tsing Hua *Xueyuan*, Po-Ya School, and Tsu-Ching *Shuyuan* also provide an environment where students of different departments can live and learn together. New students from various fields of study are assigned together in one dormitory. The *shuyuan* then creates opportunities for them to communicate with one another, through various activities, lectures, and service-learning programs (Plan Office, Chengchi College, 2012; Chengchi College, 2014; National Tsing Hua University, 2009; Cheng, 2008; and Tsu-Ching *Shuyuan*, 2012).

Besides, Ming Chi College, San-Pin *Shuyuan*, Huafan *Shuyuan*, Si-Ken *Shuyuan*, KMU Academy of Life, Chung Hua *Shuyuan*, ChanYue College, and Mu-Shan *Shuyuan* have all organized serial and specialized lectures to create interdisciplinary learning opportunities for students to open their horizons, so as not to be restricted to the study of specialized subjects (Center of General Education, Asia University, n.d.; Huafan University, 2012; Si-Ken *Shuyuan*, 2012; Dharma Drum Institute of Liberal Arts, 2012; KMU Academy of Life, 2012; Student Affair Office, Taipei Medical University, n.d.b).
In addition to the aforementioned activities and seminars, NCUT's MingSho Academy and NTUST's Leadership College have also collaborated with businesses, providing opportunities for students to experience the working environment of different industries to develop real-world practice. Orientation CAMP NTU offers activities for the exchange and participation of freshmen from different departments (NCUT MingSho Academy, n.d.e; NTUST Leadership College, 2013).

4.3 Who: Targeted Participants And Students

When discussing the target students of modern *shuyuan* of mainland China, Hong Kong, Macao, and Taiwan, three kinds are often mentioned: full coverage, only freshmen, and selected students. Currently, the student coverage of modern *shuyuan* in Taiwan can also be categorized into these three types (Table 1).

Table 1: Target Students of Each Modern *Shuyuan*

Type	Shuyuan
Full Coverage (Freshmen to Seniors)	AU (San-Pin *Shuyuan*)
	DYU (Si-Ken *Shuyuan*)
	CHU (Chung Hua *Shuyuan*)
	HFU (Huafan *Shuyuan*)
	TMU (Mu-Shan *Shuyuan*)

Only Freshmen	KMU (Chi-Shih, Huai-Ai, Chuan-Hsi, Jih-Hsin, and Hou-Sheng College)
	NTU (Orientation CAMP)
Selected Students	NCCU (Boya College, Freshman *Shuyuan*, X College, Residential College of International Development)
	NTHU (Hou-Te, and Tsai-Wu College, and the Global Program)
	Tunghai University (Po-Ya School)
	National Chung Cheng University (Tsu-Ching *Shuyuan*)
	NTUST (Leadership College)
	National Taiwan Normal University (Ching-Ying *Shuyuan*)
	National Cheng Kung University (San-Chuang *Shuyuan*)

Data source: website of universities and other online documents

4.4 Finance: Source of Financial Funding

At present, most modern *shuyuan* in Taiwan are funded by government projects, such as the "Aim for the Top University Project" and "Program for Promoting the Teaching Excellence of Universities." The advantage of such a practice is that the promotion of student learning is funded by the government. However, government funding may not be sustainable, and various *shuyuan* have had to be shut down owing to changes in government policies. A small number of modern *shuyuan* are funded by alumni donations, or self-funded by the university (Table 2).

Table 2: Source of Funding of Each Modern *Shuyuan*

Source of Funds	Universities
Alumni Donation	THU
Aim For The Top University Project	NCCU, NTHU, NTUST, and NCKU
Program for Promoting the Teaching Excellence of Universities	KMU, AU, DYU, HFU, FGU, TMU, and MCUT
Others	CCU, CHU, DILA, NTNU (funded by the university itself), and NTU

Data source: website of universities and other online documents

5. Practical Significance of the Developmental Characteristics of Modern Shuyuan in Taiwan (2008–2016)

The findings of this study showed that when introducing the original intention of establishment, the majority of *shuyuan* mentioned the tradition of residential colleges and liberal arts education in world-renowned European and American universities. However, in essence, each modern *shuyuan* is developed according to the characteristics of the university and the students, thereby having multidimensional significance. Nonetheless, the practical significance of modern *shuyuan* in Taiwan is they offer not only liberal arts education or a residential college but an education model that re-stresses attention to multidimensional experiences and activities in learning contexts, to create a comprehensive learning environment for holistic development. The practical significance of the developmental characteristics of modern *shuyuan* is as follows:

5.1 Holistic Development-Oriented Liberal Arts Education via the Hidden Curriculum

Taiwan has been reforming general education for many years. However, the process has been confronted with many bottlenecks. As general education courses are usually taught in large groups, they are considered by students an easy way to gain extra credit. In addition, many universities started to realize that liberal arts education and general education are two different levels of education; the former emphasizes holistic personal quality development, whereas the latter is an expansion of knowledge. Hence, the creation of a modern *shuyuan* environment, and the development of relevant activities, can compensate for limitations of traditional general education. General education is included in the formal curriculum, whereas the modern *shuyuan* system provides a liberal arts education-oriented, holistic development-focused *hidden curriculum*. The practice of the first five modern *shuyuan* has revealed a pursuit of liberal arts education.

5.2 Functional Residential Education, Learning-Oriented Accommodation Environment

Except for a small number of *shuyuan* that do not offer accommodation, the majority of *shuyuan* are residential colleges. The practical significance of such a system is that it can supplement the lack of dormitory education in the past. In addition, by creating a residential environment, a pupil–teacher system, and diversified activities, *shuyuan* have formed a learning community where teachers and students from various departments can have more time to live and study together.

5.3 Diversified Academic Activities, Experiential Learning Process

This study explored the origins and practical significance of the current *shuyuan* system in Taiwan. A number of private universities have established modern *shuyuan* not for the purpose of reinforcing or building a functional residential education system, nor to restore liberal arts education or create a collegiate university as those founded in the UK or US, but rather as a blue ocean strategy to extend the special features of their university, and thereby establishing a school brand and improving the popularity of the university during the student enrollment process. Therefore, the direction of operation for modern *shuyuan* in these universities is diversified, usually co-managed by both academic and student affairs divisions, and serving as a characteristic practice of teaching excellence.

According to the characteristics of private university students and the features of private universities, modern *shuyuan* can be seen as an enhancement of vocational experience that unifies knowledge and practice, trains students in values and attitudes (such as character education), and improves competencies in the workplace. The modern *shuyuan* has become a place that combines knowledge and practice through various characterized activities and the hidden curriculum, offering diversified and specialized skills, as well as active promotion of academic tasks. The multi-faceted design concept of modern *shuyuan* includes academic affairs activities, experiencing education, and basic ability training, with practical significance in multidimensional courses, activities, and holistic educational training.

Conclusions

As argued by Ryan (2001), "They identify with their residential college, this is to say. In the new identity they are forming as Yale students, their college affiliation holds pride of place." It is highly expected that students from the *shuyuan* system in Taiwan also share the same feeling.

This study reviewed the development and practice of modern *shuyuan* in Taiwan to illustrate that their multidimensional and innovative practical significance, rather than merely following the tradition of residential colleges in the UK and US. The present study also demonstrated that to understand the significance of the development of collegiate systems in the UK, US, as well as the four nations and regions on both sides of the Taiwan Strait, it is necessary to trace the development trajectory of each university, as the practical significance of modern *shuyuan* is heterogeneous rather than universal.

The *shuyuan* system in ancient China is a learning community of scholars, or a place where scholars live and study together. The residential colleges in the UK and the US belong to a traditional collegiate system that focuses more on creating a space for student life and recreation, as well as developing a sense of attachment. Hence, the colleges concentrate on student-initiated activities, a tutor system, and a residential-based education, based on the practice of developing a learning community in a residential environment. The colleges are federated units of the corresponding university and have independent power. Such a system has a profound influence on the Chinese University of Hong Kong (CUHK). To the CUHK students, *shuyuan* means home and life within the university, a unit of emotional identity and belonging, as well as a place to receive residential education. The University of Macau is also subject to such influence, and has been actively establishing the *shuyuan* system and built several residential colleges.

By contrast, in Taiwan, The first five modern *shuyuan* (that of NCCU, NTHU, THU, CCU, and KMU) are in essence a re-conceptualization of the holistic development of students, emphasizing comprehensive training in liberal arts, general education, and holistic development. Modern *shuyuan* in Taiwanese private universities focus more on academic affairs activities, lectures, and service-learning programs to facilitate holistic development. In addition, these *shuyuan* also serve as a project

to enhance university characteristics, or present a hidden curriculum of the teaching excellence program.

In general, the multidimensional significance of developing a *shuyuan* system in Taiwan is its function as an innovative strategy that can enhance holistic development in students. Such a system can reflect the future learning trend and concept of placing more emphasis on learning communities and self-learning (stimulated living environment), experiential learning (diversified academic activities), and interdisciplinary learning (liberal arts education).

For future research, the changes of *shuyuan*, the collegiate system or residential colleges in the electronic era might worth studying. It is claimed (Blimling, 2015) that around 81 percent of college students use social media as one of the most important ways of communicating with friends and family. The effect of social media on learning in colleges or universities has been arguable. In terms of the collegiate system, the topic could be more complex as students are expected to talk with others face to face, instead of on the social media, either for living or learning in *shuyuan* or residential halls and thus it is worth studying further.

References

Blimling, Gregory S. *Student Learning in College Residence Halls–What Works, What Doesn't and Why*, Jossey Bass, 2015.

Cambridge University, *The Colleges,* retrieved from http://www.study.cam.ac.uk/undergraduate/colleges/ on 15 December 2015

Chen, G.-J. and Deng, H.-B. (Eds), *Zhongguo Shuyuan Zhidu Yanjiu (Study on the Shuyuan System in China),* Zhejiang: Zhejiang Education Publishing House, 2007.

Harvard College, *Academic- learning at Harvard,* retrieved from: http://www.college.harvard.edu/icb/icb.do?keyword=k61161&tabgroupid=icb.tabgroup84423 on 20 May 2016

Kevin Taylor, *Central Cambridge: A Guide to the University and Colleges,* Cambridge: Cambridge University Press, 2008.

King, Y.-C., *Daxue zhi Linian (The Idea of University),* Hong Kong: Oxford University Press, 2000.

Li, C.-Y., *Taiwan de Shuyuan (The Ancient Academies in Taiwan),* Taipei City: Yuantsu Wenhua, 2008.

Li, G.-S. (Ed.), *Qutan Zhongguo Shuyuan (About Ancient Academies in China),* China: Baihua Literature and Art Publishing House, 2002.

Lin, C.-F., *Hafu Xueyuan de Tongshi Jiaoyu (General Education of Harvard College),* General Education Online, 20, 37-40, 2009.

Liu, L., *Jianqiao Daxue Shi (A History of University of Cambridge)*. Shanghai: Shanghai Jiaotong University, 2012.

Oxford University, *Introducing the colleges,* retrieved from http://www.ox.ac.uk/admissions/undergraduate/colleges/introducing-colleges on 24 May 2018

Robert A.M. Stern with Gideon Fink Shapiro, *The New Residential Colleges at Yale—A Conversation across Time*, The Monacelli Press, 2017

Robert J. O'Hara, *Residential Colleges and the Renewal of Campus Life,* 2009, retrieved from http://collegiateway.org/house-system/ on 26 October 2014

Ryan, Mark B. *A Collegiate Way of Learning—Residential Colleges and A Yale Education*, Jonathan Edwards College, Yale University, 2001.

Wang, C.-H., *Shuyuan Jiaoyu yu Jianzhu: Taiwan Shuyuan Shili zhi Yanjiu (Education and Architecture of Shuyuan: A Study of the Ancient Chinese Academies in Taiwan).* Taipei City: Guxiang Shubanshe, 1986.

Yale College, *Residential Colleges,* retrieved from http://yalecollege.yale.edu/content/residential-colleges on 28 October 2014.

Yang, B.-S. and Peng, D.-G., *Zhongguo Shuyuan Wenhua (Shuyuan Culture in China)*. Taipei City: Yunlung Chupanshe, 1997.

Zhou, Y., *Yelu Daxue Shi (History of Yale University)*. Shanghai: Shanghai Jiaotong University, 2012.

Website of the *Shuyuan* of each University

Asia University: http://character.asia.edu.tw/files/14-1091-41532,r707-1.php

Chung Hua University: http://chclg.chu.edu.tw/files/11-1095-177.php

Da-Yeh University: http://4can.dyu.edu.tw/abouts.php

Huafan University: http://www.hfu.edu.tw/~lc/hb.htm

Kaohsiung Medical University: http://college.kmu.edu.tw

National Chengchi University: http://bc.nccu.edu.tw/

National Cheng Kung University: http://3c.acad.ncku.edu.tw/files/11-1279-16820.php?Lang=zh-tw

National Chung Cheng University: http://www.ccuelite.ccu.edu.tw/recruitment.php

National Taiwan Normal University: http://housing.sa.ntnu.edu.tw/files/13-1003-1826.php

National Taiwan University: http://activity.osa.ntu.edu.tw/oc2016/

National Taiwan University of Science and Technology: http://leaders.ntust.edu.tw/?page_id=39

National Tsing Hua University: http://rcollege.nthu.edu.tw/files/13-1090-101339.php

Taipei Medical University: file:///C:/Users/user/Desktop/%E8%87%BA%E5%8C%97%E9%86%AB%E5%AD%B8%E5%A4%A7%E5%AD%B8%E5%AD%B8%E7%94%9F%E5%AE%BF%E8%88%E4%BD%8F%E5%AE%BF%E7%94%B3%E8%AB%8B%E5%8F%8A%E7%AE%A1%E7%90%86%E8%BE%A6%E6%B3%95990715.pdf

Experimental Evaluation of Cloud-based Virtual Programming Lab

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Abstract

Computer Programming courses have practice-oriented and theory-oriented learning goals. Practical activities play a major role of understanding the theoretical concepts while learning programming languages. Therefore, Laboratory activities are functioning as an important part in student's learning process. In a previous work, we described the structure of a pre-configured Cloud-based Virtual Programming Practice Lab (VPPL) for higher education in Afghanistan. The solution is intended to enhance the capability of computer laboratories and consequently student's practical activities by providing a Virtual PC for every student to use during one semester for completing exercises on programming courses. To measure the efficiency of this Virtual lab, we evaluated in a case-study exercise with a group of master students as a part of JAVA language course. The results show that pre-configured virtual lab is easier to use, more stable, and more available compared to physical labs and personal computers.

Keyword: Programming Courses, Computer Laboratory, Virtual PC, Cloud Computing

1. Introduction

Hands-on experiments are fundamental part while educating programming courses. At Kabul Polytechnic University (KPU), faculty of Computer Engineering and Informatics, programming courses contain lectures and lab sessions. In order to link the theories with practice, the concepts taught on lecture sessions will be applied later in lab activities.

Comprehension of complex theories and working on software projects require complex resources/services (e.g. Database server, web server, DNS server, Client computers...etc.) to be available and accessible during lab sessions. Currently, at KPU laboratories are available but the recourses are under-utilized and a limited number of equipment is accessible by students to conduct their activities. One of the reasons behind this is universities in developing countries like Afghanistan are not able to secure enough investments in current laboratories infrastructure or to expand accessibility.

The result of a survey we conducted that involved students at KPU, Faculty of Computer Engineering and informatics indicated a shortage of laboratory resources forcing students to carry hands-on activities, classwork and assignments on their personal computers (Figure 1). But due to financial barriers, students can't afford to purchase high performance machines which enables running multiple servers necessary for software projects. In some cases, students are not able to purchase computers during the first year of their bachelor studies. The result is students with limited practical skills and high rate of course failure.

This research introduces an architecture and evaluation of a Virtual Programming Practice Lab (VPPL) that utilizes the currently available resources in order to enhance practical learning experiences of the students affected by the current situation. The laboratory makes use of Cloud Computing technologies and builds on them a structure that,

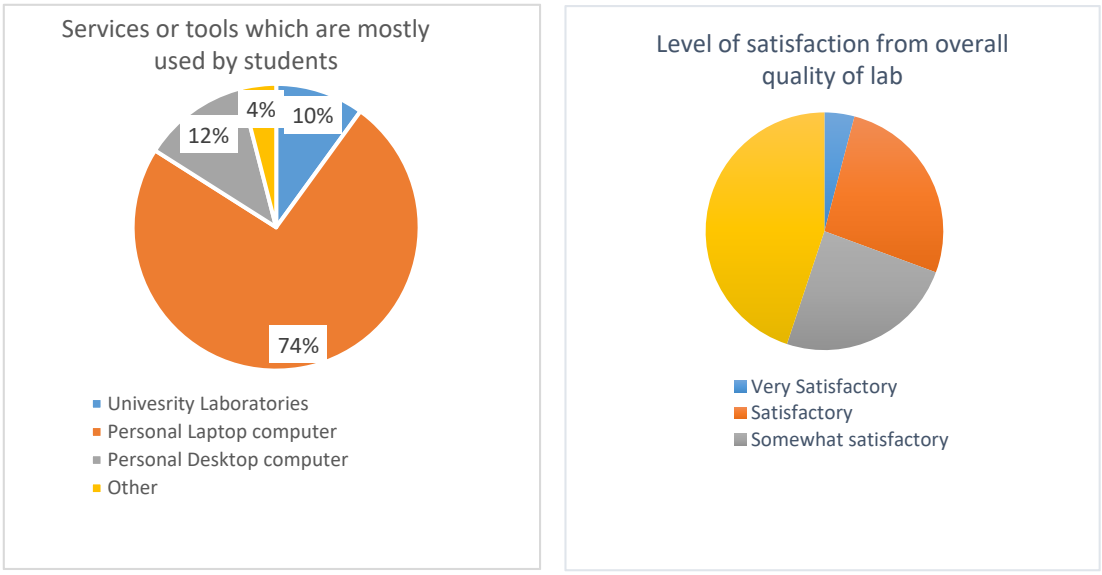

Figure 12. Physical lab survey results

as we hope, will give more chances for students to work on practical exercises.
The lab has been tested at Kobe Institute of Computing (KIC) as part of JAVA Programming course. The experiment contained three parts and 18 students participated in the evaluation.

2. Related Work

In this section we categorize a few existing Virtual laboratories for practical activities as shown in 錯誤! 找不到參照來源。.

Cloud-Based Virtual laboratory for network security education, a V-lab platform that aims to perform the network security experimental tasks (Le Xu. Wei-Tek, 2014). The system can be accessed through open VPN and offers an interactive Web GUI for resource management. Students are able to control Virtual Machines (VMs) and other recourses inside the lab to perform hands-on activity. The system is not designed to be used for programming courses practical works.

Virtual Programing Lab (VPL) a module developed at the University of Las Palmas of Gran Canaria (ULPGC) and to be used within Moodle Course Management System (CMS). The system is released for free uses under GNU/GPL license (Juan C., Enrique R., Zenón J, 2002). The feature of the system is to provide programming development environment for the beginner students and support automatic plagiarism checking. VPL is restricted to be used with Moodle and practice simple programming statements. It cannot support to handle software development projects or students group work project.

Table 1. Virtual Laboratory Feature Comparison

Lab Type	**Remote Access**	**Lab Scheduling**	**Resource Sharing**	**Data Privacy**	**Existing Laboratories**
Physical Lab	No	Reservation	Not sharable	No	Current Labs at KPU
V-lab for Network security	Yes	Unrestricted time	Sharable	Yes	(Le Xu. Wei-Tek, 2014)
Virtual Programming Lab (VPL)	Yes	Restricted time	Sharable	No	Virtual Lab for Moodle
Remote access to VLAB	Yes	Restricted time	Not sharable	No	(Stephen D., Alessandro, M. Walton, 2009)

A study comparing physical lab with virtual computing laboratories (Stephen D., Alessandro, M. Walton, 2009) reports about the implementation of computer lab using remote access to desktop computers used by students in management program course. In this study 42 workstations connected

to switch and mounted on rack, Microsoft remote desktop services were enabled on each workstation, services are accessible through web-based interface. In this configuration no hardware virtualization is used to assign a computer for individual users and the resources are share among users.

3. VPPL Architecture

In Cloud Computing, virtualization technology enables rapid scaling of resources easily in a way that is hard to achieve scaling in nonvirtualized environment. Compute services provide dynamically scalable compute capacity in to the cloud, these resources can be provisioned on-demand in the form of VMs (Bahga, K, 2013). Currently educational institutions are implementing virtual computing labs in multiple ways from remote access of dedicated computers to access servers hosting virtualized workstations. Multi-tenant aspects of the cloud allow multiple users to be served by the same physical hardware (Bahga, K, 2013). With the implementation of virtual laboratories, Universities are able to enhance the use of campus computing lab to reduce the hardware, maintenance and administration costs.

The proposed laboratory is designed based on Infrastructure as a Services (IaaS) model of cloud computing using oVirt Virtualization management platform. The solution is intended to enhance the capability of physical laboratories with the use of existing workstations. Cloud virtualization technology enables us to use the maximum efficiency of hardware by running multiple VMs on a single

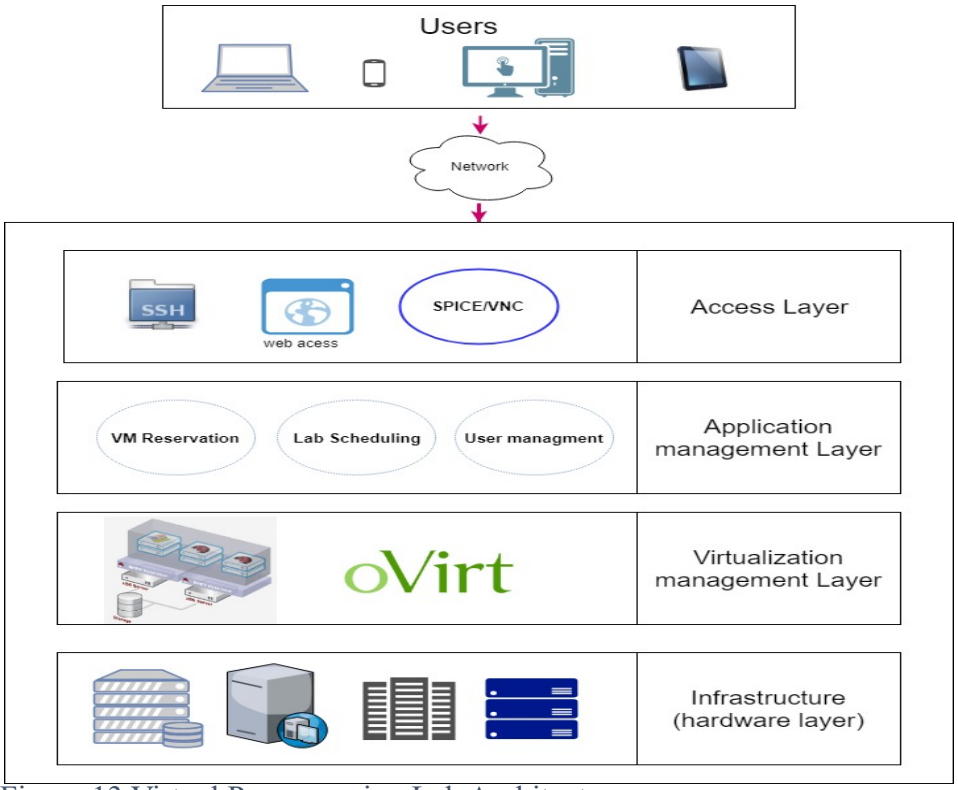

Figure 13 Virtual Programming Lab Architecture

workstation. Each virtual machine can be assigned for a student in duration of a semester as part of programming course.

The system consists of three different layers as demonstrated in Figure 2 infrastructure layer, management layer and Access layer. The details of these layers are as follows:

3.1 Infrastructure Layer

This layer provides the infrastructure of the system. It includes the necessary hardware recourses such as VM hosts, servers, network devices and web server to meet the requirement of the upper layer. Hosts (workstations) in this layer support hardware virtualization which enables them to run multiple Virtual PCs.

3.2 Management Layer

This layer is divided in to two sub layers (Virtualization management layer and Application management layer). In virtualization management layer the physical resources are virtualized by hypervisors (hosts) to provide access to VMs. oVirt platform is responsible of managing the hosts and their virtual machines. Application management layer is responsible of reservation, scheduling and authentication of users by providing a GUI to access the resources.

3.3 Access Layer

Users interact with system using their computers, smart phones or tablets. Students are required to install remote viewer application on their devices and they will be able to access their virtual machines using SPICE/VNC protocol provided by management layer.

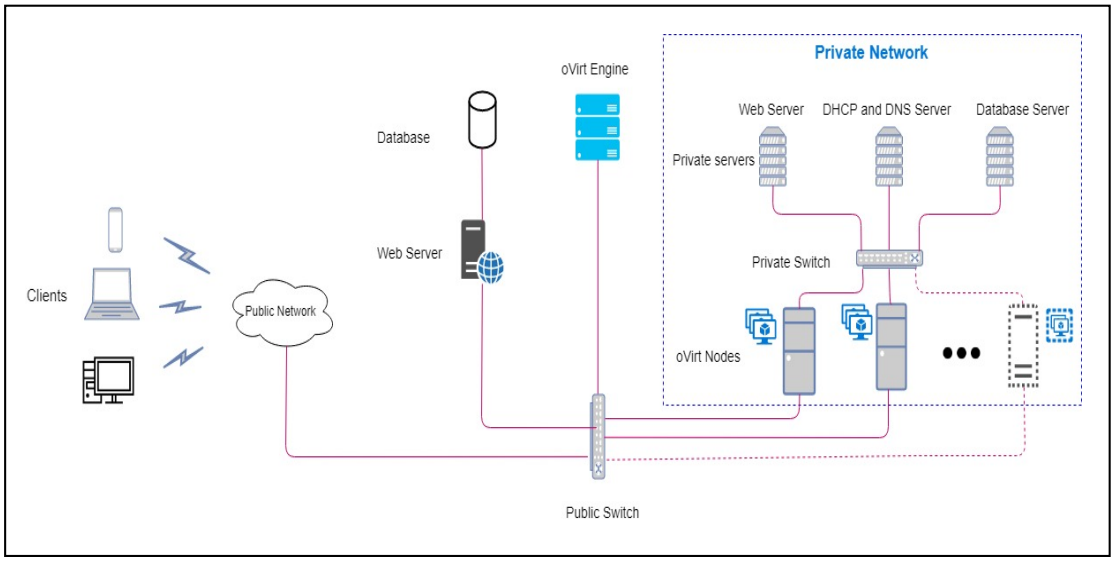

Figure 14. Virtual Programming practice lab component architecture

4. VPPL Configuration

We developed a prototype of Virtual Programming Practice Lab and conduct an experiment at Kobe Institute of Computing. The overall component of the system is shown in Figure 3. The core part of the system are: 1) engine, 2) nodes and 3) the reservation server. oVirt Virtualization Management open source platform is used to create a datacenter for cluster as oVirt engine, and cluster of cloud servers are created from workstations as oVirt nodes. The reservation system is running on a separated computer and communicates with the engine using REST API. oVirt Engine is installed on a dedicated computer running CentOS 7. The engine is responsible of controlling the VMs and visualization management tasks of nodes. oVirt nodes are installed on separated workstations which are compatible of CPU virtualization. The oVirt nodes is a robust operating system image. It uses minimal resources while providing the ability to control virtual machines running on top of it. 錯誤! 找不到參照來源。 shows the hosts, engine and reservation server hardware specification that we used in lab setup.

Table 2. Servers Hardware Specification

4.1 VPPL Network Configuration

Resource	Minimum node requirement	Engine specification	Nodes (Hosts)	Reservation server
Processor	A dual core CPU.	Intel ® Core ™ i5-3230M CPU @ 2.60GHz Virtualization VT-X	Intel ® Core ™ i5-25000 CPU @ 3.30GHz Virtualization VT-X	Intel ® Core ™ i5-3230M CPU @ 2.60GHz
Memory (RAM)	4 GB of available system RAM	4GB (RAM)	4GB (RAM)	4GB (RAM)
Secondary Storage	25 GB of locally accessible, writable, disk space.	250 GB (HDD)	500 GB (HDD)	250 GB (HDD)
Network Interface	1 Network Interface Card (NIC) with bandwidth of at least 1 Gbps.	Ethernet controller Realtek semiconductor co. 1Gbps	2 x Ethernet controller intel corporation 1Gbps	Ethernet controller 1Gbps

The network architecture of the system is divided into two parts internal and external networks. Each node is configured with two Network Interface Card (NIC). The first NIC is used to connect nodes with servers using a physical switch. This network will be used by virtual machines inside the nodes to access the resources (servers) and also to connect VMs on other hosts. The second NIC of the node is used to connect to external network. In external network oVirt engine is communicating with nodes and the network is also use by clients to access the VM using SPICE/VNC protocol.

4.2 VPPL Servers Configuration

A total of eight workstations is used in the experiment. Five workstations with the same specification are used as host of VMs, one computer is configured to host the oVirt engine, one of computers is used to run a database and a web server that will be accessed by virtual machine from the internal network and one PC is used to configure the reservation system which allows the user to access and schedule the resources from the system. **錯誤! 找不到參照來源。** shows the detailed laboratory workstation's specification.

Four VMs can be assigned to each host and total of 20 VMs are available in the system but each host can only run two virtual machines at a time due to the hardware limitation. Network File System (NFS) is configured on every host. Hard drive of virtual machines is accessible from other hosts inside the internal network. This feature allows to run a virtual machine from a host which is currently in full operational mode into another host which is free to use, it means from the available 20 VMs, the total of 10 virtual machines can be available in a time. If a user request to run a VM he/she needs to check and reserve available hour(s) from reservation system.

Table 3. Virtual Lab Resource Usage and Specification

Name	**Number of PC(s)**	**Usage**	**Operating system**
oVirt Engine	1	Engine for hosts	CentOS 7.0
oVirt Node	5	Host for virtual Machines	oVirt node OS (CentOS based operating system)
DB/Web servers	1	workstation to host database and web server	Ubuntu 6.04 LTS
Reservation system	1	Server to host the reservation system	CentOS Linux 7.0

4.3 Reservation System

Each student is assigned one Virtual Machine to complete the programming exercises during the experiment period. Students have access to their virtual machines through the reservation system from the public network. The system is a web application created in JAVA programming language. The web server is communicating with the engine through REST API to request for console of the virtual

machine. The application contains MySQL database which stores the user's information, reservations and information related to the virtual machines. Users are required to install Virt Viewer on their devices to access their virtual machines. Virt Viewer is a client-side application which allows for displaying the graphical console of VM. After a request to the VM reservation system will provide a configuration file which is necessary for Virt Viewer to retrieve the console of a Virtual Machine. Figure 4 shows the graphical interface of reservation system.

5. Experimental Evaluation

To measure the efficiency of Virtual programming lab, we evaluated in experiment with a group of 18 master students as a part of JAVA language course at Kobe Institute of Computing. The aim of this experiment was to find the effectiveness of using virtual programming practice lab in teaching and learning environment for programming courses.

For the evaluation we assigned a Virtual Machine running Ubuntu 16.04 OS for each student. The experiment contained three tasks. Their first task was to access the lab from reservation system using their personal computers and reserve an available time for using the lab resources. After accessing the console of their VM, we asked them to create JAVA application using NetBeans IDE provided on their VM and the next task was to create tables on their assigned database on database server, and final task was to retrieve data from the remote database to their application.

The survey result of two weeks experiment shown in Figure 5 indicates that among 80.1% of the students were able to accomplish all of the assigned tasks. 60% of them reported overall performance of the VM was very good at the time of experiment. Students also reported pre-configured Programming lab services is more stable and higher in performance to the compare of configuration VMs and services on their local personal computers.

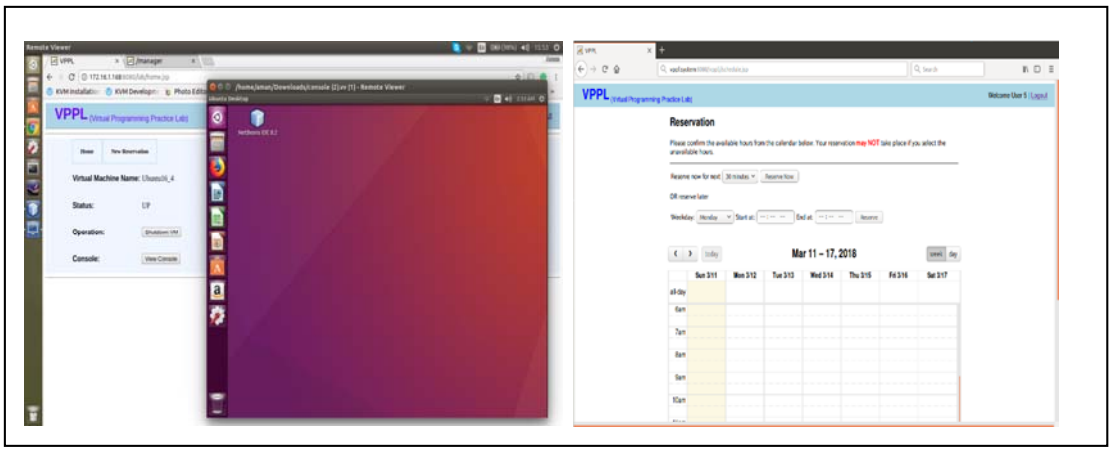

Figure 15. Reservation system interface

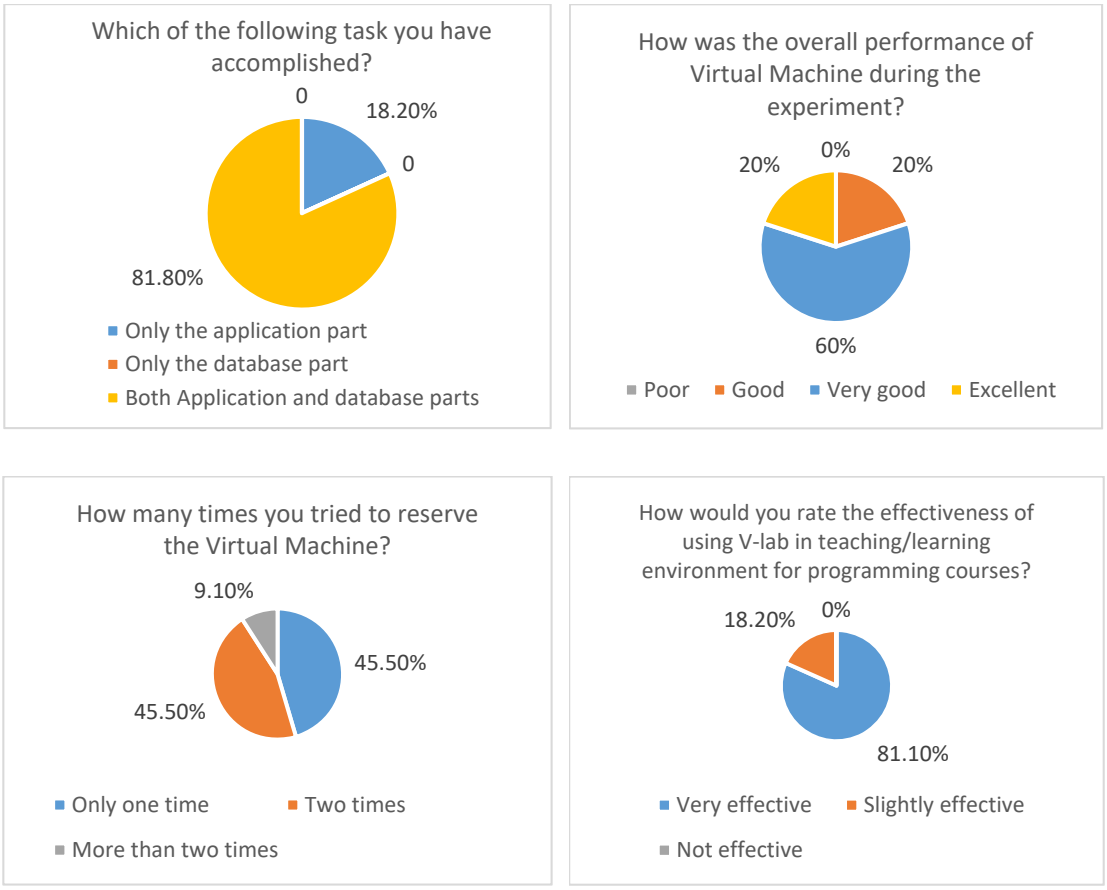

Figure 16 Experiment survey result

Conclusion

Practical activities are the important part of understanding a programming language. This paper has presented Virtual Programing Practice Laboratory education platform that provides a contained and private experiment environment for each student using for class works, assignments and projects related to programming courses. The lab also provides an interactive web GUI for reservation. The aim of this proposed solution is intended to simulate production environment that enable students to practice their programming skills.

Acknowledgment

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References

Bahga, K. 2013. *Cloud computing a hands-on approach.* Arshdeep Bahga and Vijay K. Madisetti

Juan C. Rodríguez-del-Pino, Enrique Rubio-Royo, Zenón J. Hernández-Figueroa, A Virtual Programming Lab for Moodle with automatic assessment and anti-plagiarism features, in International Conference on e-Learning, e-Business, Enterprise Information Systems, & e-Government, January 2012

Le Xu Dijiang Huang and Wei-Tek Tsai, Cloud-Based Virtual Laboratory for Network Security Education, in IEEE Transactions on Education, VOL.57, NO.3, August 2014

Mohammad N. Kabiri., Utilization and Evaluation of Cloud Computing for e-Learning in Afghan Higher Education, Master Thesis of Information Systems at Kobe Institute of Computing Japan, 2017.

oVirt virtualization management application, retrieved from https://www.ovirt.org/documentation/introduction/about-ovirt/ on February 2018

Stephen D. Burd, Alessandro F. Seazzu Anderson and Christopher Conway Sam M. Walton, Virtual Computing Laboratories: A Case Study with Comparisons to Physical Computing Laboratories, In journal of information technology education innovations in practice Volume 8, 2009

Virtual Machine Manager, retrieved from https://virtmanager.org/ on March 2018

Statistical Characteristics of English Entrance Exams of Eight National Universities in Japan

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Abstract

In spite of the decreasing population of the teenagers in Japan, the university entrance exams continue to be one of the toughest events where their intelligence is tested, which include their competence level of English. However, very few researches have been made on the English exams. There is one obvious reason for this: too many numbers of examinations to make a comprehensive research. This study has selected 2017 version of English examinations from eight national universities of various levels of the list of the national universities according to the T-score; two schools from 4 levels. And upon digitalizing their English exams, we first measured their readalibity levels using Ozasa-Fukui Year Level. We also performed Correspondence Analysis to study the interrelations among the eight exams. All eight exams are measured 7th year or higher by Ozasa-Fukui Year Level, which is created to measure English level according to the 6 years in the secondary school system in Japan. The correspondence analysis produced 6 dimensions, and we chose first three dimensions for us to study because of their high enough contribution rates. We conclude that Dimension 1 categorizes the exams according to “suggestive” vs “academic,” Dimension 2 indicates “cultural comparison” vs “globally common,” and Dimension 3 shows “subjective” vs “objective.” We realize that since this study deals with one-year data of English exam, we should not make any conclusive thoughts on the characteristics of university entrance exams in Japan. But this study has given us a definite starting point on the research of the university entrance exam in Japan.

Keyword: Readability measurement, Correspondence analysis, English entrance exams

1. Introduction

1.1 National University Entrance Exams in Japan

Although it is often pointed out that university entrance exams are not as competitive as they once were due to the rapid decrease of the teenage population, they are considered by many as the toughest test of a lifetime. The level of entrance exams of the top universities is said to exceed the guidelines provided by the Course of Study of the Ministry of Education in Japan, and the guidelines which authorized textbooks for secondary school must follow. Lists of top universities are published by various publishers every year, which is based on a T-score. Although the order differs a little among publishers, the basic order remains the same: Tokyo University comes first, followed by Kyoto University and others.

The system of university entrance exams has basically two parts. The first part is the National Center Test for University Admission (the Center Test); the first round of standardized entrance exam for national universities, and the second is the entrance exams each national university gives. Although there is no "pass" or "fail" for the National Center Test, some top ranking universities often set score limits as an entry requirement for applying to those universities. As for the second round of tests, every year, each university makes a special effort to create its exam difficult enough to allow them to select the best students with high intelligence.

1.2 Significance and Aim

The current study focuses on the English entrance examinations given by eight national universities in 2017. Although many careful studies have been done and published on the tendency of the exams for the use of the candidates, only a few academic studies have been done to examine the exams from a textual analysis point of view. One of the possible reasons for this is that the data is too big to be digitalized; there are 779 universities in Japan (86 national universities, 89 local public universities, and 604 private universities) (the data provided by the Ministry of Education), not to mention that they make their own exams every year.

As regards to previous research on university entrance exams, we find a few of them. Hasegawa, Nakajyo, and Nishigaki (2006) examined the vocabulary used in exams. Urabe (2010) studied compositions test in university entrance exams. And Ide (2012) studied entrance exams of the east-Asian countries in comparison with the Center Test of Japan.

A few studies have been done on English textbooks and they clearly indicate that statistical analyses are good tools for comparative studies because they show the relationships quantitatively among textbooks and can produce specific features of each textbook. (Ozasa & Abe, 2015; Ozasa, Watanabe, Uenishi & Sakamoto, 2016; Ozasa, Watanabe, Uenishi & Sakamoto, 2017; Uenishi, Watanabe & Ozasa, 2017; Sakamoto, Watanabe & Ozasa, 2017) Ozasa & Abe (2015), Ozasa, Watanabe, Uenishi & Sakamoto, (2016) and Ozasa, Watanabe, Uenishi & Sakamoto, (2017) studied

the readability level of English textbooks in Asia in comparison to Japanese English textbooks. Both Uenishi, Watanabe & Ozasa, (2017) and Sakamoto, Sakamoto, Watanabe, & Ozasa, (2017) employ correspondence analysis to study the historical Japanese English textbooks, of which results parallel the readability results. Watanabe & Fukui (2018) studied the first-year English textbooks of China, Thailand, Japan and the Philippines and also found that their readability levels correspond with the correspondence analysis. All these previous studies have shown that the statistical analyses employed in the analyses successfully produced some clear features and characteristics of the target texts. Therefore, the aim of the current study on the university English entrance exams is to investigate the English sentences used in these exams to find specific features and characteristics of the exams, and also to study if these features and characteristics would correspond with the order of the T-score of the national universities.

For this study, we selected eight national universities according to the order of the T-score provided by Benesse (a publishing corporation); dividing the universities placed in 60 or above of the T-score into 4 groups according to the T-scores (61-65, 66-70, 71-75, and 75 above), and selected two schools from each group (see Table 1). We also included the English exam of the Center Test to compare it with the exams of the eight national universities. We set the following research questions:

RQ 1: What are their readability levels?

RQ 2: What are their unique characteristics, if there are any?

Table 1

	T-score		Universities
1	75～	79～	Tokyo University
2		76～	Kyoto University
3	70-74	74～	Osaka University
4		71～	Kyushu Uvniersity
5	65-69	68～	Tohoku Unviersity
6		67～	Hokkaido University
7	60-64	65～	Osaka City University
8		63～	Hiroshima University

For RQ 1, we utilized three readability measurements: Ozasa-Fukui Year Level (OFYL), Fresch Reading Ease (FRE), and Fresh-Kincaid Grade Level (FKGL). And for RQ 2, we used Correspondence Analysis.

We used *Ozasa-Fukui Year Level Ver. 3.4.2nhnc1-6* (R^2=0.88) as the main measurement tool (Ozasa & Fukui, 2017). This readability tool measures English sentences according to the Japanese school grade level from grade 7-12. We also used *Flesch Reading Ease* and *Flesch-Kincaid Grade Level* as supplementary tools because they are designed to measure according to the grade level of U.S. schools.

Correspondence Analysis (CA) is a data reduction procedure like factor analysis, and it basically describes the relationships among nominal variables (in this study, eight textbooks) while simultaneously describing the relationships between the nominal dimensions for each variable. Its results are often displayed in a two-dimensional graphical map since the first and second dimensions have the highest contribution rate among all of the dimensions. Ishikawa, Maeda, Yamazaki (2010) describes CS as one of the handiest statistical analyses for categorizing textual data (p. 245).

2. Readability Analyses

2.1 Results

We used *Ozasa-Fukui Year Level Ver. 3.4.2nhnc1-6* (R^2=0.88) as the main measurement tool (Ozasa & Fukui, 207). This readability tool measures English sentences according to the grade level of Japanese schools from grade 7-12. We also used *Flesch Reading Ease* and *Flesch-Kincaid Grade Level* as supplementary tools; as much as both of them are useful measurement tools, they are designed to measure according to the grade level of American grade schools. (*Flesh Reading Ease* measures sentences on a 100 point-scale; the higher the score the easier.)

Table 2

Universities	OFYL	FRE	FKGL
	main question	main question	main question
Hiroshima U	**8.61**	28.73	11.06
Kyoto U	**8.27**	18.73	10.64
Center Test	**8**	48.57	10.24
Tohoku U	**7.89**	47.53	9.9
Tokyo U	**7.79**	37.41	10.71
Hokkaido U	**7.64**	48.93	9.34
Kyusyu U	**7.56**	37.9	10.02
Osaka U	**7.41**	43.4	9.72
Osaka City U	**7.34**	58.21	8.17

OFYL=Ozasa-Fukui Year Level, FRE=Flesch Reading Ease, FKGL=Flesch-Kincaid Grade Level

2.2 Discussion

OFYL measures English sentences according to the 6 years of the secondary schools in Japan, of which English curriculum follows the Course of Study prepared by the Ministry of Education: each year is divided into 10 levels, for instance, 1.0-1.9 refers to the 1st year of junior high school. In Table 2, all of the 8 universities' OFYL levels, as well as that of the Center Test are above 7.0, meaning all are much higher than the 3rd year of high school. The OFYL levels are not exactly in parallel with FRE or FKGL, which is understandable because for one thing, OFYL measures not according to the difficulty of sentences but according to the Course of Study, and for the second reason, since OFYL measures the 6 years of secondary schools (from 1.0 to 6.9), any levels above 6.9 are not reliable.

Consequently, the eight universities' OFYL levels are not statistically reliable. However, there is something we should point out from the readability analysis; the results suggest that the English exams of the eight national universities contain sentences which are well above the third year level of high school. And the Center Test's year level is higher than the third year level (8.0). The scores or levels of FRE and FKGL also show that the English sentences in the exams are quite high even by American standards.

3. Correspondence Analysis

3.1 Results

Correspondence analysis summarizes a set of data, in this case, the eight exams and the Center test, and produces eight categories based on the word frequency. The categories are often called "dimensions."

We first create a word frequency table of the nine texts (eight exams + the Center Test) on an excel sheet. We then take out personal and proper nouns and choose the top 100 words to create a cross tabulation (also called "contingency table") in which the columns contain the number of frequency and rows with the names of nine texts. We then compute the data into Correspondence Analysis through a statistical analysis tool (we used *College Analysis* developed by Dr. M. Fukui). Correspondence Analysis computes the tabulation, weighs its rows and columns to make an orthogonal computation and produces eight dimensions.

Table 2

	Dim 1	Dim 2	Dim 3	Dim 4	Dim 5	Dim 6	Dim 7	Dim 8
eigenvalue	0.21	0.166	0.146	0.126	0.101	0.092	0.078	0.061
correlation	0.459	0.407	0.382	0.355	0.318	0.304	0.279	0.246
contribution rate	0.215	0.169	0.149	0.129	0.103	0.094	0.079	0.062
cumulative contribution rate	0.215	0.384	0.533	0.661	0.764	0.859	0.938	1

Table 2 shows different values created by the analysis. Dimensions are in the order of contribution rate; the highest on the left and the lowest on the right. Results of Correspondence Analysis are often displayed in a two-dimensional map because in many cases, the cumulative contribution rate of Dimension 1 and 2 is over 0.7, which means Dimensions 1 and 2 explains more than 50% of the total dimensions. But when there are three or more texts, the contribution rates of Dimension 1 and 2 tend to be low. And that is what occurred to the current analysis. The cumulative contribution rate of Dimension 2 is 0.384, which means Dimension 1 and 2 only explains less than 40% of the total dimensions.

Figure 1

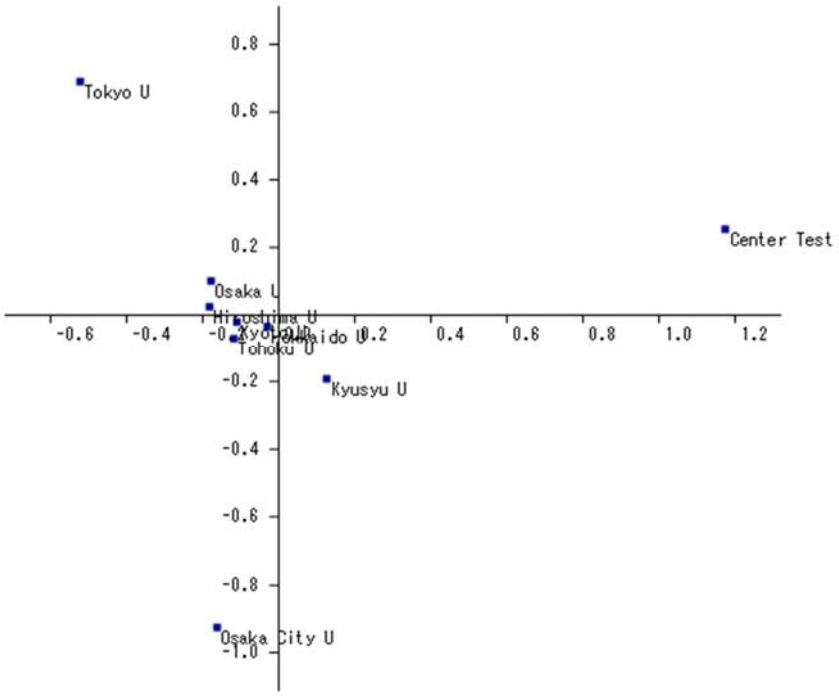


Figure 1 is a bi-plot map of the two dimensions; the horizontal line is Dimension 1 and the vertical line is Dimension 2. The map shows that Tokyo University, the Center Test and Osaka City University are placed farther away from the center and the rest are scattered around the center. The map indicates that the texts of Tokyo University, the Center Test and Osaka City University have some unique features and others are relatively similar to each other.

3.2 Discussion

Correspondence Analysis examines in this study, the word frequency list (the cross tabulation), and allocates the words and the texts (exams) with an orthogonal computation and produces sets of words called "dimensions." The number of dimensions corresponds to the number of texts used minus one; there are 9 exams (texts) in this study, hence 8 dimensions.

The bi-plot map of Figure 1 shows the Center Test, Tokyo University and Osaka City University placed farther away from the center and the rest of the schools, indicating that these three universities' exams have some unique characteristics among the 9 exams. We would discuss about the characteristics which contribute to these exams to be far more distinctive than the other exams by examining the word lists of Dimension 1 and 2.

Table 3 shows the top 15 words of highest values on both plus and minus sides of Dimension 1. And Table 4 shows the order of nine exams (universities) according to the result of Dimension 1. In other words, the Center Test has the highest plus value and Tokyo University has highest minus value in Dimension 1, of which the breakdown of words are listed in Table 3. On the plus side of Table 3,

we find “children,” “physical,” “time,” “students,” “study,” thus we would conclude that words related to education constitute the plus side of Dimension 1. And on the minus side, we find “country,” “business,” “language,” “translation,” “foreign,” thus we may conclude that the words related to “global and business” scene constitute the minus side. Taking these findings into considerations, we conclude that Dimension 1 categorizes the words according to “education” vs “global and business scenes.”

Table 3

Dim 1

1	areas	2.463	1	country	−1.078
2	children	2.326	2	culture	−1.071
3	physical	2.207	3	business	−1.003
4	time	2.12	4	countries	−0.937
5	students	1.321	5	than	−0.739
6	all	1.055	6	way	−0.577
7	like	0.911	7	languages	−0.527
8	were	0.907	8	less	−0.52
9	how	0.824	9	from	−0.516
10	study	0.707	10	an	−0.503
11	their	0.646	11	about	−0.48
12	often	0.552	12	we	−0.469
13	when	0.53	13	foreign	−0.399
14	most	0.529	14	translation	−0.389
15	can	0.465	15	years	−0.383

On Table 4, the Center Test’s value (1.176) is much higher than the rest of the exams on the plus side; there is a wide margin between the Center Test’s value and Kyusyu University which is placed second (0.128). On the minus side, Tokyo University surpasses the rest of the exams. Again, the value of Tokyo University (—0.522) is much higher than that of Hiroshima University (—0.183). This explains the wide gap between the positions of Tokyo University and the Center Test on the bi-plot map of Figure 1(on the horizontal line).

Table 4

	topics	Dim 1
Center	physical activity in various fields	**1.176**
Kyusyu U	university education PBL, liberal arts	0.128
Hokkaido U	tourism	-0.03
Kyoto U	desertification	-0.11
Tohoku U	GPS	-0.118
Osaka City U	background music	-0.163
Osaka U	translation, language	-0.178
Hiroshima U	American isolation	-0.183
Tokyo U	culture, business	**-0.522**

On the other hand, when we look at Dimension 2, we find a very different result. On the plus side of Table 6, Tokyo University is placed at the first and the Center Test at the second, a completely different from Dimension 1. Again there is a wide margin between the first place value (0.689) and that of the second (0.253) on the horizontal line of the bi-plot map (Figure 1). And on the minus side,

Osaka City University has the highest value (0.926) much higher than the second (Kyusyu University: 0.19). This wide difference between the first and the second universities makes Osaka City University being placed farther down from the rest on the vertical line of the bi-plot map of Figure 1.

When we study the words constituting the top list of the plus side of Dimension 2 on Table 5, we find words such as "culture," "country," "business," difference," " physical," and "languages," thus we conclude that the plus side of Dimension 2 indicates a characteristic related to "geography." On the minus side, we find words such as "music," "attention," "you," "us," and "problems," thus we may be safe to conclude that the minus side indicates a characteristic related to "community."

Table 5

Dim 2

1	culture	1.564	1	music	-2.275
2	country	1.559	2	attention	-2.007
3	business	1.455	3	you	-1.482
4	differences	1.415	4	your	-1.353
5	countries	1.31	5	like	-0.768
6	than	0.792	6	what	-0.717
7	different	0.757	7	make	-0.559
8	over	0.669	8	it	-0.536
9	way	0.597	9	not	-0.529
10	areas	0.575	10	can	-0.481
11	time	0.537	11	problems	-0.468
12	physical	0.522	12	will	-0.449
13	languages	0.513	13	when	-0.417
14	from	0.483	14	them	-0.417
15	other	0.437	15	on	-0.415

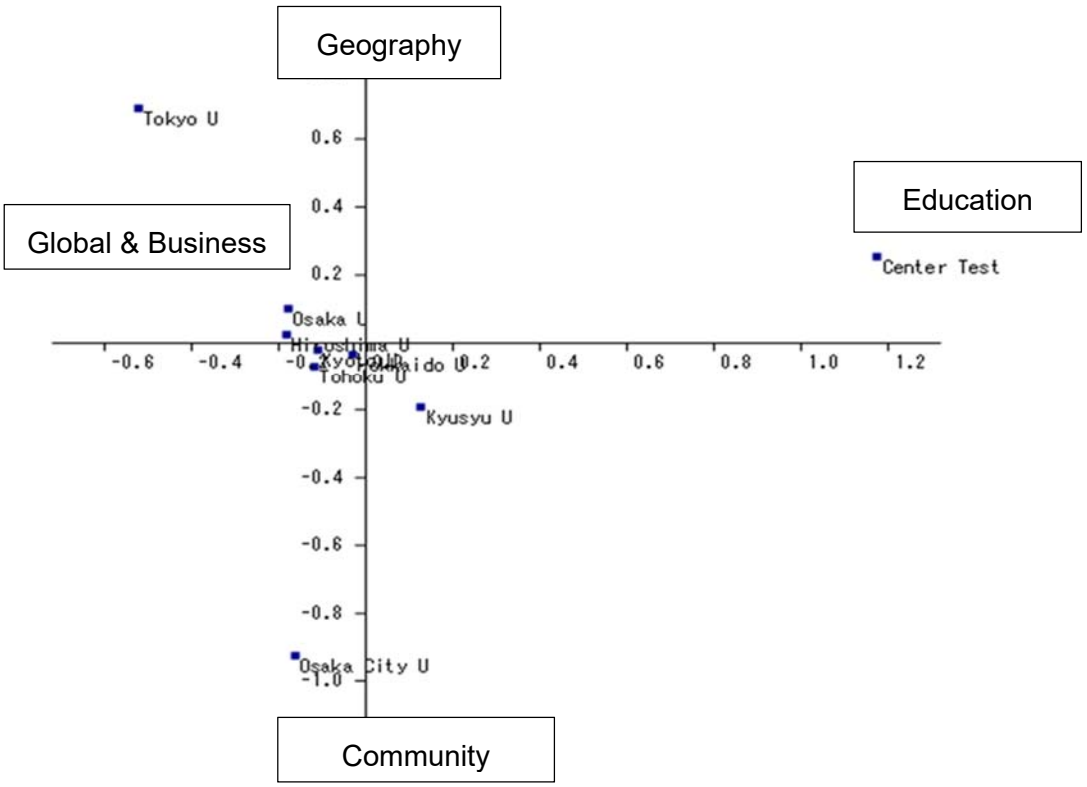
Table 6

	topics	Dim 2
Tokyo U	culture, business	**0.689**
Center	physical activity in various fields	0.253
Osaka U	translation, language	0.1
Hiroshima U	American isolation	0.024
Kyoto U	desertification	-0.023
Hokkaido U	tourism	-0.033
Tohoku U	GPS	-0.07
Kyusyu U	university education PBL, liberal arts	-0.19
Osaka City U	background music	**-0.926**

Figure 2 is the same as Figure 1 but the characteristics of Dimension 1 (horizontal) and Dimension 2 (vertical) are added on the map. It graphically displays how 8 universities' exam and the Center Test are placed according to 4 characteristics found using Correspondence Analysis. The figure tells us that Tokyo University's exam has prominent "global and business" and "global" features, the Center Test has a strong "education" feature, and Osaka City University's exam has a "community" feature. And it also tells us that the rest of the universities' exams are placed around the center, which indicates

that they either do not contain these characteristics or have very little of them. However, the bi-plot map is made of only two dimensions' data; it obviously displays a partial overview.

Figure 2



4. Cluster Analysis

Since the cumulative contribution rate of Dimension 1 and 2 is 0.384, referring to the fact that the two dimensions combined would explain 38% of the total analysis result, we decided to employ Cluster Analysis since this analysis displays all of the eight dimensions results on a dendrogram.

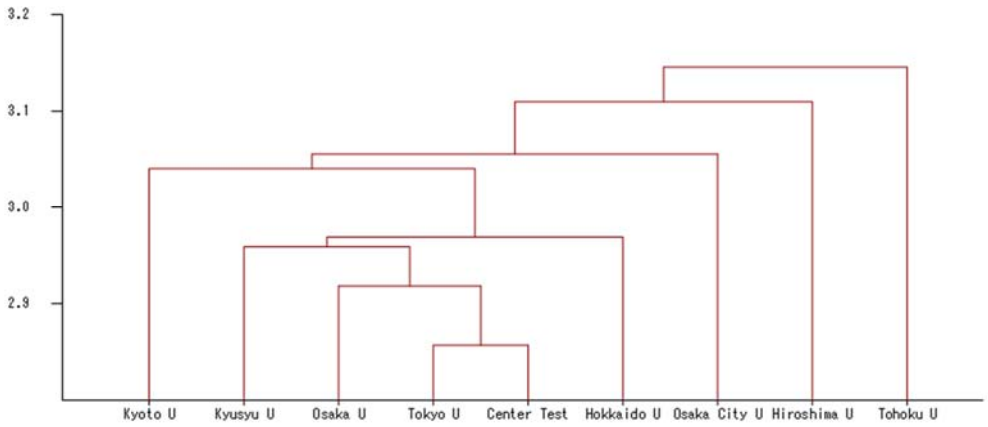
4.1 Results

Figure 3 is a dendrogram based on the results produced by Cluster Analysis. It graphically depicts the distance relationship of the nine exams based on the eight dimensions results produced by Correspondence Analysis.

When we looked at Figure 1 and Figure 3, we immediately discovered that there is a distinctive difference between the two. While the bi-plot map of Figure 1 shows that Tokyo University, the Center Test and, Osaka City University are farther apart from each other, the dendrogram of Figure 2 places Tokyo University and the Center Test the closest among all of the texts, and Osaka City University, too, in the close vicinity of the two universities. In other words, Figure 1 and Figure 2 show a completely different map of the nine exams. The reason for this difference is that Figure 1, the bi-plot map shows only the interrelation of Dimension 1 and Dimension 2. On the other hand,

Figure 2, the dendrogram displays the interrelation of all eight Dimensions. Since Dimension 1 and 2 covers only about 38%, the interrelation displayed in the dendrogram of Figure 2, which is a result of all eight dimensions, would show a more accurate relationship of the nine exams.

Figure 3



4.2 Discussion

Lists of universities in the order of their values such as in Table 4 (Dim. 1) and Table 6 (Dim.2) would show how the universities are related to each other. As stated above, Table 4 shows the Center Test on the top and Tokyo University's exam on the bottom indicating these two have strong features of their own, which are not shared with each other. On the other hand, Table 6 shows Tokyo University and the Center Test placed next to each other. We looked at the rest of the lists (see Table 7-9). Due to the limited pages, only those that are relevant to the discussion are printed on the paper.

Table 7 shows a list of the universities according to Dimension 4's results. Tokyo University and the Center Test are placed next to each other in the middle of the list, both of them on the plus side, though the value of Tokyo University is very low (0.01), this suggests that Tokyo University's exam has very little of the feature of the plus side of Dimension 4.

Table 7

Dim 4: contribution rate 0.129		
	topics	Dim 4
Osaka U	translation, language	**0.713**
Tohoku U	GPS	0.258
Osaka City U	background music	0.217
Center	physical activity in various fields	0.127
Tokyo U	culture, business	0.01
Hokkaido U	tourism	-0.238
Hiroshima U	American isolation	-0.24
Kyusyu U	university education PBL, liberal arts	**-0.41**
Kyoto U	desertification	**-0.464**

In the list of Dimension 5 (see Table 8), Tokyo University and the Center Test are again placed next to each other on the plus side. And the difference between the two is less significant than that of Dimension 4: Tokyo U (0.109) and the Center Test (0.077).

Table 8

Dim 5: contribution rate 0.103		
	topics	Dim 5
Hokkaido U	tourism	**0.556**
Kyoto U	desertification	0.211
Osaka City U	background music	0.181
Tokyo U	culture, business	0.109
Center	physical activity in various fields	0.077
Tohoku U	GPS	-0.008
Osaka U	translation, language	-0.188
Hiroshima U	American isolation	**-0.433**
Kyusyu U	university education PBL, liberal arts	**-0.539**

Table 9 shows the list of Dimension 8, in which we find Tokyo University and the Center Test being placed side by side on the plus side, even though their values are small or minute (Tokyo U: 0.033; Center: 0.03).

Table 9

Dim 8: contribution rate 0.062		
	topics	Dim 8
Osaka U	translation, language	**0.218**
Hiroshima U	American isolation	0.177
Hokkaido U	tourism	0.138
Osaka City U	background music	0.121
Tokyo U	culture, business	0.033
Center	physical activity in various fields	0.03
Kyusyu U	university education PBL, liberal arts	-0.03
Kyoto U	desertification	**-0.066**
Tohoku U	GPS	**-0.69**

From a careful study of the lists of the universities, Dimensions 2, 4, 5, 8 in particular, we find Tokyo University's exam and the Center Test are closely related while Dimension 1 placed Tokyo U

at the top of the plus side and the Center at the top of the minus side. The sum of contribution rates of these 4 dimensions comes to 0.463 while the contribution rate of Dimension 1 is 0.215, nearly twice as high. It explains why Cluster Analysis placed Tokyo University's exam and the Center Test next to each other at the core of the dendrogram. The results incline to show that Tokyo University's exam and the Center Test share many of the characteristics categorized by Correspondence Analysis.

5. Conclusion

We have examined 7 main texts of the entrance exams of 7 national universities and the Center Test, a standardized entrance exam for national universities, to find their characteristics. At the outset of the study, we made two research questions: 1. What are their readability levels? and 2. What are their noting characteristics, if there are any?

As for RQ1, we employed three readability measurement tools: Ozasa-Fukui Year Level (OFYL), Flesch Reading Ease (FRE), and Flesch-Kincaid Grade Level (FKGL) to measure the texts of the exams. OFYL, which measures English texts according to the year-level of Japanese secondary school, placed all of the 9 exams texts above year 7 level. Both FRE and FKGL, readability measurement tools used in America showed all of the exams are in high levels even in an American standard. Thus our findings indicate that the entrance exams we have chosen exceed the high school level of Japan. We also hoped to see if the order of the readability would correspond to the order of T-score. But since OFYL measures up to the third-year level of high school, and since all 9 exams' year levels are higher than the third year, the result of OFYL was inadequate to find any correct or reliable answers.

As for RQ2, we first analyzed the exams with Correspondence Analysis. The results displayed on a bi-plot map show Tokyo University placed at the top of the plus side of the vertical line, Osaka City University at the bottom of the minus side of the vertical line, and the Center Test at the top of the plus side of the horizontal line, and the rest of the exams placed around the center. The map is based on the results of Dimension 1 (horizontal line) and Dimension 2 (vertical line). Through a careful study of the word lists which consist of each dimension, we have concluded that Tokyo University's exam has strong features related to "global & business," and "geography," the Center Test has features related to "education," and Osaka City University has features related to "community." However, since the cumulative contribution rate of Dimension 1 and 2 is 0.384, indicating the two dimensions explains only 38% of the total result of Correspondence Analysis, we decided to carry out Cluster Analysis.

The dendrogram produced by Cluster Analysis, which is created from all of the 8 dimensions, placed Tokyo University's exam and the Center Test at the center, indicating the two exams are most closely related to each other among the 9 exams. This is quite different from the bi-plot map of Correspondence Analysis, which placed Tokyo University and the Center Test at opposite side of each other on the horizontal line. In order to find why these two results are different from each other, we examined the results of Dimensions 3 through 8, which are not reflected on the bi-plot map. And we found that in Dimensions 2, 4, 5 and 8, Tokyo University and the Center Test are listed side by side, and the sum of these 4 contribution rates (0.48) comes far higher than that of Dimension 1(0.215). We conclude that the close relationship of Tokyo University and the Center Test is a result of characteristics categorized by Dimensions 2, 4, 5 and 8. However, further researches are necessary to examine the exact characteristics depicted in these dimensions.

References

Benesse, the list of national universities according to T-score, retrieved from http://kou.benesse.co.jp/hensachi/search.php on June 6, 2018.

Fukui, M. & Ozasa, T., Ozasa-Fukui Year Level, a Readability Measuring Tool: Its System and Measuring Program. *Journal of ICATLL Japan*, vol. 4, 2017, 1-12.

Ide, H., Higashi Asia no Daigaku Nyushi Mondai Bunseki, Kawaijuku Guideline, 4-5, 2012, 16-28, retrieved from
http://www.keinet.ne.jp/gl/12/04/toku2_1204.pdf on June 6, 2018.

Ishikawa, S., Maeda, T., and Yamazaki M., *Gengo Kenkyu no tame no Toke Nyumon*, Kuroshio Shuppan: Tokyo, 2010.

Ministry of Education website, http://www.mext.go.jp/b_menu/toukei/002/002b/1368900.htm retrieved on June 6, 2018.

Ozasa, T. & Abe, N., Readability of English Textbooks at Primary School in Thailand and Japan, *Journal of ICTATLL Japan*, Vol. 2, 2015, 11-20.

Ozasa T., Watanabe K., Uenishi, K. & Sakamoto, M., Readability of English Textbooks at Primary and Junior High Schools in Thailand: A Comparison between Thai and Japanese Current Textbooks, *Journal of ICTATLL Japan*, Vol. 3, 2016, 1-13.

Ozasa, T., Watanabe, K., Uenishi, K. & Sakamoto, M., Readability of EFL Textbooks at Primary School in China: A Comparison with Japanese Current Textbooks. *Journal of ICTATLL Japan,* Vol. 4. 2017, 59-70.

Sakamoto, M., Watanabe, K. and Ozasa, T. (2017) A Correspondence Analysis of Five Japanese Historical English-as-a-Foreign-Langauge Textbooks, *International Conference on Education, Psychology and Society, Conference Proceedings.* July 25-27, 2017, Okiwana, Japan, 132-144.

Uenishi, K., Watanabe, K., & Ozasa, T., Correspondence Analysis of Three Japanese EFL Textbooks: In Reference to the Improvement of a Criterion Measure for a Readability Tool. *International Conference on Education, Psychology, and Learning, Conference Proceedings*. August 23-25, 2017, 49-60.

Urabe, S., Daigaku Nyushi Eisakubn no Goi Bunseki, *Eiken Bulletin*, 22, 2010, 232-238, retrieved from https://www.eiken.or.jp/center_for_research/pdf/bulletin/vol22/vol_22_p232-p238.pdf on June 6, 2018.

Watanabe,k., and Fukui, M., Quantitative Analysis of Initial Stage English Textbooks in Asia in comparison with textbooks in Japan, *2018 International Symposium on Teaching, Education, and Learning – Winter Session, Conference Proce*

Development and Psychometric Properties of Psychological Capital Questionnaire in Online Distance Learning Environment

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Abstract

The concept of psychological capital is getting increasing attention in educational research. Yet, the existing instrument available to measure psychological capital is not developed in an educational environment, especially in the online distance learning environment. This calls for the need to develop an instrument solely to measure students' psychological capital in an educational setting. In this study, the new version of the psychological capital questionnaire was developed, consisting of four constructs (self-efficacy, hope, optimism and resilience) with 12 items in total. There were 398 online learners from Wawasan Open University, Malaysia who participated in this study. The findings revealed that the new developed psychological capital questionnaire demonstrated satisfactory level of psychometric properties. Also, the result also showed that psychological capital has positive and direct effect on online learners' academic performance.

Keyword: Psychological Capital, Online Distance Learning, Academic Performance

1. Introduction

The advent of technology has revolutionised the landscape of education and has rocketed the development of online distance learning. Researchers have been exploring various approaches to enhance online learners' academic performance. Yet, the knowledge of understanding of the factors that affected online learners' learning outcomes is still nascent (Daspit, Mims and Zavattaro, 2015). Recently, psychological capital is getting increased attention in the research and practice in an education setting. It is evident that psychological capital is able to enhance students' desirable learning behaviours in online distance learning environment (Daspit, Mims and Zavattaro, 2015). For instance, researchers found that psychological capital contributed a positive impact on students' academic performance (Rand, Martin, & Shea, 2011:Luthans, Luthans, & Jensen, 2012; Vanno, Kaemkate, and Wongwanich, 2014; Carmona–Halty, Salanova, Llorens, and Schaufeli, 2018). However, the existing available instrument to measure psychological capital is not developed in an educational setting. Hence, in this study, we intend to develop a scale to measure online learners' psychological capital with desirable psychometric properties in the online distance learning setting.

The term psychological capital was first introduced by Fred Luthans and Carolyn M. Youssef-Morgan in 2004. Psychological capital refers to an individual's psychological state of mind, comprising of four constructs (self-efficacy, optimism, hope and resiliency) (Luthans and Morgan, 2004). Individual with high level of positive psychological capital refers to individual who has confidence (self-efficacy) to take up challenging tasks and work hard to achieve success; to take up tasks buoyantly and positively (optimism); persevere in his/her goals (hope); and resilient to attain success although encountered difficulties (resiliency).

The rationale for developing a psychological capital questionnaire in the online distance learning environment were:

i) The questionnaire will be able to identify online learners' psychological capital level.

Studies have found that psychological capital is a significant predictor of students' academic performance. High level of psychological capital has been found to be positively related to students' social and cognitive abilities in online learning environment (Daspit, Mims and Zavattaro, 2015); learning empowerment (You, 2016), academic adjustment (Liran, and Miller, 2017); academic engagement (Datu and Valdez, 2016, You, 2016, Sivek, 2016); and academic performance (Rand, Martin, and Shea, 2011; Luthans, Luthans and Jensen, 2012). The questionnaire is capable of identifying the level of learners' psychological capital thus helps educators and the learning institutions to gain insight on the readiness of the learners to begin their academic journey through an online distance mode.

ii) The constructs of psychological capital are not static and can be nurtured through training.

For decades, educational psychologists tend to study how students' static traits (e.g. learning styles, personality, locus of control, and etc.) affect students' academic performance. However, these static traits are more fixed and difficult to change or develop in a short time. On the other hand, psychological capital is a set of constructs that can be changed through training (e.g self-efficacy, hope, optimism, and resiliency). Studies found that learners can develop these constructs by participating in training programme including online training programme in a relatively short period of time (Luthans, Avey and Patera, 2008). These findings show a possibility to improve online learners' psychological capital in relatively short training period in the future. In the end, learners' academic success in their learning institutions can be improved.

iii) Items and constructs in the scale are tailored specifically to measure psychological capital for online learners.

To develop an effective training programme, we must first have a better understanding on how psychological capital affects online learners' learning outcomes. However, the existing psychological capital instrument is developed in the organisational setting to measure employees' psychological capital level and not specifically tailored to measure the constructs in the educational setting. The items in the instruments do not effectively capture a learner's psychological capital (Daspit, Mims and Zavattaro, 2015). Therefore, the need to develop a valid and reliable instrument solely for the educational setting is crucial.

Objectives:

i) Develop a valid and reliable psychological capital questionnaire to be used in the online distance learning environment.

ii) Investigate the relationship between psychological capital and online learners' academic performance.

2. Methodology

3.1 Research Participants

The online learners from Wawasan Open University, Penang, Malaysia participated in the pre-test (10), pilot test (30) and actual test (398) respectively. The demographic details of the actual test participants is presented in table 3.1.Of the 398 online learners participants in this study, 236 were female and 162 were male. The average age and cumulative grade points average (CGPA) were 31 years and 2.84 respectively. All the participants are experienced online learners that have been studying online distance learning courses for at least 6 semesters and above.

3.1 The Demographic Profile of Participants

Variable	Frequency	Percentage	Mean
Gender			
Male	162	40.7	
Female	236	59.3	
Age			31.46
CGPA			2.84
Number of semesters			
6th	123	30.9	
7th	141	35.4	
8th	69	17.4	
9th	65	16.3	

3.2 Research Procedure

The study involved 6 steps. Firstly, the project team re-defined the definitions of psychological capital constructs in online distance learning, as the original psychological capital questionnaire was developed in a workplace setting. Therefore, it is crucial to develop a precise conceptual definition of psychological capital in the online distance learning setting before generating the items. In the second step, fifteen (15) items were generated to measure online learner's psychological capital. In step 3, content validity was conducted to evaluate the rudimentary of the instruments' constructs and items by two of the subject matter experts. Three (3) ambiguous items were excluded from the list as recommended by the experts in this step. In step 4, the pre-test was conducted. Ten (10) online learners participated in the pre-test. The ambiguous items have been identified and modified during the pre-test. In step 5, thirty (30) online learners were involved in the pilot test. The pilot–test result showed that the instrument has a satisfactory level of reliability and validity. Owing to positive results obtained in pilot-test, in step 6 the actual test was conducted on 398 online learners of Wawasan Open University.

4. Results

The result exhibited the composite reliability and the average variance extracted (AVE) for the constructs range from 0.752 to 0.870 and 0.513 to 0.707 respectively, which are higher than the recommended threshold value of 0.7 and 0.5 respectively (Hair, Hult, Ringle and Sarstedt, 2016). Besides that, all the items' loadings ranged from 0.705 to 0.890, which have exceeded the recommended threshold value of 0.5 (Kock, 2017) except item 7. However, item 7 was retained as the AVE was 0.582, which is higher than the suggested threshold 0.5. The result also shows that the instrument is free from collinearity issues, in which the VIF values are lower than the recommended threshold value of 5 (Kock, 2015). The validity of the instrument was also assessed by discriminant validity test, as stated in table 3.2:

Table 3.2 The Result of Measurement Model

Construct	Item No	Description	Loading	CR	AVE	VIF
Self-efficacy				**0.873**	**0.696**	**2.725**
	1	I believe I can complete all the courses in my academic programme as registered.	0.815			
	2	I am confident to be able to submit all my assignments on time.	0.858			
	3	I am confident of my ability to study the course materials on my own.	0.828			
Hope				**0.896**	**0.742**	**2.241**
	4	I am determined to complete my studies despite facing difficulties in life.	0.828			
	5	I find solutions when I encountered difficulties in my studies.	0.890			
	6	I find ways to improve my academic performance when my result is below expectations.	0.864			
Optimism				**0.793**	**0.582**	**2.147**
	7	I usually have negative thoughts.	0.417			
	8	I can be successful in my studies.	0.885			
	9	I can manage my studies well.	0.889			
Resilience				**0.836**	**0.631**	**2.129**
	10	I can manage my personal issues while pursuing my studies.	0.807			
	11	I can study on my own even without feedback from my tutors.	0.705			
	12	I can complete my assignments even though I am facing difficulties.	0.864			

According to Fornell and Larker (1981), the square roots of each construct's AVE should be greater than its highest correlation with any other constructs. The results of the analysis found all square roots of AVE of all constructs (bolded value on the diagonal) have exceeded the off-diagonal elements in their corresponding row and column as indicated in table 3.3. In sum, the results indicate that the newly developed instrument demonstrated a satisfactory level of reliability and validity.

Table 3.3. The Result of Discriminant Validity

	Self-efficacy	**Hope**	**Optimism**	**Resilience**
Self-efficacy	**0.834**			
Hope	0.695	**0.861**		
Optimism	0.648	0.635	**0.763**	
Resilience	0.679	0.595	0.609	**0.795**

Note: Square root of the AVE value on the diagonal (bold).

Analysis revealed that the psychological capital have positive and significant effects on online learners' performance (CGPA) with path coefficient at .226, effect size at .051 (which is higher than .02 as recommended by Cohen, 1988), Q-square coefficient at .053 (which is higher than zero as suggested by Kock, 2017) and R-square coefficient at .05 (which is higher than recommended threshold 0.02 as stated by Cohen, 1988). It's evident that psychological capital has a positive impact on online learner's academic achievement.

Table 3.4: Summary of size and significance of Path Coefficients (β), effect size (f^2), Q-square (Q^2) and R-square (R^2)

Hypothesis	**β**	**p-value**	**f^2**	**Q^2**	**R^2**	**Decision**
Psychological capital and online learners' performance is positive associated.	0.226	<.001	.051	0.053	0.05	Supported

4. Discussion and Conclusion

The results revealed that the newly developed psychological capital questionnaire demonstrated a satisfactory level of reliability and validity. Besides that, the finding also proved that psychological capital is a predictor of academic performance in online distance learning environment. It generates new insights and understanding of online learners thus helps educators and the learning institution to assist online learners to begin their academic journey in online distance mode.

However, the existing psychological capital only comprised four constructs namely self-efficacy, optimism, hope and resiliency (Luthans, Youssef & Avolio, 2015). Therefore, there are some potential future contributors of psychological capital such as emotional intelligence, authenticity and

courage. We suggest that further research could discover some other potential psychological capital constructs in order to view the holistic picture of the impact of psychological capital in an online learning environment, thus benefiting online learners in their academic journey.

References

Carmona–Halty, M., Salanova, M., Llorens, S., and Schaufeli, W. B., How psychological capital mediates between study–related positive emotions and academic performance. *Journal of Happiness Studies*, 2018, 1-13.

Cohen, J., Statistical power analysis for the behavioural sciences. Hillsdale, NJ: Lawrence Erlbaum 1988.

Daspit, J. J., Mims, T. C., and Zavattaro, S. M., The role of positive psychological capital states in online learning: Integrating psychological capital into the community of inquiry framework. *Journal of Management Education*, 39(5), 2015626-649.

Fornell, C., and Larcker, D. F., Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of marketing research*,18(3), 1981, 382-388.

Hair Jr, J. F., Hult, G. T. M., Ringle, C., and Sarstedt, M., *A primer on partial least squares structural equation modelling (PLS-SEM)*. Sage Publications, 2016.

Kock, N., Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration (IJeC)*, 11(4), 2015, 1-10.

Kock, N., WarpPLS User Manual: Version 6.0, 2017.

Liran, B. H., and Miller, P., The role of psychological capital in academic adjustment among university students. *Journal of Happiness Studies*, 2017, 1-15.

Luthans, F., Avey, J. B., and Patera, J. L., Experimental analysis of a web-based training intervention to develop positive psychological capital. *Academy of Management Learning and Education*, 7(2), 2008, 209–221.

Luthans, B. C., Luthans, K. W., and Jensen, S. M., The impact of business school students' psychological capital on academic performance. *Journal of Education for Business*, 87(5), 2012, 253-259.

Luthans, F., and Youssef, C. M., Human, social, and now positive psychological capital management: Investing in people for competitive advantage. *Organizational Dynamics*, 33(2), 2004, 143–160.

Luthans F., Youssef, C. M., and Avolio, B. J., *Psychological Capital and Beyond*. New York: Oxford University Press, 2015.

Rand, K. L., Martin, A. D., and Shea, A. M., Hope, but not optimism, predicts academic performance of law students beyond previous academic achievement. *Journal of Research in Personality*, 45(6), 2011, 683-686.

Sivek, N., The underlying dynamics of student engagement on thesis completion. *Master Thesis of Science, Western Kentucky University*, United States,2016.

Vanno, V., Kaemkate, W., and Wongwanich, S., Relationships between academic performance, perceived group psychological capital, and positive psychological capital of Thai undergraduate students. *Procedia-Social and Behavioral Sciences*, 116,2014, 3226-3230.

You, J. W., The relationship among college students' psychological capital, learning empowerment, and engagement. *Learning and Individual Differences*, 49, 2016 17-24.

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Achievement Motivation among Javanese and Indonesian Chinese Students: A Comparison Study

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Abstract

The objective of this research is to understand the difference of achievement motivation among Javanese and Indonesian Chinese students. This study involves 178 respondents consisting of 116 Javanese students, and 62 Indonesian Chinese students, male and female, ages ranging 15-18 years old. This study utilizes the Achievement Motivation Scale from Eccles and Wigfield (1995). This study is analyzed using Mann-Whitney U-test with the assistance of windows SPSS 22. Based on the hypothesis test, produced results such as the value of significance $p = 0.927$ ($p>0.05$). This demonstrates that there is no difference achievement motivation among Javanese and Indonesian Chinese students. Therefore the hypothesis of this research is denied. Elaboration of these findings are delivered furthermore.

Keyword: Achievement motivation, Students, Javanese, Indonesian Chinese, Indonesia

1. Introduction

Indonesian achievements in the international platforms has been evident in the global community. A country's achievement can be shown by the numerous achievements that they have received. For the numerous achievements gained by a country demonstrates that the people has a high degree of achievement motivation. Achievement motivation is defined as the need for excellence, to achieve a certain standard and to achieve an accomplishment. Achievement motivation is defined as an individuals' need to increase or maintain their capacity at a high degree in certain activities (Berry & Houston, 1993).

Indonesia is widely known as a highly diverse country consisting of the most numbers of ethnic and race in the world. The Javanese are the largest race n Indonesia amongst the 500 other race (Melalatoa, 1995). Based on the national population census at 2010, the Javanese is the largest ethnic group in Indonesia, making it 40 percent of the Indonesian population. Numerous achievement has been encarved by the Javanese people, therefore they have surely contributed significantly in the history, development and growth of Indonesia.

Nevertheless, the staggering numbers of achievement by the Javanese people, other ethnic groups has played their significant role in the country's success. Though predominantly achieved by the Javanese, but there are many achievements gained by another outstanding ethnic group in Indonesia, that is the Chinese Indonesians. The Chinese Indonesian population is approximately 1.45 percent of the total population of Indonesia. With that said, that makes the Chinese Indonesians as one of the ethnic minority groups in Indonesia (Suryadinata, et al, 2003). In fact, it is said to be the largest ethnic minority group in Indonesia. Though small in number, but their role is large in contributing to the vast development in Indonesia is far from understatement. The Chinese Indonesians are in every walks of life in Indonesia, contributing to many aspects of the country. Therefore we come to understand that both the Javanese and the Chinese Indonesians have a high degree of achievement motivation.

Achievement motivation is influenced by many factors, amongst them are their ethnicity. A study has been conducted to three ethnic groups in the United States. Finding shows that the achievement motivation is seen higher in the Anglo-Americans than the Mexican and African-American groups (Ramirez & Price-Williams, 1976). Similar findings is shown, stating that there is a significant effect of ethnicity towards achievement motivation among Arab, African-American, and European-American students. Finding shows that the ethnic minority tends to have more motivation to achieve academically when at school and having a higher self-concept than the European-Americans (Kovach, 2002). Other study shows that there is a significant difference self-efficacy, achievement motivation and learning strategies from bachelor students of ethnic groups in Malaysia (Yusuf, 2010). From the explainantion above, it can be seen that there is a difference of achievement motivation among different ethnic groups. The Javanese will develop their own culture, as well as the Chinese Indonesian. The internalization of cultural values and beliefs can effect how individuals think and behave.

An interesting matter observed in this study that is that although it seems that both the Javanese and Chinese Indonesians don't show differences in achievement motivation, but study in this area is still necessary. Previous study in this area has been conducted before, namely 35 years ago. Martaniah (1982) conducted a research involving the same ethnic groups, and her study shows that there is a difference of achievement motivation among Javanese and Chinese Indonesian students. But that was a study conducted 35 years ago. In this global-interwoven web community mediated by technology for faster information access has impacted tremendously for the Indonesian society. So much has changed and new generations are born. Cultural internalization surely has altered some or more. Therefore the necessity to conduct a study in this area after 35 years last conducted, is relevant to do so. Therefore this study aims to examine the difference of achievement motivation among Javanese and Chinese Indonesian students.

2. Literature Review

McClelland (Weiner, 1984) states that achievement motivation is named *n-Ach* (Need for Achievement). Indiviuals with a high *need for achievement* tends to show diligence and perseverance. McClelland and Heckhausen stated that achievement motivation is the motif that reinforces individuals in achieving success and is aimed to achieve in competition, with several achievement indicators, that is to compare one's achievement with its' previous one, or with others' achievements.

Achievement motivation can be effected by several factors. One of them is one's ethnicity. As it has been elaborated above, ethnicity is one of the factors effecting achievement motivation. Protes (1985) showed that there is a significant difference of achievement motivation among caucasion and black students. Similar findings has been shown by Castenell (1983) which states that there is a difference of achievement motivation, self-efficacy and learning strategies among different bachelor degree students in Malaysia (Yusuf, 2010).

One achievement motivation theory that has developed involving the cognitive and socio-cultural aspect that is still well used in this 21st century is the modern theory of *Expectancy-Value Model of Achievement Motivation* by Eccles and Wigfield (1995). This theory focuses on the effect of social psychology towards indiivduals' choices and perseverance (Eccles & Wigfield, 2000). In this model, it involves aspects such as *ability beliefs*, *expectancy of success*, and *subjective task values*. *Expectancies for success* is defined as one's efficacy to perform well in a certain task, whether in short term-periodic or long-term periodic task. *Ability beliefs* is defined as the efficacy about how well they will perform on a certain task. *Values* is defined as the how important, interesting, and beneficial is the task for the individual. These aspects of achievement motivation is believd to be influenced by socialization agents and culture of the individuals (Eccles & Wigfield, 2000).

3. Research Method

3.1 Respondents

This study involves 178 students, 116 identified themselves as Javanese, and 62 identified themselves as Chinese Indonesian, both male and female, age ranging 15-18 years old.

3.2 Data Collection

The data is collected utilizing the achievement motivation scale from Eccles and Wigfield (1995) The scale consists of 24 items with 4 Likert response choices. Reliability test was undergone and generated the Alpha Cronbach value as much as 0.921, making the instrument reliable for this study. This study aims to examine the difference of achievement motivation, therefore the data will undergo a t-test analysis.

4. Results and Discussion

The data collected in this study involves respondents with clusters shown in the table below:

Table 1. Respondents description

Ethicity/Sex	Male	Female	Total
Javanese	71	45	116
Chinese Indonesian	30	32	62
Total	101	77	178

Normality test of the data was conducted for the Javanese group, and showed a significance value of p = 0,025, making the data for the Javanese group considered not distributed normally. On the other hand, normality test of the data was conducted for the Chinese Indonesian group, and showed a significance value of p = 0,452, making the data for the Chinese Indonesian group considered distributed normally. Homogenity test was undergone to insure whether the variance of the population is the same or not.

Based on the homogenity test, generated a value of p=0.425 (p>0,05), making it considered having a homogenous data. Non-parametric analysis was utilized that is the Mann-Whitney U-test. Based on the hypothesis test, showed the significance value of p=0,927 (p>0,05), making the hypothesis denied. This means that there is no difference of achievement motivation among the two groups, that is the Javanese and the Chinese Indonesian.

Based on the findings shows that there is no difference of achievement motivation among Javanese and Chinese Indonesian students. This finding is quite surprising when considering the previous study conducted 35 years ago which stated otherwise by Martaniah (1982). Therefore the

explaination of this finding lies within the explaination of the altered cultural internalization among Javanese descendants living in the modern life.

For the majority of the traditional Javanese culture, they deeply believe in fate and pre-destined. They view that every event in life was pre-destined and crafted by God's (or the Almighty) Divine Plan, that each individual has been guaranteed their sustenance throughout life. Therefore the Javanese do not try to going against that (Saksono & Dwiyanto, 2011). They believe that individual's life is guarded by The Almighty, therefore it is not necessary to work hard to achieve certain goals (Herusatoto, 2008). Koentjaraningrat (1978) stated that the aristrocrat Javanese are oriented to the past times, while the proletars such as farmers are oriented to the existing time. While on the other hand, Hermans (1967) and Heckhausen (1967) stated that individuals with high achievement motivation are future oriented individuals.

In the 1990s, lives of the Javanese engages vastly in contact with agriculture farming and economy which demands them to live actively and to continue striving. This is called as *ikhtiar* (Koentjaraningrat, 1994). This Javanese value grew infamously among the aristrocrate and the proletars, admittng thae concept of *ikhtiyar*. Ikhtiyar is defined as individuals must try as hard as possible to improve their current situation. (Koentjaraningrat, 1994).

Within the process of an endeavour to achieve, the Javanese has a personality frame work of thought that is *perihatin*. *Perihatin* is defined as the capability of an inidividual to be perseverant through tough times and to be able to be resilient in carrying heartache or physical burden within the process of becoming or achieveing their goals. *Perihatin* is also known as *laku* and *tirakat* (Najib, 1997).

The behavior of modern Javanese that also believes that in order to achieve success, one can not just behave passively, but must go through the pain to gain. Therefore with this reknown value named *ikhtiyar,* the Javanese are more active in gaining achievement, and no longer passively lean on their predestined values fully. (Koentjaraningrat, 1994).

On the other hand, the Chinese Indonesian students still uphold their Chinese cultural believes based on Confucious believes. *Confucian work dynamism* itself is defined as a value in which an individual is dedicated, motivated, responsible, educated with commitment for one's identity and organizational loyalty. Countries with high *confucian work dynamism* yang is China, Taiwan, Japan, and South Korea. Individuals with this orientation for the long term demonstrate thrift, perseverance and to submit oneself to complete one's goals. On the other hand, one with low Confucian work dynamism demonstrate low in thrift, tends to be consumptive in order to exit form social pressure, tends to desire quick results, and emphasize on exterior looks (Jandt, 2004).

One of the weaknesses of this study is that it need more respondents involved and to consider various social-education status backgrounds. Qualitative research to go along or following this study will give more depth of the finding elaborations.

References

Baker, A. M., Kanan, H. M. & Al-Misnad, S.A. (2008). Factors that discriminate best between students identified as motivated or not-motivated to achieve academically. *Education Research and Review. 3*(4), pp. 128-136.

Berry, L. M. & Houston, J. P. (1993). *The psychology at work and to industrial and organizational psychology*. America: Brown and Benchmark Publisher.

Eccles, J. S., & Wigfield, A. (1995). In the mind of the achiever: The structure of adolescents' academic achievement related-beliefs and self-perceptions. *Personality and Social Psychology Bulletin, 21*, 215–225.

Eccles, J. S., & Wigfield, A. (2000). Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology*, *25*, 68–81.

Heckhausen, H. (1967). *The anatomy of achievement motivation*. New York: Academic Press.

Hofstede, G. & Bond, M. H. (1984). Cultural dimensions: an independent validation using rokeach's value survey. *Journal of Cross-Cultural Psychology, 15*(4), 417-433.

Huang, G. H. & Gove, M. (2012). Confucianism and Chinese families: Values and pratices in education. *International Journal of Humanities and Social Science*, *2*(3), 10-14.

Jandt, F. E. (2004). *Intercultural communication: A global reader*. San Bernardino: Sage Publications.

Koentjaraningrat. (1978). *Kebudayaan, mentalitet, dan pembangunan*. Jakarta: Gramedia

Koentjaraningrat. (1994). Kebudayaan Jawa. Jakarta: Balai Pustaka.

Kovach, B. S. (2002). The influence of ethnic identification on adolescent achievement motivaion. ETD collecion for Wayne State University. Diunduh pada tanggal 12 April 2013 dari http://digitacommons.wayne.edu/dissertations/AAI3071797

Lanti, I. G. (2004). Comparing ethnic minorities in control and in hegemonic consociational situations: The political and economic roles of the Chinese in Malaysia and Indonesia. *Graduate Journal of Asia-Pacific Studies,* 2(1), 69-82.

Leung, M. (2010). The effects of Chinese values (confucian work dynamism and human heartedness) on students' achievement goals and learning strategies. Dipresentasikan pada AARE International Research Conference 2010, Melbourne, Australia.

Magnis-Suseno, F. (1991). Etika Jawa. Jakarta: PT. Gramedia

Martaniah, S. M. (1992). Motif sosial remaja Jawa dan Keturunan Cina: Suatu studi perbandingan. *Disertasi*. Fakultas Psikologi Universitas Gadjah Mada, Yogyakarta.

Melalatoa, M. J. (1995). Ensiklopedia suku bangsa di Indonesia (Jilid A-K). Jakarta: Departemen Pendidikan dan Kebudayaan Republik Indonesia

McClelland, D. C. (1967). *The achieving society*. New Jersey: D. Van Nostrand

McClelland, D. C. (1987). *Human motivation*. Australia: Press Syndicate of the University of Cambridge.

McClelland, D. C., Atkinson, J. W., & Clark, R. A. (1963). *The achievement motives*. New York: Appleton.

Mulder, N. (1973). *Kepribadian Jawa dan pembangunan nasional*. Yogyakarta: Gadjah Mada Press.

Ramirez, M. & Price-Williams, D. R. (1976). Achievement motivation in children of three ethnic groups in the United States. *Journal of Cross-Cultural Psychology. 7* (1), pp. 46-60.

Saksono, I. G. & Dwiyanto, D. (2011). *Terbelahnya kepribadian orang Jawa: Antara nilai-nilai luhur dan praktek kehidupan*. Yogyakarta: Keluarga Besar Marhaenis DIY.

Salili, F. (1995). Explaining Chinese students' motivation and achievement: A socio-cultural analysis. Dalam Maehr, M. L. & Pintrich, P. R. (Eds.) *Advances in Motivatian and Achievement*, *9*, (h. 103-115). Greenwich, Connecticut: JAI Press.

Stevenson, H. W. & Lee, S. Y. (1996). The academic achievement of Chinese students. Dalam Bond, M. H. (Ed.). *The handbook of Chinese psychology* (h. 124-142). Hong Kong: Oxford University Press.

Sudiarja, A. (1996). *Ajaran konfusianisme dalam perspektif keagamaan Tionghoa dalam (tanpa nama editor) pengusaha ekonomi dan siasat pengusaha Tionghoa*. Yogyakarta: Kanisius.

Suryadinata, L. (1988). *Kebudayaan minoritas Tionghoa di Indonesia*. Jakarta: PT. Gramedia
Suryadinata, L. (2002). *Negara dan etnis Tionghoa: Kasus Indonesia*. Jakarta: LP3S
Suryadinata, L., Arifin, E. N., & Ananta, A. (2003). *Indonesia's population: Ethnicity and religion in a changing political landscape*. Singapore: Institute of Southeast Asia Studies.
Wigfield, A., Eccles, J. S., Schiefele, U., Roeser, R., & Davis-Kean, P. (2006). Development of achievement motivation. Dalam Damon, W. & Eisenberg, N. (Eds.) *Handbook of Child Psychology* (6th Ed) *3*, (h. 231-240). Hoboken, NJ: Wiley.

Wijayanti, H. & Nurwianti, F. (2011). Kekuatan karakter dan kebahagiaan pada suku Jawa. *Jurnal Psikologi, 3*(2), 23-30.

Yusuf, M. (2010). Ethnicity perception on self-efficacy, self efficacy encouragement, achievement motivation and self-learning strategies. *OIDA International Journ*

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Does Experiential Learning Theory as a Teaching Method Enhances Creativity? A Study on First-Year Undergraduate Student

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Abstract

This study aims to identify the influence between experiential learning teaching methods towards creativity. This study was participated by 57 first-year undergraduate students of business management faculty as the experiment group. These students are required to join the faculty core course for one semester, which uses teaching methods based on Experiential Learning Theory (ELT). As the control group, 58 students of industrial engineering faculty who didn't join the course participated. Score of creativity is measured by Verbal Creativity Test (Munandar, 1977) and compared before & after the treatment. The results show that experiential learning teaching method influences the scores of creativity significantly on the experiment group, when compared before and after the course was conducted. This study also found that there are no correlations between creativity and creative activity, but there are correlations between creative and non-academic activities. This finding might prove a novel and wider definition of creativity. Suggestion for further study is to consider certain traits as a moderator variable, such as openness to experience, or creative personality.

Keyword: Experiential learning, Undergraduate students, Creativity, Andragogy

1. Background

For the past decade, the acceleration of information technology development urges big changes in the business climate. Currently, human capital are highly expected to be able to innovate novel ways to develop and expand business and industry. Creativity plays an important role in obtaining global competitive advantage, through transforming innovation into economic value (Wu, et al., 2014). This shows the urgency for human capital to be creative, so that they can adapt well with the changes of the industry. This aligns with the analysis of Kim et al. (2015) that a shift is needed, from imitative to creative human capital, with creativity as one of the virtues.

Creativity seems to be even more needed for human capital involved in the business and management field. Berglund and Wennberg (2006) mentioned that entrepreneurship is important to stimulate growth, innovation, and job creation. This means that human capital in the business and management sector should be able to find creative ways for development and change. Boulocher-Passet, Daly, and Sequeira (2015) believes in the importance of having and nurturing creativity even in corporate settings for future managers. The enhancement of creativity should be put into attention, especially for human capital in the business and management sector.

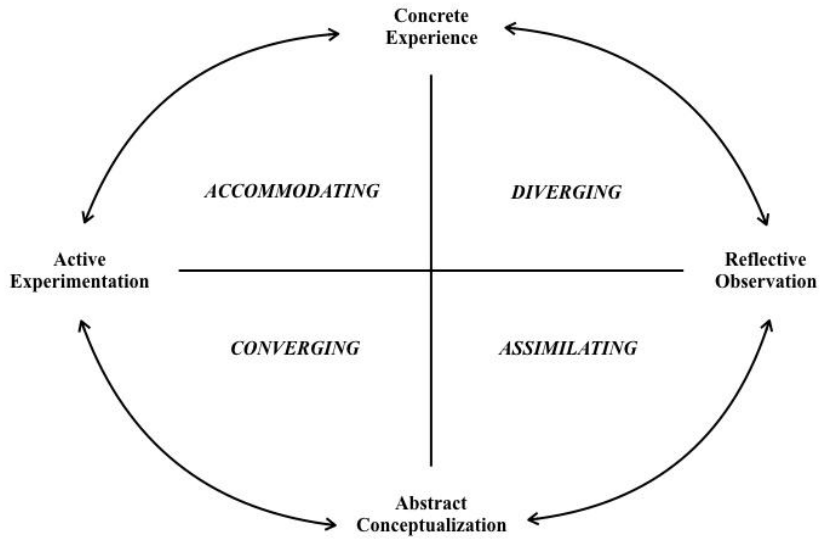
Creativity itself has many definition, and always begins from the creation process that starts from idea formation. The classic theory of creation process, proposed by Graham Wallas and Catherine Patrick, is consisted of four periods: (i) preparation period, where creator vaguely finds awareness in the problem and makes random attempts to solve the problem; (ii) incubation period, where the problem falls into consciousness; (iii) inspiration period, which triggers insight, discovery, and illumination; and (iv) elaboration, where creative ideas are executed and flourished (Damajanti, 2015). Prior to the inspiration period, creativity is 'prepared' through a cognitive interaction in the brain. Helie and Sun (2010) proposed Explicit-Implicit Interaction Theory (EIIT) as an explanation of how creative ideas are produced. Implicit knowledge is explained as information that is acquired out of experience, and explicit knowledge is information built out of explicit facts obtained from procedural learning. This theory proposes five basic principle, that creativity is precipitated based on, (a) an implicit and explicit process that happens in the brain that happens in parallel and separated, (b) the simultaneous correlation/relationship between explicit and implicit information in solving a problem, (c) redundant representation of both explicit and implicit information, (d) integration of both explicit and implicit process' outcomes, and (e) reprocessing which probably goes both ways.

Creativity is one of the biggest need for human capital in the industry, however the education system aren't accommodating enough for its enhancement. Haque (2017) sees that students face challenges upon graduation when they discover that conventional teaching methods doesn't align with the needs of industry. In Indonesia, this problem can be seen clearly. Based on its curriculum, education in Indonesia has always been using pedagogy approach. According to Maddalena (2015), pedagogy approach believes that students are dependent on the teachers. Teaching methods are more didactic, focuses more on a standardized curriculum (Maddalena, 2015). These kind of methods are not different

than most of academic institutions in Indonesia, which usually has a certain and most likely rigid teaching plan. The teachers are expected to *know everything* and must provide the right answers to the students. This kind of approach is even implemented in tertiary education settings, equivalent to university level education. Similar occurrence is experienced by other society, such as in South Korea (Kim et al., 2015).

Based on its concepts, pedagogy approach actually doesn't integrate with the needs of current industry to enhance creativity. Based on the explicit-implicit interaction theory (EIIT) explained above, creativity will appear through the interaction between implicit and explicit knowledge. It is harder for any interaction of both knowledge through a didactic approach, that limits students to explore its own experiences. Learning through experiences might allow students to have more interaction between implicit and explicit knowledge, hence enhances creativity. Experiential learning theory (ELT) defines learning as the process of building knowledge through transformation of experience (Mainemelis, Boyatzis, & Kolb, 2002). Experiential learning is less hierarchical than the conventional teaching method, which allows an open environment for discussion with everyone involved (Reynolds, 2009). According to Mainemelis, Boyatzis, and Kolb (2002), the learning model portrays two modes of grasping experience: Concrete Experience (CE) & Abstract Conceptualization (AC); and two modes of transforming experience: Reflective Observation (RO) & Active Experimentation (AE).

Figure 1. Experiential Learning Theory (ELT) Cycle based on Kolb & Kolb (2005)



The ELT model also evolves into learning phases of the cycle. Usually the learning style theory is used to assess individual learning styles and their preferences (Kolb & Kolb, 2005). We see that every individual are able to go through all of the learning styles, and have their own tendencies (Corbett, 2005). However, through this research we believe that every individual are actually able to go through all phases. Those four learning style are *diverging, assimilating, converging,* and *accommodating*

(Kolb & Kolb, 2005). *Diverging style* is more prominent on CE and RO experiences, and performs through idea generation process, such as brainstorming sessions. *Assimilating style* is more prominent on RO and AC experiences, and performs through making wide range of information into a form that is concise and logical. *Converging style* is more prominent on the AC and AE experiences, and performs through finding practical ideas and theories, such as problem solving and decision making. *Accommodating style* is prominent on AE and CE experiences, and performs through carrying out plans and involving self in new and challenging experiences.

Both concepts of ELT (two modes of grasping experience: concrete and abstract experience and two modes of transforming experience) and EIIT (implicit and explicit knowledge interaction) are very similar. The similarity between two models rose a big question: If creativity is produced through the interaction between implicit and explicit knowledge, could experiential learning theory (ELT) as a teaching method enhance creativity?

The main idea of this research is to see whether the concepts of experiential learning theory (ELT) could be used as a teaching method to enhance creativity. The assumption of this teaching method is: through ELT, the students are able to have open discussions in a less didacting environment, which allows them to cognitively experience more interaction between implicit and explicit knowledge. The aim is to make students experience circular model of ELT repeatedly, through the act of doing and reflecting. Making the students experience ELT repeatedly is actually relevant with the concept itself, where the model is visualized as a cycle or a spiral (Kolb & Kolb, 2005). The teaching method is aimed for first year undergraduate students in the business and management faculty, based on the urgency that has been elaborated above. The assumption is that the students' will enhance their creativity along with their spiral experience of learning.

The teaching design for this method is to provide students with experience that would allow them to solve problems around them through project initiation. Since it is based on ELT, the students are encouraged to figure out their own answers, with possibilities to discuss their projects with academic tutors and other students. The academic tutors are advised to challenge the student's thoughts, and not dictate them, to avoid pedagogical method being applied all over again. Throughout the semester, students are asked to initiate or participate in a project based on their concerns and problems around their daily lives. Each module has different designs, some project should be executed individually, in groups of 3, or even in groups of 20 or more. The students will have the chance to get feedbacks and discuss their projects with the academic tutors for twice a week. Each modules are conducted for about 4-5 weeks.

Throughout each modules, it is assumed that the students experience several cycles repeatedly, but mainly go through one main cycle: Brainstorming session and understanding the background problem (*Diverging style* □ CE & RO), project ideation and proposing the solution (*Assimilating style* □ RO & AC), project planning (*Converging style* □ AC & AE), and project execution (*Accommodating style* □ AE & CE). This method is believed to give a chance for the students to go through the cycle. It should be bore that aside from the main cycle, the students will experience smaller

ranges of the cycle. Each phase of the cycle will experience another cycle (During brainstorming, students will be faced with ideas from others or themselves CE, which elicit an impression for them RO, so that the students can conclude the idea AC, and try to respond to the idea AE; etc)

Figure 2. Project Creation Cycle

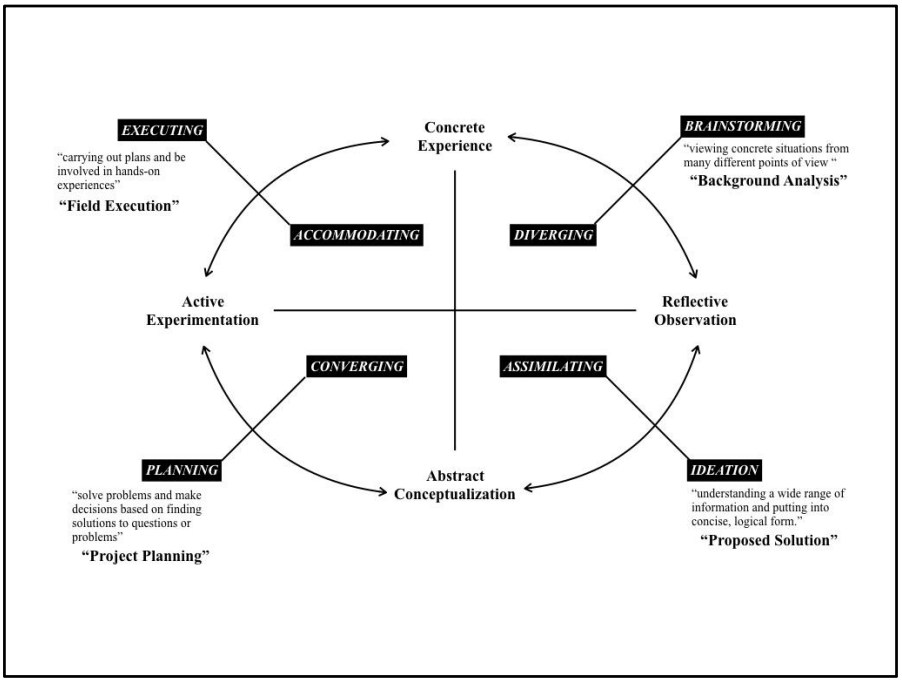
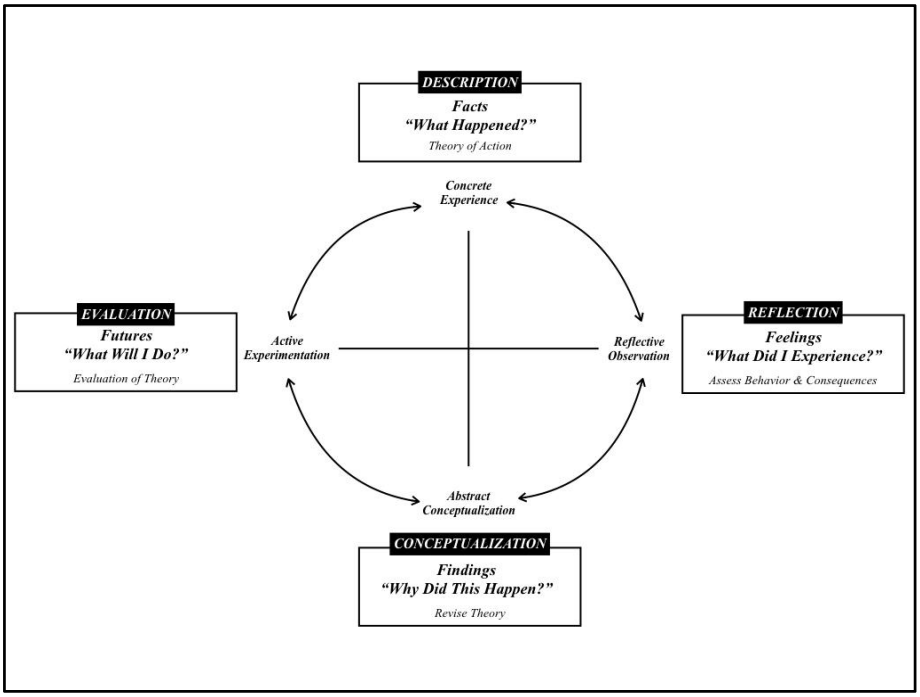


Figure 3. Project Reflection Cycle



After each module, each students are assigned to make a learning journal, which is an essay reflecting on the students' previous projects. Jordi (2011) mentions that the act of reflecting from concrete experience may result in experiential learning discourse, and it is the key learning process of ELT. Learning journal allows the students to reflect on their experiences, so that they have the chance to look back, see their own results and also suggest alternatives for themselves in the future. The triggering questions of each module are designed, according to each period of the ELT cycle: Asking the students what kind of project they initiate and their process in doing the project (*Concrete experience)*, their own evaluation and impression of their process (*Reflective observation*), their conclusion and findings through the project (*Abstract conceptualization*), and what would they do if they have a second chance doing the project (*Active experimentation*).

2. Method

Participants

The participants of this research are 115 first-year undergraduate university students obtained by convenience sampling method. This research is categorized as a quasi experimental research design, since randomization is not possible to conduct prior the research. Since the course is a required course in the business and management faculty, the research team isn't able to randomize and place students to join and not join the course. Fifty seven students are students from the business and management faculty, which is the experiment group. Fifty eight students are students from the industrial engineering faculty, which is the control group.

Instrument

The instrument of this research measures creativity, especially verbal creativity. The creativity test scores are obtained through the Verbal Creativity Test by Munandar (LPSP3 UI, 2011). Verbal creativity test is seen as the more relevant creativity test for students than the figural creativity test. The reason behind this decision, based on observation, students often are intimidated by creativity tests that involves drawing, hence might influence their motivation during the test.

The test itself are given in Bahasa Indonesia, so that all students may have equivalent level of verbal understanding. The interscorer reliability score for this test is 0.94 (LPSP3 UI, 2011). This test consists of 6 types of tasks, which requires participants to make a list that:

1. Continues a given first syllables into understandable words
2. Finds other words when a given word is rearranged
3. Constructs sentences based on 3 given alphabet
4. Shows objects with the exact same adjectives given
5. Explores the unusual usage of ordinary objects
6. Explores cause and effects of unusual situations

Procedure

The procedure implemented of this research is administered through a course that is obligatory for first-year undergraduate students of the business and management faculty. The course is called *Performance Art*, two times a week, conducted from August to December 2017. The teaching method on this course is based on experiential learning theory (ELT) cycle, which involves the students in initiating projects. Each projects are assisted by academic tutors to challenge and feedback the students' project and ideas. The academic tutors have gone through training process, hence supposedly is able to build an environment that is supportive for ELT to happen.

Learning journal is given on the end of every module and every learning journal is given a chance to get feedbacks from the trained tutor so that the students are able to discuss on their own reflection. The experiment group consist of students who completed this course and submitted all the task given by this course. The control group of this course are students who didn't join the course, nor joined any other courses that allows them to explore about new ideas and potentially stimulate creativity.

Data Collection and Analysis

The data collection is conducted two times, before the procedure (pretest) and after the procedure (posttest) took place. During the pretest, data on verbal creativity is obtained, along with several extra data on creative and non-academic activities, only to the experiment group. The pretest was conducted on the first week of the semester, so that the students hasn't gone through any of the procedures. During the posttest, data on verbal creativity and the extra data to both experiment and control group. The posttest was conducted about 4 weeks after the course is over.

The data analyzed for the experiment group are only for participants who attended the pretest and posttest. We also cut out the participants who didn't answer all questions completely. The data analyzed to see the difference between creative scores on the experiment and control group uses *t*-test statistical analysis. The data analyzed to see the correlation between activities and creative scores uses *Pearson* statistical analysis.

3. Results (3)

Analysis of this research mainly investigates the effects of Experiential Learning Theory (ELT) teaching method on the undergraduate students' creativity. The main statistical analysis uses *t*-tests based on the creativity test scores: between the experimental group (students who joined the course) and control group (students who didn't join the course) after the treatment; and also before and after the procedure on the experimental group. Extended analysis covers the correlations of students' creativity test scores and their interest in art, frequency of doing artistic activities, and non-academic activities using *Pearson* correlation.

Creativity Within Group Before and After The Course

The score difference between students joining the course (experimental group) before and after the procedure was implemented are calculated by paired sample *t*-test. The creativity test scores on students who joined the course before the procedure (M = 61.79, SD = 7.912) and after the procedure (M = 66.82, SD = 8.093) showed significant difference; $t(56) = -8.633$, $p < 0.05$. This means that the Experiential Learning Theory (ELT) as a teaching method for one semester can improve students' creativity.

The results of the within group pretest-posttest analysis is proved to be supporting our early assumptions that this teaching method is able to enhance creativity. Experiential learning is the dialectic act between reflection and action, which goes two ways (Mainemelis, Boyatzis & Kolb, 2002). This interaction assumingly might elicit another interaction, which is the explicit implicit interaction proposed by Helie & Sun (2010). Although significance is found through this test, a deeper understanding of explicit implicit interaction and its model should be investigated further.

Our attempts to enhance creativity individually also results on many other benefits. This module allows the students to experience the ELT cycle fully, which also develops its understanding of context and content. Corbett (2005) suggests that individuals are able to be flexible to adjust their learning styles to be able to adapt to many situations. Since the basis of this module is for the students to create projects based on their concerns of the environment, students have the opportunity to engage in communities around the city, initiating and contributing to solve problems within community. We also predict this module might enhance the sense to identify opportunity around the community. This notion is very important especially for future entrepreneurs. Further research on this is suggested.

Aside from the teaching design itself, training the academic tutors seems like an effective method to ensure a climate of discussion. A facilitator (in this case, a tutor) is not a part of the group but an outsider who helps the group to interact in a more efficient manner (Baruah & Paulus, 2009). According to Boulocher-Passet, Daly and Sequeira (2015), there are many advantages in involving a person acting as a facilitator to increase the quality of ideas: To ensure the students staying on track according to its initial objective, to avoid rambling discussions, to ensure voices of all members are heard (for group tasks), to give critical questions. The method of providing tutor to assist the students could support standpoints by Tomkins and Ulus. They see that ELT method is often seen as a minimal guidance method, but it actually involves a different quality of guidance, and focus on relations between the facilitators and students (Tomkins & Ulus, 2016).

Creativity Between Groups After The Course

The results of score difference between students joining the course (experimental group) and not joining the course (control group) are calculated by independent sample *t*-test. It was revealed that there was no significant difference on the creativity test scores between students who joined the course (M = 66.82, SD = 8.093) and students who didn't join the course (M = 69.83, SD = 8.223); $t(113) = -$

1.973, $p = 0.051$. This shows that creativity test scores between both groups are pretty similar, even after procedure had undergone.

The notable finding based on these calculation is that the scores of the control group is higher than the experiment group. This might be caused by the research design itself, which is *quasi-experimental design*, where the assignment of the participation doesn't involve the process of randomization. This means that that the experiment and control group each came from different backgrounds: the experiment group are only students from the business and management faculty, and the control group are only students from the industrial engineering faculty. Kirk (1982) mentions that the consequence of skipping the randomization process is that there might be other variables involved, not only independent variable. Since the creativity test scores of the control group wasn't obtained before the procedure began, and no other variables was measured, there are no information that will support the possibility of students from the industrial engineering already has high creative scores, even without any kind of experiential learning procedure given.

There is a possibility that actually industrial engineering students has higher creative scores prior to any kind of treatment. This might be influenced by the selection process in the university in the first place. In the university where the data collection is conducted, industrial engineering faculty has a higher admission score than in the business and management faculty, which might also automatically filter the difference between students' intelligence. Preckel, Holling, and Wiese (2006) in their research on creativity and intelligence, found that there are correlations between intelligence and verbal creativity.

Another possibility to consider is on the verbal creativity test itself. Is it possible that engineering students have higher verbal ability that business & management students? Berglund and Wennberg (2006) conducted a research to compare the creativity scores between engineering and business students. It was found that both groups had high creative potential, but engineering students produced ideas that is more practical, and business students produced ideas that is more speculative. Further research is suggested to use several measures of creativity.

Artistic and Non-Academic Activities Correlation

Subsidiary results for this research examines the correlation between artistic and non-academic activities with creativity. The participants were asked to indicate whether they do art often. It is also mentioned that doing art includes drawing, sculpting, singing, dancing, playing musical instruments, doing arts and crafts. Results of the *Pearson* correlation indicated that there was a significant positive association between the frequency of doing art and creativity, ($r(113) = 0.201$, $p = 0.033$). This results is parallel with the notion that people who do artistic activities would have higher scores of creativity. It is always expected when talking about people who encounter high level of creativity and creation are usually artists (Pelowski, Leder, & Tinio, 2017), therefore this result is also in our expectations. Tin (2003) proposed that the act of repeating in a task can enhance one to generate new ideas. The ability to generate new ideas, as one the characteristic of creativity, will enhance creativity as well. For

that reason, it is logical that students who often do artmaking also have high scores in their creativity test.

Weisberg (2006) stated that society values greatly the products of artistic creativity, such as art, music, drama, literature, poetry. The question proposed with this is whether art enthusiast would have high creativity score. We asked the participants to mark their interest in admiring artworks, such as visiting art galleries, attending theater shows, reading, looking at artworks. Based on this question, a correlation between the answers and their creativity scores were conducted. Results of the *Pearson* correlation indicated that there wasn't any association between the interest in admiring work of art and creativity, ($r(113) = 0.038$, $p = 0.688$). This shows that being an art enthusiast wouldn't associate with one's creativity. In this case, the act of doing would affect creativity, more than mere interest.

It is a common belief that creativity can be enhanced by doing art, but this research believes that creativity can be enhanced by experiencing the ELT cycle. This means that non-art activities might be able to enhance creativity as well. Lynch et al. (2015) observes that many believes in the effect of extracurricular activity, such as summer camp, would increase creativity. However, they also admit that there are limited research that examines its effect. Therefore, we also examined whether there is a correlation for students who are involved in activities other than academic activities and their creativity scores. Results of the *Pearson* correlation indicated that there was a significant positive association between the involvement in non-academic activities and creativity, ($r(113) = 0.328$, $p = 0.000$). This result may confirm the notion that creativity doesn't always have to be about art. Creek and Lougher (2008) even mentioned that creative activity doesn't always form through artworks. Creative expression of a person could be shown through daily lives, such as experimenting with food, mix-and-matching one's clothes, or room decoration.

Strength and Limitation

This research believes that the experiential learning theory (ELT) cycle can be used as a teaching method that increases creativity. Interesting findings on this research covers the effect of ELT as a teaching method towards creativity on business and management students. This result proves that it is possible for academic institutions to use this method to fulfill the industry demands, especially on having creative and innovative human capital. However, experiential learning theory (ELT) as a method to enhance creativity is still very vague, and further research are suggested to enrich this method. Future research that is recommended is to explore the correlations that lies between the explicit implicit interaction theory and the experiential learning itself; find factors that might affect creativity through experiential learning, such as creative personality or personality tests. Openness to experience from the Big 5 Theory can be the moderator variable of this model, since it has always been linked with creativity (George & Zhou, 2001; Silvia, 2009). Other further research recommendation is to examine the method with different types of creativity tests, such as figural creativity and numerical creativity, aside from verbal creativity (Preckel, Holling, & Wiese, 2006).

References

Baruah, J. and Paulus, P.B., Enhancing group creativity: The search for synergy. In *Creativity in groups,* 2009, 29-56, Emerald Group Publishing Limited.

Berglund, H. and Wennberg, K., Creativity among Entrepreneurship Students: Comparing Engineering and Business Education. *International Journal of Continuing Engineering Education and Lifelong Learning*, 16(5), 2006, 366-379.

Boulocher-Passet, V., Daly, P., Sequeira, I., Enhancing Creativity Understanding in Large Undergraduate Business Cohorts: The Added Value of Including and Training Facilitators, *University of Brighton*, 2015, retrieved from http://eprints.brighton.ac.uk/15472/ on 18 June 2018.

Corbett, A.C., Experiential Learning Within the Process of Opportunity Identification and Exploitation. In *Entrepreneurial Learning*, 2005, 142-162. Routledge.

Creek, J., & Lougher, L., *Occupational Therapy And Mental Health*, 2008, Philadelphia, PA: Elsevier Health Sciences.

Damajanti, I., *Kreativitas Artistik Heri Dono: Interpretasi Dalam Dimensi Sosial-Budaya,* 2015*,* Institut Teknologi Bandung.

George, J.M. and Zhou, J., When Openness to Experience and Conscientiousness are Related to Creative Behavior: An Interactional Approach. *Journal of Applied Psychology*, *86*(3), 2001, 513.

Haque, W., Experiential Learning: Beyond the Classroom and Connecting with the Industry, Proceedings of the 11th *IFIP World Conference on Computers in Education, 3-6 July 2017. (Dublin, Ireland).*

Hélie, S. & Sun, R., Incubation, Insight, and Creative Problem Solving: A Unified Theory and A Connectionist Model. *Psychological review*, *117*(3), 2010, 994.

Jordi, R., Reframing the Concept of Reflection: Consciousness, Experiential Learning, and Reflective Learning Practices. *Adult Education Quarterly*, *61*(2), 2011, 181-197.

Kim, H.J., Lee, H.S., Youn, J.J., Eom, S.J. & Lee, J.K., A Study On College Students' Demands for Creativity and Personality Education as Part of the General Education Curriculum. *Indian Journal of Science and Technology,* 8(S8), 2015, 29-36.

Kirk, R.E., *Experimental design*, 1982, John Wiley & Sons, Ltd.

Kolb, A.Y. & Kolb, D.A., Learning Styles and Learning Spaces: Enhancing Experiential Learning in Higher Education. *Academy of Management Learning & Education*, *4*(2), 2005, 193-212.

LPSP 3 UI, Tes Kreativitas Verbal, 2011, Depok

Lynch, M.L.,Hegarty C.B., Trauntvein, N., & Plucker, J. A., *Assessing creativity via divergent thinking in residential camp settings* (Doctoral dissertation, University of New Hampshire). 2015

Maddalena, L. A., What the #%&! is Andragogy?, *Mtm Coach*, 2015.

Mainemelis, C., Boyatzis, R.E. & Kolb, D.A., Learning Styles and Adaptive Flexibility: Testing Experiential Learning Theory. *Management Learning*, *33*(1), 2002, 5-33.

Pelowski, M., Leder, H. and Tinio, P., Creativity in the Visual Arts. *Cambridge Handbook of Creativity Across Domains*, 2017

Preckel, F., Holling, H. and Wiese, M., Relationship of Intelligence and Creativity in Gifted and Non-gifted Students: An Investigation of Threshold Theory. *Personality And Individual Differences*, 40(1), 2006, 159-170.

Reynolds, M., Wild Frontiers—Reflections on Experiential Learning. *Management Learning*, *40*(4), 2009, 387-392.

Silvia, P.J., Nusbaum, E.C., Berg, C., Martin, C. and O'connor, A., Openness to Experience, Plasticity, and Creativity: Exploring Lower-order, High-order, and Interactive Effects. *Journal of Research in Personality*, *43*(6), 2009, 1087-1090.

Tin, T.B., Creativity, Diversity and Originality of Ideas in Divergent Group Discussion Tasks: The Role of Repetition and Addition in Discovering 'New Significant', or 'Original' Ideas and Knowledge. *Language and Education*, *17*(4), 2003, 241-265.

Tomkins, L. and Ulus, E., 'Oh, Was That "Experiential Learning"?!' Spaces, Synergies and Surprises with Kolb's Learning Cycle, *Management Learning,* 47(2), 2016, 158-178.

Weisberg, R.W., *Creativity: Understanding Innovation in Problem Solving, Science, Invention, and the Arts*, 2006, John Wiley & Sons.

Wu, H.Y., Wu, H.S., Chen, I.S. and Chen, H.C., Exploring the critical influential factors of creativity for college students: A multiple criteria decision-making approach. *Thinking Skills and Creativity*, *11*, 2014, 1-21.

ICEL_0229

Forgiveness and Happiness among Student Collage in China and Indonesia: A Comparative Study

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Abstract

Most of undergraduate student were in the transitional phase between late adolescence and early adulthood. At this age, prone to conflict because of the many tasks of development that must be done such as searching identity or building social maturity that affect to their happiness. This study aims to see the difference between happiness in Indonesian and Chinese undergraduate students. Subjects in this study amounted to 42 Indonesian and Chinese undergraduate students with age ranged 18-25 years old. This study uses the scale of happiness (Tyasari, 2014). The result show that in Indonesian and Chinese undergraduate students found difference with Indonesian is higher than Chinese undergraduate students (p = 0,000).

Keywords: Happiness, Indonesian undergraduate students, Chinese undergraduate students.

1. Introduction

Being a student has its own challenges. Cognitively, they are faced with more complex problems to solve than previous educational stages. Socially, they are required to be able to interact with the wider community, especially for students who have field program on campus. Emotionally, the age of students is required to achieve stability in order to live their lives with more adaptive. By age, students are in the 18-25 year age range where it is the transition age from late adolescence to adulthood. This transitional age has many physical, emotional, and social changes that can cause many problems and conflicts in its time. Hall (Santrock, 2007) says adolescence is a time of turmoil that is filled with conflict and mood swings known as strom and stress phases. According to Erikson (Santrock, 2005) adolescence is very closely with the development of "sense of identity vs. role confusion" is the feeling or awareness of identity. In general, during adolescence, teenagers will be faced with many questions about his existence. When teenagers succeed in understanding themselves, their roles to the meaning of religious life, then the teen will find his or her identity, which means that the teen will have a healthy personality, and vice versa if the teenager fails then the teenager will experience confusion that will affect his personality. Not a few teenagers who do antisocial or immoral action because the development tasks are less well developed (Ali & Asrori, 2011). The phase difference of adolescents with previous phases is in this phase the adolescent has been able to think more abstractly, test the hypothesis and consider what is around in depth.

Basically every teenager who is able to carry out the task of development well, will be easier in achieving balance and personal integrity. Teens who are able to carry out their developmental tasks adequately will have the opportunity to experience the satisfaction of life, joy, harmony in life and productive so that it is expected to be better prepared in facing the task of further development. Conversely, adolescents who are unable to perform their development task well, will tend to experience disappointment, dissatisfaction to frustration and depression that will disrupt the growth of individuals. Based on the results of pre-eliminary research conducted by researchers at 215 undergraduate students on university, found information that there are problems faced by students in the last week, among others are academic, friendship, romance, economic and family problems such as the known problems can disrupt the psychological and developmental condition of a person if not resolved properly. The researchers used the Beck Anxiety Inventory (BAI) and Beck Depression Inventory (BDI) scales to determine the impact of the problems faced by students experiencing anxiety to depression or not. According to Beck (Seligman, 2005) people with depression always think bad things about himself and his future. These thoughts are the result of depression, sheing depression is caused by a conscious thought disorder. Similarly, anxiety is the fear of something bad that comes from someone's cognition. Beck (Seligman, 2005) adds cognition greatly determines one's emotions and emotions is also important to determine the patient's resilience in dealing with the problem. According to Beck (Seligman, 2005) from uncontrolled cognition that anxiety and depression can arise, because if a person is in a stressful or unpleasant situation, then a person will tend to feel anxious and if his anxiety

is higher but not resolved properly then causing frustration, despair to depression so that someone will find it difficult to feel the sense of happiness or positive emotion that should be felt. After completion of the survey, the Beck Anxiety Inventory scale obtained 33.5% categorized high, 43.2% in the medium category and 23.3% in the low category of 215 students. As for the results of the Beck Depression Inventory (BDI) Scale obtained 60.5% categorized normal, 26.5% categorized mild mood distrubance, 5.6% categorized borderline clinical depression, 5.6% in moderate depression category, and 1.8 % severe depression.

This challenging situation will certainly affect the level of student happiness. According to Seligman (2005) happiness consists of three aspects namely; the satisfaction of the past, the happiness of the present and the optimism for the future. While the factors that can affect happiness according to Seligman (2005) include money, marriage, social life, negative emotions, age, health, and religion. Hypothesis in this research is there is difference between happiness level of student in Indonesia and China.

2. Methods

This study used a scale of happiness developed by Tyasari (2014), which is based on aspects of Seligman's theory. This scale aims to reveal happiness on the subject by measuring the aspects of happiness that include past satisfaction, present happiness and future optimism. Item scale is 21 statements, consisting of 9 favorite items and 12 unfavorable items. This scale of happiness provides an answer option for a subject consisting of four alternative answers, which are Very Agree, Agree, Disagree, and Very Disagree. The scoring moves from point 1 to 4, in favorable items and vice versa for unfavourable items. Data were analyzed using different test (comparison) with Independent Sample Test technique. Data analysis program used is SPSS (Statistical Product and Service Solutions)

3. Participants

The subjects of the study were 42 undergraduate students in Indonesia and China with the age range 18-25 years. Male and female sex . The selection of subjects in this study using non-random sampling technique purposive sampling, the selection of samples in accordance with the desired with certain considerations (Latipun, 2004).

4.Results

First, homogeneity test on the variable of happiness of Chinese and Indonesian students showed $p = 0.205$ ($p > 0,05$) which means the data is homogeneous. Homogeneity test results can be seen in the following table:

Tabel. 1
Homogeneity Test

Variable	P	Conclusion
Happiness on China & Indonesia	0,205	Homogen

The happiness variable was found p value = 0.000 which means there is significant difference in both subject group, with the mean of Indonesian student M = 74,48 higher than the mean of student of China M = 49,81. Hypothesis test results can be seen through the table below:

Table. 2
Comparison Test

Variable	p	Undergraduate Student	Mean	Conclusion
Happiness	0,000	Indonesia	62,81	There is a significant difference. The average of Indonesian students is higher than China
		China	49,81	

5. Discussion

The result of difference test of difference of happiness variable was found difference with student of Indonesia higher than Chinese student. The results of this study support the revelation of the Varkey Foundation survey results found that the score of juvenile happiness of Indonesia is 90% and China 62%. The survey results stated that teenagers in Indonesia believe that religion is very influential on happiness, so when have problems, and Indonesian teenagers are not too worried, anxious or lonely. Unlike the teenagers in China more concerned about climate change related to its future.

After several interviews with several Chinese students and observations while in Hangzhou, Zhoukou and Shanghai the most visible thing is the competitive nuance of Chinese society. Unlike the Indonesian culture that still tends to collective and not too competitive. As Paul Ekman (2003) points out, one way to experience happiness is to change the perspective of what happens to each other's lives. According to Paul Ekman (2003), praise, friendship, appreciation from others is a gift that can make a person feel happy. While Indonesians are famous for their hospitality to others, collective life is not individualized as in other countries, so it becomes true that Indonesian students find higher levels of happiness than Chinese students, because whatever the circumstances, there will be those who provide good support from family, friends or neighbors around.

6. Conclusion

Hypothesis of variable comparation of happiness between undergraduate student in Indonesia and China accepted. The level of happiness between the undergraduate students of Indonesia and China, Indonesian undergraduate students found higher than Chinese undergraduate students. The limitation of this research were researchers realize this research has not been able to reveal the existing situation in the field as a whole. The limited time and ability given to the researcher when disseminating the data cause the questionnaire is not maximal. So that researchers get less information related to how happiness to students in these two countries.

In addition, research conducted in groups requires better coordination among researchers, especially when the distance is separated between countries and languages. Researchers also experience constraints when preparing two scales in two language versions

Reference

Ali, M & Asrori, M. 2011 . Psikologi Remaja. Jakarta : PT. Bumi Aksara

Hurlock, E.B. 2006. *Psikologi Perkembangan: Suatu Pendekatan Sepanjang Rentang Kehidupan.* Edisi Kelima). Jakarta: Erlangga

Latipun. 2006. *Psikologi Eksperimen Edisi Kedua*. Malang : UPT. Penerbitan Universitas Muhammadiyah Malang

Santrock, J., W. 2007. Remaja. Jakarta: Erlangga

Seligman, M. E. P. 2005. *Authentic Happiness*. Bandung : Penerbit Mizan

Tyasari, R. R. 2014. Pengaruh pelatihan pemaafan terhadap kebahagiaan pada anak dengan orang tua bercerai. Skripsi. Psikologi Universitas Islam Indonesia Yogyakarta

Varkey Foundation. 2017. *What the World's Young People Think and Feel. Generation Z: Global Citizench*. Diunduh pada 3 Maret 2017, dari varkeyfoundation.org

ICEL_0233

An Application for Chemical Laboratory Learning

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Abstract

This research developed an application on mobile to support the junior high school students for learning chemistry. This application is a chemical laboratory simulation games on Android platform. There are 9 laboratory exercises from 2 main lessons. The contents come from the junior high school curriculum that can be simulated in mobile application. Each laboratory has 2 parts, i.e., preparation stage and experiment stage. In the preparation stage, students will learn about laboratory equipment as how they called and how they look like. Students will know equipment and should be able to prepare them correctly in the real chemical laboratory. In the second stage, students will try to do the experiment when the instructions were assigned. Students have to finish the lab in the limit time and the score will be showed when the laboratory exercise is finished. The evaluation results showed that the contents of experimentation in the chemical laboratory game are correct. Equipment in this game is similar to the actual equipment. In addition, all users are satisfied in knowledge and enjoy on this game.

Keyword: Learning, Laboratory, Chemistry, Mobile Application, Android

1. Introduction

Chemistry is a course that has many techniques for learning. Students cannot only read form the book or listen in the lecture class. To more understand, students should try to use real equipment in laboratory. However, some schools cannot prepare all experiments. Some experiments use several equipment and substances that require more funding. Furthermore, some experiments may be harmful for small children. Other learning and teaching techniques may able to support learning process. Mobile application is an alternative way for learning.

Smartphones and tablets are cheaper than the past. Android is an operating system on mobile that are widely used. An application on Android can be widely accessed from many group of users. However, the target group of this application is students in grade 7-9. Application is designed as the games with the instruction. Scenes in game is simulated from chemical laboratory. Players should be able to get both knowledge and entertainment. For some students, they may use this application for testing their idea before conducting real experiments in laboratory.

2. Similar Application

There were some chemical applications which created for each target group. However, these applications have both strength and weakness. An application that was create by Plearnsoft [1]. This application is a freeware that simulate chemistry experiments. However, this application is designed of grade 10-12 students. Moreover, in the experimentation step, this application show video clip. Thus, the learners do not have any interaction in this part.

Figure 1. Chemistry Software from PlearnSoft

Virtual Lab [2] is a simulation software that was created National Science Digital Library (NSDL). Moreover, there are other software applications that were created by this institution for chemistry learning.

In this application, there are a lot of tools and equipment which are very similar to real laboratory. Each substance can be set the intensity. The results are more reliable because it was developed by chemistry experts. Example of interface in Virtual Lab is showed in Figure 2.

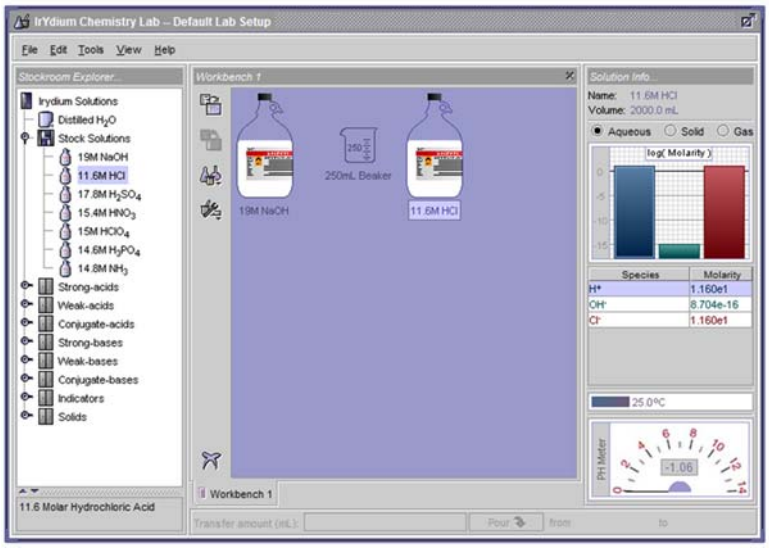

Figure 2. Virtual Lab

Since the experiment in virtual lab is very similar to real experiment, the users must have knowledge before using this application. There are a lot of equipment which are not easy for small children.

Chemistry Lab Escape [3] is a game which players must find the equipment in chemistry laboratory to get a key. Keys are used for open the door to leave out from the laboratory. Example of Chemistry Lab Escape is showed in Figure 3. This application is more attractive. Players can solve the problem by themselves. However, there is only one scene and contents were created for entertain. The goal of this application was not designed for learning.

Figure 3. Chemistry Lab Escape

3. Development Tools

In order to support teachers in chemistry class, an application is design to cover 9 experiments about substance/particle, gas, liquid, solid, solution, colloid, suspension, energy, and acid/bases. In each experiment, there are instruction which the player must follow. The difficult level of each experiment is differed, and the number of substance depends on the experiment.

To develop this application, SQLite is used as the small database in Android. MySQL [4] is used to be the database management system. Android Studio and SDK [5] - [7] and Eclipse are used for development. Pictures are drawn in drawing and decoration program.

4. Chemical Laboratory Application

When player open chemical laboratory application, this application will check the saved data in database. For the first time, players can choose to start new game. If there are saved data, players can choose to resume or reset game. These interfaces are showed in Figure 4.

(a)

(b)

Figure 4. Start Page (a) First time playing (b) Resume playing

Then, the next page is the experiment selection. This page will show some experiments and score of played lab. This page showed in Figure 5.

Figure 5. Select Experiments

Players must study equipment and substance before playing. Examples of equipment showed in Figure 6.

Figure 6. Equipment and Substance

Then, players must choose the suitable equipment as showed in Figure 7. This part is decided to evaluate the knowledge about equipment of players. Before choosing the equipment, the experimental description is showed to the players and players can go back to read them when they want.

Figure 7. Equipment Selection

For the experiments, there is the time limitation. Players must pick up equipment and perform the experiment with the suitable sequence in a fixed limit time. Figure 8 shows example of experimental page.

Figure 8. Experimental Page

If the players finish their experiment with in the limit time, “Lab Passed” with the score will be showed on screen. In opposite, if they cannot complete the experiment, the result will be “Lab Failed”, which are showed in Figure 9.

(a)

(b)

Figure 9. Result Page (a) passed (b) failed

When the players finish each experiment, there are the conclusion of that experiment. This part is prepared for the players who what to understand it more. Figure 10 shows the conclusion page.

Figure 10. Conclusion Page

Moreover, from the start page, the players can choose option. In the option page in Figure 11, there are manual, setting, and about. All contents in this application is Thai language because we design for early secondary students and they may have the limitation in foreign language.

Figure 11. Option Page

5. Evaluation

In order to evaluate this application, the questionnaire is created to survey on 30 students. Ten students are learning chemistry and twenty students are not learning this course. After they used this application, they went to answer the question in an online questionnaire. In the questionnaire, we asked about the suitable of contents, user interface design, overall opinion, and suggestion. Figure 12 - Figure15 show example of questionnaire.

Figure 12. Basic Information and Contents in Questionnaire

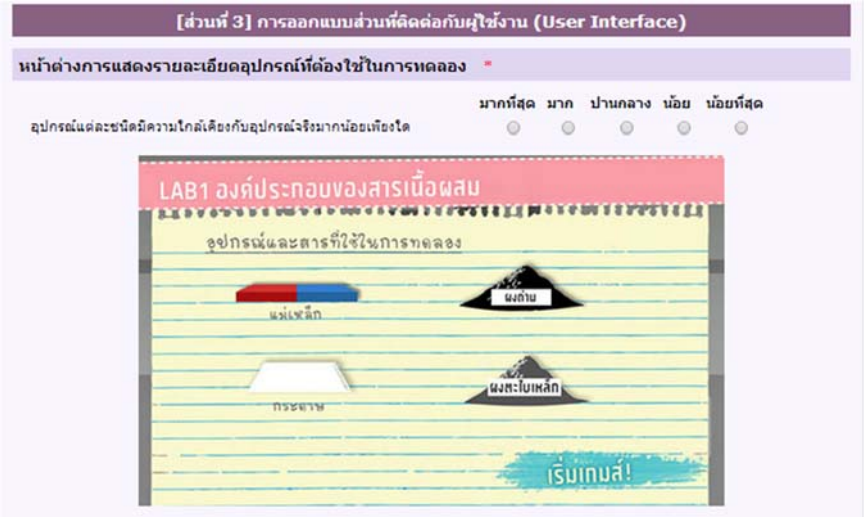

Figure 13. User Interface in Questionnaire

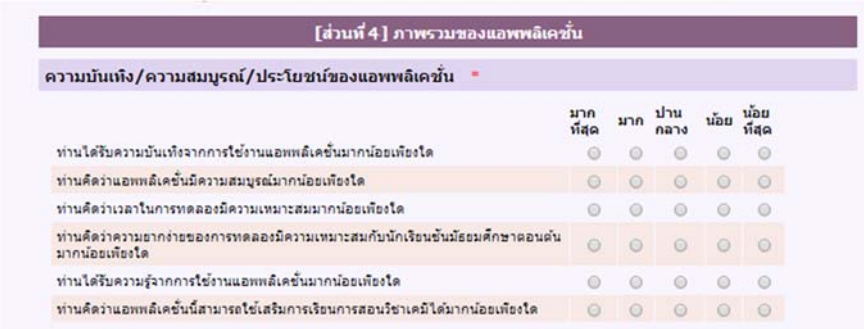

Figure 14. Overall Opinions in Questionnaire

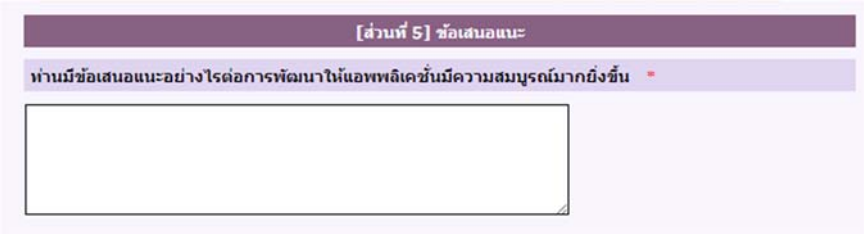

Figure 15. Suggestion in Questionnaire

From 30 students, there are 15 males and 15 females. The results from questionnaires are presented in Table 1. The results show that most users this application, the most score is on good rating. However, this application is not complete. There are some opinions that suggest to add more equipment. Time limitation is a weakness of this application, many players cannot finish experiment on time. Shaking function in application is too short.

Table 1. Results from Questionnaires

Questions	Rating				
	Very Poor	Poor	Fair	Good	Excellent
1. Suitable of Contents	0	0	2	20	8
2. Suitable of Experiment	0	1	6	12	11
3. User Interface	0	0	6	19	5
4. Equipment Selection	0	1	8	15	6
5. Game Engine	0	1	5	16	8
6. Easy to Play	0	1	15	7	7
7. Easy to Understand	0	1	7	11	11
8. Conclusion of Experiment	0	0	5	16	9
9. Entertainment	0	1	6	15	8
10. Completeness	1	3	6	15	5
11. Suitable for Secondary School Student	0	0	7	15	8
12. Knowledge	0	0	12	11	7
13. Support Chemistry Learning	0	0	6	15	9
Average	0.0769	0.6923	7.0000	14.3846	7.8462

Graph of evaluation results are showed in Figure 16. These results showed that there are many parts that must be improved. Moreover, this application should be tested on secondary school students to get real feedback.

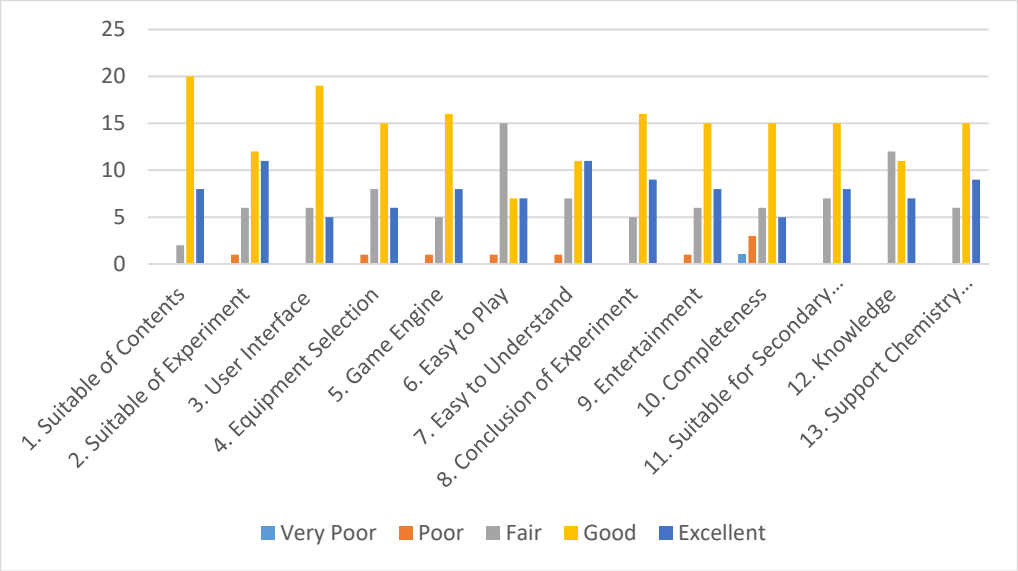

Figure 16. Evaluation Results

6. Conclusion

This paper presents an android application for chemical learning. This application is designed for students in secondary schools. Students can perform the experiments and see the results. The evaluation results show that players satisfy this application. Teachers and students may use this application as a part for supporting in chemical learning.

However, there are some weaknesses such as instruction is not clear, time condition is too short, and playing techniques should be more. Moreover, there are some limitations such as players cannot get smell and this application is developed for only an operating system. These weaknesses and limitations will be solved in the next version.

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References

[1] Plearnsoft, http://web-education-ex.blogspot.com/2013/07/blog-post_25.html [Accessed: 20 June 2018].
[2] Virtual Lab, http://chemcollective.org/ [Accessed: 20 June 2018].
[3] Chemistry Lab Escape Game, http://www.123bee.com/ [Accessed: 20 June 2018].
[4] ThaiCreate.Com Team, http://www.thaicreate.com/mobile/android-sqlite-database.html [Accessed: 20 June 2018].
[5] “Develop Android Applications with RAD Studio”, https://www.embarcadero.com/products/rad-studio/create-android-apps [Accessed: 20 June 2018].
[6] AndroidStudio, https://developer.android.com/studio/ [Accessed: 20 June 2018].
[7] ghmthailand, “Review : Mono for Android SDK”, http://ghmthailand.blogspot.com/2012/09/review-codenameone-sdk.html [Accessed: 20 June 2018].

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To Adopt or Not -Business Analytics Program in Business Schools

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Abstract

Abstract— In 2010, Ritsumeikan Asia Pacific University (APU) launched a course in data mining in the Asia Pacific School of Business in conjunction with a professor who was a faculty member of both the Institute for Communication Technology and the School of Management. The limited program was born of the efforts of a visionary President of APU who in 2008 realized the vast potential of this field even when the field was far from what it is today. A second course was added in 2013. This paper is a case study that serves to establish a knowledge base for schools that are still in the preimplementation stage of any form of Business Analytics or Data Science offering within a Business School setting. Currently there are 302 programs in data science or Business Analytics, but this is a small fraction of accredited universities worldwide. Among AACSB accredited universities this represent less than half. The gap must and will be filled and this paper can serve as part of an initial roadmap for a Business Analytics Program implementation. It is further argued in this paper that students should be exposed to the inner workings of at least one machine learning algorithm to avoid blind faith in a black box process and over-confidence in the outputs and predictions obtained.

Keyword: Business Analytics, Data Science, Education, Job Growth

1. Introduction

The BA Landscape

The era of Big Data is here and business schools must provide Business Analytics education that is now expected a rapidly growing coterie of businesses. A 2017 study by the IBM predicts that by 2020 the United States will face a shortage of more than 2.0 million managers, analysts, and other workers who are well-versed in the principles and use of analytics[130]. The demand will extend over the categories of professional services, finance and insurance, manufacturing, information, healthcare and social assistance, and retail trade. The demand is projected to grow by 39%. Already, according to Wired, the growth rate for this profession has reached more than 4000 percent over the past 7 years. Also, according to Wired, traditional business analysts are being replaced by data scientists to use machine learning and data mining techniques to discover new product trends and patterns of customer behavior that create a more accurate picture of where various aspects of the business is going[131].

Five years ago Thomas Davenport and D.J. Patel wrote in the Harvard Business Review that data scientists "are akin to Wall Street 'quants' of the 1980s and 1990s." This initial wave was followed by new university-based financial engineering programs that "churned out a second generation of talent."

The authors predicted the same would happen in business analytics.

This has proved to be the case. University-based analytics programs dramatically increased from about 5 five years ago to over 400 AACSB analytics degree programs across nearly 220 business schools worldwide. IBM predicts demand for data scientists will soar 28% by 2020[132]

The Association to Advance Collegiate Schools of Business (AACSB)'s International Accounting Accreditation Standard A7, Information Technology Skills and Knowledge for Accounting Graduates: states: "Data analytics or business analytics along with appropriate IT skills and knowledge development should be a key component of accounting curricula"[133]

A Gallup poll found that 69 percent of employers expect candidates with data science skills will get preference for jobs with their organizations. But just 23 percent of college leaders said their graduates will have those skills. One reason for this gap is "an educational culture where both faculty and students devote little time outside of their own specialties," the report said. So, while data scientists with graduate degrees have the chops, business majors typically do not[134]. Colleges are adding degrees and certificates in this discipline, with 303 new accredited data science programs in the U.S.

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130 https://www.forbes.com/sites/louiscolumbus/2017/05/13/ibm-predicts-demand-for-data-scientists-will-soar-28-by-2020/#40494b897e3b

131 https://www.wired.com/insights/2013/04/data-scientists-to-wipe-out-business-analysts/

132 https://www.forbes.com/sites/louiscolumbus/2017/05/13/ibm-predicts-demand-for-data-scientists-will-soar-28-by-2020/#2c5628347e3b

133 http://bit.ly/1RNASdz

134 https://www.insidehighered.com/news/2017/03/30/report-urges-data-science-course-work-all-undergraduates-close-growing-skills-gap

since 2010. But most are too new for employers to get a good sense of the job candidates they produce, according to the report. Meanwhile, business schools offer few programs that include related course work.[135]

The growth in the number of programs over the past 5 years is phenomenal and yet these represent a small fraction of the business programs in colleges and universities worldwide. The demand is outpacing the supply and many more business programs must begin on a path towards educating students in data analytics using the new tools available via machine learning.

Companies such Amazon.com, Google, eBay, Netflix, and Wal-Mart to name a few, analyze massive amounts of data about their customers to discover new insights. Such companies are gaining competitive advantage from analytics—whether it's learning more about customer buying habits, decisions for new product offerings, or more value for its customers (T. H. Davenport).

What's Included?

Davenport (T. H. Davenport) defines analytics as "the extensive use of data, statistical and quantitative analysis, explanatory, and predictive models, and fact-based management to drive decisions and actions." Analytics can be categorized into three areas based on the methods and purpose: descriptive, predictive, or prescriptive. Operations Research (OR), Management Information Systems (MIS), and statistics subdivides analytics into descriptive, predictive, and prescriptive [Gorman].

Descriptive analytics explores what has occurred, involves gathering, organizing, tabulating, and depicting data and is an extension of Business Intelligence (Abbott). BI is an Information Technology (IT) function that provides decision makers with dashboards, scorecards, and data cubes that provide the ability to slice and dice historical data (Mary Dunaway).

Predictive analytics focuses on what will occur in the future. It includes methods that rely on machine learning, regression analysis, customer segmentation, and decision trees. These type analytics go beyond the descriptive characteristics of the data and relationships among the variables. The techniques help to identify the associations among the variables and then predict the likelihood of an outcome of the phenomenon. Although, the associations of the variables are used for predictive purpose, explicit cause-and-effect relationships is not always necessary to make accurate decisions (T. H. Davenport). Furthermore, value can be gained with Predictive analytics to discover interesting and meaningful patterns in the data, identify the important factors, and explore using complex mathematical formulas outcomes to inform decision-making (Mary Dunaway). Proscriptive analytics is a goal yet to be realized in Business Analytics education.

Learning lessons

A question business schools who have yet to implement business analytics programs is whether it is worth the financial and human capital investment required to add an introductory course or up to

135 https://www.insidehighered.com/news/2017/03/30/report-urges-data-science-course-work-all-undergraduates-close-growing-skills-gap

3 courses in the field in order to test the waters as to what kind of program can be the most effective solution to meet the future demands for business analytics. Dunaway et. al focus on a fuller integration of BA courses into an online Master's program beyond the goals covered in this paper, to establish a full-fledged BA program (Mary Dunaway).

2. Predictive Analytics & Business Analytics versus Data Science

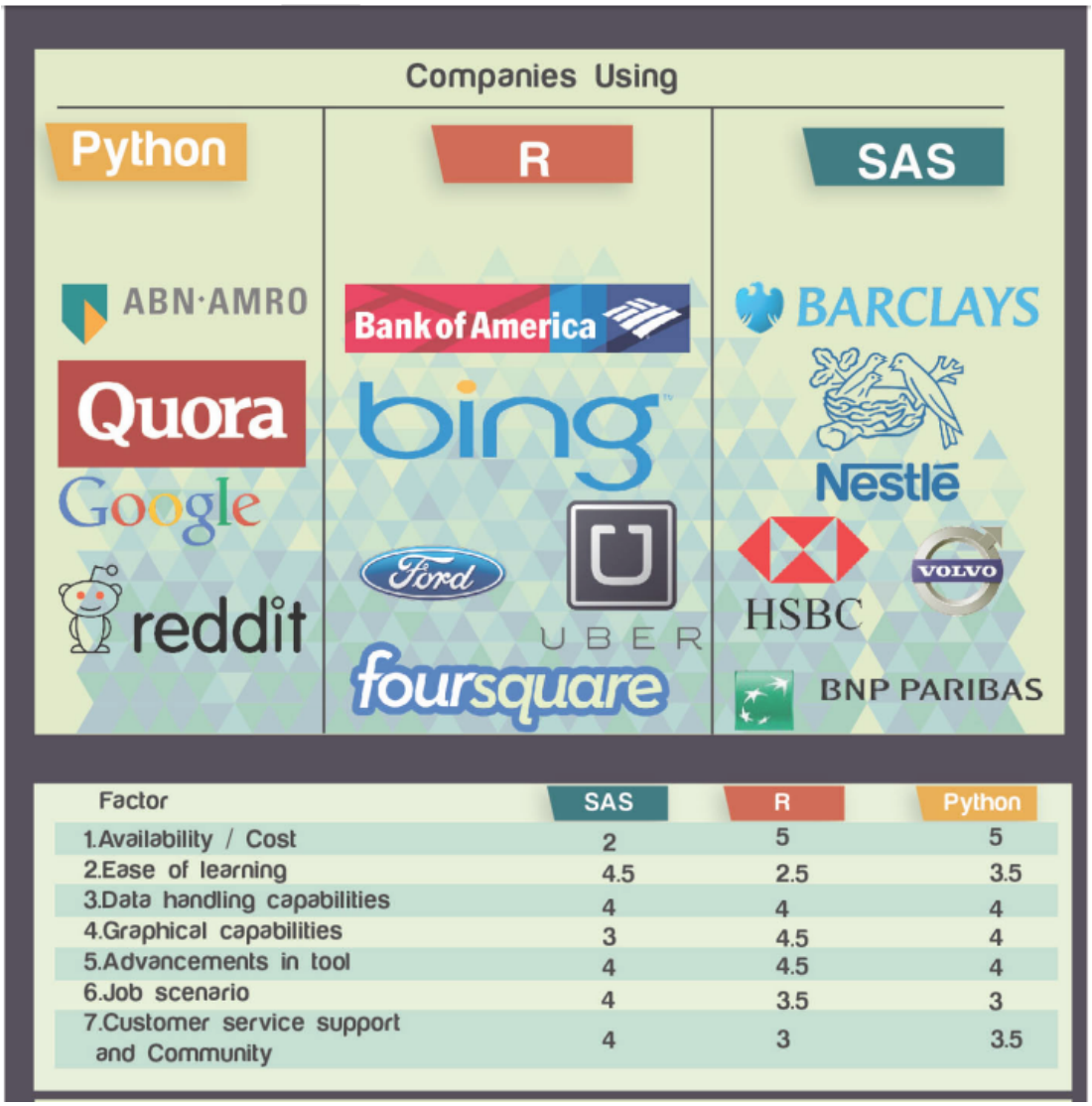
-Pathways for Student Learning

The terms Descriptive Analytics, Predictive Analytics, Prescriptive Analytics are primarily relevant to Business Analytics and will generally be the focus in business education. Data Science is usually a program within an IT based program. The fields have a large intersection of content and purpose but also differ in some important ways. Most programs choose one or the other focus but almost all borrow courses and faculty because of the large amount of shared content.

Software choices

One of the key decisions that need to be made is the choice between use of off-the-shelf software such as SAS, Tableu, Weka, RapidMiner, etc. and the use of programming languages such as R and Python. These are not mutually exclusive, but some choice needs to be made in terms of time-allocation of educational resources. A 2016 study by Burch Analytics shows a definite trend towards open source alternatives and away from the longstanding suite of analytic tools from SAS, which are proprietary[136]. It should also be noted that a new Microsoft initiative is its Azure technology which debuted in 2016.

[136] http://www.burtchworks.com/2017/06/19/2017-sas-r-python-flash-survey-results/



Factor	SAS	R	Python
1.Availability / Cost	2	5	5
2.Ease of learning	4.5	2.5	3.5
3.Data handling capabilities	4	4	4
4.Graphical capabilities	3	4.5	4
5.Advancements in tool	4	4.5	4
6.Job scenario	4	3.5	3
7.Customer service support and Community	4	3	3.5

[137]

Figure 1: Choice of software tools

[137] https://www.analyticsvidhya.com/blog/2015/05/infographic-quick-guide-sas-python/

Figure 2. Magic Quadrant for Business Intelligence and Analytics Platforms from Gartner 2017[138]

Given figures 1 and 2 above, data science students will probably focus on programming-based approaches -R and Python, while the Business Analytics student could benefit from exposure to both off-the-shelf tools and programming language instruction. As seen from the graph in Figure 2, Microsoft has entered the field relatively recently but is already considered a leading player with its Azure platform. Azure has made the strategic decision to integrate with R and this amplifies both the attractiveness of R and Azure.

Data Science versus Data Engineering

In any discussion of business analytics and data science, the area of data engineering must also be addressed. Data engineering refers to the design of information systems and their management. This encompasses technologies like Hadoop, Map reduce, traditional database management, warehousing, cloud technologies like AWS, Google Cloud, and Microsoft Cloud. Mastery of data engineering is essential for data scientist whereas for a business analytics student, some familiarity with the language and tools should be provided but nuts and bolts mastery is not an objective of most programs.

[138] https://www.gartner.com/doc/reprints?id=1-3RTAT4N&ct=170124&st=sb

Facing Limitations

The Business Analytics program must be conditioned by the limitations that a 2~3 course program places on the time available and these restrictions are more marked in an MBA program. At APU the choice resulted in a combination of in-depth coverage of one or two algorithms in the first course and then a broad general overview in the second course. This author believes that in-depth knowledge in at least one machine algorithm should be a mandate of any business analytics program because without this, practitioners will be prone to overestimate the applicability of models. As stated by Paul Lin, [Lin] "Although these new skills can enhance accountants' career development, using new IT tools can also increase the risk of system security breaches. Therefore, the AACSB also contends that understanding the nature of IT developments related to data management, analytics, and security within and across organizations is critical for the professional development of accountants."
This is the path that has so far been adopted at APU.

At The Pareny Asia Pacific University

Course 1

Several iterations of a 2-course program at APU have been implemented over a period of 7 years. The first course started using the text, Data Mining: Methods and Techniques, Shawkat Ali, Saleh Wasimi. This text is well written and does a good job of describing the processes, theory, and issues in the data mining work cycle. In addition, it provides a good set of tutorials on the open source off-the-shelf software Weka. In 2010 there was very little in the way of tutorials for Weka and so this book was an excellent choice on that basis alone. Now there are a series of excellent online videos that cover most of the considerable capabilities of Weka produced by authors of the Weka software from University of Waikato, New Zealand[139]. Prior to the creation of these videos, the professor at APU created a series of about 50 hours of videos on Weka and these were published at Kdnuggets. Because of the large number of classification and regression algorithms, the feature selection algorithms, a variety of interfaces, including the experimenter, knowledge flow, explorer, workbench, clustering, association mining, forecasting, CPython scripting, and visualizer, Weka remains an excellent tool for both conducting data science and teaching it. The excellent Weka machine learning algorithms have also been ported to both R and Python. Another reason for the selection of Weka was the lack of availability of SAS. SAS now offers a free cloud based subscription for students.

Revised Course 1

This above course 1 was run several times with the same textbook. The text provides students with a complete understanding of the analytics process with one exception. As with most off-the-shelf tools, students do not learn programming. Weka does provide many "filters", which enable the user to perform many of the tasks that would normally be performed in a programming language such as R or Python for both the data preprocessing phase and in the modeling phase. However, this is different

[139] http://www.cs.waikato.ac.nz/ml/weka/mooc/dataminingwithweka/

from learning to program. It became clear that even at the introductory level, if students are going to understand the processes of data science, students must face the endeavor of programming. According to a recent survey by CrowdFlower, most data scientists claim that preprocessing of data takes about 80% of their time and complex preprocessing is best handled through programming[140].

Introduction to Business Analytics Mathematics and Algorithms with R (course 1 -latest iteration, 2017)
Part 0 ***Learning R Basics:*** Using the O'Reilly free R tutorial at http://tryr.codeschool.com/ 3 weeks
Part 1 ***Foundational Math for Business Analytics; Sets, Logic, Probability using R:*** Implement functions for set operations, logic, and probability in a dataframe context. All math is done within the context of dataframes and does not rely on inbuilt R functions. This approach develops students understanding of R, of function building, and of the value of sequential development of functions. (finish week 7)
Part 2 ***Naïve Bayes Algorithm Implementation:*** Using the tools developed in part 1, implement Naïve Rule, Complete Bayes, Cutoff Probability Method, and Naïve Bayes algorithms (finish week 10)
Part 3 ***Neural Network Algorithm Implementation:*** Using programming skills developed in part 1 and part 2 construct a neural network with a single hidden layer. (finish final week)
Part 4 ***Team Project:*** In week 3, students are grouped into teams of 4 and asked to produce a report due at the end of the semester with a real dataset (many students choose data from Kaggle). They are asked to compare 4 models, two of which are Naïve Bayes and Multivariable Regression. Videos with instructions on how to run these models are provided. The basics of Scrum Project Management are introduced, and teams are required to have a rotating "scrum master", provide weekly group member assessments (to the instructor), and produce scrum deliverables every 2 to 3 weeks.
Note: Much of the homework is based on watching videos with questions imbedded. The videos are produced with Camtasia.

Table 1: Introduction to Data Science Mathematics and Algorithms with R

Because of the difficulties in acquiring necessary programming skill in R (in the first attempt at teaching R -*see Course 2 below*), and with the goal of providing students both with a broad overview of business analytics and a hands-on investigation into the inner workings of an actual machine learning algorithm, the course was modified significantly in the last year[141] (Table 1). In prior iterations of this course, it was found that students lacked the basic understanding of math, logic, and

[140] http://visit.crowdflower.com/rs/416-ZBE-142/images/CrowdFlower_DataScienceReport_2016.pdf

[141] The notes for this course are being assembled and will be published as a text or pdf in 2018.

probability that are needed to proceed in an organized fashion with the task of applying R to real data. The latest version of this course was developed to meet these needs, while at the same time, providing students with an understanding of what is the actual structure of a machine learning algorithm. The first course in the sequence now starts with learning R in the context of fundamental computer science mathematics and proceeds to build towards the actual development of two machine learning algorithms: Naïve Bayes and Neural Networks. The steps to this goal include *R and set theory*, *R and mathematical logic*, and *R and probability*. With these covered in the first 7 weeks of the course, students learn to build a Naïve Bayes algorithm and a neural network algorithm. The material is taught in class lectures and supplemented with out-of-class videos containing embedded questions using Camtasia[142].

Team Project Requirement

Simultaneously students are asked to participate in team projects that are due at the end of the semester. These projects are modeled on the work that Galit Shmueli has done since 2012[143]. The team projects provide students with the opportunity within the first course to implement a machine learning based project using practical data. Many students choose data from Kaggle.com. Without the student project, business-oriented students may feel as though the concepts they learn in logic and mathematics are not practical. Students are also introduced to project management in this project through an introduction to Scrum and Agile[144]. The role of scrum master is rotated each week during the span of the project and 2 or 3 iterations or scrum deliverables are required prior to the final delivery at the end of the semester.

The *revised* course 1 is a somewhat radical departure from the standard presentation of machine learning to novices and the results of this approach will have to be tested through several iterations. It was felt that without having some exposure to algorithm development students would have only nominal understanding of outcomes provided at the end of the data mining cycle and would therefore not be able to accurately gauge the accuracy of their results. This could lead to blind faith in a black box process and over-confidence in the outputs and predictions obtained.

Course 2

A second course was introduced into the curriculum in the third year after the establishment of the first course. This course sought to extend the content of the first course by following through with concrete applications of business problems and further to introduce students to programming. R was selected as the programming language. At that time, R was the clear leader in terms of model building and also the preferred language in industry (Google, Facebook, and Twitter all used R for their modeling tasks). Things have changed since then and Python is now at least on equal footing with R in industry and academia.

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142 https://www.techsmith.com/

143 http://www.galitshmueli.com/student-projects

144 https://www.scrumalliance.org/why-scrum

R was taught by following the initial chapters R in Action by Kabacoff. The applications covered Advertising and Promotion using regression, Preference and Choice using conjoint analysis, Economic Data Analysis with ARIMA, and Text and Sentiment Analysis. The text for this portion of the course was Modeling Techniques in Predictive Analytics with Python and R: A Guide to Data Science by Miller.

Revised Course 2

With fundamentals covered in the *revised* course 1 (Table 1), the *revised* course 2 provides a more standard approach to Business Analytics, with a broader overview of the issues and processes in Business Analytics. This includes time series data, classification, regression, over-fitting, model evaluation, feature engineering, feature reduction. It also briefly introduces data engineering with an introduction to AWS and Spark. This course mirrors the first course originally offered at THE PARENT ASIA PACIFIC UNIVERSITY. However, with an understanding of programming and algorithms with R, students can use programming to generate 2 team projects with at least one in a business/marketing setting and work with real data from Kaggle.com. Students also manage their own AWS account.

Students would need a course in Foundations of Data Science. The course covers topics such as causality, programming in Python, Probability, Sampling, prediction & classification. Alternatively, such courses are available online and could be required as prerequisite knowledge.

Real Business Situations and Needs Practiced in Classes

There are two ways in which real business situations can be practiced in class. By partnering with cooperate sponsors students can provide analytics solutions to the tremendous digital data generated by firms on a daily basis. This creates a symbiotic relationship where students access real data and businesses benefit from cutting edge solutions. There are also many competitions that students can compete in. One well known site for this is Kaggle.com. Additionally, local businesses can benefit from the universities expertise, where they may not have resources to develop their own data science team. This also provides needed internship opportunities for business students and may improve recruitment and employment opportunities for graduates. As most local businesses are part of business associations the word on the street will spread and generate more opportunities. This will also lead to innovation in local businesses. Coop? Further, with the growth of online boot camp-styled data science skill courses, there is a need to connect to the perspective that is taught in business schools. These boot camp type programs could benefit from a relationship with a business school.

Revenue and Financing

A major consideration in the decision to establish a new program within a business school is of course revenue and financing. As argued above the demand for programs in business analytics is strong and growing. Many schools have taken the plunge, and this argues for the viability of a revenue stream.

Of course, each institution needs to evaluate its particular competitive position and its position in its local and national academic ecosystem in order to determine whether moving forward with such a program will pay for itself and also if not keeping up with its competition will lead to negative downward pressure on its revenue stream.

In terms of financing a program, all the typical considerations come into play. If the university has faculty working in data science, these faculty members can teach foundations of data science, algorithms, and data engineering content. Professors in IT can teach programming and statistics-based content. It is possible that courses can be team-taught to optimize resources and expertise. marketing, finance faculty can teach applications of analytics if they have background or interest in developing such expertise. The option of faculty hired to teach the program full-time would be an important consideration. If the university is in a metropolitan area, part-time faculty can be drawn from local business to teach if a well-developed curriculum and syllabi are in place.

Assessment of Learning

In 2015 assessment of the learning outcomes were calculated on a 7-point scale with a questionnaire to the students. The students were asked about their satisfaction with the class and its relevance to their future study. Students overall were satisfied and were motivated to continue exploration of the field. They also felt that the course had relevance for their future.

Gender		Year in College		Nationality	
male	73%	2nd year	16%	US	1
female	27%	3rd year	73%	China	3
		4th year	11%	Indonesia	8
				Japan	4
				Taiwan	4
				Vietnam	2
				Other	15
Major		Strongest Subject in High School			
Business	80%	STEM	64%		
non-Business	20%	non-STEM	36%		
Statistics taken		Graduation Plans		Previous programming study	
NO	78%	Work	92%	NO	18%
YES	22%	Academic	8%	YES	82%

Assessment of Student Learning Experience			
AOL	Mean	S.D	Scale
Satisfaction	6	1.8	1~7
Relavance to future work	6.3	1.5	1~7
Interest in future study	6.7	1.7	1~7

Table 2: Assessment of Learning

Conclusions

Will the investment of financial and human capital be rewarded with improved impact, greater recognition within the field of AACSB recognized institutions, greater admissions number of applications, and improved quality of incoming students? According to analysis of business and academic trends the addition of such a program will enhance the school pedagogically and improve the school's competitiveness. On the other hand, without the adoption of this type of program schools will fall behind their competitors and lose in the recruitment competition for superior applicants. For a student in business this abbreviated program provides a two-pronged introduction to business analytics, giving them knowledge of what is involved in machine learning. It is a goal of the program to give students confidence in conducting their own investigations and confidence in being able to manage and communicate intelligently with data scientists in the firm. For a business school, this is a first step in the development of a mature business analytics program. Extensions of the program can focus on *BA and Marketing*, *BA and Finance*, *BA and Data Engineering*, and *BA and Statistical Learning*.

References

Abbott, D. *Applied predictive analytics: Principles and techniques for the professional data analyst.* 2014.

Davenport, T. H., & Harris, J. G. *Competing on analytics: The new science of winning Harvard*. (2007).

Davenport, T. H., & Kim, J. *Keeping up with the quants: Your guide to understanding and using anlytics*. Harvard Business Review Press, 2013.

Gorman, M. F., & Klimberg, R. K. *Benchmarking academic programs in business analytics. Interfaces,*. Interfaces, 44(3), 329-341, (2014).

Lin, Paul. *What CPAs Need to Know about Mobile Business Analytics*. The CPA Journal; New York86.5 (May 2016): 39-41, n.d.

Mary Dunaway, Richard McCarthy. *CASE STUDY: LESSONS LEARNED IN LAUNCHING AN INTEGRATED ONLINE*. Issues in Information Systems, n.d. Volume 16, Issue IV, pp. 152-156, 2015.

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