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SOCIAL SCIENCES & HUMANITIES

JSSH

VOL. 25 (S) APR. 2017

A special edition devoted to

TVET Talent Development:
Advancing Society Through Quality, Technology, Innovation and Skill Mobilisation

Guest Editors
Badaruddin Ibrahim, Faizal Amin Nur Yunus & Mohd Hasril Amiruddin

PERTANIKA
JOURNALS

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Journal of Social Sciences & Humanities
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About the Journal

Overview

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Recognized internationally as the leading peer-reviewed interdisciplinary journal devoted to the publication of original papers, it serves as a forum for practical approaches to improving quality in issues pertaining to social and behavioural sciences as well as the humanities.

JSSH is a **quarterly** (*March, June, September* and *December*) periodical that considers for publication original articles as per its scope. The journal publishes in **English** and it is open to authors around the world regardless of the nationality.

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An ISSN is an 8-digit code used to identify periodicals such as journals of all kinds and on all media–print and electronic. All Pertanika journals have ISSN as well as an e-ISSN.

Journal of Social Sciences & Humanities: ISSN 0128-7702 *(Print)*; ISSN 2231-8534 *(Online)*.

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Most scientific papers are prepared according to a format called IMRAD. The term represents the first letters of the words **I**ntroduction, **M**aterials and Methods, **R**esults, **A**nd, **D**iscussion. IMRAD is simply a more 'defined' version of the "IBC" [Introduction, Body, Conclusion] format used for all academic writing. IMRAD indicates a pattern or format rather than a complete list of headings or components of research papers; the missing parts of a paper are: *Title, Authors, Keywords, Abstract, Conclusions*, and *References*. Additionally, some papers include Acknowledgments and Appendices.

The *Introduction* explains the scope and objective of the study in the light of current knowledge on the subject; the *Materials and Methods* describes how the study was conducted; the *Results* section reports what was found in the study; and the *Discussion* section explains meaning and significance of the results and provides suggestions for future directions of research. The manuscript must be prepared according to the Journal's **INSTRUCTIONS TO AUTHORS**.

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Authors are notified with an acknowledgement containing a *Manuscript ID* on receipt of a manuscript, and upon the editorial decision regarding publication.

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Pertanika follows a **double-blind peer-review** process. Manuscripts deemed suitable for publication are usually sent to reviewers. Authors are encouraged to suggest names of at least three potential reviewers at the time of submission of their manuscript to Pertanika, but the editors will make the final choice. The editors are not, however, bound by these suggestions.

Notification of the editorial decision is usually provided within ten to fourteen weeks from the receipt of manuscript. Publication of solicited manuscripts is not guaranteed. In most cases, manuscripts are accepted conditionally, pending an author's revision of the material.

As articles are double-blind reviewed, material that might identify authorship of the paper should be placed only on page 2 as described in the first-4 page format in Pertanika's **Instructions to Authors** given at the back of this journal.

The Journal's peer-review

In the peer-review process, three referees independently evaluate the scientific quality of the submitted manuscripts.

Peer reviewers are experts chosen by journal editors to provide written assessment of the **strengths** and **weaknesses** of written research, with the aim of improving the reporting of research and identifying the most appropriate and highest quality material for the journal.

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What happens to a manuscript once it is submitted to *Pertanika*? Typically, there are seven steps to the editorial review process:

1. The Journal's chief executive editor and the editorial board examine the paper to determine whether it is appropriate for the journal and should be reviewed. If not appropriate, the manuscript is rejected outright and the author is informed.

2. The chief executive editor sends the article-identifying information having been removed, to three reviewers. Typically, one of these is from the Journal's editorial board. Others are specialists in the subject matter represented by the article. The chief executive editor asks them to complete the review in three weeks.

   Comments to authors are about the appropriateness and adequacy of the theoretical or conceptual framework, literature review, method, results and discussion, and conclusions. Reviewers often include suggestions for strengthening of the manuscript. Comments to the editor are in the nature of the significance of the work and its potential contribution to the literature.

3. The chief executive editor, in consultation with the editor-in-chief, examines the reviews and decides whether to reject the manuscript, invite the author(s) to revise and resubmit the manuscript, or seek additional reviews. Final acceptance or rejection rests with the Edito-in-Chief, who reserves the right to refuse any material for publication. In rare instances, the manuscript is accepted with almost no revision. Almost without exception, reviewers' comments (to the author) are forwarded to the author. If a revision is indicated, the editor provides guidelines for attending to the reviewers' suggestions and perhaps additional advice about revising the manuscript.

4. The authors decide whether and how to address the reviewers' comments and criticisms and the editor's concerns. The authors return a revised version of the paper to the chief executive editor along with specific information describing how they have answered' the concerns of the reviewers and the editor, usually in a tabular form. The author(s) may also submit a rebuttal if there is a need especially when the author disagrees with certain comments provided by reviewer(s).

5. The chief executive editor sends the revised paper out for re-review. Typically, at least one of the original reviewers will be asked to examine the article.

6. When the reviewers have completed their work, the chief executive editor in consultation with the editorial board and the editor-in-chief examine their comments and decide whether the paper is ready to be published, needs another round of revisions, or should be rejected.

7. If the decision is to accept, an acceptance letter is sent to all the author(s), the paper is sent to the Press. The article should appear in print in approximately three months.

   The Publisher ensures that the paper adheres to the correct style (in-text citations, the reference list, and tables are typical areas of concern, clarity, and grammar). The authors are asked to respond to any minor queries by the Publisher. Following these corrections, page proofs are mailed to the corresponding authors for their final approval. At this point, **only essential changes are accepted**. Finally, the article appears in the pages of the Journal and is posted on-line.

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ABSTRACTING/INDEXING

Pertanika is now over 40 years old; this accumulated knowledge has resulted the journals being indexed in abstracted in SCOPUS (Elsevier), Thomson (ISI) Web of Knowledge [ESCI, BIOSIS & CAB Abstracts], EBSCO & EBSCOhost, ERA, DOAJ, AGRICOLA (National Agric. Library, USA), Cabell's Directories, Google Scholar, MyAIS, Islamic World Science Citation Center (ISC), ASEAN Citation Index (ACI) & Rubriq (Journal Guide).

Preface

We are very pleased to present this Special Issue of the Pertanika Journal of Social Sciences and Humanities (JSSH). This issue is a compilation of selected papers that were presented at the 5th World Congress on Technical and Vocational Education (WoCTVET) held on the 1 and 2 November, 2016 at KSL Resort Hotel, Johor Bahru, Malaysia. From this conference, there were a total of 52 papers selected for journal publication that are published in two separate volumes. These papers were selected based on the reviewers' approval and had undergone the required peer reviewing process for journal publication.

WoCTVET 2016 was a joint collaboration between Universiti Tun Hussein Onn Malaysia (UTHM) and key players in Technical and Vocational Education in Southeast Asia, among whom were the Polytechnics Department, the Ministry of Education Malaysia, UNESCO-UNEVOC, SEOMEO-VOCTECH, the Regional Association for Vocational Teacher Education (RAVTE) and the Colombo Plan Staff College (CPSC). In line with the theme 'TVET Talent Development: Advancing Society Through Quality, Technology, Innovation and Skill Mobilisation', topics of interest for WoCTVET 2016 compiled in this volume include, but are not limited to, leadership and management, curriculum and instruction, assessment and evaluation, and innovation and educational technology.

We would like to thank the contributors as well as the reviewers for their commitment and patience as well as their significant contribution towards the success and publication of this JSSH WoCTVET 2016 Special Issue. It is hoped that this publication will be an encouragement for researchers from around the world to be more active in publishing research papers that are insightful and useful for academics and practitioners alike.

Last but not least, we wish to thank the Chief Executive Editor of UPM Journals, Dr. Nayan Kanwal and his dedicated publication team, for their kind assistance, advice and understanding towards the successful publication of this Special Issue in this prestigious journal.

Guest Editors:

Badaruddin bin Ibrahim (Assoc. Prof. Dr.)
Faizal Amin Nur bin Yunus (Dr.)
Mohd Hasril bin Amiruddin (Dr.)

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Application of Fuzzy Delphi Approach Determining Element in Technical Skills among Students towards the Electrical Engineering Industry Needs

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ABSTRACT

Responsible development of a nation calls for knowledgeable and skilled human capital. Indeed, human capital plays a big role in the planning process and implementation of national development. To achieve this, one strategy is to enhance the skills of individuals, thereby also enhancing their marketability to ensure the availability of a flexible, technically skilled and efficient workforce. To produce and fulfil the requirement for a skilled workforce, the education delivery system and practical training of future graduates should become more responsive to the needs of the job market, which is dynamic and productive and geared towards global competition. This study aims to identify the elements of technical skills needed by electrical engineering students that would make them marketable today. A total of 21 experts were selected to analyse the fuzziness consensus of experts. All collected data were analysed using the Fuzzy Delphi Method. The results show 16 of the 23 elements meet the conditions, the threshold value (dkonstruk) is less than 0.2 and the percentage of the expert group is more than 75%. This shows that, based on the consensus of the experts, the elements of technical skills are needed by electrical engineering students for mastering technical skills.

Keywords: Electrical engineering, Fuzzy Delphi Technique, marketability, technical expertise

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INTRODUCTION

Skills is an important area, especially for developing countries that intend to get ahead in the 21st century. Malaysia is among the developing countries in Southeast Asia that are actively involved in producing skilled manpower to meet their manpower needs.

Skilled youth are necessary for the economic and technological development of Malaysia. In a knowledge economy, every individual should have the basic skills to compete in the market. A complete package of skills will help graduates secure a job as the job market no longer relies solely on academic excellence, but also on the marketability of employees (Mat Yazid, 2010).

Othman, Hamzah, Norihan and Aripin (2011) found that there was a significant gap in the performance expected by employers and that shown by graduates. They stated that some graduates did not know which technical skills were needed for their work. If this situation continues, graduates may face the threat of unemployment. In 2009, 27% of graduates of institutions of higher learning were still unemployed six months after graduation, while 33% of those who managed to get a job were earning less than RM1,500 per month (KPM, 2012).

PROBLEM STATEMENT

The quality of graduates is a major issue that is closely related to their employability after graduation. Generally, in considering the quality of graduates, emphasis and attention are given to the lack of skills, particularly in terms of technical skills to meet the needs of industry (Rahman, Mokhtar, Yasin, Jusoff, & Mohd Hamzah, 2011).

A study conducted by Othman (2012) found that the graduates studied were less competent in terms of technical skills, unable to do a good job as required by industry and weak in soft skills (KPM, 2012), while Rahman et al. (2011) found that technical graduates were less proficient in technical skills and employability. The studies showed that employers preferred employees who had the necessary skills when it came to recruiting new employees (Harun, 2002; Amiruddin, Nur, Bekri, & Hashim, 2015).

This study was carried out to identify the elements of technical skills that students are required to master in order to meet the needs of their career in general and industry in particular. The results will help in describing the problems associated with acquiring the methods and requirements of technical skills that are needed by students to meet the needs of industry, a study is needed to.

PURPOSE OF REVIEW

The main objective of this study was to identify the elements of technical skills that electrical engineering students would need to master to meet the needs of the job market. Technical skills are determined by the consensus of experts, what is required by employers and the needs of a particular field. The following research questions were studied:

1. Based on the experts' agreement, what are the values of the Delphi Fuzzy method for the elements of technical expertise?
2. Based on the consensus of the experts, how many elements of technical skills do polytechnic students of electrical engineering have to meet to fulfil the needs of industry?

SCOPE AND LIMITATIONS OF THE STUDY

This study focused on the elements of the technical skills required and mastered by electrical engineering students during the teaching and learning process in preparation for meeting the needs of industry and the job market. A total of 21 experts were chosen to sit on the panel of experts based on Jones and Twist (1978). Each selected expert had more than 10 years' experience in the field of technical and electrical engineering.

METHODOLOGY

In this section, we discuss how we analyzed the data based on all the data collection instruments that were selected. For the analysis of the Fuzzy Delphi technique, a questionnaire was developed by the researchers based on the literature and interviews were seven professionals in the field of technical and electrical engineering. The second step was to obtain the consensus of the experts on the elements of technical skills. The experts comprised five specialist engineering-industry skilled training workers, three liaison officers of industrial training who coordinate the placement of students at the Polytechnic, two senior officials from the Centre for Research and Development Polytechnic KPT, three officers of vocational training in electrical engineering in the Department of Manpower, three assistant vocational training officers in engineering at the Department of Manpower, three lecturers in electrical engineering, including a head of department and two lecturers with more than 10 years' experience in the field of electrical engineering.

Seven experts interviewed in the first step also answered the questionnaire. Table 1 below shows the simpler Fuzzy Delphi technique for determining the elements of technical skills based on the experts' consensus for the first phase.

Table 1
Fuzzy Delphi technique

Step	Total Expert	Instrument Design
First step (Establishment of survey instrument)	7 experts	Structured interview
Second step (Obtain consensus)	21 experts	Survey instrument

Fuzzy Delphi technique

After the interview with the seven experts, the questionnaire was produced. The questionnaire was administered to the 21 experts, including the seven who had been interviewed. The steps used in determining the Fuzzy Delphi technique are given below.

Step 1: Determining the experts. Twenty-one experts were invited to answer the questionnaire.

Step 2: Selecting a linguistic scale. The researchers chose a seven-point linguistic scale ranging from 'very strongly disagree' to 'strongly disagree', 'disagree', 'not sure', 'agree', 'strongly agree' and 'very strongly agree'. Table 2 shows the seven-point linguistic scale.

Table 2
Seven-point linguistic scale

Seven-Point Linguistic Scale				
Linguistic Variables		Scale Fuzzy		
1	Very strongly disagree	0.0	0.0	0.1
2	Strongly disagree	0.0	0.1	0.3
3	Disagree	0.1	0.3	0.5
4	Not sure	0.3	0.5	0.7
5	Agree	0.5	0.7	0.9
6	Strongly agree	0.7	0.9	1.0
7	Very strongly agree	0.9	1.0	1.0

Step 3: Getting the average value. The average value was determined according to the formula prescribed. Here is a formula used to obtain the average value:

$$d\left(\tilde{m},\tilde{n}\right)=\sqrt{\frac{1}{3}\left[(m_1-n_1)^2+(m_2-n_2)^2+(m_3-n_3)^2\right]}.$$

Step 4: Determining the value of 'd' (Threshold value). If the value of d is d<0.2, then all the experts had reached a consensus agreement. If the value of d is d>0.2, the researchers had to repeat the procedure.

Step 5: Getting a 75% consensus. At this point, the researchers had come to a decision or agreement on the expert group known as the consensus group. It was decided that a 75% consensus would be necessary to show agreement among the experts. If the consensus was less than 75%, the researchers would have to repeat the procedure to ensure there was at least 75% consensus among the experts.

Step 6: Get Fuzzy evaluation. Fuzzy evaluation is one method for determining the ranking of an item. It is quite a difficult process because it involves complex numbering and an alternative method of using a mathematical formula to determine ranking. This is called the defuzzified process.

Step 7: Defuzzified (Score determining process). Three formulae can be used in the defuzzified process to determine ranking/ scoring of the items:

i. Amax = 1/3 * (a1 + am + a2)
ii. Amax = 1/4 * (a1 + a2 + 2am)
iii. Amax = 1/6 * (4am + a1 + a2)

For this study, the researchers chose formula (i).

RESULTS AND DISCUSSION

Each study has its own requirements (Chu & Hwang, 2008). This study set out to select items only within the linguistic scale of 'strongly agree' and 'agree' on a 7-point Likert scale. Results of the analysis using the Fuzzy technique found 16 elements with a consensus percentage of >75%. Chu and Hwang (2008) and Murray, Pipino and

Gigch (1985) showed that the agreement of the expert group was also observed. About 75% of the items were disposed of as low-value deals. The table below shows the results for the position of the elements of technical skills based on the consensus of the experts. These data consisted of the threshold value of each element (item d), the threshold value constructs (d construct) and its elements by agreement among the experts. Analysis findings reported by the highest ranking item for each construct are as follows:

Table 3
Items by rank for each construct

Experts	Element of Technical Skill							
	1	2	3	4	5	6	7	8
1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.1
2	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.1
3	0.1	0.0	0.2	0.1	0.1	0.1	0.2	0.1
4	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.2
5	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.2
6	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
7	0.1	0.2	0.2	0.1	0.7	0.2	0.2	0.2
8	0.1	0.2	0.2	0.1	0.3	0.3	0.2	0.1
9	0.1	0.0	0.2	0.1	0.2	0.2	0.2	0.2
10	0.1	0.5	0.2	0.4	0.4	0.1	0.1	0.2
11	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.2
12	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2
13	0.1	0.0	0.2	0.1	0.2	0.1	0.1	0.2
14	0.3	0.2	0.2	0.1	0.2	0.1	0.1	0.2
15	0.1	0.0	0.1	0.1	0.2	0.4	0.7	0.1
16	0.1	0.0	0.2	0.1	0.1	0.1	0.1	0.1
17	0.1	0.2	0.2	0.3	0.3	0.7	0.2	0.1
18	0.1	0.2	0.2	0.3	0.3	0.3	0.1	0.2
19	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2
20	0.3	0.2	0.2	0.4	0.4	0.2	0.2	0.2
21	0.1	0.2	0.2	0.3	0.1	0.3	0.1	0.2
Threshold value (d) of each item	0.101	0.146	0.153	0.174	0.200	0.189	0.153	0.147
Percentage for each item $d \leq 0.2$	90%	100%	86%	76%	81%	85.7%	100%	100%
Defuzzification (Average Response)	0.91	0.86	0.82	0.79	0.76	0.77	0.76	0.81
Defuzzification (Fuzzy Evaluation)	19.10	18.00	17.20	16.60	15.90	16.10	16.00	17.10
Ranking of elements	1	3	6	12	16	14	15	8

Table 3 *(continue)*

Experts	Element of Technical Skill							
	9	10	11	12	17	18	19	20
1	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1
2	0.1	0.2	0.2	0.2	0.1	0.0	0.1	0.1
3	0.1	0.2	0.2	0.1	0.1	0.0	0.1	0.1
4	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
5	0.2	0.5	0.1	0.1	0.1	0.1	0.2	0.1
6	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1
7	0.1	0.4	0.2	0.1	0.1	0.0	0.2	0.3
8	0.1	0.1	0.1	0.1	0.2	0.0	0.1	0.3
9	0.1	0.1	0.2	0.1	0.1	0.0	0.2	0.1
10	0.3	0.2	0.2	0.1	0.2	0.3	0.2	0.4
11	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.3
12	0.1	0.1	0.2	0.1	0.1	0.0	0.2	0.1
13	0.1	0.2	0.2	0.1	0.2	0.0	0.2	0.1
14	0.1	0.2	0.2	0.1	0.2	0.0	0.1	0.1
15	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.3
16	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1
17	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.3
18	0.2	0.4	0.2	0.1	0.2	0.1	0.2	0.3
19	0.4	0.2	0.2	0.1	0.8	0.3	0.8	0.7
20	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.3
21	0.1	0.1	0.1	0.1	0.1	0.0	0.2	0.3
Threshold value (d) of each item	0.141	0.203	0.153	0.139	0.157	0.096	0.178	0.203
Percentage for each item $d \leq 0.2$	90%	86%	100%	100%	95%	90%	95%	82%
Defuzzification (Average Response)	0.77	0.86	0.82	0.80	0.81	0.89	0.84	0.79
Defuzzification (Fuzzy Evaluation)	16.20	18.00	17.20	16.70	17.10	18.80	17.60	16.60
Ranking of elements	13	4	7	10	9	2	5	11

CONCLUSION

The findings clearly indicate that there are 16 elements of technical skills that are needed by electrical engineering students based on the consensus of expert opinion. Motivation is the basic element and the first choice of the experts. This study has enabled the identification of the elements of the technical skills of students of electrical engineering. This information will help lecturers prepare activities or programmes that are suitable for students to master

technical skills effectively and efficiently with an eye towards meeting the needs of industry. This study also provides a clear picture for institutions of higher learning that are required to prepare technical or psychomotor domains for teaching and learning tasks that are specific to the demands of the electrical engineering industry.

Information and feedback from industry can help in the preparation of a model or framework of elements of technical skills for students in the form of supporting documents such as handbooks to be used as reference. This will facilitate learning and teaching greatly. Feedback from the ministry on the measures and the elements that need improvement will also help to produce electrical engineering students who are ready to take their place in industry, thus reducing the unemployment rate among graduates.

REFERENCES

Amiruddin, M. H., Nur, Y. F. A., Bekri, R. M., & Hashim, M. H. M., (2015). Application of communication skills (CS) among lecturers in vocational teaching and learning in Vocational College Zone Johor, Malaysia. *International Journal of Vocational Education and Training Research 2015, 1*(4), 55–61.

Chu, H. C., & Hwang, G. J. (2008). A Delphi-based approach to developing expert systems with the cooperation of multiple experts. *Expert Systems with Applications, 34*(28), 26–40.

Harun, M. (2002). *Peluang kerjaya lepasan SPMV dalam bidang elektrik dan elektronik di sektor industri bagi menghasilkan carta aliran kerjaya, satu kajian di 3 buah kilang di Daerah Batu Pahat, Johor.* (Master's thesis). Universiti Tun Hussein Onn Malaysia, Malaysia.

Jones, H, & Twiss, B. L. (1978). *Forecasting technology for planning decisions.* New York: Macmillan.

Kementerian Pelajaran Malaysia. (2012). R*ancangan Malaysia ke sepuluh: Meningkatkan kemahiran rakyat Malaysia untuk meluaskan kebolehpasaran*. Retrieved from http://www.moe.gov.my/userfiles/file/RMK10bab5%2014_6_10.pdf

Mat Yazid, R. (2010). *Penerapan kemahiran personal qualities dalam kalangan pelajar pendidikan kejuruteraan melalui aktiviti pembelajaran.* (Bachelor's degree thesis). Universiti Teknologi Malaysia, Malaysia.

Murray, T. J., Pipino, L. L., & Gigch, J. P. (1985). A pilot study of fuzzy set modification of Delphi. *Human System Management*, 6–80.

Othman, M. (2012). *Tahap kompetensi pelajar melaksanakan kerja amamli berpandukan Domain Psikomotor Simpson.* (Doctoral thesis). Universiti Tun Hussein Onn Malaysia, Malaysia.

Othman, M. Z., Hamzah, R., Norihan, I. S., & Aripin, M. A. (2011). Dua teras, satu destinasi: Pelan reformasi strategik PTV ke arah pembangunan sejagat. *Jurnal Teknologi, 56*, 101–11.

Rahman, S., Mokhtar, S. B., Yasin, R.M., Jusoff, K., & Hamzah, M.I.M. (2011). Learning environment and the development of students' generic skills. *Middle-East Journal of Scientific Research, 7*(5), 663–668.

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Polytechnic Science Lecturers' Intention to Use ICT as a Tool in Northeast Nigeria: A Smart PLS Approach

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ABSTRACT

This study appraises the intention of educators to use computer technology for teaching and learning in Northeastern Nigeria, a region comprising Adamawa, Bauchi, Borno, Gombe, Taraba and the Yobe States. Although the Nigerian government has provided computers for teaching and learning, they are underutilised. A survey was conducted to validate items recorded in past studies. The Technology Acceptance Model (TAM) was employed as a theoretical framework. The Bootstrapping Algorithm with SmartPLS was applied for modelling interaction with 269 subjects from the targeted populations of 715 science lecturers from Northeast Nigeria. Several studies affirmed a significant influence of perception of usefulness and perception on ease-of-use on attitude towards technology acceptance and were validated in different behavioural intention to use. Perceived usefulness and ease-of-use explain individual attitude and directly influence intention. This study investigates influence attributes of the Technology Acceptance Model (TAM) towards use of the computer as a teaching aid among lecturers in Nigeria. Constructs based on TAM (perceived usefulness, ease-of-use and attitude on behavioural intention to use a computer) also supported the impact of perceived ease-of-use on perceived usefulness and towards the lecturers' attitude. Overall, variance explained indicated 40%. The result verifies TAM as robust and can be applied within different cultures. This implies that teaching in polytechnics and other institutions of higher learning can be improved if computers and training to facilitate ease-of-use are provided for lecturers.

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INTRODUCTION

Davis (1989) on technology acceptance model (TAM) ascertained that attitudes could predict behavioural intention. TAM established that perceived usefulness and perceived ease-of-use could foretell attitude towards technology acceptance. Perceived usefulness is the extent to which one can use a system to enhance his or her job performance, while ease-of-use is the extent to which one feels that system is not complicated to use. Attitude is defined as the extent to which one has an optimistic/ pessimistic assessment towards technology usage. Behavioural intention measures the strength of the individual's intention to perform a specific task (Davis, 1989). TAM is illustrated in Figure 1.

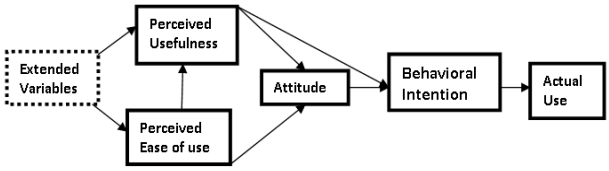

Figure 1. Technology acceptance model (Davis, 1989)

Several studies focussed on testing the sturdiness and power of the questionnaire instruments developed and used by Davis, Bagozzi and Warshaw, (1989, pp. 982–1003). TAM has been widely applied in a variety of studies in social sciences, including technology acceptance based on trust (Ashraf, Thongpapanl, & Auh, 2014; Kim, Lee, Mun, & Johnson, 2016; Ayodele, Oga, Bundot, & Ogbari, 2016; Solomon, Alina, & Eta, 2015). TAM has also been integrated towards structural modelling technology acceptance (Ali & Khalil, 2013; Loiacono, Watson, & Goodhue, 2007) and use in education (Delen & Bulut, 2011; Draper, 2010; Lee & Lehto, 2013; Mai, 2015).

This study investigated the influence of behavioural intention and the effect of perceived ease-of-use towards technology usage based on TAM. In this study computer use was considered the target technology, while science lectures in Northeast Nigeria were considered the sample framework. Considering the technology acceptance model (Davis, 1989), however, this study reoffered five hypotheses based on the model shown in Figure 1, as given below:

H_1: Perceived ease-of-use has a significant effect on the attitude of lecturers towards intention to use a computer.

H_2: Perceived ease-of-use significantly affects lecturers' perception of usefulness towards using a computer in teaching.

H_3: Perceived ease-of-use significantly affects science lecturers' behavioural intention towards using a computer in teaching.

H_4: Perceived usefulness significantly affects science lecturers' behavioural intention towards using a computer in teaching.

H_5: The attitude of science lecturers significantly affects behavioural intention towards using a computer in teaching.

Figure 2 illustrates the hypothetical framework of this study based on TAM (Davis, 1989, pp. 319–340).

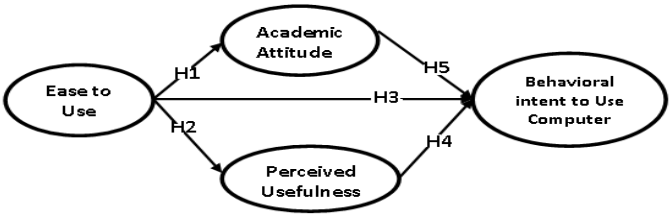

Figure 2. Hypothetical framework

RELATED LITERATURE

Behavioural Intention towards Technology Usage

Nor Khalil and Pearson (2007, pp. 1–10) adopted TAM to predict a more serious use of multimedia learning among a proportional number of 362 students. Loiacono, Watson and Goodhue (2007, pp. 51–87) combined TAM and TRA as a foundation to build up a set of instruments that may be accustomed to evaluating consumers' awareness of the specific site and identified 12 dimensions that had strong measurement validity. A number of scientific studies deemed TAM salient in the direction of predicting behavioural intention to make use of technology in a learning setting, including Oshinaike and Adekunmisi (2012) and Shittu, Fakomogbon, Gambari and Owodunni (2016). Other studies deemed TAM best suited among other theories of technology acceptance, including Hsiao and Yang (2011), Ankit and Bisht (2012), Ali and Nor Khalil (2013) and Solomon et al. (2015), who confirmed the potential power of TAM attributes along with other technology acceptance factors mentioned in other theories. Conclusively, this study related to investigating the potential strength of TAM in relation to using a computer to aid information search in Nigeria.

Cultures in Northeastern Nigeria have significantly affected the belief system, attitude and behavioural intention towards technology use. However, there may be lecturers from other parts of the country who are use computers to teach science (Srite, 2006, p. 9). This study tested the Technology Acceptance Model and behavioural intention towards using ICT in teaching science.

METHODOLOGY

This is a quantitative study due to the nature of the problem and location of the researcher (Creswell, 2014). The number of participants was 715 and a random sample of 349 participants was chosen based on sample size determination suggested by Krejcie and Morgan (1970). The target population was the academic staff from Northeastern Nigeria including Gombe, Bauchi Adamawa, Yobe and Taraba states, where technology acceptance is slow due to resistance to Western education as well as religious values (Ukiwo, 2007). The pilot test carried out justified that all the Cronbach's Alpha values were over 0.7 (Awang, 2014, p. 63) and the factor loading was over 0.7. The t-statistic and (R2) were used to justify model fitness.

RESULTS

A total of 349 sets of a questionnaire were provided to the target participants, numbering 715, with a return rate of 85%. The final number of participants was 269, with males representing about 70% of the participants. Most of the participants were in the age group of 30-39 (32%) and most had one to three years of experience (31%).

Assessment of Measurement Model

Convergent validity is accomplished whenever the factor loading is statistically above 0.7. A t-statistic above ±1.96 indicates a significant value (Wong, 2013, pp. 22–25), an average variance of extracts (AVE) that is above 0.5, a CR that is above 0.6 and a Cronbach's Alpha that is above 0.7. A total of 18 measurement models were achieved, as reported in Table 1.

Table 1
Overview of measurement models

	AVE	Composite Reliability	Cronbach's Alpha	R^2
Att	0.740742	0.895327	0.824243	0.17623
Ease-of-use	0.736592	0.933177	0.911552	
Usefulness	0.683400	0.928056	0.906391	0.073089
Behaviouralintention	0.732864	0.916440	0.878757	0.402438

The structural model shown in Figure 3 indicates that the R^2 of 0.402 implies that 40.2% of the variance of intention of using a computer is explained by the exogenous TAM constructs in this study.

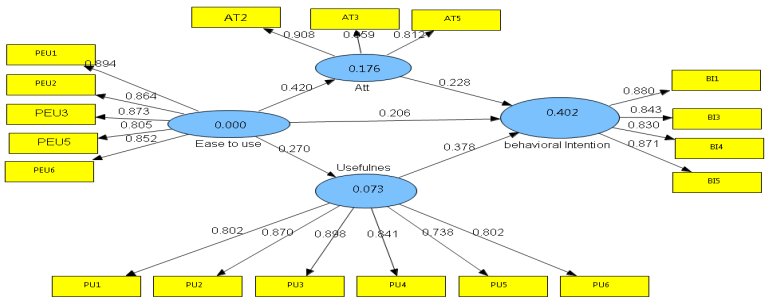

Figure 3. Structural model

The model t-statistic as presented in Figure 4 indicated the significant interaction of all the constructs at t-statistics over ±1.96.

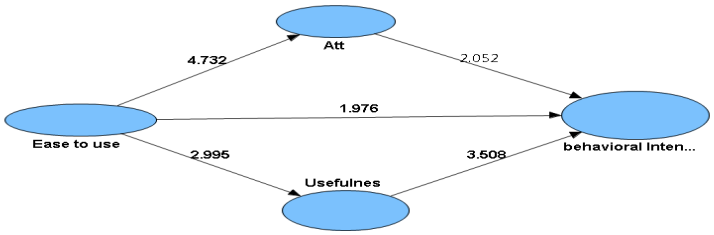

Figure 4. Inner model t-statistic

Statistically, perceived ease-of-use significantly affected usefulness and attitude towards intention to use a computer in teaching with a critical ratio of 4.7032 and 2.995, respectively and perceived usefulness, attitude and ease-of-use all significantly affected behavioural intention with a critical ratio of 3.508, 2.052 and 1.976, respectively. The results for the hypotheses reoffered in this paper are presented in Table 2.

Table 2
Overview of measurement models

	Hypotheses – Interaction			t-statistic	Coefficients	Remark
H1	Ease-of-use	---->	Usefulness	2.995	0.270350	Supported
H2	Ease-of-use	---->	Attitude	4.732	0.419797	Supported
H3	Ease-of-use	---->	Behavioural intention	1.976	0.206066	Supported
H4	Usefulness	---->	Behavioural intention	3.508	0.378420	Supported
H5	Attitude	---->	Behavioural intention	2.052	0.227987	Supported

DISCUSSION AND CONCLUSION

The final outcome was supported the hypothesis that academic staff's behavioural intention to make use of a computer is impacted by usefulness, ease-of-use and attitude. This outcome is in line with the findings of Solomon, Alina, Eta and Ojo (2013a), Chang, Yan and Tseng (2012) and Ali and Khalil (2013). This implied that the management of educational institutions ought to encourage the use of computers to teach science and ought to provide assisting conditions to aid utilisation of computers/laptops in teaching. On the other hand, perceived ease-of-use also impacted on usefulness and attitude of the academic staff towards the intention to use the technology. This outcome was consistent with the findings of Ali and Khalil (2013), Solomon et al. (2013b) and Nor Khalil and Pearson (2007). This suggests that the management of educational institutions should encourage academic staff to attend workshops and seminars while tracking their usefulness and staff's attitude towards technology acceptance. The outcome of this phenomenal study confirmed the success and potential of TAM to evaluate individuals' behavioural intentions.

Among the limitations of the study was the significant number of male participants (70.3%). This might have biased the end result in term of impact of gender on behavioural intention. In addition, the outcome may not be generalised as academic staff in other nations may be subject to other conditions and might not share the same level of experience and IT knowledge as well as infrastructure and comprehensiveness of educational recommendations as the Northeastern Nigerian science lecturers surveyed in this study.

The Technology Acceptance Model (TAM) is used to describe the intention to make use of computers/laptops in teaching. The perceived usefulness, ease-of-use and attitude constructs were found to have a significant impact on behavioural intention. This study also justified the end result of perceived ease-of-use on usefulness and attitude towards behavioural intention in the use of computers/laptops in teaching in Nigeria. Future research should look into the other factors that affect lecturers' behavioural intention in using technology in science teaching.

REFERENCES

AliSaleh A., & Khalil M. (2013). Adoption of internet banking by Yemeni consumers: An empirical investigation. *Australian Journal of Basic and Applied Sciences, 7*(2), 182–189.

Ankit, K., & Singh, S. B. (2012). The impact of trust and perceived risk on internet banking adoption in India: An extension of technology acceptance model. *International Journal of Bank Marketing, 30*(4), 303–322.

Awang, Z. (2014). A handbook on SEM for academicians and practitioners: The step-by-step practical guide for beginners (p. 63). Bandar Baru Bangi: MPWS Rich Resources.

Chang, C. C., Yan, C. F., & Tseng, J. S. (2012). Perceived convenience in an extended technology acceptance model: Mobile technology and English learning for college students. *Australasian Journal of Educational Technology, 28*(5), 809–826.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative and mixed method approaches* (4th ed.). Thousand Oaks, California: Sage Publications, Inc.

Davis, F. D. (1989). Perceived usefulness. Perceived ease-of-use and user acceptance of informationtechnology. *MIS Quarterly, 13*(3), 319–340.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science, 35*(8) 982–1003.

Delen, E., & Bulut, O. (2011). The relationship between students' exposure to technology and their achievement in science and math. *TOJET: The Turkish Online Journal of Educational Technology, 10*(3).

Draper, K. (2011). Understanding science teachers' use and integration of ICT in a developing country context (Doctoral dissertation).

Hsiao, C. H., & Yang, C. (2011) The intellectual development of the technology acceptance model: A co-citation analysis. *International Journal of Information Management, 31*(2), 128–136.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Education Psychology Measure, 30*(3),607-610.

Lee, D. Y., & Lehto, M. R. (2013). User acceptance of youtube for procedural learning: An extension of the technology acceptance model. *Computers and Education, 61*, 193–208.

Loiacono, E. T., Watson, R. T., & Goodhue, D. L. (2007). WebQual: An instrument for consumer evaluation of websites. *International Journal of Electronic Commerce, 11*(3), pp. 51–87.

Mai, M. Y. (2015). Science teachers' attitudes towards using ict and mobile learning technologies in Malaysian Schools. *Science, 3*(1).

Nor-Khalil, M. D., & Pearson, J. M. (2007). The influence of trust on internet banking acceptance. *Journal of Internet Banking and Commerce, 12*(2)1–10.

Oshinaike, A. B., & Adekunmisi, S. R. (2012). Use of multimedia for teaching in Nigerian university system: A case study of University of Ibadan. *Library Philosophy and Practice*. Retrieved from: http:// unllib.unl.edu/LPP/.

Shittu, A. T., Fakomogbon, M. A., Gambari, A. I., & Owodunni, A. S. (2016). Acceptance of information technology for teaching in Nigerian vocational and technical education: A confirmatory factor analysis. *Malaysian Online Journal of Educational Management (MOJEM), 4*(1), 1–16.

Solomon, O., Alina, S., & Eta, W. (2015). Evaluation of trust tools built-into technology adoption. *World Applied Sciences Journal, 33*(7), 1132–1141.

Solomon, O., Shamsuddin, A., Wahab, E., & Ayobami, O. K. (2013). Technology acceptance evaluation of electronic banking in Nigeria. *Australian Journal of Basic and Applied Sciences, 7*(13), 219-226.

Solomon, O., Shamsuddin, A. Wahab, E. Ajagbe, M. A., & Enegbuma, W. I. (2013). A study of electronic commerce adoption factors in Nigeria. *International Journal of Information Systems and Change Management,* 6(4), 293–315.

Srite, M. (2006). Culture as an explanation of eechnology acceptance differences: An empirical investigation of Chinese and US users. *Australasian Journal of Information Systems, 14*(1).

Ukiwo, U. (2007). Education, horizontal inequalities and ethnic relations in Nigeria. *International Journal of Education Development, 27*(3), 266–281.

Wong, K. K.-K. (2013). Partial least squares structural equation modelling (PLS-SEM) techniques using SmartPLS. *Marketing Bulletin, 24*(1), 1–32.

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The Availability of Electronic Courses Using ICT Infrastructure in Teaching and Learning among Teachers in Nigeria's TVET Institutions

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ABSTRACT

As information and communication technology becomes a regular feature of the educational environment, it may be difficult for teaching and learning activities especially in TVET institutions to remain unchallenged. However, ICT application as a pedagogical tool in Nigerian TVET institutions is not a common practice, and it also remains unclear how utilisation of ICT enhances pedagogy. This study is interested in the availability of electronic courses using ICT infrastructure in teaching and learning. Using activity theory as a guide, multiple case studies are conducted. The Qualitative Case Study Methodology is used in this research. Five TVET institutions and 20 participants are selected using maximum variation and homogeneous purposive sampling strategies, respectively. During the visits to the institutions, classroom observation is carried out, documents such as the curriculum and teacher's lecture materials are reviewed for triangulation. Semi-structured interviews are conducted with 20 selected participants as the primary data collection method. At the data analysis stage, the inductive and deductive methods are used to analyse the data, and two strategies of grounded theory as open and axial coding are employed. The coding process is achieved through the use of an inherent feature of NViVO10. The findings show that four themes: availability of infrastructure, computer specifications, educational software and connectivity.

Keywords: Availability, ICT infrastructure, qualitative research, TVET Institution

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INTRODUCTION

The governments of various nations, non-governmental organisations and academic institutions around the world have made

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significant investments in computer-based information technology to support the teaching and learning process (Webb, 2007). Such investments are made to enhance the quality of education and learning, which in turn gives students a better chance of participating in the 21st-century learning environment. Information and communication technology (ICT) makes available valuable tools for achieving excellence in the teaching and learning process (Intel Corporation, 2007). ICT include computers, LCD projectors, software and the Internet, among others. Osakwe (2010) believed that such facilities are the most significant tools in teaching and learning.

This study intended to examine and understand how teacher's utilisation of ICT influences pedagogical practice within the four walls of the classroom. This research focussed only on the teaching and learning of electronic courses to keep the study manageable. Pedagogical practices signify numerous strategies used in different combinations for improving student learning outcomes. According to Jaji (2008), no one approach is appropriate for all teaching situations. The term 'influence of ICT' in this research work refers to the effect of technology on pedagogy to enhance teaching practices as well as the learning process. The teachers' role is of paramount importance because they are the ones who ensure that lesson objectives are met (Farhat, 2008).

It is the teacher who decides on the appropriate software to be used to achieve the lesson objectives. Teachers need technological skills and the commitment to ensure effective teaching and learning using ICT in educational institutions (Almadhour, 2010). Thus, it is essential for teachers to understand issues concerning ICT and their effect on pedagogical activities so that they will be able to utilise ICT as a pedagogical tool. Hence, the need to explore and understand in detail how ICT influences pedagogy in the teaching of electronic courses is necessary.

In view of the tremendous effort by the federal government of Nigeria towards the successful use of ICT in teaching and learning, the government formulated several policies with lofty goals. One was to encourage teachers to develop a sense of confidence in using the computer to solve teaching and learning challenges. Between the year 2007 and 2013, the federal government of Nigeria tripled the allocation for education from N224 billion to N634 billion. As a result, the government was able to distribute and install computers in some schools and establish ICT centres in all Nigerian universities (Jegede, 2009). This effort was intended to change pedagogical practice in TVET institutions.

The implementation of ICT in Nigerian TVET institutions, especially in the field of electronics, is necessary if teachers and their students are to participate in the learning environment of the present century. According to Jaji (2008), ICT has impacted teaching and research in Nigerian schools. However, one strident complaint is that the development of ICT has not been

accompanied by growth of ICT integration in the classroom (Jaji & Abubakar, 2012). Consequently, teachers cannot implement ICT in education as a pedagogical tool because they are not competent in basic computer operation (Igbuzor, 2008). It is evident that there has been little application of ICT in the TVET sub-sector in 52 African countries including Nigeria (Farrell et al, 2007).

The types of ICT facility available in Nigerian TVET institutions, how teachers access and utilise the available facilities and how the use of ICT enhances their pedagogy also remains unclear. This signifies that the use of ICT, particularly in the teaching of electronic courses, is minimal. However, the reasons for this low use of ICT in electronic courses are not well established by research. As a result of the shortcomings in the Nigerian education system and the discrepancies in various research findings, there is doubt as to whether the existing TVET institutions in Nigeria are utilising ICTs as a pedagogical tool. It may be said, therefore, that such important issues have not been given due attention by researchers as study in this area is limited. In the same vein, it makes sense to state that the use of ICT as a pedagogical tool in Nigerian TVET institutions, particularly in the field of electronics, is not a common practice. Perhaps, this strongly suggests that current pedagogical practices using information and communication technology in Nigerian TVET institutions need complete revision.

ICT AND EDUCATION

Almost 20 years into the 21st century, established academic institutions struggle to keep up with different challenges as a result of new technology (Webb, 2007), signalling the need for students to learn how to seek out new information to meet the challenges of today's dynamic learning environment. New technology has potential for knowledge distribution (Baskin & Williams, 2006). As pedagogical content differs from one subject to the other, the choice and use of ICT resources will differ for the educational practices of the different subjects, which have different concepts. However, teacher beliefs and attitudes and their confidence in using ICT remain relevant in the pedagogical adoption of ICT. Teacher use of ICT in the teaching process depends on the organisational contexts in which teachers live. There is a need for pedagogical reasoning that provides teachers opportunities to connect with their schools through constant access to ICT infrastructure. According to Barakabitze (2014), students' perceptions change when they are exposed consistently to the capabilities of ICT.

Teacher beliefs include the understanding that ICT is an important foundation stone for expressing concepts of the teaching process (Barakabitze, 2014). One participant in a study stated that once teachers use ICT, it is possible for students to develop better skills in ICT, and that most teachers perceive ICT as being beneficial

because it makes the teaching process easier. Hennessy, Harrison and Wamakote (2010) reported that there are a lot of factors hindering teachers' successful use of ICT in the teaching process. Among others were lack of expertise in using ICT, lack of technical support in schools and lack of incentives and support for teachers.

The situation is the same in the Nigerian context. Among the barriers to ICT integration in Nigerian universities were low confidence among teachers in using ICT and low teacher competency due to lack of time for training (Yusuf, 2005a). Education institutions cannot survive in the face of such challenges. According to Hennessy, Harrison and Wamakote (2010), it is necessary for teachers to determine which ICT applications specifically have additional value for their pedagogical practices.

Understanding Pedagogy

Pedagogy is a structured process in which a culturally more experienced teacher uses helpful tools to mediate or guide a learner into reliable ways (Hardman, 2007). Hardman stressed that pedagogy refers to any conscious activity designed by one person to bring about learning in another and which is capable of providing motivation and ensuring a successful student journey to a particular productive end. However, no common approach suits all teaching and learning situations. Competent teachers must use different strategies in various combination to teach a diverse group of learners to improve their learning outcome (Bhowmik, Banerjee, & Banerjee, 2013). There is a need to develop active pedagogy by creating a student-centred learning environment that will encourage and ensure students support as they take control of their learning (Ruthven, Hennessy, & Deaney, 2005).

It is also the teacher's responsibility to ensure that all students are engaged intellectually regardless of their background. Using a balanced theoretical framework teachers will be able to reflect critically on their work with colleagues; this is termed 'productive pedagogy'. According to Bhowmik et al. (2013), pedagogy should incorporate strategies that support intellectual engagement, recognise learner differences and support classroom environment across subjects and key learning areas. Therefore, pedagogical practices should be a concern for teachers, school administrators, education systems and local communities.

ICT IN THE TEACHING OF ELECTRONICS

If teachers in technical and vocational education are to be part of today's dynamic learning environment, then training and retraining in ICT skills is inevitable (Hooker et al., 2011). ICT helps in lesson delivery and makes education and information accessible to whomever needs it. Considering several disciplines within the TVET programme, ICT facilities should be used to support the teaching and learning process (Chukwuedo & Omofonmwan, 2013). These include electrical/electronic

technology, semiconductor devices, circuit theory analysis, electrical installation, digital logic circuits, electrical devices and machines and electronic communication, among others.

Teaching and learning in the TVET programme cannot be restricted to the traditional classroom setting, especially in the teaching of electrical/electronics, but should adopt acceptable technological dynamism to become productive in the teaching process through the use of ICT (Chukwuedo & Omofonmwan, 2013). In the process of ICT utilisation, one study found that the student participated actively and paid maximum attention and their interest rose rapidly in the learning process (Ambikairajah, Sheng, Celler, & Che, 2005). Considering the abstract nature of notions such as frequency, voltage and electrical current, students needed animation simulation and measurements to be able to observe these concepts as processes in order to be able to explain and describe the abstract content for deep understanding (Fedak & Bauer, 2005). There are different types of simulation software. Multisim is one of the most commonly used.

METHODOLOGY

The Qualitative Case Study Methodology was used in this research. Five TVET institutions and 20 participants were selected using the maximum variation and homogeneous purposive sampling strategies, respectively. All the participants were lecturers. During the visits to the institutions, classroom observation was carried out and documents such as the curriculum and teachers' lecture materials were reviewed for triangulation. Semi-structured interviews were conducted with the 20 participants as the primary data collection method. At the data analysis stage, the inductive and deductive methods were used to analyse the data and two strategies of grounded theory as open and axial coding were employed. The coding process was achieved through the use of an inherent feature of NVivo10. Despite the positive influence of ICT on pedagogical practices, the cross cases highlighted that ICT has an adverse impact on student ethics. ICT enables teachers to have greater control over their lesson preparation and delivery through the use of simulation software, helping teachers to make abstract concepts more concrete for students to understand more easily.

A technical and vocational institution was the first visited in the course of this research. The institution is one of the two technical and vocational colleges in Northeastern Nigeria. It is an institution located just one 198 km away from a town where the researcher is based. The institution is situated in a prime location of the state capital and is accessible by road. The students of the institution are admitted from different parts of Nigeria. The institution was first visited on 23 April, 2014. The institution has four different schools, specialising in technical education, vocational education, business education and science education. Therefore, the institution provides skills training in several

disciplines based on the needs of individual students, their parents and the community as a whole. The School of Technical Education has five departments, including electrical/electronic studies, mechanical metalwork and carpentry. The institution issues the National Certificate in Education (NCE); four of the participants comprising two academic staff and two students were from the electrical/electronic department.

The first participant to be interviewed was 49 years old and had been teaching for 20 years. He had taught electrical courses for 12 years as an NCE graduate and eight years in the present institution, where he was teaching NCE I, NCE II and NCE III. The participant had been using ICT facilities as a pedagogical tool for almost four years. In the current semester, he was teaching one NCE course, TED 123, which was on magnetism and electromagnetism. Among the ICT tools he used in teaching activities were a laptop, an LCD projector and PowerPoint presentations.

The second teacher who was interviewed was 38 years old and had been teaching electrical courses for 12 years as an NCE graduate. The teacher worked at the secondary school level for almost two years before working at the present institution, where he had been teaching NCE I, II and III. In the current semester, he was teaching a course on semiconductor materials in the NCE II programme. He had been using ICT as a pedagogical tool to teach for almost six years. The students who were interviewed were from two classes of the NCE I and II programmes.

RESULTS AND DISCUSSION

During the semi-structured interview, a good number of issues regarding ICT and its utilisation as a pedagogical tool in the teaching of electronic courses emerged. These issues are presented below.

Availability of infrastructure

Availability of ICT infrastructure in this institution was considered a prerequisite for the efficient utilisation of ICT as a pedagogical tool; hence, the need to pay maximum attention to the availability of ICT facilities in this institution was emphasised. Data obtained from both the interviews and observation conducted in this institution show that both teachers and students are in favour of using ICT. The first teacher interviewed stated that the institution has four different centres equipped with ICT and the management restricted computer labs for use by the computer department, but teachers from other schools sometimes used the computer labs as well. The participants stated that the ICT centre as well as the Centre for Educational Technology (CET) were for general use. The institution also has a virtual library that allows lecturers to use a smart board. In addition, all academic staff were given a laptop for office use.

> Using ICT facilities is actually encouraging because of the multimedia involved; if you are teaching abstract concept there is need to try using various technologies to make it more concrete to the student. So when I am teaching a concept, I try as much

> as I can to make it three dimensional using ICT. Though the institution has scheduled the computer lab for the computer department only, we also sometime make arrangements to use it, while the ICT Centre is for general use and the Centre for Educational technology is also scheduled for general use.

The participant further revealed that using ICT made his lesson on electronic concepts interesting and allowed him to make abstract concepts more concrete for students helped them understand the concepts better. Using ICT to teach also allowed him to get his students to understand concepts more quickly. He added that previously, before he had started to use ICT in his teaching, it had been difficult to get students to grasp these abstract concepts quickly. With the help of ICT, teachers could make some of the concepts three-dimensional so that students could capture the main idea. Another teacher was also in favour of using ICT as a pedagogical tool, and confirmed that the institution had several ICT centres.

Computer specifications

According to one interviewee, ICT centres were not specifically for the institution's electronic department. The participant added that one of the centres belongs to the computer department while the remaining four were for the whole institution. When lecturers conducted practical sessions, they made arrangements with the computer department. Indeed, such access to the available ICT facilities suggested to the researchers that there was no ICT centre in the electrical/electronic department. The participant further revealed that teachers sometimes used their personal ICT resources such as laptop and LCD projector to teach:

> I use a digital projector, laptop, and at times my galaxy note to show students in the class. Mostly, I use to come along with my equipment, including generator if I do anything of such because of the nature of our national grid that is not steady. I used to come with my personal ICT equipment, I come with my projector for the teaching purpose.

According to the participant, to successfully achieve his lesson plan, he went to class with his personal ICT equipment such as LCD projector, laptop and electric generator. He also had the required software installed on his computer. Oviawe and Oshio (2006) reported that educational institutions in Nigeria lack computers and other related ICT facilities for effective teaching and learning.

Educational software

One participant stated that educational software has a category of resistors, capacitors transistors and integrated circuits (IC). During practical lessons, lecturers picked components available on the software. Most of the time they used the electronic work bench and designed and simulated circuits; if there were problems they would try to fix it immediately. The teacher revealed that they used simulation

software to make designs using categories of components featured on the software.

> We use the electronics software to teach the students, such as software featuring an electronic work bench to design and simulate circuits. I install it on my system, and I usually project it on the white board to make the designs, using categories of resistors, capacitors, transistors, IC etc. Then, we pick and draw with it, for the students to see the circuit diagram and then we stimulate it and test run it on the board. If there's any problem or any error somewhere, we then try to fix the problem immediately.

As the interview was the main source of data gathering in this study, students were also interviewed. Among other things discussed was the issue of ICT infrastructure available in their institutions. The first student interviewed pointed out that the institution has two ICT centres, one computer laboratory and one digital library that has two different sections. The participant added that each section of the virtual library has 25 computers.

During observation, some of the ICT centres were visited. The presence of suitable hardware and software is a pre-requisite for the utilisation of ICT in teaching and learning. The first centre visited was a computer lab, and it was noted that there were 22 Asus brand computers in the lab that were each installed with Windows XP operating system and had a 500-MHZ processor, a 10-GB hard drive, 64-MB RAM and a 14-inch flat screen monitor. The second centre was an ICT centre that was equipped with 30 HP brand computers that were each installed with Windows 7 and had a 500-GB hard drive, a 2-GB Ram, a 2.4-GHz processor, a wireless card and an MM Card Reader. The computers were also equipped with CD/DVD-Combo hardware, a 17-inch flat screen monitor, an HP mouse and a USB extended keyboard. The centre's virtual library accommodated a total of 40 computers in its two sections.

The institution also had an educational technology centre that had 20 computers. During the interviews, participants stated that all the facilities were found in various computer centres within the institution. It was noted during observation that none of the classrooms were equipped with computers. Of the computers in the institution that were shown to the researchers, 19 desktop computers were not in good working condition.

Connectivity

One participant stated that there was no computer in the classroom and during lessons, teachers would use their laptop and LCD projectors. This was indeed noted during a classroom observation.

> We have two ICT centres, one computer centre and a virtual library with two sections. All the computers are in the computer centre; our teachers always come along with their laptop and LCD projectors to the class because in my class there are no ICT facilities fixed because other courses might not require the use of ICT. But we have centres

> where these facilities are fixed for us to use.

The participants added that their institutions had two centres that had 40 computers, and these computers were connected to the Internet, while an additional 50 were connected to the local area network (LAN). During observation, it was noted that peripheral devices were located at various places in the institution such as the head of department's office, the computer centres, the ICT centres and the educational technology centres. The devices included a scanner and printer. Yusuf (2005) reported that one of the challenges inhibiting successful use of ICT in education was limited infrastructure such as poor Internet connectivity and inconsistent power supply. Photocopiers were located in either the Dean's office or the Examination Office, while equipment such as LCD projectors were permanently fixed in the major halls and also in various ICT and computer centres.

The interviews revealed that some of the teachers were making use of software such as the electronic workbench for simulation and design, which enabled them to design circuits using components available in the software that allowed them to simulate the circuit. They did not use educational software to replace the workshop, but rather they used it to turn assignments into lab procedure in order to encourage students to continue learning after class hours. Participants further elaborated that they used an LCD projector and whiteboard. According to one of the participating teachers, different circuit designs were done to help students to better understand the concepts. The following was stated by the second teacher interviewed:

> So we use electronics software to teach the students. I use it in practical lessons. I have it installed on my system and project it on a whiteboard to show the circuit designs we have made. The software has different categories of resistors, capacitors, transistors and ICs. We pick any component to draw with it. They see the circuit diagram when we simulate it. Then we test run it on the board using the software. If there are any problems or any errors somewhere we can see them and then we try to fix them.

It was obvious during classroom observation that teachers used LCD projectors, laptops, mutism, circuit makers and MS-Excel for design to teach their students. The courses taught using these included TED 123, titled Magnetism and Electromagnetism, which was a course for NCE I students, and TED 223, titled Electronic Devices, which was a course for NCE II students. The teachers delivered their lessons using PowerPoint presentations and used LCD projectors and laptops. Ndibalema (2014) stressed that there is a lack of supporting materials for each learning unit. The participants appreciated the use of ICT in teaching and learning. They further revealed that their teachers had been using these facilities for instructional delivery and would display everything on the whiteboard and instruct

students to use the facilities to teach their course-mates. The students learnt better when they had to teach their course-mates. One of the students who was interviewed said:

> We were taught digital electronics, in which we learnt about the principle of operation of flip-flops, we were taught using PowerPoint slides, which the teachers used to present the lessons. This allowed us to see the operational principle of how flip-flops operated. This was done last year. In the present semester, we learnt about magnetism and electromagnetism.

The participant further explained that the students faced challenges that included inadequate ICT facilities, especially computers. Secondly, they lacked a strong and reliable Internet service that could support new information search.

CONCLUSION

This paper discussed briefly the availability of ICT infrastructure in Nigeria's TVET institutions. It looked at the use of ICT in the teaching and learning of electronic courses. The study revealed four themes as discussed above: availability of infrastructure, computer specifications, educational software and connectivity.

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REFERENCES

Almadhour, B. (2010). *The integration of information and communication technology into secondary technology teachers' pedagogy in New Zealand.* (Doctoral thesis). Auckland University of Technology, New Zealand.

Ambikairajah, E., Epps, J., Sheng, M., Celler, B., & Chen, P. (2005, March). Experiences with an electronic whiteboard teaching laboratory and tablet PC based lecture presentations [DSP courses]. In *Acoustics, Speech, and Signal Processing, 2005. Proceedings.(ICASSP'05). IEEE International Conference on* (Vol. 5, pp. v-565). IEEE.

Barakabitze, A. A. (2014). The context of education initiatives, importance and inhibitors of ICTs towards improving teaching and learning in Tanzania: A critical literature review. *Information and Knowledge Management, 4*(10), 83–97.

Baskin, C., & Williams, M. (2006). ICT integration in schools: Where are we now and what comes next. *Australasian Journal of Educational Technology, 22*(4).

Bhowmik, M., Banerjee, B., & Banerjee, J. (2013). Role of pedagogy in effective teaching. *Basic Res J Educ Res Rev, 2*(1), 1–5.

Chukwuedo, S. O., & Omofonmwan, G. O. (2013). Information and communication technology: The pivot of teaching and learning of skills in electrical and electronics technology programme in Nigeria. *International Journal of Vocational and Technical Education, 5*(6), 117–123.

Farhat, N. (2008). *The impact of technology on teaching and learning in high schools in the United Arab Emirates*. (Doctoral thesis). University of Leicester, United Kingdom.

Farrell, G., Isaacs, S., Trucano, M., Hamdy, A., Hare, H., Tetang Tchinda, J., & Fall, B. (2007). Survey of ICT in education in Africa. *Country Reports, 2*(53). Retrieved from http://www.infodev.org/en/Publication.353.html

Fedak, V., & Bauer, P. (2005, September). E-learning in education of electrical drives and power electronics: Opportunities and challenges. *International Conference on Electrical Drives and Power Electronics*, 26–28.

Hardman, J. (2007). An activity theory approach to surfacing the pedagogical object in a primary school mathematics classroom. Outlines. *Critical Practice Studies, 9*(1), 53–69.

Hennessy, S., Harrison, D., & Wamakote, L. (2010). Teacher factors influencing classroom use of ICT in sub-Saharan Africa. *Itupale Online Journal of African Studies, 2*(1), 39–54.

Hooker, M., Mwiyeria, E., & Verma, A. (2011). ICT competency framework for teachers in Nigeria. World Bank and GESCI initiative.

Igbuzor, O. (2008). The state of education in Nigeria. *A keynote address delivered at a round table organized by civil society action coalition on education for all* (CSACEFA).

Intel Corporation (2007). *White paper bridging the digital divide in Nigeria*. All rights reserved. Retrieved on 2014, June 18 from www.intel.com/worldahead.

Jaji. (2008). Trends and barriers on the integration information and communication in the Nigerian school system, *Nigerian Journal of Technology Teacher Education, 1*(1), 101–110.

Jaji & Abubakar (2012). The effect of instructional technology on teaching and learning in Nigerian secondary schools. *Nigerian Journal of Technology Teacher Education, 3*(1), 137–143.

Jegede, P. O. (2009). Assessment of Nigerian teacher educators' ICT training. *Issues in Informing Science and Information Technology, 6*, 415–420.

Ndibalema, P. (2014). Teachers' attitudes towards the use of information communication technology (ICT) as a pedagogical tool in secondary schools in Tanzania: The case of Kondoa district. *International Journal of Education and Research, 2*(2), 1–16.

Osakwe, N. R. (2010). The influence of information and communication technology (ICT) on teacher education and professional development in delta state, Nigeria. *Asian Journal of Information Technology, 9*(5), 280–285.

Oviawe, J. I., & Oshio, L. E. (2011). Impact of information and communication technology on teaching and learning ability of education students in universities in Edo State, Nigeria. *International Review of Social Sciences and Humanities, 2*(1), 126–133.

Ruthven, K., Hennessy, S., & Deaney, R. (2005). Incorporating Internet resources into classroom practice: Pedagogical perspectives and strategies of secondary school subject teachers. *Computers and Education, 44*(1), 1–34.

Webb, I. (2007). *Key factors in the use of ICT in primary classroom*. Doctoral thesis. University of Tasmania, Australia.

Yusuf, M. O. (2005a). Information and communication technology and education: Analysing the Nigerian national policy for information technology. *International Education Journal, 6*(3), 316–321.

Yusuf, M. O. (2005b). An investigation into teachers' self-efficacy in implementing computer education in Nigerian secondary schools. Meridian: A middle school. *Computer Technologies Journal, 8*(2), 4.

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The Role of Career Counselling in Job and Career Development

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ABSTRACT

The purpose of this study is to investigate the long-term stability of the positive effects obtained through career guidance. This study focussed on the longitudinal effects of career guidance on students' major satisfaction. Data from the Korea Education and Employment Panel (KEEP) were analysed by applying SPSS 18.0 and AMOS 18.0 to investigate the mediation effect of students' self-efficacy between career guidance and students' major satisfaction. Results indicated a continual increase of self-efficacy in long-term stabilisation with regard to students' satisfaction with their academic majors. This study quantitatively investigated the long-term stability of the positive effects obtained through career guidance. Although the findings were somewhat tentative, there was preliminary support for the influence of three critical ingredients: counselling, career information and professor guidance in all types of career guidance. However, additional research is needed to identify which students benefit from which career guidance and under what circumstances.

Keywords: Career guidance, longitudinal effect, major satisfaction, mediation, self-efficacy

INTRODUCTION

The increased policy interest in career guidance provision is evident in the overlapping policy reviews conducted in the last decade by influential international organisations (Watts, 2012). According to the Organisation for Economic Cooperation and Development's definition (OECD, 2004), career guidance is services with the goal of helping people of any age and at any point throughout their lives to manage their careers. Internationally, to meet the changing demands of society, schools must acknowledge their responsibility towards guiding young people in lifelong job and career development (Perdrix, Stauffer, Masdonati, Massoudi, & Rossier, 2011).

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Career guidance has been related to self-efficacy, and people with high self-efficacy have greater outcome expectations than people with low self-efficacy (Day & Allen, 2004). People with more positive outcome expectations may put in greater effort and, therefore, see successful career development. In college, students are at a very important stage because they are supposed to set their career development such as career planning or career decisiveness at this stage (Winters, Meijers, Kuijpers, & Baert, 2009).

Many researchers also have expressed a need for career guidance outcome studies, especially longitudinal studies (Hughes, Bosley, Bowes, & Bysshe, 2002; Perdrix et al., 2011). There is huge variation in effectiveness among different approaches (Swanson, 1995; Whiteley, 1984). Further, the literature on the long-term effectiveness of career guidance is extremely limited (OECD, 2004). Only a few researchers have investigated the progression of career guidance outcomes using longitudinal methodology. Due to the cost of conducting longitudinal studies and the difficulty of getting long-term data, there are very limited longitudinal effectiveness studies (Perdrix et al., 2011). Thus, the long-term effectiveness of career guidance is often overlooked.

With this necessity, this study aimed to investigate the long-term stability of the positive effects obtained through career guidance on self-efficacy one year after and on major satisfaction two years after career guidance. This study focussed on the longitudinal effects of counselling, career information and professor guidance on college students' major satisfaction.

LITERATURE REVIEW

Career Guidance

The current concept of career development interventions is to help individuals to be the subjects of their own being. Such concepts are a major change from old concepts of earlier career development interventions in most countries. At one time, career guidance took the form of the relatively directive method where a professional guided young people who were finishing school and beginning to go into the job market (Savickas, 2003). In today's context, three components of career guidance services can be distinguished (Watts, 2010):

1) Career counselling: This is conducted on an individual basis, focussing on the career issues faced by young people.
2) Career education: This is part of the curriculum and focusses on helping young people to develop their abilities for managing their job and career.
3) Career information: This is provided in various formats and is concerned with information on the labour market, career paths, jobs and courses.

Self-Efficacy

Career guidance has often been related to an important explanatory construct, self-efficacy, or more specifically, career decision-making self-efficacy (Maguire &

Killeen, 2003; Swanson, 1995; Whiteley, 1984). According to Judge, Erez and Bono (1998), self-efficacy is individuals' perception of their ability to perform across a variety of situations. It is regarded as an individually different long-term construct in relation to individuals' effort to overcome obstacles and to cope with their choice behaviour.

Day and Allen (2004) examined the role of self-efficacy in career development. People with high self-efficacy have more positive outcome expectations, which leads to having greater effort and better performance. Research has also shown that low levels of self-efficacy in career development will lead to an avoidance of career decision-making behaviour and less job satisfaction. Furthermore, high levels of self-efficacy in career development are related to success of career planning and decisiveness (Swanson, 1995; Whiteley, 1984).

Major Satisfaction

Major satisfaction represents an important ultimate goal of career guidance and is often regarded as an indicator of effective job and career development (Allen, 1996; Graunke & Woosley, 2005). Major satisfaction for college students represents an important construct associated with their academic performance and their future career plans (Graunke & Woosley, 2005). For students, major satisfaction is equal to job satisfaction because, like work environments, academic environments vary with respect to opportunity to use various skills and interests (Allen, 1996). Major satisfaction also may also be a proxy for later job satisfaction and career success because many college programmes cannot be run without their respective social and vocational environments (Astin, 1965). Furthermore, studies investigating major satisfaction are limited in job and career development literature and the findings have been inconclusive (Savickas, 2003; Watts, 2012).

METHODOLOGY

This study used the Korea Education and Employment Panel (KEEP) data produced by the Korea Research Institute for Vocational Education Training (KRIVET) from 2013 to 2015. The data contains various educational and vocational variables related to students, parents, teachers and school administers. KEEP has been gathering data on cohorts of students of middle schools, high schools and vocational and technical schools since 2004. This study used the data collected on college students because the data concerned students progressing from middle school to college. This made it possible to figure out the long-term effect of various factors on college life including career guidance, which the students had encountered two years previously.

The final number of observations in the data of this study were 357. Male students comprised 32.2% of the sample, while female students comprised 67.8% of the sample. Also presented were students' gender, major, school type and school location for the current study.

PROCEDURE AND DATA ANALYSIS

As suggested by Baron and Kenny (1986), mediation effects through structural equation modelling (SEM) techniques were investigated using SPSS 18.0 and AMOS 18.0. With SEM, multiple indicators (i.e. ability, preference, life value and career decision self-efficacy) of our hypothesised mediator variable were incorporated directly into the model. This made it possible to deal with the bias that measurement error can produce in the estimation of mediated effects. Furthermore, the variables used in the analysis were normally distributed, which generalised the approach to normality of the sampling distributions of the variables.

The procedure contained three steps: First, the independent variable must affect the mediation variable significantly. Second, the independent variable must affect the dependent variable significantly. Third, the mediation variable must affect the dependent variable significantly and the effect of the independent variable on the third stage must be smaller than in the second stage. In this regression, if the effect of the independent variable in the third stage is significantly different from 0, the relationship among them is partial mediation. If the effect of the independent variable in the third stage is not significantly different from 0, the relationship among them is complete mediation.

The following are the research question and the hypotheses that guided this study:

1. Research Question 1. Does career guidance have longitudinal and positive effects on college students' satisfaction with their academic majors?
    - Hypothesis 1.1 – Counselling will have longitudinal and positive effects on students' satisfaction with their academic majors.
    - Hypothesis 1.2 – Career information will have longitudinal and positive effects on students' satisfaction with their academic majors.
    - Hypothesis 1.3 – Professor guidance will have longitudinal and positive effects on students' satisfaction with their academic majors.

2. Research Question 2. Does self-efficacy have a mediated effect between career guidance and students' satisfaction with their academic majors?
    - Hypothesis 2.1 – Students' self-efficacy will have a mediated effect between career guidance and students' satisfaction with their academic majors.

RESULTS

Mediation analysis

All four of Baron and Kenny's (1986) conditions for mediation were met in the analysis. (a) Career guidance was significantly associated with self-efficacy (β=0.157, $p<0.001$); (b) career guidance was significantly associated with major satisfaction (β=0.222, $p<0.001$); (c) self-efficacy was significantly associated with major satisfaction (β=0.291, $p<0.001$); (d)

the impact of career guidance on major satisfaction in the presence of the mediators was smaller (β=0.176, p<0.001) compared with (b) (see Table 5). The mediated analysis in the condition fit the data. χ^2=(33, N=357)=114.2, p<0.001, the comparative fit index (CFI)=0.934, the goodness-of-fit index (GFI)=0.937.

Table 1
Summary of investigating Baron and Kenny's conditions for mediation

	Path		B	S.E	β	t
Stage 1						
Career Guidance	→	Self-efficacy	0.157	0.046	0.178	3.407***
Counselling	→	Self-efficacy	0.146	0.039	0.196	3.770***
Career Information	→	Self-efficacy	0.113	0.038	.155	2.956**
Professor Guidance	→	Self-efficacy	0.054	0.034	0.083	1.571
Stage 2						
Career Guidance	→	Major Satisfaction	0.222	0.062	0.186	3.565***
Counselling	→	Major Satisfaction	0.186	0.053	0.185	3.541***
Career Information	→	Major Satisfaction	0.175	0.051	0.178	3.403***
Professor Guidance	→	Major Satisfaction	0.079	0.046	0.090	1.710
Stage 3						
Career Guidance Self-efficacy	→	Major Satisfaction	0.222	0.062	0.186	3.565***
Counselling Self-efficacy	→	Major Satisfaction	0.186	0.053	0.185	3.541***
Career Information Self-efficacy	→	Major Satisfaction	0.175	0.051	0.178	3.403***
Professor Guidance Self-efficacy	→	Major Satisfaction	0.079	0.046	0.090	1.710

Note. N=357, ** : p<0.01 *** : p<0.001

Specifically, I tried to investigate each component of career guidance, so I analysed the each three questions for career guidance because these questions contained different information related to career guidance. Two components of career guidance, counselling and career information, met all four of Baron and Kenny's (1986) conditions in our analysis. First, (a) counseling was significantly (β=0.146, p<0.001) associated with self-efficacy; (b) counselling was significantly associated with major satisfaction (β=0.186, p<0.001); (c) self-efficacy was significantly associated with major satisfaction (β=0.289, p<0.001); (d) the impact of counselling on major satisfaction in the presence of the mediators was smaller (β=0.144, p<0.01) compared with (b). Second, (a) career information was significantly associated with self-efficacy (β=0.113, p<0.01); (b) career information was significantly

associated with major satisfaction; (c) self-efficacy was significantly associated with major satisfaction (β=0.296, p<0.001); (d) the impact of career information on major satisfaction in the presence of the mediators was smaller (β=0.142, p<0.01) compared with (b). However, professor guidance on subject matter was not only significantly associated with self-efficacy (β=0.054, p>0.05); but also significantly associated with major satisfaction (β=0.079, p>0.05).

The results indicated different influences of career guidance on self-efficacy and major satisfaction. Counselling and career information were more effective variables for enhancing students' self-efficacy and their subsequent major satisfaction compared with professor guidance. Furthermore, the results showed partial mediation of self-efficacy between career guidance and students' major satisfaction.

It was then investigated whether the path from career guidance to major satisfaction equals zero. The chi-square for this model differed significantly from the preliminary mediated model χ^2=(34, N=357)=122.5, p<0.001, the comparative fit index (CFI)=0.928, the goodness-of-fit index (GFI)=0.932. Thus, the preliminary model was retained and is illustrated in Figure 2. The indirect effect of career guidance was significant, z=2.116, p<0.05. The results are summarised in Table 2.

Table 2
Estimates in Mediation Model

	Path		Unstandardised estimates (Standardised estimates)
Career Guidance	→	Counselling	1.547(0.795)***
Career Guidance	→	Career Information	1.646(0.827)***
Career Guidance	→	Professor Guidance	1.000(0.446)***
Career Guidance	→	Self-efficacy	0.331(0.228)***
Career Guidance	→	Major Satisfaction	0.333(0.170)**
Self-efficacy	→	Ability	1.000(0.780)***
Self-efficacy	→	Preference	0.954(0.740)***
Self-efficacy	→	Life-Value	0.858(0.693)***
Self-efficacy	→	Decision-Making	0.927(0.695)***
Self-efficacy	→	Planning	0.889(0.692)***
Self-efficacy	→	Self-Respect	0.914(0.714)***
Self-efficacy	→	Major Satisfaction	0.304(0.226)***

Note. N=357, ** : p<0.01, *** : p<0.00

DISCUSSION

The results showed that individual differences of students caused huge effects, but it is believed that it is too early to reach this conclusion. While in this study, the effects of differences in students' gender, major, school type and school location were not studied in detail, it is very likely that when students have more distinguished characteristics, the outcomes could be quite different. The most important outcome of the present research is the longitudinal effects of career guidance on students' satisfaction for their academic majors with the mediation effect of self-efficacy. Thus, the goal of career guidance should help students to have more self-efficacy, which would lead to vocational identity and career development. Career issues such as reasons for taking specific classes, future plans and job selection of students should be on the agenda. Furthermore, schools have to focus on guidance in work practice, conversations between teachers, students and apprenticeship that contribute to students' career competency (Winters et al., 2009).

However, the fact that schools indicated they were providing career guidance for some period did not mean that every participating college student was experienced in good career guidance. Some faculty who had been giving career guidance for a couple of years, for example, could not yet be considered competent. Although schools in this research indicated that they used counselling, career information and professor guidance to guide students in their jobs and careers, this is still a very new aspect of educational practice in Korea. More time and effort can be put into vocational education and training, including facilitation of faculty to fulfil this new task.

Faculty members, for example, should learn how to advise students about future career plans and job selection, besides school subjects. Earlier studies have already shown that teachers often spend most of their time in teaching about school subjects and find it difficult to broaden their responsibilities to discuss future students' careers (Winters et al., 2009). Also, teachers should be trained in student-centred teaching while providing guidance. For a learning environment in which students can initiate actions for their career, teachers should demonstrate less directing acts and enable students to control their own future career plans. Further research may contribute to how this facilitation of teachers can best be provided.

Certain limitations of the present study warrant consideration and suggest possibilities for further research. First, the study was done using the KEEP data; thus, results can only be generalized to colleges in Korea and, to an even lesser degree, to other school types internationally. Future research should further refine analyses on career guidance by using larger and more widespread data-sets. It would be valuable to investigate what kind of career guidance other countries use and compare the results between countries on effects of career guidance.

Lastly, the study focused only on outcomes in terms of students' satisfaction with their academic majors while students

were still taking college courses. Other student outcomes such as the development of a vocational competency could be investigated, as well as long-term effects with regards to skills for job and career development to be measured when students are entering the labor market. Finally, since the quantitative methodology provides only a few broad general results, it could be recommended to examine the subject matter using mixed methods. The use of multiple methodologies could include the combination of self-reports, interviews and case studies with the survey method. Thus, the use of quantitative and qualitative methods would have been preferable, since interview and observation data could have explained some more facts that were not explained through self-reported surveys.

REFERENCES

Allen, M. L. (1996). Dimensions of educational satisfaction and academic achievement among music therapy majors. *Journal of Music Therapy, 33*, 147–160.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173–1182.

Day, R., & Allen, T. D. (2004). The relationship between career motivation and self-efficacy with career success. *Journal of Vocational Behavior, 64*, 72–91.

Graunke, S. S., & Woosley, S. A. (2005). An exploration of the factors that affect the academic success of college sophomores. *College Student Journal, 39*, 367–376.

Hughes, D., Bosley, S., Bowes, I., & Bysshe, S. (2002). *The economic benefit of guidance*. (Doctoral thesis). University of Derby thesis database.

Judge, T. A., Erez, A., & Bono, J. A. (1998). The power of being positive: The relation between positive self-concept and job performance. *Human Performance, 11*, 167–187.

Maguire, M., & Killeen, J. (2003). Outcomes from career information and guidance services. OECD.

OECD (2004). *Career guidance and public policy: Bridging the gap*. OECD, Paris.

Perdrix, S., Stauffer, S., Masdonati, J., Massoudi, K., & Rossier, J. (2011). Effectiveness of career counseling: A one-year follow-up. *Journal of Vocational Behavior, 80*, 565–578.

Savickas, M. (2003). The next decade in vocational psychology: Mission and objectives. *Journal of Vocational Behavior, 59*, 284–290.

Swanson, J. L. (1995). The process and outcome of career counseling. In W. B. Walsh & S. H. Osipow (Eds.), *The handbook of vocational psychology* (pp. 217–259). Mahwah, NH: Lawrence Erlbaum.

Watts, A. G. (2010). Career guidance and post-secondary vocational education and training. A paper prepared for the OECD review of post-secondary vocational education and training, skills beyond school.

Watts, A. G. (2012). *Current issues and future directions on career education*. A paper prepared for the Career Education International Forum. Seoul, Korea.

Whiteley, J. M. (1984). A historical perspective on the development of counseling psychology as a profession. In S. D. Brown & R. L. Lent (Eds.), *Handbook of Counseling Psychology* (pp. 3–55). New York: John Wiley.

Winters, A., Meijers, F., Kuijpers, M., & Baert, H. (2009). What are vocational training conversations about? Analysis of vocational training conversations in Dutch vocational education from a career learning perspective. *Journal of Vocational Education and Training, 61*, 247–266.

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Cooperative Learning (CL) as 21st Century's Teaching Method in Improving English Proficiency among Primary School Student: Teachers' Perception

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ABSTRACT

Cooperative learning (CL) as a 21st-century classroom teaching method has begun to be viewed as a form of active learning in Malaysia. Although CL has been applied and successfully implemented abroad, it is still considered difficult to put into practice among primary school teachers in Malaysia for improving English among primary school students. Primary school teachers are more comfortable with conventional teaching methods including using the national language, Bahasa Malaysia. In order to implement CL successfully, teachers require knowledge of CL, its features and terms and how it functions in classrooms. This qualitative study examined 10 primary school teachers' from the southern zone of Peninsular Malaysia on their understanding of CL and factors perceived to affect its implementation. Using Johnson and Johnson's (1994) features of CL and Bain, Lancaster and Zundans' (2009) list of CL terms as a framework for analysis, we found that the teachers' level of CL knowledge shaped their perception of the factors affecting its implementation in the classroom. However, more research is needed to explain how teachers' knowledge of CL can shape what teachers perceive as barriers to effective implementation that affect the success of CL in practice.

Keywords: Cooperative learning (CL), English proficiency, teachers' perception

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INTRODUCTION

Today's classrooms are diverse. Students have varying academic abilities, ethnic and cultural differences and special needs. These differences are compounded by the expectations of all students to participate in general classroom activities and perform well on state assessments. As teachers feel pressured to help students improve their performance on standardised tests, the need to implement alternative teaching methods has become more urgent. Teachers are currently faced with implementing effective strategies that can address the needs of their students. According to McLaren (2015), effective teachers spend their career learning better techniques that will help students succeed in school and in life. Mitchell (2014) noted that effective teachers have a variety of instructional strategies at their disposal and he recommended that teachers use research-based instructional strategies. One research-based method is cooperative learning.

Cooperative learning (CL) has been identified in the literature as a successful research- based teaching strategy in which small teams of diverse students use a variety of learning activities to improve their understanding of a subject (Epstein, 2016; Slavin, 2015; Davidson, Major & Michaelsen, 2014). According to Pedersen and Digby (2014), CL involves a team in which students work in small groups to accomplish a common learning goal under the guidance of a teacher. Hertz-Lazarowitz, Kagan, Sharan, Slavin and Webb (2013) described teams as a set of interdependent individuals with unique skills and perspectives who interact directly to achieve their mutual goal.

Poor command of English among students should be given attention by all teachers especially for students who are poor in English communication. Moreover, teachers cannot let students be left behind without adequate English communication skills in a world that is becoming rapidly globalised as that would leave them unable to face the challenges of life (Spawa & Hassan, 2013). A study done by Ahmad, Abdullah and Ghani (2014) showed that the English teacher, especially in Sabah and Sarawak, Malaysia, faced difficulties in teaching because 61% of the students were not proficient in and were hesitant to use the English language.

Numerous studies done by researchers have encouraged the use of CL in order to increase student achievement and social skills development especially in English (Kuo & Huang, 2015; Hill & Miller, 2013). Thus, this study will focus on primary school teachers' perception of CL especially in improving English proficiency among students. CL is an effective teaching strategy that allows students of various ability levels to work together in small teams to accomplish a specific goal (Johnson et al., 1998, p. 26).

BACKGROUND OF THE RESEARCH

Many scholars have proven that CL is one of the best learning methods of the 21st century. Cooperation in the process of learning can give students a sense

of tranquillity that can help them learn better. CL relies on students' learning style (Johnson, Johnson, & Tjosvold, 2012, p. 15). Learning cooperative skills will enable students to take an active approach in their own learning. CL provides the opportunity for students to express ideas and discuss and interact with peers while learning through their own experience (Cohen & Lotan, 2014). Research conducted by Cheung, Slavin, Lake and Kim (2016) found that CL helped other researchers to practise this method in today's classes and also helped teachers to help students improve their grades.

According to Cohen (1993), Hintz (1990) and Rich (1990), the employment of a new methodology and the improvement of classroom instruction can only come about through the teacher's efforts. The success or failure of a new educational idea depends greatly on the role of the classroom teacher; therefore it is important to recognise the existence of salient concerns of teachers regarding innovation. Whether or not change actually becomes practice depends on the individual teacher. Hintz's analysis of lessons taught using CL did not show enhancement in student achievement largely due to the teacher's deviation from the ideas of CL offered by the research.

In this paper, researchers argue that teachers require knowledge of CL features and terms and how these features function to implement CL successfully in their practice with the aim of helping students improve their English proficiency. To discover the teachers' existing knowledge of CL and factors perceived to affect its implementation, this study examined the perception of Malaysian primary school teachers. This study examined teachers' knowledge of CL terms and functions (i.e. CL pattern language) and compared it with CL features and terms described by Johnson and Johnson (1989) and Bain, Lancaster and Zundans. (2009). It also examined how teachers' level of CL knowledge shaped how they perceived and managed various factors affecting the practice of CL. Determining and understanding teachers' knowledge of CL pattern language and how this affects their CL implementation (or lack thereof) is important because the findings will provide information for teacher training and professional development programmes (Ministry of Education).

THE UNDERLYING FEATURES OF COOPERATIVE LEARNING (CL)

Seminal researchers in CL, such as Slavin (1989), have slightly different approaches to CL; however, they share common elements for its structure. For the purpose of this study, Johnson and Johnson's (1994) titles of the key characteristics of this approach used in the 'Learning Together Model' have been summarised below to provide an understanding of CL principles or features:

1. Positive interdependence exists when group members perceive that they are linked with each other in a way that one cannot succeed unless everyone succeeds.
2. Individual and group accountability refers to the group being accountable

for achieving its goals, but also to each member being accountable for his or her contribution and for learning the material.

3. Face-to-face promotive interaction occurs when members share resources, such as learning material, as well as help, support, encourage and praise each other's efforts. Promotive interaction aims to enhance group cohesion.
4. Teaching students the required interpersonal and small group skills, such as communication, positive reinforcement, constructive feedback and problem solving skills, is necessary in addition to teaching them academic subject matter.
5. Group processing exists when group members reflect on how well they are achieving their goals and maintaining effective working relationships and then make adjustments accordingly.

Johnson and Johnson (1994), among other researchers, argued that these five underlying principles must be implemented simultaneously in order for CL to be effective in the classroom (Dyson & Grineski, 2001; Kagan, 1994; Slavin, 1989). In their study on pattern language development, Bain et al. (2009) listed the following terms under CL within their "Pattern Language Lexicon": Face-to-face interaction; positive interdependence; interpersonal skills; focus on group processes; individual accountability; social cohesion; cognitive elaboration; metacognition; procedural; declarative; all levels of learning; differentiation; and motivation. The researchers were interested in the teachers' use of these terms and their knowledge of the CL features outlined above when they were asked to describe their understanding and experience of CL in order to improve English proficiency among primary school students. In this study, researchers focussed on the perception of teachers in the use of these terms and their knowledge of the CL features outlined above when they were asked to describe their understanding and experience of CL in improving English proficiency among primary school students.

LITERATURE REVIEW

Cooperative learning (CL) in improving English proficiency

In recent years, several researchers and instructors uncovered many benefits of CL. During CL activities, students work with their peers to achieve and complete shared goals. Instead of working alone, the goals are reached through interdependence between cooperative group members. All group members are responsible for achieving the common goals. CL is today one of the most popular methods in teaching and learning, and has been shown to have positive effects on various outcomes (Pedersen & Digby, 2014). Based on Johnson, Johnson and Holubec (1993), CL is an instructional method whereby students in small groups collaborate to maximise one another's learning and to achieve mutual goals. This methodology has been widely used to teach various educational subjects such

as Mathematics and English (Bolukbas, Keskin, & Polat, 2011; Meng, 2010; Law, 2011). Most studies on the effectiveness of CL have consistently indicated that this methodology promotes higher achievement, more positive interpersonal relationships and higher self-esteem than do competitive or individualistic efforts (Ning, 2013). Partridge and Eamoraphan (2015) and Mohamad (2013) indicated that English reading materials could be learnt through social interaction by undergoing re-definition and reconceptualisation of the materials to become internalised. English reading skills are enhanced in a learning environment in which learners interact and use language for socially constructing meaning (Zoghi, Mustapha, & Massum, 2010). Furthermore, research findings by Selamat, Esa, Salleh and Baba (2012) showed that additional classes could improve performance in learning and extend students' excellence. Practically employed CL helps learners participate in reading lessons effectively, creates an abundant and healthy English-learning environment, makes language learning more meaningful and increases acquisition (Bolukbas, Keskin, & Polat, 2011). Teacher roles should also shift from being knowledge transmitters to thought mediators. Teacher mediation involves facilitating, modelling and coaching. Based on Hennessey and Dionigi (2013), to become as effective facilitator, teachers must intervene and assist in the problem-solving process, assess group interactions and monitor how students are developing their language skills, all of which allows them to make changes where needed to enhance student learning. Creating a safe, non-threatening and learner-centred environment is also important for teachers to ensure that all students have the opportunity to contribute to achieving group goals (Ning, 2011).

METHOD

Participant sample

Ten participants were recruited using Snowball sampling (Creswell & Plano, 2011). The teachers were initially contacted and identified by colleagues who might be interested in participating in the study. Approval was gained from the Ministry of Education prior to data collection, and each participant gave informed consent. Teachers ranged in years of teaching experience, from one to 10 years in teaching the English language. The participants were selected from five primary schools in the southern zone of Peninsular Malaysia. Five participants were from Teacher Education Colleges (CTE), four had completed their educational degree from the same university and the remaining one participant had graduated from an overseas tertiary institution.

DATA COLLECTION

The semi-structured interview was used to examine teachers' understanding of the term 'cooperative learning' (CL) (Research Question 1) and the factors they perceived to affect its implementation (Research Question 2). Each participant

was informed of the topic before their interview. The interviews were about 20-45 minutes long depending on the participant. Each interview began with a screening question: What do you understand by the term 'cooperative learning' (CL)? Depending upon this initial response, the interviewer classified the participants into one of three categories (limited, general or detailed understanding of CL) and posed different questions accordingly. Table 1 shows the interview schedule based on the initial classification.

Table 1
Fuzzy Delphi technique

Limited	General	Detailed
Cooperative learning: - Small groups work - Group goals - Group characteristics * mixed abilities * mixed genders * two to six members - Individual accountability - Equal opportunity - Team competition • What opportunities do you feel exist for using cooperative learning in the classroom? • How do you think you could use this strategy? • What barriers might inhibit your use of cooperative learning?	• Do you use cooperative learning in your classroom? • How do you use cooperative learning in your classroom? • What opportunities do you feel exist for using cooperative learning in the classroom? • What barriers might inhibit your use of cooperative learning? • What do you need to know to make the implementation of cooperative learning successful? • How did you learn about cooperative learning?	• How do you use this strategy in the classroom? • What opportunities do you feel exist for using cooperative learning in the classroom? • What barriers might inhibit your use of cooperative learning? • What do you believe teachers need to know and understand about cooperative learning to ensure they can successfully implement cooperative learning? • How did you learn about this strategy?

As the dialogue progressed, the interviewer moved flexibly between categories in order to ask a range of questions to accurately represent the full extent of the participant's CL knowledge. For instance, if the participant demonstrated deeper understanding of CL than the interviewer had initially thought, then the interviewer asked a question from a higher categorisation to probe for further knowledge. Essentially, the three categories acted as a loose guide for selecting questions to probe participants' depth of CL knowledge and use. Each participant's categorisation (i.e. limited, general or detailed) was only finalised during the analysis stage, as explained below.

DATA ANALYSIS

The interviews were audio-taped, then transcribed and read several times. Initially, each transcript was coded

using three codes: i) understanding, ii) opportunities, and iii) barriers. The codes, 'opportunities' and 'barriers', focussed on those factors that affected each English teacher's implementation of CL. This intra-textual analysis approach (Wiedemann, 2013) resulted in the identification of raw data themes within each English teacher's transcript that represented the factors affecting CL.

The code 'understanding' was further divided into 'limited', 'general' and 'detailed' by comparing English teacher knowledge of CL terms and functions against CL features and terms described by Johnson and Johnson (1994) and Bain et al. (2009). A word search of each transcript found that none of the English teachers used the specific terms outlined by Bain et al. (2009); however, a couple of English teachers made reference to them. Therefore, 'limited' referred to participants having minimal or no understanding of the underlying principles of CL as defined by Johnson and Johnson (1994) and others (e.g. Kagan, 1994; Slavin, 1989), as well as no use of the CL pattern language terms identified by Bain et al. (2009). 'General' referred to those participants who displayed an understanding of some CL features, functions and terms, but did not use Bain et al.'s (2009) CL pattern language terms. 'Detailed' referred to the participants who articulated all or most of the principles of CL and who frequently showed an understanding of CL pattern language in their responses (Table 2).

The next phase of analysis involved the researchers examining the common themes across the whole data set, with particular attention being given to how the teachers' level of CL knowledge shaped their perception of the factors affecting its implementation. This approach is called inter-textual analysis (Maykut & Morehouse, 1994) and it allowed the researchers to link similar raw data themes that were represented across individual participants together, drop irrelevant themes and develop higher order themes (more refined concepts) to ensure that themes specifically addressed the two research questions. For example, the raw themes 'working together', 'student training' and 'teacher control' were merged to develop the higher order theme of 'teacher planning and control'. To facilitate consensus and verification of the representativeness and interpretation of the codes derived from the interviews, on-going discussion among the researchers occurred, enabling critical reflection on the emergent themes. The researchers only focussed on teachers' level of understanding and teacher planning and control as the key themes regarding CL knowledge and factors perceived to affect the implementation of CL in primary schools.

RESULTS AND DISCUSSION

Teachers' level of understanding

Teachers' CL knowledge affected the way they perceived and managed the factors of

teachers' level of understanding and teacher control and planning. Table 2 shows that of the 10 participants in this study, half were categorised as having limited understanding of CL (three female and two male teachers). Of the remaining participants, three were seen as having general understanding (three females, one male) and two showed detailed understanding (two females and one male).

Table 2
Participant demographic details

Pseudonym	Gender	Teaching status	Teaching experience	CL knowledge categorisation
Mr Ali	Male	Permanent	3-5 Years	Limited
Mr Syafiq	Male	Permanent	3-5 Years	Limited
Miss Elizabeth	Female	Temporary	0-2 Years	Limited
Miss Nadia	Female	Permanent	0-2 Years	Limited
Miss Khaltom	Female	Permanent	3-5 Years	Limited
Mr Salvan	Male	Temporary	3-5 Years	General
Mr Lim	Female	Temporary	3-5 Years	General
Mrs Suri	Female	Permanent	10 + Years	General
Mr Kamal	Male	Temporary	0-2 Years	Detailed
Mr Ng	Male	Permanent	10 + Years	Detailed

Table 2 shows that half of the participants demonstrated 'limited' CL knowledge (Mr Ali, Mr Syafiq, Miss Elizabeth, Miss Nadia). This suggested that there were still teachers who lacked knowledge of CL. Not all teachers have deep knowledge of CL and are not serious and regular about applying this method in their classes. Miss Elizabeth equated group work with CL and did not appear to realise that CL extends beyond traditional group work (Johnson, Johnson, & Holubec, 1993). Miss Elizabeth's response illustrates a number of misconceptions about students' ability to perform particular roles. Johnson and Johnson (1994) argued that every student should be provided with the opportunity to develop the skills needed to fulfil different roles. Bain et al. (2009) used the phrases "all levels of learning" and "focus on group processes" to describe CL language pattern but Miss Elizabeth assumed that the role of the leader had to be filled by a student who was perceived to be of higher ability. She appeared to assume that the lower achiever was the one who benefitted from the group process, a situation which can lead to a breakdown of positive interdependence and individual and group accountability, as articulated by Johnson and Johnson (1994).

Statements by Mr Salvan, Mr Lim and Mrs Suri articulate more clearly their 'general' level articulate CL knowledge. This response highlights the characteristic of positive interdependence as a way of structuring CL (Bain et al., 2009; Johnson & Johnson, 1994). Although Mr Salvan admitted, "I've mostly had experience with Year One and I haven't used it very much because it's very hard to do especially in English subject and not suitable for the young students...." Mr Salvan implied that the age of students (Year One students are 6 or 7 years old) and the difficult teacher planning and control that are required for effective CL implementation restricted his usage of this approach.

Table 3 shows further that Mr Kamal and Mr Ng provided a more 'detailed' understanding of CL. Mr Ng's response demonstrated a recognition of three principles of CL (Johnson & Johnson, 1994): positive interdependence, by "... children working together ..."; promotive interaction, by "... getting the children to teach each other ..." and students promoting the success of others through encouragement and support; and, students being taught social and team building skills and then using them to work collaboratively. It also demonstrated recognition of the teacher's role as a facilitator. Although Mr Kamal did not use the exact CL pattern language terms outlined by Bain et al. (2009), he did describe 'face-to-face interaction', 'positive interdependence', 'interpersonal skills', 'social cohesion' and 'all levels of learning' in his explanation above. Besides that, Mr Kamal provided more detailed understanding of CL, showing that he was thinking out of the box i.e. that he could interpreted the effect of the implementation of CL, especially in improving communication and social skills that are suitable and appropriate for 21st century student teaching and learning.

Teacher planning and control

Teachers with a general and limited understanding of CL expressed difficulty in planning and control, whereas the teachers with a detailed understanding recognised the need for a delicate balance between teacher control and student autonomy. To achieve the latter, it was acknowledged that careful teacher planning is required. Mr Ng (detailed) explained that in CL settings some children sought to be uninvolved in the group process. He believed that the 'free-rider problem' (Slavin, 2014; Dingel, Wei, & Huq, 2013) only occurs if there is a lack of teacher planning and control in the learning environment.

Table 3
Participant's level of understanding cooperative learning (CL) knowledge

Pseudonym	CL knowledge categorisation	Statement
Mr Ali	Limited	"The cooperative learning methodologies that I know are group work and discussion." "Cooperative learning involves group work. Right…"
Mr Syafiq	Limited	"I don't have much understanding of it...it's something to do with group work and working as a team".
Miss Elizabeth	Limited	... I have used group work ... you can get around to each group and see what they're doing, I try and make it so that there is a higher achiever that can sort of control the group, and then a lower achiever so they can benefit ... the higher achiever can help the lower achiever.
Miss Nadia	Limited	Cooperative learning is "one of the teaching approaches"…. that uses "the strategy of groupings, putting pupils in smaller groups with different competencies."
Miss Khaltom	Limited	"Cooperative learning is a method that is used in classes whereby pupils are grouped…such that when they are given tasks they contribute ideas." "Cooperative learning to me is the children working cooperatively in small groups through research tasks or they undertake lessons or activities and it's more child-centred and directed rather than teacher- directed."
Mr Salvan	Limited	I've mostly had experience with teaching in English subject about one year and I haven't used it very much because it's very hard to do especially in English subject and not suitable for young students...."
Mr Lim	General	"Cooperative learning means involving the students to cooperate and share knowledge and what they know together and finally they present… It is almost similar to group discussion…"
Mrs Suri	General	"Cooperative learning is a type of learning where children are grouped according to age, sex and ability and the activity given is done as a group." "Cooperative learning is one of the methods of teaching where students work together in groups during the teaching and learning process."
Mr Kamal	Detailed	"It is an approach where children actually learn collaboratively in groups and it targets the development of social skills, and the same time teaching of content."
Mr Ng	Detailed	"Cooperative learning to me would be children working together ... to develop an understanding of what is being taught ... first off maybe individual instructions by the teacher and then moving together to get the children to teach each other, because the way they explain it to each other is at their level, and much better than the way the teacher can actually explain it to them. So, we give them some sort of guidance and then allow for the students to do their own building and teaching to each other"

Guzzetti, Young, Gritsavage, Fyfe and Hardenbrook (2013) stated that the majority of teaching in schools is characterised by teacher control and student submissiveness and powerlessness, in essence a teacher-directed learning environment. However, a student-centred learning environment, which is more conducive to CL, provides students with opportunities to explore, examine and critique content and concepts whilst applying their knowledge, understanding and skills to solve real-life problems (Slavin, 1996).

For teachers, however, it may be difficult to relinquish control of their students. For instance, teachers with a general and limited understanding of CL saw lack of teacher direction as a barrier. As Mr Ali (limited) stated, lack of understanding of CL can make it difficult to practise CL in the classroom, especially among students who are not proficient in English. Mr Salvan (general) also gave the same idea that most teachers still do not have the confidence to use CL because it requires advance planning methods and the amount of time for English language in school is not enough. Moreover, Mrs Suri (general) and Mr Lim (general) believed that that some teachers might not employ CL because they perceived that allowing for more student control could increase behavioural management issues and lack of student focus. They also argued that there was no training regarding the implementation of CL at primary schools. Miss Khaltom (limited) stated that there was no specific module on CL that could guide teachers. On the other hand, Mr Kamal (detailed) believed that barriers to implementing CL could be easily overcome by teachers themselves. In this instance, Mr Kamal expressed the stereotype that good teaching is an individual trait. This assumption, however, can be problematic because it assumes that teachers cannot be taught how to change their practice (Pattanpichet, 2011; Elmore, 1996, 2007).

Table 4
Teacher planning and control based on cooperative learning (CL) knowledge

Pseudonym	CL knowledge categorisation	Statement
Mr Ali	Limited	"Teachers still feel a lack of understanding and difficulty to practise the method of cooperative learning in the classroom especially for student who are not proficiency in English…".
Mrs Khlatom	Limited	"…I found out there was no special modules to provide guidance for English teachers to implement cooperative learning method in the classroom …."
Mr Salvan	General	"When I was entrusted to educate English subject at primary schools, most teachers still do not have the confidence to use cooperative learning method because it requires advance planning methods and the amount of time for the English subject is not enough ...."

Table 4 *(continue)*

Mr Lim	General	"Another barrier is there's no teacher-direction. Not no teacher-direction, but say certain points that a group can be working without teacher direction and then list some key elements that if the teacher was there they'd have to focus their attention on that."
Mrs Liza	General	"I think very young teachers are frightened about implementing cooperative learning approaches. It's difficult to implement than traditional method…"
Mr Kamal	Detailed	"... they're only there if you set them ... I don't see any barriers there to it. It comes down to the individual; do you want to do it or don't you? Do you want to include the children in the decision- making process? It's up to the individual to come to terms with that and go for it."
Mr Ng	Detailed	"... children who will tend to allow other children to do all the work for them, children feel lazy and thinking like 'well, good, group work, I can sit back and have a rest.."

CONCLUSION

The findings in this study does not highlight the challenges that teachers' face when attempting to implement an instructional methodology that is well theorised and advocated, but not well embedded in teacher training nor traditionally supported in schools. The study showed that only two teachers in the sample had knowledge of CL pattern language required to meet Johnson and Johnson (1994) and Bain, Lancaster and Zundans' (2009) criteria. Moreover, this study showed that the extent to which factors were perceived as barriers to CL, or issues that could be effectively managed by teachers, differed depending on the teacher's knowledge of CL features and function. On the other hand, few teachers who had a more sophisticated understanding of CL features, functions and language pattern could describe more effective CL practice or provide preliminary evidence to support the view that when teachers have this pattern language and understand it they can have effective practice (Zoghi, Mustapha, & Maasum, 2010; Veenman, Kenter, & Post, 2000). Coupling this outcome with the finding that most teachers in the sample had limited knowledge and practice of CL reinforces the need for the embedded design of CL pattern language in teacher training (Bain et al., 2009) and continuous structural support (above management) for the implementation of CL in primary schools (Putnam, 1998; Veenman et al., 2000).

As explored by Whitehead (2014), a large number of teachers who have started to use CL do not receive support from instructors, administrators, schools or colleges, and teachers normally learn about CL through one-off workshops or on their own initiative. Without repeated exposure to CL language pattern throughout teacher training programmes or the reinforcement of this language in on-going professional development courses, how can we expect teachers to adopt CL effectively in practice?

How can we improve practice in education on a larger scale if teachers do not have the required professional language pattern to manage the barriers and to implement CL successfully? How can students improve their proficiency in English if teachers lack knowledge of CL?

Further research needs to be done to consider primary school teachers' understanding and definition of CL, their preparedness to employ CL in the classroom and their experience of using this approach. Also, given that the researchers did not assess the implementation of CL in this study, a follow-up could involve testing the influence of teachers' CL knowledge on the implementation of CL and measuring the effects of the mediating factors identified in the current study, such as the teachers' perception of the need to control. Gaining more insight into teachers' perceptions, uses and understanding of CL will shed light on how to: (a) effectively address the (perceived and actual) barriers faced by teachers in their unique context; and, (b) manage the on-going challenges of translating theory into practice on a larger scale across schools.

Although the study findings indicate that CL was not fully implemented as a 21st-century teaching method, participants in this study still had a positive attitude towards CL as a teaching approach that can lead to improvement of classroom instruction. In summary, based on the above study, for the success of teaching methods or approaches, whether CL or other teaching methods, the most important requirements are full understanding of the method by the teachers and support by the top management seen in the provision of enough facilities and training for teachers.

REFERENCES

Ahmad, I. S., Abdullah, H., & Ghani, M. F. A. (2014). Attitudes and motivation toward learning the English Language among Students from Islamic Education System Background: Exploring the views of teachers. *Journal of Education and Learning (EduLearn), 8*(3), 195–208.

Bain, A., Lancaster, J., & Zundans, L. (2009). Pattern language development in the preparation of inclusive educators. *International Journal of Teaching and Learning in Higher Education, 20*(3), 336–349.

Bolukbas, F., Keskin, F., & Polat, M. (2011). The effectiveness of cooperative learning in the reading comprehension skills in Turkish as a foreign language. *The Turkish Online Journal of Educational Technology, 10*(4), 330–335.

Cheung, A., Slavin, R. E., Lake, C., & Kim, E. (2016). Effective secondary science programs: A best-evidence synthesis. *Annual meeting of the Society for Research on Educational Effectiveness, Washington, DC*.

Cohen, E. G., & Lotan, R. A. (2014). *Designing groupwork: Strategies for the heterogeneous classroom* (3rd ed.). Teachers College Press.

Cohen, M. D. (1993). *Variables affecting the teacher implementation of cooperative learning methods in ESL and bilingual classrooms*. (Unpublished doctoral dissertation). University of Houston, Texas, United States of America.

Creswell, JW., & Plano Clark. (2011). *VL Designing and conducting mixed methods research* (2nd ed.). Sage Publications.

Davidson, N., Major, C. H., & Michaelsen, L. K. (2014). Small-group learning in higher education cooperative, collaborative, problem-based, and team-based learning: An introduction by the guest editors. *Journal on Excellence in College Teaching, 25*(3&4), 1–6.

Dingel, M. J., Wei, W., & Huq, A. (2013). Cooperative learning and peer evaluation: The effect of free riders on team performance and the relationship between course performance and peer evaluation. *Journal of the Scholarship of Teaching and Learning, 13*(1), 45–56.

Dyson, B., & Grineski, S. (2001). Using cooperative learning structures in physical education. *Journal of Physical Education, Recreation and Dance, 72*(2), 28–31.

Elmore, R. (1996). Getting to scale with good educational practice. *Harvard Educational Review, 66*(1), 1–27. Retrieved from http://hepg.org/her/abstract/288

Elmore, R. (2007). Professional networks and school improvement. *School Administrator, 64*(4), 20-24. Retrieved from http://www.aasa.org/SchoolAdministratorArticle.aspx?id=6812

Epstein, B. (2016). Five heads are better than one: preliminary results of team-based learning in a communication disorders graduate course. *International Journal of Language and Communication Disorders, 51*(1), 44–60.

Guzzetti, B. J., Young, J. P., Gritsavage, M. M., Fyfe, L. M., & Hardenbrook, M. (2013). *Reading, writing, and talking gender in literacy learning*. Routledge.

Hennessey, A., & Dionigi, R. A. (2013). Implementing cooperative learning in Australian primary schools: Generalist teachers' perspectives. *Issues in Educational Research, 23*(1), 52–68.

Hertz-Lazarowitz, R., Kagan, S., Sharan, S., Slavin, R., & Webb, C. (Eds.). (2013). *Learning to cooperate, cooperating to learn*. Springer Science and Business Media.

Hill, J. D., & Miller, K. B. (2013). *Classroom instruction that works with English language learners* (2nd ed.). USA: ASCD.

Hintz, J. L. (1990). *Cooperative learning: Analysis of teacher implementation*. (Unpublished doctoral dissertation). University of Wisconsin,US.

Johnson, D., & Johnson, R. (1989). *Cooperation and competition: Theory and research*. Edina, Minnesota: Interaction Book Company.

Johnson, D., & Johnson, R. (1994). *Learning together and alone: Cooperative, competitive, and individualistic learning* (4th ed.). Boston: Allyn and Bacon.

Johnson, D., Johnson, R., & Holubec, E. (1993). *Cooperation in the classroom* (6th ed.). Edina, Minnesota: Interaction Book Company.

Johnson, D. W., Johnson, R. T., & Smith, K. A. (1998). Cooperative learning returns to college: What evidence is there that it works? *Change: The Magazine of Higher Learning, 30*(4), 26–35.

Johnson, D. W., Johnson, R. T., & Tjosvold, D. (2012). Effective cooperation, the foundation of sustainable peace. *Psychological components of sustainable peace*. New York: Springer.

Kagan, S. (1994). *Cooperative learning*. California: Kagan Cooperative Learning.

Kuo, Y. C., Chu, H. C., & Huang, C. H. (2015). A learning style-based grouping collaborative learning approach to improve EFL students' performance in English courses. *Educational Technology and Society, 18*(2), 284–298.

Law, Y. K. (2011). The effects of cooperative learning on enhancing Hong-Kong fifth graders' achievement goals, autonomous motivation and reading proficiency. *Journal of Research in Reading, 34*(4), 402–425. http://dx.doi.org/10.1111%2Fj.1467-9817.2010.01445.x

Maykut, P., & Morehouse, R. (1994). *Beginning qualitative research: A philosophic and practical guide*. London: The Falmer Press.

McLaren, P. (2015). *Life in schools: An introduction to critical pedagogy in the foundations of education*. Routledge.

Meng, J. (2010). Cooperative learning method in the practice of English reading and speaking. *Journal of Language Teaching and Research, 1*(5), 701–703. http://dx.doi.org/10.4304%2Fjltr.1.5.701-703

Mitchell, D. (2014). *What really works in special and inclusive education: Using evidence-based teaching strategies*. Routledge.

Mohamad, N. H. (2013). *Pembangunan kemahiran komunikasi Bahasa Inggeris menerusi Badan Beruniform PALAPES UTHM*. (Unpublished doctoral dissertation). Universiti Tun Hussein Onn, Malaysia.

Ning, H. (2011). Adapting cooperative learning in tertiary ELT. *ELT Journal, 65*(1), 60–70. http://dx.doi.org/10.1093%2Felt%2Fccq021

Ning, H. (2013). The impact of cooperative learning on English as a foreign language tertiary learners' social skills. *Social Behavior and Personality: An International Journal, 41*(4), 557–567.

Pattanpichet, F. (2011). The effects of using collaborative learning to enhance students' English speaking achievement. *Journal of College Teaching and Learning, 8*(11), 1–11.

Pedersen, J. E., & Digby, A. D. (2014). *Secondary schools and cooperative learning: Theories, models, and strategies*. Routledge.

Putnam, J. (1998). The process of cooperative learning. In J. Putnam (Ed.), *Cooperative learning and strategies for inclusion: Celebrating diversity in the classroom* (2nd ed.). Baltimore: Brookes Publishing Co.

Rich, Y. (1990). Ideological impediments to instructional innovation: The case of cooperative learning. *Teaching and Teacher Education, 6*(1), 81–91.

Selamat, A., Esa, A., Salleh, B. M., & Baba, I. (2012). Extra classes' effectiveness in smart secondary school, Johore, Malaysia. *Asian Social Science, 8*(1), 111–118.

Slavin, R. E. (1989). *Cooperative learning and student achievement*. Hillsdale: Lawrence Erlbaum.

Slavin, R. E. (1996). Research on cooperative learning and achievement: What we know, what we need to know. *Contemporary Educational Psychology, 21*(4), 43–69. http://psycnet.apa.org/doi/10.1006/ceps.1996.0004

Slavin, R. E. (2014). Making cooperative learning powerful. *Educational Leadership, 72*(2), 22–26.

Slavin, R. E. (2015). Cooperative learning in elementary schools. *Education 3-13, 43*(1), 5–14.

Spawa, C. M. C., & Hassan, F. (2013). "I doesn't know English": Beliefs and practices in the teaching of speaking in ESL classroom. *Pertanika Journal of Social Sciences & Humanities, 21*(2), 44–460.

Veenman, S., Kenter, B., & Post, K. (2000). Cooperative learning in Dutch primary classrooms.*Educational Studies, 26*(3), 281–302. http://dx.doi.org/10.1080/ 03055690050137114

Whitehead, S. D. (2014, June). Complexity and cooperation in Q-learning. In Maching Learning: Proceedings of the Eighth International Workshop (pp. 363-367).

Wiedemann, G. (2013). Opening up to big data: Computer-assisted analysis of textual data in social sciences. *Historical Social Research/ Historische Sozialforschung*, 332–357.

Zoghi, M., Mustapha, R., & Tg. Nor Rizan Mohd. Maasum, (2010). Collaborative strategic reading with university EFL learners. *Journal of College Reading and Learning, 41*(1), 67–94.

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Participation of Shy Children during the Teaching and Learning of Basic Psychomotor Skill

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ABSTRACT

Shy behaviour during the teaching and learning of basic psychomotor skills could affect the development of children's skills. This study was undertaken to examine the relationship between shyness and children's participation during the teaching and learning of basic psychomotor skills in early education. The samples for this study were n=118 (55 boys, 63 girls) shy preschool children who enrolled in the Segamat Preschool, Ministry of Education (MOE) Malaysia who were nominated by their teachers during the primary stage of data collection. The children were then rated by their teachers in terms of their shyness level and participation during the teaching and learning of basic psychomotor skills. The analysis showed that the children's level of shyness was high (M=3.73, SD=0.642) whereas the children's participation was low (M=2.40, SD=0.731). There was no significant difference in the level of shyness between boys and girls. However, there was a strong negative correlation between the level of shyness and the student's participation in the teaching and learning of basic psychomotor skills.

Keywords: Basic psychomotor skills, classroom, participation, shyness, teaching and learning

INTRODUCTION

Most of the teaching and learning in early education focusses on the skills that emphasize on children's hand-eye coordination while promoting thinking skills and creativity among children. Learning psychomotor skills requires optimum participation from children to master the skills competently. It is pivotal for children

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to enhance their basic skills in preparation for elementary school where they will learn more advanced skills. Learning basic psychomotor skills includes mastering the process of asking and answering questions, participating in discussion and performing tasks in groups, being involved in hands-on activities, as well as presenting the final work orally. Learning basic psychomotor skills emphasizes on the ability to use the imagination, creativity and talents and to show appreciation; most important is the ability to use these skills independently.

However, it is not easy for children to participate in the teaching and learning of basic psychomotor skills due to the different emotions shown by children. Among the emotions that cause the teaching and learning of basic psychomotor skills to become less effective is shyness. According to Zimbardo, Pilkonis and Noorwood (1977), shy children avoid classroom learning situations, especially when asked to demonstrate the skills due to wariness of negative evaluation and fear of making mistakes or failing to perform the skills correctly. Shy children feel ashamed of their own behaviour and always underestimate their social competence (Crozier, 2005; Schlenker & Leary, 1982).

Shyness causes preschool children to become inactive during the teaching and learning of basic psychomotor skills. Moreover, shyness makes the learning objectives hard to achieve. Durmuş (2007) defined shyness as a trait, character, attitude or state of inhibition. Shyness is a reaction of social interaction that causes discomfort, where the individual becomes preoccupied with something else or feels ashamed of his or her own behaviour. Shy behaviour can cause negative reactions that reduce one's self-confidence (Wadman, Durkin, & Conti-Ramsden, 2008). Lack of self-confidence causes children to demonstrate passive behaviour during the teaching and learning of basic psychomotor skills and makes they refuse to participate in group and classroom activities.

Classroom participation

According to Sayadi (2007), active participation in the classroom can improve one's skills. There are two types of class participation: verbal participation and non-verbal participation (Sayadi, 2007). Verbal participation requires students to talk, ask and answer the questions, give comments or views and also participate in class or group discussion during the teaching and learning session (Lee, 2005). Non-verbal participation includes students' actions or behaviour like paying attention, participating in activities, making eye contact, raising the hand, engaging in hands-on activities and also cooperating in group tasks (Lee, 2005; Sayadi, 2007). Masek (2016) defined students' participation in a matrix that shows patterns of students' interactions. There are four constructs based on the matrix, which are behaviour (active/passive), oral (talkative/silent), group skills (excellent/poor) and confidence level (high/low). Referring to the matrix, a shy student will demonstrate passive behaviour, keep

silent, display poor group skills and show low self-confidence.

There are very strong connections between classroom participation and students' academic and skill competencies. Students' participation in a classroom (Gomez, Arai, & Lowe, 1995; Tsou, 2005) and small groups (Masek, 2016) is very important for achieving learning objectives and allowing effective learning to take place. Skinner, Kindermann and Furrer (2009) in their study on students' engagement in classroom learning stressed that anxiety and shyness are disaffected emotions whereas disengagement and passivity in the learning activities are types of disaffected behaviour. According to the researchers, both disaffected emotion and disaffected behaviour bring negative impact on students' participation in classroom activities. Lack of classroom participation will lead to a poor process of teaching and learning and will cause failure in achieving teachers' learning goals. This will affect students' ability to master the skills (Skinner et al., 2009).

Shy students' participation in the teaching and learning session

According to Holbrook (1987), university lecturers identified a decrease in student involvement during the teaching and learning session where students' shy behaviour led to an increase of unasked questions. This situation indicated that students had trouble understanding the topic and would, therefore, face problems during the practical session. According to Anderson (1993), students were embarrassed to speak or ask questions during the teaching and learning session due to fear that they would ask inappropriate questions and be laughed at or be underestimated by others. Students rarely start the discussion of a topic, fear to challenge the teacher, rarely ask for clarification, do not respond voluntarily, avoid generating new topics and are shy to demonstrate their skills and perform practical activities (Anderson, 1993). Due to the lack of classroom and group interaction, passive learning situations exist unnoticed although active learning is deemed essential in the learning of basic skills.

A study conducted by Cowden (2009) found that students who were shy felt less confident of their ability, believing that other students were smarter and more skilled. The lack of self-confidence also caused shy students to have low self-esteem (Cowden, 2009). The low level of confidence caused students to feel embarrassed to raise their hand, afraid to go up to the front; consequently, they did not dare to try to answer questions or do tasks. In terms of academic achievement and skill competencies, shy students are left behind because they keep silent in discussions and remain inactive in other activities; thus, teachers also take a longer time to get to know them (Coplan, Hughes, Bosacki, & Rose-Krasnor, 2011). A study carried out by Coplan, Prakash, O'Neil and Armer (2004) found that shy students refused to talk because they were not ready or lacked knowledge. According to this study, shy students acted only as passive observers in group activities and this limited their chance

to learn better. The failure of shy students to communicate and to actively participate in classroom learning affects their academic ability and results and skill competencies (Coplan et al., 2004). The researchers stressed that shy students talk less during the teaching and learning session and even if they do talk, their comments are very few and they take longer to respond.

This study was supported by Friedman (1980), who found that the difficulty of shy students to communicate affected the learning session, whereby students freeze and cannot answer questions posed by teachers, are unable to give an opinion or ask the teacher about matters that they are not sure of, in addition to being silent observers and letting other students engage in group activities. Sallinen-Kuparinen, McCroskey and Richmond (1991) viewed shyness as negative behaviour resulting from many factors such as skill deficiencies, social isolation, ethnic/cultural divergence, social introversion, unfamiliarity with academic discourse, lack of confidence in subject matter and communication apprehension, all of which affect students' participation in class.

Although many studies reported the negative effects of being shy, Bosacki, Coplan, Rose-Krasnor and Hughes (2011), on the other hand, mentioned that shy students demonstrate positive behaviour in the classroom such as being obedient to the teacher, never making noise and never interrupting teachers' conversations. Shy children simply listen when the lesson is being carried out and behave demonstrate greater passive behaviour and are more polite than their peers. However, such passive behaviour causes passive participation (Phillips, Sponsor, & Morgan, 1998) and it is not a good sign in the learning of basic psychomotor skills in the classroom. Shy students often avoid taking part in activities because they fear to communicate and interact with the teacher and peers during classroom learning. Furthermore, shy students often refuse to get involved in hands-on activities, group activities and also discussion as they believe that they are drawing the attention of others (Crozier, 2005; Gökhan, 2010; Rimmer, Good, Harris, & Balaam, 2011), they are unskilled (Skinner et al., 2009; Zimbardo et al., 1977) and they might do something wrong or say something silly (Anderson, 1993).

PRESENT STUDY

The main goal of this study was to examine links between emotion and children's participation in the teaching and learning of basic psychomotor skills in preschool physical education. Drawing upon previous studies, we expected shyness to be negatively associated with children's participation. We also sought to explore the children's level of shyness and the impact of gender differences on the children's shyness' level. Finally, we also explored the children's participation in a learning session of basic psychomotor skills.

METHODOLOGY

This study was conducted in two phases of data collection. The first phase was carried out to obtain the population figure of shy preschool children. This was done using an identification cut form via Google forms that involved preschool teachers. We did not attach labels, providing only short behavioural descriptions of shy children in their classroom. The second phase of this study involved the distribution of questionnaires to the teachers.

Participants

Using the convenience sampling technique, we obtained data from 118 preschool children aged 5 and 6 years. The children were enrolled in the Ministry of Education (MOE) Preschool in Segamat and were selected by their teachers during the first phase of data collection.

MEASURES

Teacher ratings

A questionnaire consisting of three-part items was developed and approved by experts. Sixty-five teachers were asked to rate the nominated children based on a 5-point Likert scale. The first part of this questionnaire was the demographic section. The second part contained 13 items and was adapted from the Children's Behaviour Questionnaire or CBQ (Rothbart, Ahadi, Hershey, & Fisher, 2001) to assess the children's level of shyness. The last section of the questionnaire contained 19 items that assessed the children's participation during the teaching and learning of basic psychomotor skills.

RESULTS

The children's demographics were analysed. The sample included 63 girls (53.4%) and 55 boys (46.6%). Sixty samples (50.8%) were 5 years of age whereas 58 samples (49.2%) were 6 years old.

Level of shyness

The children's level of shyness was analysed using mean scores and standard deviation. The analyses shown in Table 1 indicated a high overall mean score (M=3.73, SD=0.642). "Is shy to give opinions" was the highest mean score item (M=3.90), whereas "does not make eye contact with group members" showed the lowest mean score (M=3.08).

Table 1
Children's level of shyness

Item	Mean	Standard deviation
Gets embarrassed when getting attention while performing the activities	3.66	1.019
Is shy to give opinions	3.90	1.089
Sometimes seems nervous when talking to the teacher	3.82	1.146
Acts shy when talking to his/her friends	3.76	1.252
Hard to speak on the learning topic	3.85	1.198
Does not make eye contact with group members	3.08	1.221
Sometimes prefers to watch rather than join others in group activities	3.76	1.145
Feels uncomfortable when taking part in group activities	3.68	1.189
Feels uncomfortable when discussing with others	3.75	1.172
Seems to be unfriendly during group discussion	3.84	1.049
Hard to mix with others, especially in the group	3.85	1.159
Is uncomfortable to ask others to perform group activities together	3.77	1.077
Hard to adapt to other groups	3.79	1.110
Total Mean Score	3.73	0.642

Gender differences for level of shyness

As shown in Table 2, the girls' level of shyness was reported to have a higher mean score than that of the boys (M*girls*=3.77, SD*girls*=0.96; M*boys*=3.69, SD*boys*=0.92).

Table 2
Gender differences for level of shyness

Gender	N	Mean	SD
Girls	63	3.77	0.96
Boys	55	3.69	0.92

Further analysis from an independent t-test shown in Table 3 found that there was no statistically significant difference between the boys and girls, t(116)=-0.64, p=0.53.

Table 3
Independent t-Test for shyness level of girls and boys

	F	Sig	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	0.88	0.35	-0.64	116	0.53	-0.076	0.12	-0.31	0.16
Equal variances not assumed			-0.63	109.7	0.53	-0.076	0.12	-0.31	0.16

Participation

The children's participation was also analysed using mean scores and standard deviation as shown in Table 4. The children were found to have a low level of participation (M=2.40, SD=0.731) during the teaching and learning of basic psychomotor skills. "Brave to give opinions" was the item with the lowest mean score (M=2.03). This shows that the children did not actively participate in contributing their ideas and opinions. Meanwhile, "listen carefully to the teacher" was the item with the highest mean score (M=2.69, SD=1.106), suggesting that shy children could listen attentively.

Table 4
Children's participation

Item	Mean	Standard deviation
Brave to answer the questions	2.32	1.069
Come to the front voluntarily	2.35	1.159
Often asks about matters he/she is not sure of	2.11	1.204
Discusses the learning topics actively	2.63	1.146
Brave to raise a hand	2.36	1.196
Readily cooperates during group activities	2.66	1.156
Takes part in all activities actively	2.47	1.123
Brave to demonstrate his/her skills in front of others	2.31	1.106
Brave to give opinions	2.03	1.113
Demonstrates good behaviour during the teaching and learning	2.46	1.159
Readily follows instructions	2.56	1.129
Listens carefully to the teacher	2.69	1.106
Takes shorter time to respond	2.42	1.097
Gives relevant comments	2.16	1.140
Brave to present own work in front of the class	2.58	1.120
Brave to talk about own work in front of the class	2.23	1.049
The effectiveness of the learning session is high	2.42	1.089
Teacher's teaching objectives become easy to achieve	2.58	1.120
Teaching and learning session becomes active	2.46	1.107
Total Mean Score	2.40	0.731

Link between shyness and participation

The correlation between the level of shyness and the children's participation was calculated. As shown in Table 5, there was a strong negative correlation between both variables, r=-0.805, n=118, p=0.000, which suggested that the higher the level of shyness, the lower the children's participation in the teaching and learning of the basic psychomotor skill.

Table 5
Correlation between level of shyness and children's participation

	Shyness level		Participation
	Pearson Correlation	1	-0.805**
	Sig. (2-tailed)		0.000
	N	118	118
Participation	Pearson Correlation	-0.805**	1
	Sig. (2-tailed)	0.000	
	N	118	118

**. P< 0.01

DISCUSSION

Results from the present study showed that the children had a high level of shyness, which supported the studies by Balda and Duhan (2010), Coplan et al. (2004), Coplan et al. (2011), Coplan and Weeks (2009) and Henderson, Zimbardo and Carducci (2010) that shyness is universal and exists from a young age. Shyness makes children become inactive during teaching and learning and affects their basic skill competencies. This happens because when the children become passive and do not participate in learning activities, their psychomotor skills cannot be developed and improved. The results also support previous studies (Balda & Duhan, 2010; Coplan et al., 2011; Rimmer et al., 2011) that proved that shyness happens in social situations including during teaching and learning sessions. It happens when the children do not trust their ability and think of others as being more skilled than they. Shy children also lose out on opportunities to highlight their skills and talents. Besides bringing a bad impact on children's skill ability, shyness causes the teaching and learning process to become derailed and ineffective, obstructing a smooth teaching and learning process. It also blocks the teacher's achievement of teaching objectives and the student's achievement of learning objectives.

This study also found that children experience the highest level of shyness when they are asked to give their opinion during a discussion. This is because they are afraid that others will underestimate them if they say something wrong or irrelevant, as proved by Holbrook (1987). Meanwhile, this study found that the children could maintain eye contact with members of the group at a moderate level. This was due to this item only measuring children's ability to communicate non-verbally. Furthermore, the children already knew their peers by the time this study was conducted. This study also showed that even though the children had a high level of shyness, they could still interact non-verbally using body language such as nodding, shaking the head and making hand gestures or signals like pointing with a finger. This finding supported the study by Sayadi (2007), who stated that there are two types of classroom involvement, verbal

participation and non-verbal participation. However, although the learning of basic psychomotor skill focusses on hands-on activities, non-verbal participation is less effective than verbal participation as it can lead to misunderstandings among group members. Group members might also have problems such as lack of ideas during group discussion as shy children only participate non-verbally.

Most studies have found that girls exhibit more shyness than boys (Balda & Duhan, 2010; Crozier, 2005; Rubin & Coplan, 2004) due to the nature that boys are more dominant and girls are known to be more polite and gentle. This study also supported previous studies in which girls showed a higher mean of shyness level than boys. This suggested that during the teaching and learning of basic psychomotor skills, girls tend to be more passive than boys. However, our analysis from an independent t-test found that even though the girls' mean of shyness level was higher than that of the boys, there was no statistically significant difference between these two groups of children in terms of gender variables. This finding supported the research carried out by Gökhan (2010), who also reported that statistically significant differences between girls and boys were not found. This may be due to the fact that the samples were very young i.e. their shyness' levels were at the early stage, and therefore, high. With teenagers, in whom shyness has already developed and increased, shyness is displayed towards peers or others of the opposite gender.

The results also led us to surmise that shy children's participation in the teaching and learning of basic psychomotors is very low, suggesting that shy children do not actively participate in skill learning sessions. This finding supports the research carried out by Zimbardo et al. (1977), who found that students who were shy avoided learning situations whenever possible, especially when the teacher asked them to perform the skills they had learnt in front of the class. This was due to the fear of negative evaluation by others and worrying that they might fail to demonstrate good skills. When there was no active participation from the children during the learning session, children's skills could not be evaluated, improved and developed by the teacher. Basic skills are important for equipping children with good skill competencies for the future. If children do not gain competence in basic skills during the preschool years, they will most probably encounter problems with self-management and demonstrate low psychomotor skills in elementary school.

In addition, the findings show that the children's participation in giving opinion was at the lowest level whereby creative ideas could not be channelled outwards and developed to produce meaningful and creative products or outputs. However, shy children in this study could listen to their teacher easily, and this supported the study by Bosacki et al. (2011), who argued that even though shy children do not actively participate in teaching and learning, they are actually good listeners and do not have behavioural problems during lessons.

Unfortunately, passive behaviour is not conducive for the teaching and learning of basic psychomotor skills because without active participation, skills learning cannot succeed.

Results from the correlation test found that there was a strong negative significant correlation between shyness level and participation during the teaching and learning of basic psychomotor skills, suggesting that the higher the shyness level of a child, the lower the participation he/she might show. This finding is in line with previous studies by Friedman (1980) and Valiente, Swanson and Lemery-Chalfant (2012), who also found a negative significant correlation between the two variables. According to Bosacki et al. (2011), shy children have low self-esteem. The lower the children's self-esteem, the greater shyness they feel to raise their hand, go up to the front and respond to challenges.

In this study, it was undeniable that the children had a high level of shyness and their participation in the teaching and learning of basic psychomotor skills was low i.e. there was a strong relationship between the two variables. Children who are emotionally shy will demonstrate physical unfitness or weakness. This condition will cause children to avoid engaging or becoming involved in activities during the teaching and learning session. Shy children will only observe their peers and not be active while performing hands-on activities. This finding is consistent with the matrix of interaction in the study of Masek (2016), who described shy students as those having passive behaviour, being introverted, having low self-confidence and demonstrating poor teamwork skills. Thus, children's participation during the teaching and learning of basic psychomotor skills is crucial and can be affected by emotions that are not required for mastering the skills.

The strong negative correlation between the children's participation in the teaching and learning of basic psychomotor skills and their shyness level also shows that the emotional manifestation of shyness is dominant in relation to the children's participation i.e. the children were unable to engage actively in the learning session due to being restrained by shyness. When this happens, children will face difficulty in asking and answering questions and will avoid engaging in individual and group activities, will be afraid to demonstrate the skills they have learnt and will not dare to present their work in front of the class.

CONCLUSION

The present study supported previous research that showed that children's level of shyness during the teaching and learning of basic psychomotor skills was high. Although many research studies found that girls tended to be shyer than boys, our findings did not show any statistically significant difference between the two variables. This study did not differ from any other research that found that the participation of shy children in the teaching and learning of basic psychomotor skills was low, whereas the relationship between the children's level of shyness and their participation was high. This study also proved that it is important to increase

the self-esteem of shy, emotional children. This will help them to actively participate in teaching and learning activities so that they will be able to master basic psychomotor skills before they learn more advanced skills in their later school years. We believe that our findings have implications for teachers who wish to eliminate shyness-related problems in the classroom and increase students' participation.

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REFERENCES

Anderson, F. E. (1993). *The enigma of the college classroom: Nails that don't stick up*. In P. Wadden (Ed.), A handbook for teaching English at Japanese colleges and universities (p. 101–110). Oxford: Oxford University Press.

Balda, S., & Duhan, K. (2010). Social inhibition in preschool children: Causes and coping strategies. *Journal of Psychology, 1*(2), 79–83.

Bosacki, S. L., Coplan, R. J., Rose-Krasnor, L., & Hughes, K. (2011). Elementary school teachers' reflections on shy children in the classroom. *Alberta Journal of Educational Research, 57*(3), 273–287.

Coplan, R. J., Hughes, K., Bosacki, S., & Rose-Krasnor, L. (2011). Is silence golden? Elementary school teachers' strategies and beliefs regarding hypothetical shy/quiet and exuberant/talkative children. *Journal of Educational Psychology, 103*(4), 939–951. https://doi.org/10.1037/a0024551

Coplan, R. J., Prakash, K., O'Neil, K., & Armer, M. (2004). Do you "want" to play? Distinguishing between conflicted shyness and social disinterest in early childhood. *Developmental Psychology, 40*(2), 244–58. https://doi.org/10.1037/0012-1649.40.2.244

Coplan, R. J., & Weeks, M. (2009). Shy and soft-spoken: Shyness, pragmatic language, and socio-emotional adjustment in early childhood. *Infant and Child Development, 18*(3), 238–254. https://doi.org/10.1002/icd.622

Cowden, P. A. (2009). *Communication and conflict: Social anxiety and learning*. Proceedings of the Academy of Organizational Culture, Communications and Conflict (Vol. 14, pp. 16–18). Las Vegas, Nevada: DreamCatchers Group. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=edb&AN=47108089&site=eds-live&authtype=uid

Crozier, W. R. (1985). Shyness and students' perceptions of seminars. *Psychology Learning and Teaching, 4*(1), 27–34.

Crozier, W. R. (2005). Shyness and students' perceptions of seminars. *Psychology Learning and Teaching, 4*(1), 27-34. https://doi.org/10.2304/plat.2004.4.1.27

Durmuş, E. (2007). The perceptions of shy and non-shy students. Ankara University, *Journal of Faculty of Educational Sciences, 40*(1), 243–268.

Friedman, P. G. (1980). *Shyness and reticence in students*. Educational Resources Information Center (ERIC). Washington, DC: National Education Association.

Gökhan, B. A. S. (2010). An investigation of the relationship between shyness and loneliness levels of elementary students in a Turkish sample. *Educational Sciences, 2*(2), 419–440.

Gomez, A. M., Arai, M. J., & Lowe, H. (1995). *When does a student participate in class?* Ethnicity and classroom Participation. In Annual Speech Communication Association Conference (pp. 1–26). San Antonio, Texas: ERIC.

Henderson, L., Zimbardo, P., & Carducci, B. (2010). Shyness. *In The Corsini encyclopedia of psychology* (4th ed.). John Wiley and Sons, Inc. https://doi.org/10.1002/9780470479216.corpsy0870

Holbrook, H. T. (1987). The quiet student in your classroom. *Language Arts, 64*(5), 554–557. Retrieved from http://login.ezproxy.lib.umn.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,uid&db=eric&AN=EJ357931&site=ehost-live

Lee, P. (2005). *Students' personality type and attitudes toward classroom participation*. Proceedings of the CATESOL State Conference, California State University (pp. 1–6). Los Angeles, USA.

Masek, A. (2016). An appropriate technique of facilitation using students' participation level measurement in the PBL environment. *International Journal of Engineering Education, 32*(1), 402–408.

Phillips, J., Sponsor, F., & Morgan, B. L. (1998). "Please Don't Call on Me": Self-esteem, communication apprehension, and classroom participation. *Journal of Undergraduate Research.* University of Wisconsin-LaCrosse 4, 81–87.

Rimmer, J., Good, J., Harris, E., & Balaam, M. (2011). Class participation and shyness: Affect and learning to program. *Proceedings of the 23rd Annual Psychology of Programming Interest Group Conference* (pp. 1–9). York: University of York.

Rothbart, M. K., Ahadi, S. A., Hershey, K. L., & Fisher, P. (2001). Investigations of temperament at three to seven years: The children's behavior questionnaire. *Child Development, 72*(5), 1394–1408.

Rubin, K. H., & Coplan, R. J. (2004). Paying attention to and not neglecting social withdrawal and social isolation. *Merrill-Palmer Quarterly, 50*(4), 506–534.

Sallinen-Kuparinen, A., McCroskey, J. C., & Richmond, V. P. (1991). Willingness to communicate, communication apprehension, introversion, and self-reported communication competence: Finnish and American comparison. *Communication Research Report, 8*(1), 55–64.

Sayadi, Z. A. (2007). *An investigation into first-year engineering students' oral classroom participation: A case study.* Universiti Teknologi Malaysia. Universiti Teknologi Malaysia.

Schlenker, B. R., & Leary, M. R. (1982). Social anxiety and self-presentation: A conceptualization and model. *Psychological Bulletin, 92*(3), 641–669. https://doi.org/10.1037/0033-2909.92.3.641

Skinner, E. A., Kindermann, T. A., & Furrer, C. J. (2009). A motivational perspective on engagement and disaffection. *Educational and Psychological Measurement, 69*(3), 493–525. https://doi.org/10.1177/0013164408323233

Tsou, W. (2005). Improving speaking skills through instruction in oral classroom participation. *Foreign Language Annals, 38*(1), 46–55.

Valiente, C., Swanson, J., & Lemery-Chalfant, K. (2012). Kindergarteners' temperament, classroom engagement, and student-teacher relationship: Moderation by effortful control. *Social Development, 21*(3), 558–576. https://doi.org/10.1111/j.1467-9507.2011.00640.x

Wadman, R., Durkin, K., & Conti-Ramsden, G. (2008). Self-esteem, shyness, and sociability in adolescents with specific language impairment (SLI). *Journal of Speech, Language, and Hearing Research: JSLHR, 51*(4), 938–952. https://doi.org/10.1044/1092-4388(2008/069)

Zimbardo, P., Pilkonis, P., & Noorwood, R. (1977). *The silent prison of shyness*. Department of Psychology, Stanford University CA. California.

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Conceptual Framework for Designing and Developing a Creativity Enhancement Module in Education Incorporating Indigenous Perspectives

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ABSTRACT

Creativity is rated among the most important human mental attributes or human capital that is considered by researchers as the driving force behind economic development, technical advances, work-place leadership and life success. As such, creativity is certainly an important aspect of technical and vocational education and training, in which design and innovation are among the core subjects. As the perspective that enhancement of creativity can be carried out through learning and training is accepted, the design and development of instructional modules plays a significant role in enhancing the creativity levels of both trainers and trainees, especially in the field of education. Teaching and learning resources in varying degrees of depth and difficulty that cater for the individual, groups and organizations can be prepared. This article sets forth a conceptual framework for a structure for a creativity enhancement module that includes its design, development and evaluation. Keys areas in the framework include theories of creativity and domains that are involved, theories of teaching and learning creativity, indigenous perspectives and theories of module design, development and evaluation of the module in the intervention process

Keywords: Creativity, enhancement of creativity, indigenous perspectives, module, theories of creativity and domains

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INTRODUCTION

Creativity is one of the human mental attributes that have been valued as a natural resource (Guilford, 1950) and a form of human capital (Runco, 1992; Rubenson & Runco, 1992, 1995). Makel and Plucker

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(2008), drawing from the works of other researchers, identified creativity as the engine of economic development and the impetus behind technological advances, work-place leadership and life success. Apart from that, creativity has been used as a problem-solving approach for diverse therapies such as cultivating a healthy loving relationship as part of grief therapy. Abd. Hamid (2004) stated that in this age of globalisation, creativity is seen as a valuable asset for developing human resources.

While some believe that creativity is genetically determined and its self-expressive and spontaneous nature cannot be enhanced by training, as reported by Runco (2007) and Yong (1994), many researchers support the opposite view (Torrance, 1962; Parnes, 1962; Petty, 1997). Rubenson and Runco (1992, 1995) stated that an investment by individuals in their creative potential is in many important ways analogous to investment in formal education. In this context, importance is placed on developing the small "c" or everyday creativity of ordinary people (Petty, 1997; Craft, 2001; Richards, 2007). The recognition of this importance is supported by the inclusion of creative thinking in many national school curricula of countries such as Malaysia (Educational Planning and Research Division [EPRD], 2007; Curriculum Development Division [CDD], 2010), the United Kingdom, (National Advisory Committee on Creative and Cultural Education [NACCCE], 1999) and Singapore (Tan & Law, 2004). In the classroom, apart from teaching creatively, importance is also placed on 'teaching for creativity' viz. teaching that is aimed at developing students' creativity (NACCCE, 1999). Novice and experienced teachers alike have been placed in the forefront to enhance the creative potential of their students, for example, by modelling creativity (Belcher, 1975; Runco, 1991; Tan & Law, 2004). The school should be a unique place where teaching and the environment can be modified to develop childrens' behaviour and non-cognitive knowledge (Othman, Amiruddin, & Hussein, 2011) as well as creative talent (Ogilvie, 1973). Pre-service and in-service teachers are trained to teach creatively and to develop students' creativity using the formal curriculum and through their in-house training. (Rajendran, 2013; Tan & Law, 2004). Mansfield, Busse and Kreplka (1978) concluded that "creativity training programmes seem to support the view that creativity can be trained."

De Bono (1996) introduced his CoRT Thinking Programs using lateral thinking, which involves perceptions and attention-directing tools to overcome mental blocks in thinking by generating new ideas. According to Runco (2007), "creative potentials are the most likely to be fulfilled if they are intentionally chosen and reinforced" viz. through tolerance and acceptance within society on the macro-level and the use of

strategies and problem-solving techniques in the classroom on the micro-level. The importance of this approach is supported by Amiruddin, Abd Samad and Othman (2015). On the micro level, a teaching and learning module is very helpful as it can serve as a tool, material or resource that achieves an established aim and brings effective learning to the student (Mohd Noah & Ahmad, 2005). Modules are written with fixed objectives (Mohd Noah & Ahmad, 2005) and can be used as suitable platforms to convey the explicit instructions and directions of the chosen enhancement tactics proposed by Runco (2007).

Following Craft's (2000) assertion that insights into creativity in other cultures can be overshadowed by the cultural saturation of Western concepts of creativity, Tan and Law (2004, p. 16) proposed an indigenous approach that "contributes to knowledge of creativity and highlights the study of creativity from the native perspective and for the native target group." Thus, the design and development of modules that incorporates an indigenous perspective and elements would be more relevant and inclusive of the society in study.

Modules which can be constructed for teaching, motivation, academic or for training courses Ahmad (2002), aided or unaided by facilitators (Mohd Noah & Ahmad, 2005) and designed for the individual or a class (Gibbons, 1971), can be developed in relation to creativity enhancement in education. Other considerations in the design include i) the method of teaching creative thinking viz. direct instruction method (de Bono, 1996; Lipman, 1988) versus the infusion method (Chambers, 1988; Swartz & Park, 1994); ii) needs analysis (Boydell, 1996; Ellington & Aris, 2000; Piskurich, 2006); iii) duration of course (de Bono, 2009); and iv) content level (Treffinger, 1986).

METHODOLOGY

The method adopted for the synthesis of this conceptual framework was based on a deductive approach connecting relevant theories and components from the literature review. Mohd Jamil et al. (2014, p. 4) indicated that the design and development of a framework can be carried out from content analyses of books, documents or texts.

RESULTS AND DISCUSSION

In this conceptual framework, the design and development of a creativity enhancement module in education in a research setting spanned five dimensions viz. i) the relevant theoretical background for the module content; ii) the indigenous perspective; iii) design and development of the module; iv) its role as an intervention tool/usability; and v) the output viz. the successful enhancement of creativity in the target group (Figure 1).

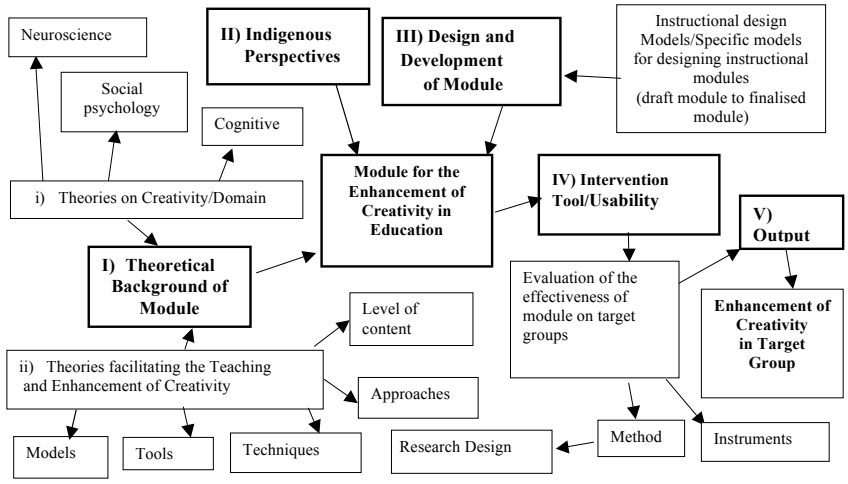

Figure 1. A framework for designing and developing a module for the enhancement of creativity in education incorporating indigenous perspectives

Components of the Framework

I) Theoretical background of module content. This dimension covers two broad types of theories relevant to the planning of the module developer: i) theories of creativity; and ii) theories facilitating the teaching and enhancement of creativity.

i) ***Theories/Models on creativity/domain.*** Theories/models from different perspectives and can be taken into account to facilitate and illuminate the understanding of learning such as learning styles (Othman & Amiruddin, 2010a); this is applicable to teaching and learning involving the enhancement of creativity. In the definition of creativity itself, there have been over 100 analyses in the literature that describe it explicitly (Meusberger, 2009), among which are Rhode's (1961) 4Ps Model, Guilford's (1967) Structure of Intellect Theory (creative thinking as an operation of divergent production) and Czikszentmihalyi's (1988) theory that creativity results from the synergy between the individual, domain and the field. Torrance (2007) followed up on Guilford's work in the cognitive field by developing and refining his psychometric instruments viz. the Torrance Tests for Creative Thinking (TTCT) featuring the subscales of fluency, originality, elaboration, abstractness of titles and resistance to premature closure. Wallas (1926) described the creative process as a four-stage process covering i) preparation; ii) incubation; iii) illumination;and iv) verification. From social psychology, Amabile (1983, 1996) proposed a componential theory that sees the interactions of four components: domain-relevant skills, creativity-relevant processes, task motivation within the individual and the social

environment itself. In neuroscience, Sperry (1964) proposed the Split-Brain Theory highlighting the dominancy of the right hemisphere of the brain during holistic and creative thinking processes. Flaherty (2005) linked creativity to the activities in frontal and temporal lobes of the brain. Gardner (1983, 1999), who shifted the paradigm from the general intelligence perspective to the existence of multiple intelligences, concluded that creativity in these intelligences is subject to the individual, domain and field and is a "communal judgement." Runco and Chand (1995) proposed a two-tier componential theory involving motivation and knowledge in the first tier, which influenced problem-solving skills, ideation and evaluation in the second tier. Simonton (1999) elaborated on creativity in the context of the evolutionary process. Kaufman and Beghetto (2009) provided an update on the 'Big C' and 'Little c' model with the four C's model of creativity viz. 'mini-c' (personal transformative learning), 'little-c' (everyday creativity), 'Pro-C' (creativity in professional and vocational fields) and 'Big C' (eminent creativity). Sternberg and Lubart (1991) conceptualised creativity by linking it to the analogy of making an investment of "buying low and selling high" viz. developing ideas that are raw, promoting their worth and value to others and selling them before moving on to develop other new ideas. To generate creativity, the confluence of six elements viz. i) intelligence; ii) knowledge; iii) thinking styles; iv) personality; v) motivation; and vi) the environment are needed.

According to Sternberg's (1986) Triarchic Theory of Intelligence, intelligence covers three diverse components: analytic, practical and creative. This was further expanded to become the Theory of Successful Intelligence (Sternberg & Grigorenko, 2000), which added skills such as i) setting and achieving reasonable and relevant goals; ii) optimising strengths and minimising weaknesses; and iii) adaptation to the environment.

Domain-related theories/models can be discussed when certain specific domains are used in the enhancement of creativity. For example, the use of logo programming multimedia software to enhance students' creativity in Taiwan (Tsuei, 1998) referenced some background theories involving the advantages of using hypermedia to help students focus on their creative ideas and integrating multimedia technology for engaging students in higher-order cognitive skills involved in design.

ii) ***Theories facilitating the teaching and enhancement of creativity.*** To establish a theoretical base, the making of a module related to the enhancement of creativity levels of participants would require the referencing of learning theories be it general or specifically for creativity. Module developers

have the choice of using the main general learning theories (Gregory, 2016) such as from the behavioural, cognitive, social, humanistic and constructivist perspectives to underpin learning using their modules. For example, constructivism, which has become the dominant perspective of students' learning (Mayer, 2004) and is a recognised theory for modern learning (Woolfork, 1995), could be referenced. Interpreted in many forms (Phillips, 1998), it is rooted in the premise that the learner constructs "coherent and organized knowledge actively" (Mayer, 2004). In the general context, the cognitive constructivism of Piaget (1970) could apply for individualised learning, as with social constructivism (Vygotsky, 1978) for learning in groups. The module, together with the facilitator and peers in the group, forms the 'scaffolding', which helps the learner to move into the "zone of proximal development" for new learning. Gregory (2016) described the primary purpose of humanistic of learning as being student-centred and personalised and focussing on affective and cognitive needs to develop the potentials of self-actualised people in cooperative and supportive environments. Two key proponents, Rogers (1995) and Maslow (1971), identified the connection of creativity to self-actualisation.

Apart from applying generic theories of teaching and learning, there exists models and theories that are creativity-specific. For example, Torrance and Safter (1990) proposed a three-stage creative teaching and learning model using specific strategies sequentially i.e. i) heightening anticipation; ii) deepening expectation; and iii) keeping it going. Models illuminating the stages or processes of creative thinking can help to inform and facilitate learning and teaching in that area. One of them is the four-stage model proposed by Wallas (1926) involving the stages of preparation, incubation, illumination and verification. There are many updated versions of the Creative Problem Solving Model initiated by Osborn in 1953 (Osborn, 1963) and Parnes (1962). The initial stages, which form the basis of newer approaches are: i) objective finding; ii) fact finding; iii) problem finding; iv) idea finding; v) solution finding; and vi) acceptance finding.

In developing a creativity enhancement module, other considerations can include the type of approach whether, by direct teaching or the infusion method, tools and techniques for the delivery of the lesson and the difficulty level of the content. In the direct teaching method, creative thinking is taught independently as a "stand-alone" programme or course such as those implemented by de Bono (1996), Gordon (1961), Osborn (1963), Parnes (1962) and Torrance (1962) as differentiated from the infusion method (Chambers, 1988; Swartz & Park, 1994), where teaching and learning of

thinking skills are infused with subject content.

Tools and strategies are two more important aspects of teaching and learning creative thinking. De Bono likened thinking tools to those tools such as a hammer, saw, plane and drill used by the carpenter: each performing a specific function to facilitate effectively the work to be done. Sulaiman, Aziz and Mok (2013) listed graphic organisers (including mind maps), questions and CoRT tools among thinking tools used for learning and in daily life. Buzan (2005) used the map of the city as an analogy to describe a mind map; the main theme is like the centre of the city, the main roads leading from the centre represent the main thoughts and so on. Research Trust (CoRT) tools developed by de Bono (1996) are "attention-directing perceptual tools," represented in mnemonics e.g. PMI represents "Plus, Minus, Interesting". "SCAMPER", short for substitute, combine, adapt, modify, put to another use, eliminate and reverse, is another creative-thinking tool to help learners think out of the box (Osborn, 1963; Eberle, 1996).

Brainstorming is a divergent-thinking group technique introduced by Osborn in 1953 (Osborn, 1963) and developed by Parnes (1962) for creative problem solving. Rajendran (2013) highlighted that with the use of the cooperative learning structure proposed by Kagan (1989) such as 'Think, Pair, Share", learners are able to assess their own thinking in comparison to other points of view and to learn from them. According to Runco (2007), brainstorming is almost definitely the most often employed enhancement technique even though it has its many distractors.

In planning the content of a module, the depth of the content needed could be facilitated by referring to models such as Treffinger's (1986, p. 16) Three-Tier Creative Learning Model as follows:

Level I: Learning basic thinking tools for generating and analysing ideas

Level II: Learning and practising problem-solving models that allow students to apply basic thinking tools in a more complex and systematic structure

Level III: Dealing with real problems and challenges that require students to use basic tools and problem-solving methods to deal with real problems.

II) Indigenous perspectives. The inclusion of indigenous perspectives of the society that the module is intended for can be used to enrich course content and make it more relevant to the targeted audience (Othman & Amiruddin, 2010b). This is applicable to the context of module making for the enhancement of creativity. According to Tan and Law (2004), the indigenous approach

or indigenisation of creativity arises from contextual considerations from social, cultural, emotional and individual systems. From a social and cultural perspective, Tan and Law (2004, p. 97) drew on connotations from the works of researchers like Kagitcibasi (1992) that the indigenous approach is a methodological orientation and Sinha (1993) that indigenisation "… takes on a character suited to the social-cultural milieu of the recipient country." As such, local elements from diverse aspects such as values, concepts, belief systems, methodologies and other resources specific to an ethnic or cultural group as described by Ho (1998), can be accepted to complement the content in the module. For example, in Malaysia, a Southeast Asian country comprising 30 million people from three main ethnic races viz. Bumiputeras, Chinese and Indians (Department of Statistics, Malaysia, 2016), Bahasa Melayu or Malay, the mother tongue of the biggest ethnic group in the country, is the national language. Malay perspectives, metaphors, poems and figure of speeches can be presented in creative exercises in the module.

III) Design and Development of the Module. Mohd Jamil, Siraj, Hussin, Mat Noh, and Sapar (2014) included the instructional module as one of the products that can utilise the design-and-development research approach. Richey and Klein (2007) posited that there are four phases in the design-and-development approach viz. the needs analysis phase, the design phase, the development stage and the evaluation phase. Mohd Jamil et al. (2014) allocated the various methods for the different phases of constructing an instructional module: i) needs analysis: interview, Delphi or Fuzzy Delphi methods (with experts) and questionnaire feedback (from consumers); ii) design and development phase: Delphi or Fuzzy Delphi method (with experts) or content analysis of books, documents and texts; and iii) evaluation (usability tests): interview, Delphi or Fuzzy Delphi, questionnaire feedback and interpretive structural modelling (with experts), questionnaire feedback, partial least squares structural equation modelling and experimental testing involving consumers.

From an instructional design perspective, there is a wide range of established instructional design system models that can provide a source of reference or framework for the making of a specific instructional package (Ng, 2013), like a module. Piskurich (2006) considered instructional design specifically as a set of rules or procedures for creating training that does what it is supposed to do. Ng (2013) listed the ADDIE model, the Dick and Carey model and the Morrison, Ross and Kemp model as among the popular models chosen for instruction design. Ellington and Aris (2000) noted that one system that has been widely adopted has been the ADDIE model, after the acronym formed by the first letters of five stages involved in the system viz. analysis, design, development, implementation and evaluation. Branch (2009) described ADDIE as not a specific, fully elaborated model in its own right

while Molenda, Pershing and Reigeluth (1996) classified it as "an umbrella term for instructional system design models" based on oral discourse.

The Dick and Carey model (Dick & Carey, 2004) is a systems approach that uses eight iterative steps: i) identify instructional goals; ii) conduct instructional analysis; iii) analyse learners and contexts; iv) write performance objectives; v) develop assessment instruments; vi) develop instructional strategies; vii) develop and select instructional materials; and viii) design and conduct formative evaluation. The Morrison, Ross and Kemp model (2007) incorporates nine inter-dependent core elements in a circular structure, consisting of i) instructional problems; ii) learner characteristics; iii) task analysis; iv) instructional objectives; v) content sequencing vi) instructional strategies; vii) designing the message; viii) instructional delivery; and ix) evaluation of instruments.

Apart from the generic instructional design models, there are specific models for the designing of instructional modules such as those proposed by Russell (1974), Alsagoff (1981) and Mohd Noah (as cited in Mohd Noah & Ahmad, 2005, p. 27). The Sidek Model starts with goals formulation and analysis of needs, develops a synthesis of the draft module and finishes with the completed module that is ready for use. Pilot tests, validity tests and the evaluation of the effectiveness of a draft module is needed to transform the draft into a final, useable module of high quality.

An indication of a module of high quality rests upon the results of validity and reliability tests. According to Tuckman and Waheed (1981), a minimum score of 70% or 0.7 in decimal index form (Fraenkel & Wallen, 1996) of the Cronbach's Alpha value based on responses from a feedback questionnaire among subject matter experts is sufficient to validate a module used in research. The reliability of any instrument is based on the consistency, stability, dependability and accuracy of assessment results (McMillan (2001). Brown, Irving and Keegan (2008) indicated that among methods of estimating reliability, Cronbach's Alpha correlation, which determines the average of all inter-item correlations and adjusts them to the number of items used, is a robust statistic to be taken into account. A Cronbach's Alpha value of 0.7 or higher would indicate enough consistency to justify making educational decisions.

In the development of any instructional package, Piskurich (2006) indicated that reviews are required for content (by subject matter experts), design, editing and organising (by experienced reviewers) and testing (with samples with nearly the same level as the audience for a beta test, and with a real audience for a pilot test before the module is ready for use).

IV) Module as an intervention tool/ Usability. According to Nielsen (1994), usability testing of a product involves testing the product on real users for input on how they use the system. In this perspective, the module as a product is used as an intervention

and its effectiveness is evaluated. Mohd Jamil et al. (2014) listed a variety of methods for usability tests involving experts and users as follows:- i) experts' review using interviews, questionnaires, the Delphi method, the Fuzzy Delphi method, interpretive structural modelling and ii) user feedback using partial least squares structural equation modelling, questionnaire and experimental tests. Abdul Wahab, Mohd Sapar and Mohd Kamaruzaman (2012) opined that the experimental design used in quantitative research using a pre-test and post-test remains the best choice to assess the effectiveness of an instructional module. Apart from that, a quasi-experimental design can also be used (Mohd Jamil et al., 2014).

Instruments for creativity assessment come from what Plucker and Renzulli (1999) considers historically, as the four Ps (Person, Product, Process and Press) categories of assessment. Makel and Plucker (2008) re-categorised them under Personality, Product, Process/Cognitive and Environmental assessments. Researchers have the choice to select relevant assessment instruments to match and test their module objectives.

Callahan and Hunsaker (as cited in Makel & Plucker, 2008, p. 258) noted that in over 40 years since Guilford's (1967) Structure of Intellect battery of tests on divergent production, assessing the creative process remains the dominant route to assessing creativity. In this category, the Torrance Tests of Creative Thinking (TTCT) developed by Torrance (1966), which has been renormed four times, has become highly recommended in the educational field and is even used in the corporate world (Kim, 2006).

V) Output. The output will depend on the outcome for the evaluation of the effectiveness of the finalised module on the target group. A significant difference between post-test scores over the pre-test would show the effective enhancement of creativity in the target group.

DISCUSSION

This proposed framework is conceived as a general guide for module developers with the enhancement of the creativity for educational stakeholders in mind. For example, a module to enhance the creativity of head teachers or other administrators in education would take into consideration relevant theoretical background including theories of creativity, the teaching and enhancement of creativity, theories in the domain of management, indigenous perspectives, the design and development of the module, the intervention/usability of the module and the output viz. the successful enhancement of creativity in the target group. This framework can be further modified or adapted to suit the objectives of any projects in module design and development involving creativity enhancement and can facilitate the flow in which creativity modules are created.

CONCLUSION

The conceptual framework proposed in this article for the designing of a module for the enhancement of creativity in education used

in research consists of five components viz. the theoretical background for the module, indigenous perspectives, the design and development of the module, the usability of the module or its use as an intervention and finally, the output. The theoretical background is divided into two parts: i) theories of creativity/domain; and ii) theories facilitating the teaching and enhancement of creativity.

REFERENCES

Abdul Hamid, M. A. (2004). *Kreativiti: Konsep, Teori dan Praktis*. Skudai: Penerbit UTM.

Abdul Wahab, M. N., Mohd Sapar, M., & Mohd Kamaruzaman, M. F. (2012). The effectiveness of the Emwave Bio Feedback Therapy aided LINUS module on students in the Chenor Zone, Pahang. *Proceedings for the International Postgraduate Seminar for Special Education UKM-UPI*, 2nd Series, 2012, January 27-28, Universiti Kebangsaaan Malaysia.

Ahmad, J. (2002). *Kesahan, kebolehpercayaan, keberkesanan modul program maju diri ke atas motivasi pencapaian di kalangan pelajar-pelajar sekolah menengah negeri Selangor*. (Doctoral thesis). Serdang, Selangor: Putra University Malaysia.

Alsagoff, S. A. (1981). Pengenalan pengajaran dengan tumpuan khas kepada modul pengajaran dan modul pembelajaran. J*urnal Pendidik dan Pendidikan, 3*(1), 54–62.

Amabile, T. M. (1983). Social psychology of creativity: A componential conceptualization. *Journal of Personality and Social Psychology, 45*, 997–1013.

Amabile, T. M. (1996). *Creativity in context*. Boulder, Colorado: Westview Press.

Amiruddin, M. H., Abd. Samad, N., & Othman, N. (2015). An investigation on the effects of mastery learning strategy on entrepreneurship knowledge acquisition among aboriginal students. *Procedia Social and Behavioral Sciences 204*(2015), 183–190.

Belcher, T. L. (1975). Modelling original divergent response: An initial investigation. *Journal of Educational Psychology, 67*, 351–358.

Boydell, T. H. (1990). *The identification of training needs* (2nd ed.). London: British Association for Commercial and Industrial Training.

Branch, R. M. (2009). *Instructional design*. New York, NY: Springer.

Brown, G., Irving, E., & Keegan, P. (2008). *An introduction to educational assessment, and evaluation* (2nd ed.). North Shore, NZ: Pearson Prentice Hall.

Buzan, T. (2005). *The ultimate book of mind maps.* London: Thorsons.

Chambers, J. G. (1988). Teaching thinking throughout the curriculum – Where else? *Educational Leadership, 45*(7), 4–6.

Craft, A. (2000). *Creativity across the primary curriculum: Framing and developing practice*. London: Routledge.

Craft, A. (2001). Little "c" creativity. In A. Craft, B. Jeffrey, & M. Leibling (Eds.), *Creativity in education*. London: Continuum.

Curriculum Development Division [CDD]. (2010). *Buku panduan kreativiti: Pembangunan dan amalan dalam pengajaran [Creativity guidebook: Development and practice in teaching]*. Kuala Lumpur: Education Ministry of Malaysia.

Cziksentmihalyi, M. (1988). Society, culture and person: A systems view of creativity. In R. J. Sternberg (Ed.), *The nature of creativity* (p. 325–339). New York: Cambridge University Press.

De Bono, E. (1996). *Teach yourself to think*. London: Penguin Books Ltd.

De Bono, E. (2009). *Edward de Bono's thinking course: Powerful tools to transform your thinking*. Harlow, Essex: BBC Active.

Department of Statistics, Malaysia. (2016). *Population distribution and basic demographic characteristics Report (2010)*. Retrieved from http://www.statistics.gov.my/ on 2016, July 13.

Dick, W., & Carey, L. (2004). *The systematic design of instruction* (6th ed.). Boston, MA: Allyn and Bacon.

Eberle, R. (1996). *Scamper on: Games for imagination development*. Austin: Prufrock Press Inc. Education Planning and Research Unit.

Educational Planning and Research Division [EPRD]. (2007). *Pendidikan di Malaysia*. Putrajaya, Malaysia: Education Ministry of Malaysia.

Ellington, H., & Aris, B. (2000). *A practical guide to instructional design.* Skudai, Johor, Malaysia: Universiti Teknologi Malaysia.

Flaherty, A. W. (2005). Frontotemporal and dopaminergic control of idea generation and creative drive. *Journal of Comparative Neurology, 493*(1), 147–153.

Fraenkel, J. R., & Wallen, N. E. (1996). *How to design and evaluate research in education* (3rd ed.). New York: McGraw Hill Inc.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.

Gardner, H. (1999). *Intelligence reframed – Multiple intelligences for the 21st century*. New York, NY: Basic Books.

Gibbons, M. (1971). *Individualized instruction*. New York: Teachers College Press.

Gordon, W. J. J. (1961). *Synectics: The development of creative capacity*. New York: Harper.

Gregory, H. (2016). *Learning theories in plain English*. Retrieved from *http://www.learning theories.com* on 2016, April 5.

Guilford, J. P. (1950). Creativity. *American Psychologist, 5*, 444–454.

Guilford, J. P. (1967). *The nature of human intelligence*. New York: McGraw-Hill.

Ho, D. Y. F. (1998). Indigenous psychologies: Asian perspectives. *Journal of Cross-Cultural Psychology, 29*(1), 88–103.

Kagan, S. (1989). The structural approach to cooperative learning. *Educational Leadership, 1989 December-1990, February, 47*, 12–15.

Kagitcibasi, C. (1992). Linking the indigenous and universalist orientation. In S. Iwawaki, Y. Kashima, & K. Leung (Eds.), *Innovations in cross-cultural psychology*, (pp. 29–37). Amsterdam: Swets and Zeitlinger.

Kaufman, J. C., & Beghetto, R. A. (2009). Beyond big and little: The four c model of creativity. *Review of General Psychology, 13*(1),1–12.

Kim, K. H. (2006). Can we trust creativity tests? A review of the Torrance tests of creative thinking (TTCT). *Creative Research Journal, 18*(1), 3–14.

Lipman, M. (1988). Philosophy goes to school. Philadelphia: Temple University Press.

Makel, M. C., & Plucker, J. A. (2008). Creativity. In S. I. Pfeiffer (Ed.), *Handbook of giftedness in children: Psycho-educational theory, research, and best practices*, 247–269. Tallahasee, Florida: Springer.

Mansfield, R. S., Busse, T. V., & Kreplka, E. J. (1978). The effectiveness of creativity training. *Review of Educational Research, 48*(4), 517–536.

Maslow, A. H. (1971). *The further reaches of human nature*. New York: Viking.

Mayer, R. E. (2004). Should there be a three strikes rule against pure discover learning? *American Psychologist, 5*9(1), 14–19.

McMillan, J. H. (2001). *Classroom assessment and practice for effective instruction* (2nd ed.). Boston, Massachusetts: Allyn & Bacon.

Meusberger, P. (2009). Milieus of creativity: The role of places, environments and spatial contexts. In P. Meusberger, J. Funke, & E. Wunder (Eds.), *Milieus of creativity: An interdisciplinary approach* to spatiality of creativity, knowledge and space (pp. 97-153). Dordrecht: Springer.

Mohd Jamil, M. R., Siraj, S., Hussin, Z., Mat Noh, N., & Sapar, A. A. (2014). *Pengenalan asas kaedah fuzzy delphi dalam penyelidikan rekabentuk pembangunan.* Bangi, Malaysia: Minda Intelek Agency.

Mohd Noah, S., & Ahmad, J. (2005). *Pembinaan modul: Bagaimana membina modul latihan dan modul akademik*. Serdang, Malaysia: Putra University of Malaysia.

Molenda, M., Pershing, J. A., & Reigeluth, C. M. (1996). Designing instructional systems. In R. L. Craig (Ed.), *The ASTD training and development handbook* (4th ed.). (pp. 266–293). New York, NY: McGraw-Hill.

Morrison, G. R., Ross, R. M., & Kemp, J. E. (2007). *Designing effective instruction* (4th ed.) New York, NY: John Wiley & Sons.

National Advisory Committee on Creative and Cultural Education [NACCCE)]. (1999). *All our futures:Creativity, culture and education*. Suffolk: DfEE Publications.

Nielsen, J. (1994). *Usability engineering*. Academic Press Inc. Elsevier.

Ng, P. F. (2013). *Evaluation of a brain-compatible literacy intervention for pre-schoolers at the risk of literacy difficulties*. (PhD thesis). Universiti Teknologi Malaysia, Skudai.

Ogilvie, E. (1973). *Gifted children in primary school*. School Council, London: Macmillan.

Osborn, A. F. (1963). *Applied Imagination; Principles and Procedures of Creative Problem-solving: Principles and Procedures of Creative Problem-solving.* Scribner.

Othman, N., & Amiruddin, M. H. (2010a). Different perspective of learning styles from VARK Model. *Procedia Social and Behavioral Sciences* 7(C): 652–660.

Othman, N., & Amiruddin, M. H. (2010b). The readiness of the Orang Asli youths in venturing into entrepreneurship. *9th WSEAS International Conference on Education and Educational Technology (EDU '10)*.

Othman, N., Amiruddin, M. H., & Hussein, H. (2011). Entrepreneurial behaviour and non-cognitive entrepreneurship knowledge among the Orang Asli youths from the south zone of Peninsular Malaysia. *10th WSEAS International Conference on Education and Educational Technology (EDU '11)*.

Parnes, S. J. (1962). Do you really understand brainstorming. In S. J. Parnes & H. F. R. Harding (Eds.), *A sourcebook for creative thinking*. New York: Scribner's.

Petty, G. (1997). *How to be better at creativity*. London: Kogan Page.

Phillips, D. C. (1998). How, why, what, when, and where: Perspectives on constructivism in psychology and education. I*ssues in Education,* 3, 151–194.

Piaget, J. (1970). *Science of education and psychology of the child*. New York: Oxford University Press.

Piskurich, G. M. (2006). *Rapid instructional design: Learning ID fast and right* (2nd ed.). San Francisco, California: Pffeifer.

Plucker, J. A., & Renzulli, J. S. (1999). Psychometric approaches to the study of human creativity. In R. J. Sternberg (Ed.), *The handbook of creativity* (pp. 35–61). New York: Cambridge University Press.

Rajendran, N. S. (2013). *Teaching and acquiring higher-order thinking skills: Theory and practice*. Tanjong Malim, Malaysia: Sultan Idris Education University.

Rhodes, M. (1961). An analysis of creativity. *Phi Delta Kappa, 42*, 305–310.

Richards, R. (2007). *Everyday creativity and new views of human nature*. Washington: American Psychological Association.

Richey, R. C., & Klein, J. D. (2007). *Design and development research: Methods, strategies and issues.* London: Erlbaum.

Rogers, C. R. (1995). *On becoming a person: A therapist's view of psychotherapy*. Boston: Houghton Mifflin. (Originally published 1961.)

Rubenson, D. L., & Runco, M. A. (1992). The psychoeconomic approach to creativity. *New Ideas in Psychology, 10*,131–147.

Rubenson, D. L., & Runco, M. A. (1995). The psychoeconomic view of creative work in groups and organizations. *Creativity and Innovation Management, 4*, 232–241.

Runco, M. A. (1991). *Divergent thinking*. Norwood, NJ: Ablex Publishing Corporation.

Runco, M. A. (1992). Creativity and human capital. *Creativity Research Journal, 5*, 373–378

Runco, M. A. (2007). *Creativity: Theories and themes: Research, development and practice*. San Diego, California: Elsevier Academic Press.

Runco, M. A., & Chand, I. (1995). Cognition and creativity. *Educational Psychology Review, 7*, 243–267.

Russell, J. D. (1974). *Modular instruction: A guide to design, selection, utilization and evaluation of modular materials*. New York: Burgess Publishing Company.

Simonton, D. K. (1999). Creativity as blind variation and selective retention: Is the creative process Darwinian? *Psychological Inquiry, 10*, 309–328.

Sinha, D. (1993). Indigenization of psychology in India and its relevance. In U. Kim & J. W. Berry (Eds.), *Indigenous psychologies: Research and experience in cultural contexts* (pp. 30–43). Newbury Park: Sage Publications.

Sperry, R. (1964). The great cerebral commissure. *Scientific American, 210*(1), 42–52.

Sternberg, R. J. (1986). A triarchic theory of intellectual giftedness. In R. J. Sternberg & J. E. Davidson (Eds.), *Conceptions of giftedness* (pp. 223–243). Cambridge, Massachusetts: Cambridge University Press.

Sternberg, R. J., & Grigorenko, E. (2000). *Teaching for successful intelligence: To increase student learning and achievement.* Arlington Heights, Illinois: Skylight Professional Development.

Sternberg, R. J., & Lubart, T. I . (1991). An investment theory of creativity and its development. *Human Development, 34*, 1–31.

Sulaiman, R., Aziz, M., & Mok, S. S. (2013). *Kemahiran berfikir*. Puchong, Malaysia: Penerbitan Multimedia.

Swartz, R. J., & Parks, S. (1994). *Infusing the teaching of critical and creative thinking into content instruction.* California: Critical Thinking Books and Software.

Tan, A. G., & Law, L. C. (2004). *Creativity for teachers*. Singapore: Marshall Cavendish.

Torrance, E. P. (1962). Developing creative thinking through school experiences. In S. J. Parnes & H. F. Harding (Eds.), *A sourcebook for creative thinking*. New York: Scribner's.

Torrance, E. P. (1966). *The Torrance tests of creative thinking – Norms-Technical manual, research edition-verbal tests, form A and B – Figural tests, form A and B*. Princeton, New Jersey: Personnel Press.

Torrance, E. P. (2007). Creativity research in education: Still alive. In I. A. Taylor, & J. W. Getzels (Eds.), *Perspectives in creativity* (pp. 278–296). NJ: Transaction Publishers. (Originally published in 1975).

Torrance, E. P., & Safter, H. T. (1990). *The incubation model of teaching: Getting beyond the Aha!* New York: Bearly Limited.

Treffinger, D. J. (1986). Research on creativity. *Gifted Child Quarterly, 30*(1), 15–19.

Tsuei, M. (1988). *The effects of LOGO programming and multimedia software on fifth grade students' creativity in Taiwan*. Unpublished doctoral thesis. University of Texas, United States of America.

Tuckman, B. W., & Waheed, M. A. (1981). Evaluating an individualized science programme for community college students. *Journal of Research in Science Teaching, 18*, 489–495.

Vygotsky, L. S. (1978). Tool and symbol in child development. In N. Cole, V. John-Steiner, S. Scribber, & E. Souberman (Eds.), *Mind in society: The development of higher psychological processes* (p. 86). Cambridge, Massachusetts: Harvard university Press.

Wallas, G. (1926). *The art of thought*. New York: Harcourt Brace and World.

Woolfolk, A. E. (1995). *Educational psychology* (6th ed.). Boston, Massachusetts: Allyn and Bacon.

Yong, L. M. S. (1994). Creativity: *A study of Malaysian students*. Kuala Lumpur: Arenabuku Sdn. Bhd.

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Product-Orientated Learning Efficacy among Technical Students

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ABSTRACT

The appropriateness of learning methods used contributes to performance improvement and interest in the topic, Electromagnetism, among technical students with different cognitive styles. Learning is a process in which students obtain new information and knowledge. For effective learning and to achieve academic excellence, students need to know the proper learning methods. This study identifies appropriate learning methods for technical students in order to improve the achievement of technical students of different of cognitive and to enhance their interest as presented in Witkin's Theory. This research studies a couple of learning groups engaged in product-orientation learning and conventional learning. The sample comprises 70 students from Malaysian polytechnics to determine their cognitive styles through the Group Embedded Figures Test. A pre-test, post-test and a questionnaire were used in quasi-experimental research to obtain data concerning the students' performance and their interest in learning. The results show that product-orientated learning yields the best scoring of students' performance and interest increment compared to other methods. We conclude that learning methods should ensure students' needs positively correlate with their achievements and interest. Based on the advantages of the product and its effectiveness in aiding student comprehension, this product is seen to be an appropriate learning method for technical students in Malaysian polytechnics

Keywords: Cognitive styles, learning method, product-orientated learning

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INTRODUCTION

Technical and Vocational Education Training (TVET) provides education for technical students and is responsible for producing highly skilled graduates. In order to achieve this goal, technical and vocational institutions have implemented

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various methods involving multiple parties. Although the methods have been established and carried out, the students' academic performance and skills still seem to be deteriorating. This deterioration has contributed to shortcomings in fulfilling the requirements of industries that require highly skilled talent. Several research studies have been conducted to identify this performance decline among local polytechnic students (Emran & Hamid, 2014; Che Kob, Abdulah, Kamis, Hanapi, & Ridzuan, 2016; Marlina, Azilla, & Adila, 2013). The investigations revealed that not all learning methods employed affected student achievements (Godwin, 2013). Many learning methods have been studied and it has been suggested that they be used for technical and vocational students. Nevertheless, the results of these investigations found, surprisingly, that students are still applying conventional learning as a learning method (Crouch, Fagen, Callan, & Mazur, 2004; Ragan, Frezza, & Cannell, 2009). However, these studies did not focus on the appropriateness of the learning methods used by the students to improve the quality of their learning and achievements.

Product-orientated learning, which is one of the learning methods, helps students to learn more clearly. This method provides more details about content and theory (Salas & Ellis, 2006). The researchers also claimed, by comparing to previous research, that this method could help students to interact directly with the content through a product or object that was applied during the lecture. According to Metros and Bennett (2002), this learning method aims to transform the delivery of the curriculum learning design in an effort to improve the quality of higher learning institutions.

Conventional learning only provides limited learning materials, while learning-orientated products can be used repeatedly and students may learn the latest technology (Wiley, 2009) from using them. By using learning technologies, students can apply the technology used in the real world of industry. In addition, it may make students realise the difference between knowledge and application (Cheng & Wang, 2013). For an effective student learning approach, students should be actively involved in operating the products. It is an important aspect in the world of learning as it helps students reinforce theoretical knowledge and problem solving whether for complex problems or real problems (Tick, 2007). When students know what they have learnt, learning is more interesting and efficient and the students are motivated to continue. Salas and Ellis (2006) explained that product-orientated learning is able to drive students to explore the information obtained through the method of problem solving. In addition, Lin, Tseng, Weng and Su (2009) noted in their study that this method enables students to learn and prioritise knowledge and information they need, thus improving their understanding towards teaching and learning.

Previous studies emphasised some aspects of product-orientated learning, also called learning materials. These

learning materials consist of the actual material used when learning takes place to give exposure to the students about real concepts and actual materials used in industry. Farrokhnia and Esmailpour (2010), who studied the effectiveness of learning through experiments using real materials and virtual and comprehensive study, found that the application of real materials compared to simulation helped students to improve their understanding of electricity as electricity is an abstract concept that is difficult to be grasped only through theory (Kolloffel & Jong, 2013). Therefore, it can be summarised from these studies that product-orientated learning is suitable for technical and vocational education, in which real-world applications as well as concepts must be mastered. The researchers then added that although technical students in particular referred to textbooks to learn their field, this traditional method of learning was limited in facilitating understanding. These students should use and apply real materials and procedures so that the information obtained is used precisely and completely.

Salas and Ellis (2006) recommended the use of 'web-based' learning products for technical and vocational students as a means of enhancing comprehension of difficult theories and applications. However, students were not able to use and feel the actual materials. This method was suitable as an introduction or preparation for using the actual materials. Lucas (2014), who studied the pedagogy of vocational students, found that for effective and deep learning, students needed three key aspects to be present: opportunity to use actual materials during learning, guidance from an expert and proper symbols.

These studies suggested that the researchers were focussed on learning methods for technical and vocational students in order to improve their academic performance, but failed to fully consider the characteristics of the students. Students' characteristics are an important aspect in learning strategies as they indicate the students' ability to manage learning (Pithers, 2006). Therefore, this study aimed to investigate the learning methods that are considered product-orientated. It focussed on the characteristics of students from different orientations i.e. field independent (FI) and field dependent (FD) in cognitive styles and the learning method that best suited them. The research questions were as follows:

(a) Is there a significant difference in the level of achievement and increment of polytechnic students' interest between the treatment group and the control group among students with different cognitive styles who are field independent (FI)?

(b) Is there a significant difference in the level of achievement and increment of polytechnic students' interest between the treatment group and the control group among students with different cognitive styles who are field dependent (FD)?

The results obtained indicated the importance of learning methods in improving students'

achievement and interest in learning among technical and vocational students.

METHOD

Participants

The participants comprised 70 first-semester students enrolled in the Diploma in Electronic Engineering (Communication) programme in Malaysian polytechnics. Thirty-three students from Sultan Abdul Halim Polytechnic were placed in the treatment group, while the other 37, from Tuanku Syed Sirajuddin Polytechnic, were placed in the control group. All qualified participants were considered as being on the same level. These students were chosen as they were stakeholders. All were studying Electrical Technology. The actual number of students enrolled in this programme is large but only 70 participated in the experiment.

Materials

Students in the treatment group were led through product-orientated learning on the topic, Electromagnetism, which is one of the topics studied in the Electrical Technology course. Four sub-topics were chosen namely, magnetic field, magnetic inductance, Faraday's Law and Fleming's Right-Hand Law. An activity from each sub-topic was run. The students were provided with a lab sheet to guide them through the activities.

Procedure

The 70 participants were assigned into two groups: a control group (Tuanku Syed Sirajuddin Polytechnic students) and a treatment group (Sultan Abdul Halim Polytechnic students). The control group applied the traditional method in learning the modules, while the treatment group applied product-orientated learning. Before the lecture, both groups were tested on their cognitive ability using the Group Embedded Figure Test (GEFT), which required the students to answer a set of questions. The test was conducted to determine the students' cognitive styles i.e. if they were field independent (FI) or field dependent (FD). The test contained three parts, which the students had to complete in 20 minutes. They were also required to answer a pre-test question to identify background knowledge of the topic, Electromagnetism. The test took both the cognitive and affective domains into consideration. The whole procedure took about one hour and 30 minutes. Next, they were required to answer questionnaires to determine their interest before the study began.

The study period took eight weeks to complete. After that, the students were again required to answer a post-test question to determine their level of knowledge on the topic that was learnt. Then, they were once again asked to answer a questionnaire to find out whether there was an increment in interest after the methods were applied.

DATA ANALYSIS

The Statistical Package for the Social Sciences (SPSS) software was used to analyse the findings. MANCOVA was used to find the differences in student

achievement and interest in FI and FD between the control group and the treatment group. All the statistical tests performed had a significant value of x=0.05.

RESULTS

Table 1 shows the interaction effect of the two groups of students, the treatment group and the control group against their cognitive styles. The Pre-Achievement and Pre-Interest scores show the pre-test and initial interest scores, respectively, before learning took place. The Post-Achievement and Post-Interest scores indicate the post-test and increase in student interest, respectively, after learning had been completed.

Table 1
Score of Field Independent and Field Dependent Cognitive Styles Students' Achievement and Interest

Source	Dependent Variable	df	MS	F	P
Pre-Achievement	Post-Achievement	1	2324.365	149.261	0.000
	Post-Interest	1	0.004	0.251	0.618
Pre-Interest	Post-Achievement	1	2.156	0.138	0.711
	Post-Interest	1	3.986	252.778	0.000
Group	Post-Achievement	1	10.128	0.650	0.423
	Post-Interest	1	0.018	1.129	0.292
Cognitive Style	Post-Achievement	1	3217.825	206.635	0.000
	Post-Interest	1	4.902	310.836	0.000
Group * Cognitive Style	Post-Achievement	1	14.044	0.902	0.346
	Post-Interest	1	0.016	1.002	0.321
Error		64	15.573	149.261	

Significant at $p<0.05$

The Group* Cognitive of Post-Achievement and Post-Interest shows that the $F(1,64)=0.902$, $p>0.05$ and $F(1,64)=1.002$, $p>0.05$, which indicate that both groups obtained the same score. Therefore, the results show that there were no statistically significant difference between the two variables, achievement and interest of students. The reading of these values shows that there was no statistically significant difference in student achievement and interest before and after the learning process.

Table 2, however, shows that there was a difference between the two learning methods.

Table 2
Comparison of Mean Scores for Student Achievement and Interest in Field Independent and Field Dependent Cognitive Styles

Dependent Variable	Independent Variable	Group	N	Mean Score (Before)	Mean Score (After)	SD
Post-Achievement	Field Independent	Treatment	6	28.91	84.92	7.41226
		Control	15	23.1	60.33	5.94218
	Field Dependent	Treatment	27	26.61	82.13	7.92342
		Control	22	22.02	57	6.61708
Post-Interest	Field Independent	Treatment	6	2.26	3.35	0.24410
		Control	15	2.47	2.82	0.26645
	Field Dependent	Treatment	27	2.41	3.51	3.51741
		Control	22	2.46	2.88	0.31745

Table 2 scores clearly show that there was a statistical difference between the mean scores of the two groups and the students' cognitive styles. The mean score for student achievement in FI among the treatment and control groups were, respectively, increased from 28.91 to 84.92 and from 23.01 to 60.33. The mean score for student achievement for FD among the treatment and control groups, also increased, respectively, from 26.61 to 82.13 and from 33.02 to 57. At the same time, the mean score for student interest in FI among the treatment and control groups, also increased, respectively, from 2.26 to 3.35 and from 2.47 to 2.82. The FD among the treatment and control groups increased from 2.41 to 3.51 and from 2.46 to 2.88, respectively. All the readings indicated that there were differences in student achievement and interest before and after learning.

Students' grade scores are based on the standard set by the Polytechnic Higher Education Ministry of Malaysia, and this standard was also adhered to in this study; under this standard, the score 80-100 is 'excellent', 65-79 is 'distinction', 40-64 is 'pass' and 30 or lower is 'fail'. The score for the students' interest was based on a 4-point Likert scale, where 1='Strongly disagree', 2='Somewhat agree', 3='Agree' and 4='Strongly agree'. The post-test results on the topic, Electromagnetism, showed that the students who used product-orientated learning received the score, 'excellent'. They also showed an increase in interest.

DISCUSSION

The results showed that students of both cognitive styles who used the product-orientated learning method did better that those who use conventional learning methods. They scored 'excellent' and showed an increase in interest. Product-orientated learning was able to stimulate their interest to explore the topics in greater depth, unlike for the students who applied conventional learning. It is quite a challenge developing compatible learning product that can be used effectively by students of

different cognitive styles. However, the product-orientation method proved in this instance well suited to do just this.

According to Witkin, Moore, Goodenough and Cox (1977), who studied the field-dependent and field-independent cognitive styles, field independent as a feature is more prominent than field dependent especially among technical, vocational and engineering students. However, the product-orientation learning method enabled both groups to obtain the score, 'excellent' without bias. This method allowed the students to grasp a complex topic in their studies.

Field-dependent students enjoy interaction, while field-independent students tend to be intrapersonal learners. This method, therefore, favours field-independent students as it gives them the opportunity to interact during learning. This helps them improve their memory and comprehension. Ragan, Frezza, and Cannell (2009) and Salamun (2004) found that learning materials gave an opportunity for students to engage directly with learning, enabling them to form involvement actively. Atif (2013) believed that the use of this learning method helps students work together to solve a problem. In this study, it helped field-independent students to cultivate the habit of working in a group, which is a practice they would have to do in real-life work situations.

In this study, product-orientated learning triggered active learning through interaction among the two different groups of students, and this facilitated comprehension, leading to improvement in their performance. When students are actively involved in their learning process and especially with the guidance of their lecturers, they learn well and effectively (Ganefri & Hidayat, 2015); this is probably due to the friendly and personal learning environment that is created.

Field-independent students are analytical thinkers, whereas field-dependent students are global thinkers. Electromagnetism is a challenging for both groups; Salamun (2004) found that the product-orientated learning could improve comprehension of this challenging topic for both groups, helping them understand the complex theories introduced and solve related problems. Not only that, it also improved their academic achievement and thinking process, enabling them to understand complex concepts and solve complex problems. As technical and vocational students, they often encountered complex learning content, so this method would be useful to them. Field-dependent students prefer a casual learning environment, while field-independent students prefer a formal learning environment. However, product-orientated learning offered an environment that was casual yet competitive. This aspect was vital to the students as they need to be adept at critical thinking to compete in a world of sophisticated technology.

Since this learning method was student-centred, meaning it encouraged more discussion rather than lectures, field-dependent students were comfortable. However, field-independent students faced some problems and would have preferred

to learn independently. Nevertheless, this product-orientated learning method allowed both groups to learn independently, while encouraging discussion in order to reinforce comprehension so as not to distort information. Discussion also helped to consolidate the knowledge they had acquired.

In the context of strengthening learning, field-dependent students require more reinforcement. They also require objectives to be defined, whereas field-independent students are able to do this themselves. Field-dependent students, therefore, require learning materials to help them understand content better. However, product-orientation learning also helps field-independent students to learn better and understand more easily. Cheung and Slavin (2013) described the use of learning aids such as hardware and materials, and stated that the product-orientated learning method can strengthen students' cognitive style and improve their achievement. Although this method required some time for the students to grasp, in the end, it was a better way of learning. Working with real materials allowed the students to acquire knowledge directly and provided them with valuable information and concepts. This prevented misconception.

Cheung and Slavin (2013) stated that using learning materials in practical lessons helped students to strengthen their comprehension of theories. However, this was an impediment for field-dependent students. Product-orientated learning attracted both student groups to be fully involved in the learning process. It also prevented boredom, which can set in when learning is mostly through reading textbooks or listening to lectures. Thus, this is a better method than the conventional method.

CONCLUSION

This study investigated the appropriateness of learning methods for technical students with different cognitive styles. Malaysian polytechnics rely on textbooks during lectures. For complex topics like Electromagnetism this is not suitable as these topics contain concepts that are difficult to grasp. The results of this study showed that product-orientated learning was helpful for students in learning complex topics. Thus, this learning method is recommended for use in Malaysian polytechnics. Fuglseth and Gronhaug (2003) stated that the performance of field-dependent and field-independent students will improve if they apply appropriate teaching and learning methods. As this method used real materials, it also requires the use of physical manipulation and the tactile sense as students will be required to work with tools and equipment. Using actual products also aids learner comprehension, long-term recall and transfer, level of thoughts and other elements pertinent to hands-on work. We recommend that this method be used in technical and vocational institutions to improve student achievement and interest. Future research could consider related psychomotor processes that are vital in technical and vocational education.

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REFERENCES

Atif, Y. (2013). Conversational learning integration in technology enhanced classrooms. *Computers in Human Behavior, 29*(2), 416–423. doi: 10.1016/j.chb.2012.07.026

Che Kob, C. G., Abdulah, M. S., Kamis, A., Hanapi, Z., & Rus, R. C. (2016). Amalan gaya pembelajaran pelajar cemerlang di Politeknik Seberang Perai: Kajian pelajar Malaysia berdasarkan Model Felder Silvermen. *Malaysian Journal of Society and Space, 3*(3), 181–191.

Cheng, K. W. E., & Wang, W. (2013). Environmental object based method for electrical engineering subjects to enhance learning and teaching, 3(2). doi: 10.7763/IJIET.2013.V3.257

Cheung, A. C. K., & Slavin, R. E. (2013). The effectiveness of educational technology applications for enhancing mathematics achievement in K-12 classrooms: A meta-analysis. *Educational Research Review, 9*, 88–113. doi: 10.1016/j.edurev.2013.01.001

Crouch, C., Fagen, A. P., Callan, J. P., & Mazur, E. (2004). Classroom demonstrations: Learning tools or entertainment. *American Journal of Physics, 72*(6), 835. doi: 10.1119/1.1707018

Emran, N. F., & Hamid, H. (2014). Gaya pembelajaran pelajar semester pendek 2014 untuk topik "Capital Allowance" kursus PA502 Taxation 1. Retrieved from the Sistem Pengurusan Penyelidikan dan Inovasi Online Politeknik Tuanku Sultanah Bahiyah website: ecrim.ptsb.edu.my/file/20141106092008.pdf

Farrokhnia, M. R., & Esmailpour, A. (2010). A study on the impact of real, virtual and comprehensive experimenting on students' conceptual understanding of DC electric circuits and their skills in undergraduate electricity. *Procedia Social and Behavioral Sciences 2, 2*(2), 5474–5482. doi: 10.1016/j.sbspro.2010.03.893

Fuglseth, A. M., & Gronhaug, K. (2003). A tool kit for measurement of organisational learning : Methodological requirements and an illustrative. *Journal of Universal Computer Science, 9*(12), 1487–1499.

Godwin, A. (2013). Influence of learning styles and teaching strategies on students' achievement in biology. *Voice of Research, 1*(4), 5–13.

Hidayat, H. (2015). Production based learning: An instructional design model in the context of vocational education and training (VET). *Procedia - Social and Behavioral Sciences, 204* (2014 November), 206–211. doi: 10.1016/j.sbspro.2015.08.142

Kolloffel, B., & Jong, T. de. (2013). Conceptual understanding of electrical circuits in secondary vocational engineering education: Combining traditional instruction with inquiry learning in a virtual lab. *Journal of Engineering Education, 10*2(3), 375–393.

Lin, H.-Y., Tseng, S.-S., Weng, J.-F., & Su, J.-M. (2009). Design and implementation of an object oriented learning activity system. *Educational Technology and Society, 12*(3), 248–265.

Lucas, B. (2014). *Vovcational pedagogy: What it is, why it matters and what we can do about it*. United States of America: City & Guilds.

Marlina, S., Azilla, N., & Adila, N. (2013). "System approach" dalam pengajaran pembezaan untuk kursus matematik kejuruteraan 2, di Jabatan Matematik, Sains dan Komputer, Politeknik Sultan Azlan Shah. In *E-Prosiding Seminar Pendidikan Matematik, Sains dan Komputer Peringkat Kebangsaan* (pp. 57–68). Malaysia: Politeknik Merlimau Melaka. Retrieved from www.pmm.edu.my/jmsk/images/doc/e-proceeding.pdf

Metros, S. E., & Bennett, K. (2002). *Learning objects in higher education*. United States of America: ECAR.

Pithers, R. T. (2006). Cognitive learning style : A review of the field dependent-field independent approach. *Journal of Vocational Education and Training, 54*(1), 117–129. doi: 10.1080/13636820200200191

Ragan, E. D., Frezza, S., & Cannell, J. (2009). Product-based learning in software engineering education. *Proceedings of the 39th IEEE International Conference,* San Antonio, Texas: *Frontiers in Education Conference*. Retrieved from http://dl.acm.org/citation.cfm?id=1733663.1733790

Salamun, B. E. (2004). *The integration of technology into the science classroom: A case study of two senior high schools at Surabaya, Indonesia*. New Mexico State University.

Salas, K. De, & Ellis, L. (2006). The development and implementation of learning objects in a higher education setting drivers for the adoption of flexible methods at the University of Tasmania. Interdisciplinary *Journal of Knowledge and Learning Objects, 2*, 1–21.

Tick, A. (2007). Application of problem-based learning in classroom activities and multimedia. In *5th Slovakian-Hungarian Joint Symposium on Applied Machine Intelligence and Informatics* (pp. 363–375). Slovakia: Obuda University. Retrieved from http://uni-obuda.hu/conferences/sami2007/36_Andrea.pdf

Wiley, D. A. (2009). *Connecting learning objects to instructional design theory: A definition, a metaphor, and a taxonomy*. United States of America: Utah State University.

Witkin, H. A., Moore, C. A., Goodenough, D. R., & Cox, P. W. (1977). Field-dependent and field-independent cognitive styles and their educational implications. *Review of Educational Research, 47*(1), 1–64. doi: 10.3102/00346543047001001

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Analyzing Generic Competency Required by Malaysian Contractors from Malaysian Construction Management Graduates using the Rasch Measurement Model

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ABSTRACT

This study aimed to investigate construction management graduates' generic skills competency required by Malaysian contractors for entry-level construction managers. This study employed a questionnaire survey, and data were collected using a 5-point Likert scale questionnaire. The instrument adopted 75 items from the Association of Project Management and the Project Management Institute generic skills competency to measure industry requirements. A total of 94 construction practitioners representing contractors (grade 5 to 7) in the Klang Valley participated in this study. The Rasch Measurement Model was used to analyse the items and respondents' reliability, the items and respondents' separation index, the items' fit, the levels of items' agreement and the respondents' ability. The findings showed that the items' reliability index was 0.83 and the respondents' reliability index was 0.96. The items' strata index was 2.18, which means that there are two different levels of item agreement in this study. Meanwhile, the respondents' strata index was 5.24, which means that there are five levels of respondents' requirement in this study. The results also found that 21 items were misfits based on the Rasch Measurement Model's values of outfit/infit MNSQ and the z-standardised index. The Rasch Measurement Model identified that most of the construction practitioners

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required construction management graduates to practise generic skill competency in performing the roles and tasks of entry-level construction managers.

Keywords: Construction management, entry-level construction managers and generic competency

INTRODUCTION

The working environment and culture of a construction project are unique compared to most other working conditions. Construction professionals work with more people from other disciplines than do most other professionals (Gould & Joyce, 2009). They must work as a team within the whole organisation, with each individual having a specific function to deliver specific sub-objectives and the performance of each is usually measured to rate the achievement of organisational goals (Mat Isa, 2007). Someone is needed to manage an organisation for it to achieve its goals.

Construction management skills involve people relationships, which is why most of the skills relate to direct human and project interrelationship. Relative to social skills, the work of site managers and contract managers stresses on the need for keeping people informed, getting them involved in tasks, fostering cooperation and teamwork, communicating clearly, dealing with people as individuals and showing an interest in people (Smallwood, 2000). Construction management is all about people (soft) skills and technical (hard) skills (Tan, 2005). However, some researchers have suggested that construction managers are lacking in managerial knowledge and skills that enable them to perform at their optimum. Moreover, graduates have been found to be lacking in communication skills (verbal and written), are unable to relate to others, do not seem to understand other employees and are not able to manage and facilitate others working in the same organisation (Love & Haynes, 2001).

Employers seek employees who are quick to learn, can adapt to change, are able to work on a range of tasks simultaneously (Harvey, Moon, Geall, & Bower, 1997) and have good oral and written communication skills. Furthermore, the industry requires employees to have the ability to work with others, be flexible and adapt to the changing working environment (United States Department of Labour, 2009). They require employees who are able to work in teams, communicate effectively, solve problems and manage themselves (Davies & Poon, 1999). Construction managers cannot achieve everything by effort alone (Love & Haynes, 2001). They often need to harness their positive skills sufficiently to get along with others and implement projects with the rest of the project team for its successful completion and to achieve set goals and objectives (Tan, 2004). The importance of generic skills for entry-level construction managers is the reason for this research, which focussed on identifying competency of generic skills of entry-level construction managers required by Malaysian contractors for performing the roles and tasks of entry-level construction managers.

Competency in Construction Management Scope

Management skills include human skills (generic skills), technical skills and conceptual skills (see Figure 1). Figure 1 shows that competency in generic skills covers more than 50% of the competency required in management.

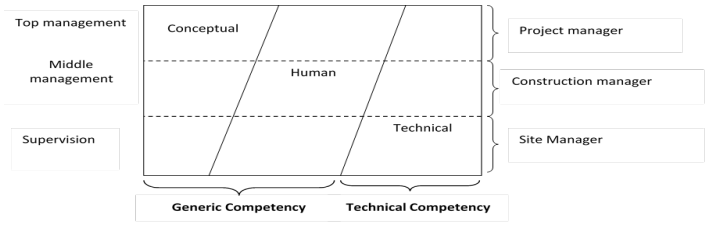

Figure 1. Management skills

Technical skills are proficiencies in a specific kind of activity, particularly one involving methods, processes, procedures or techniques (Rose, 1988). Technical skills are the ability to apply techniques and procedures. Mat Isa (2007) stated that technical skills are more structured and can be learnt through education, training and practice. Conceptual skills are the ability to think and to conceptualise abstract and complex situations (Stephen & Mary, 2009). Rose (1988) further stressed that it is evident that conceptual skills development impacts the future direction and tone of an organisation and involves the ability to see the enterprise as a whole as the various functions of an organisation depend on one another.

In the classical view, Katz (1974) identified human skills as building cooperation within a team. They involve working with attitudes and communication, individual and group interest, in short working with people. However, the contemporary view believes that human skills are people-related activities, which are management's effort aimed at managing people in the organisation. Such activities include providing support and encouragement to others, providing recognition for achievement and contribution, developing skills and confidence of organisation members, consulting when making decisions and empowering others to solve problems (Certo & Certo, 2009). Human skills reflect the ability to work effectively as a group member and to build cooperative effort (Rose, 1988).

In the past, most contractors were focussed on technical and conceptual skills in hiring their construction managers (Bridgstock, 2011). However, nowadays, technical and conceptual skills are not enough to qualify a construction worker, who must face the needs of a global industry that is advanced, powerful and forward moving. Badawy (1995) suggested that the criteria

for successful managers must not depend on the managers' traits and characteristics but rather on their competency in performing their job. Therefore, it is important for construction management students to improve their competency skills and gain competency during their studies.

The Rasch Measurement Model

The aim of this study was to investigate construction management graduates' generic competency as required by Malaysian contractors for performing the roles and tasks of entry-level construction managers. This research employed a Rasch Measurement Model specifically designed for survey rating scales, namely the Rasch Rating Scale Model (Andrich, 1978). This model is appropriate for Likert-scale data because it relates the measure of a person's latent trait (e.g. one's tendency to agree with a statement) to the probability of an item response on a single scale. It is only when these two elements are placed on the same scale and compared that truly meaningful inferences about persons and interactions can be made.

The Rasch Measurement Model is able to identify items on interval scale and enhances one's capability to understand a construct and recognise potential inadequacies in a given scale (Green, 1996). When the principal responds to items, he or she indicates his or her level of satisfaction using an ordinal rating scale. The Rasch Rating Scale Model converts these raw ordinal data responses to their natural logarithm, thereby producing interval level measures or logits (Aziz, 2010). Similar to a ruler, which uses units like inches to represent equidistant interval units of measure, item maps use logits. Furthermore, the Rasch Measurement Model analysis utilises the Winsteps measurement software to test data-to-model fit (dimensionality) and data measure quality (item fit) and illustrates the construct hierarchy by way of item maps.

METHODOLOGY

This research used the survey as research design. The target population of this study included G5 to G7 contractors in Malaysia. This research employed the cluster sampling technique. The population of this research was 2,679 contractors of Grade 5 to 7 in the Klang Valley, registered with the Construction Industry Development Board [CIDB] Malaysia. This group was chosen for this research due to their establishment and because most of them employed construction management graduates, unlike contractors of Grade 1 to 4. Ninety-four respondents were randomly selected from the various construction practitioners. They were construction managers and individuals who worked with entry-level construction managers, and therefore, were believed to be able to assess entry-level construction managers).

This research adopted the 360˚ survey as a research instrument. This research used an instrument that included 11 constructs that consisted of 75 items. The constructs were:

1. Communication
2. Behavioural characteristics
3. Conflict management
4. Teamwork and cooperation
5. Analytical thinking
6. Critical thinking
7. Flexibility
8. Team leadership
9. Ethics
10. Negotiation
11. Relationship building

The reason for adopting the 360° survey in this research was that construction projects are unique in nature. Construction projects vary from one another. They are different in project procurement and project type. Moreover, the job specification of construction managers is very general. Many claim to be construction managers (Project Management Institute, 2004), including architects and quantity surveyors.

RESULTS AND DISCUSSION

The summary statistics tables show that the Cronbach Alpha value was 0.96, which is acceptable, indicating test reliability in measuring the generic skills competency required by Malaysian contractors for construction management graduates. Table 1 shows that item reliability was 0.83, which means that there were a sufficient number of items to measure for an accurate reading. The instrument could reliably separate person perception. Person reliability was 0.96, indicating that 96% of the result would be repeated if the same respondents were answering questions tied to alternative instruments measuring generic skills competency (Aziz, 2011).

For an instrument to be useful, separation should exceed 2.0, with higher values of separation representing the greater spread of items and persons along a continuum. If the statistically distinct levels of item difficulty are defined as difficulty strata with centres three calibration errors apart, then this separation index G can be translated into the number of item strata defined by the test H and similarly for persons (Wright & Master, 1982). The number of person strata was 5.24, indicating that the contractor and construction practitioner could be separated into five requirement groups. The number of item strata was 2.18, indicating that the requirement level could be separated into two important levels. Thus, the sample of 94 construction practitioners could be separated into five levels of requirement, and the 75 items in the soft skills development model could be separated into two levels of importance.

Table 1
Reliability of the instrument (measured: 94 persons)

	Total Score	Count	Measure	Model Error	Infit		Outfit	
					MNSQ	ZSTD	MNSQ	ZSTD
Mean	266.5	71.2	-6.31	0.20	1.81	1.8	1.80	2.4
S.D.	62.5	11.9	1.52	0.13	1.95	3.4	1.55	3.1
Max.	373.0	75.0-	0.85	1.34	9.90	9.9	9.90	9.9
Min.	3.0	1.0	-9.29	0.08	0.28	-6.9	0.28	-4.2

REAL RMSE 0.29 TRUE SD 1.49 SEPARATION 5.24 PERSON RELIABILITY 0.96
MODEL RMSE 0.24 TRUE SD 1.50 SEPARATION 6.28 PERSON RELIABILITY 0.98
S.E. OF PERSON MEAN = 0.17

Measured: 75 Item

	Total Score	Count	Measure	Model Error	Infit		Outfit	
					MNSQ	ZSTD	MNSQ	ZSTD
Mean	305.6	81.7	0.00	0.17	1.69	2.0	1.81	1.8 |
S.D.	14.4	2.5	0.48	0.01	1.67	1.3	1.56	2.2 |
Max.	337.0	85.0	0.65	0.18	9.90	6.1	9.90	9.9 |
Min.	258.0	70.0	-2.18	0.08	0.87	-0.8	0.88	-0.3

REAL RMSE 0.20 TRUE SD 0.44 SEPARATION 2.18 ITEM RELIABILITY 0.83
MODEL RMSE 0.17 TRUE SD 0.46 SEPARATION 2.75 ITEM RELIABILITY 0.88
S.E. OF ITEM MEAN = 0.06

Item Polarity and Item Measure Quality

This study referred to the common logit scale as this was the same scale that was used in measuring both person ability and item difficulty. Therefore, it compared both variables on the same interval scale. The logitmax was "Applies complex concepts" (e.g. root-cause analysis, portfolio analysis, natural selection) or "Applies knowledge of past discrepancies, trends and relationships to look at different situations "(CT8.2). Moreover, the logitmin, "Communicates decisions and the reasons for decisions to team members. Encourages top-down and bottom-up communication from all members of the project team" (C2.6), where located, was δ=2.83. This indicated that the item difficulty of the item was spread over 2.83 logit units against the person, measuring 10.14 logits unit.

The quality of the item was determined by the attributes' Point Measure Correlation (PMC); the PMC value must be within the acceptable parameter, which is x, $0.4<x<0.8$. Table 2 shows only one item with PMC below 0.4 (C2.1, 0.38) and one item with negative Point Measure Correlation (C2.6,-.04). This negative value shows the relationship for response item i.e. the respondents contradicted the variable or the construct (Linacre, 2006). These two items were rejected because they did not measure any constructs. Table 2 also showed a small measurement error mean of SE +0.17 logit.

Further verification was done by looking at the outfit column for the Mean Square value; MNSQ=0.5<*y*<1.5. Outfit statistics are sensitive to unexpected behaviour on items. It is more sensitive in responding to items of greater difficulty and vice versa (Aziz, 2010). Table 2 shows that 19 items were out of the MNSQ, and the z-std range was rejected. Table 2 shows that the item (PS4.7), "Knows when to escalate or engage others when conflicts cannot be resolved," was a misfit, with MNSQ 1.53 logit with z-std still in range. Item (TW6.6), "Asks for support and offers assistance as appropriate," had 0.05 logit more than 1.50 logit with z-std still in range. Therefore, these two items, PS4.7 and TW6.6, were counted as fit due to the z-std>+/-2.0.

Analysis of items from the same dimension having the same measure showed items (CT8.3), "Applies or modifies complex learned concepts or methods appropriately," and (CT8.1), "Observes discrepancies, trends and interrelationships in data, or sees crucial differences between the current situation and past situations," at 0.38 logit. Moreover, (N12.2), "Decides on the desired outcome and minimum acceptable position, recognising the extent of own remits and the point at which escalation may become necessary. Distinguishes between negotiating a position and real underlying need," and (N12.6), "Considers practical options and prioritises those presenting the optimal solution for the project," at 0.26 logit. (AT7.2), "Sets priorities for activities in order of importance," and (AT7.4), "Understands how actions taken on the project may impact other areas of the project, other projects in the organisation or other organisational operations," at 0.08 logit. (RB10.1), "Maintains formal working relationships; most contacts are work-related largely confined to work-related matters but not necessarily formal in tone, style or structure," and (RB10.3), "Maintains a network of relationships, which extends through all levels of the work unit or project team," at 0.03 logit. This same measure was observed when respondents saw the items as measuring the same thing. An item whose MNSQ was closer to 1 and z-std closer to 0 was deemed a better fit. Thus, items (CT8.1), (N12.6), (AT7.4) and (RB10.3) should be maintained while items (CT8.3), (N12.2), (AT7.2) and (RB10.1) should be deleted or rephrased to preserve content validity.

Table 2
Item polarity and item measure quality

Entry Mode	Total Score	Total Count	Measure	Model S.F.	Infit		Outfit		PT-Measure		Exact Match		Displace	Item
					MNSQ	ZSTD	MNSQ	ZSTD	Corr.	Ext.	OBS %	Exp &%		
45	281	82	.65	.16	1.14	.9	1.17	.8	.68	.62	56.1	52.5	.60	CT8.2
54	281	81	.57	.16	1.90	4.4	1.82	2.8	.55	.62	54.3	52.6	.60	RB10.2
1	258	74	.56	.17	1.72	3.5	6.30	9.7	.38	.61	50.0	52.6	.60	C2.1
17	290	83	.54	.16	1.45	2.5	2.48	4.4	.52	.61	47.0	52.9	.60	BC3.1
6	286	80	.38	.16	1.29	1.7	1.31	1.2	.66	.60	53.8	54.0	.60	N12.1
44	293	82	.38	.16	1.33	1.9	1.34	1.3	.64	.60	59.8	53.9	.60	CT8.1
46	293	82	.38	.16	1.42	2.3	1.39	1.4	.68	.60	61.0	53.9	.60	CT8.3
4	281	78	.34	.17	1.60	3.1	1.70	2.2	.49	.59	48.7	53.5	.60	C2.4
70	295	82	.33	.16	1.34	1.9	1.40	1.4	.63	.60	47.6	54.0	.60	N12.4
66	293	81	.31	.16	1.49	2.7	1.76	2.4	.60	.60	56.8	54.2	.60	TL11.10
68	298	82	.26	.16	1.23	1.4	1.26	1.0	.65	.59	53.7	54.3	.60	N12.2
72	298	82	.26	.16	1.14	.9	1.21	.8	.66	.59	48.8	54.3	.60	N12.6
19	307	84	.25	.16	1.12	.8|	1.07	.3	.68	.60	59.5	54.4	.60	PS4.1
49	295	81	.25	.17	1.44	2.4	1.35	1.3	.63	.60	51.9	54.5	.60	E9.2
3	285	78	.24	.17	1.51	2.7	1.49	1.6	.54	.58	50.0	54.0	.60	C2.3
15	300	82	.23	.16	1.38	2.1	2.68	4.4	.58	.60	52.4	54.5	.60	BC3.9
22	308	84	.23	.16	1.19	1.1	1.16	.7	.70	.5	61.9	54.6	.60	PS4.4
47	300	82	.22	.16	1.27	1.6	1.22	.8	.66	.59	56.1	54.7	.60	CT8.4
51	297	81	.20	.17	1.41	2.3	2.75	4.4	.61	.60	53.1	54.7	.60	E9.4
26	305	83	.20	.16	1.31	1.8	1.34	1.2	.61	.59	65.1	54.6	.60	FX5.1
38	305	83	.20	.16	1.34	2.0	1.24	.9	.67	.59	48.2	54.6	.60	TW6.9
50	298	81	.18	.17	1.50	2.7	1.42	1.4	.62	.59	48.1	54.7	.60	E9.3
58	302	82	.17	.17	1.10	.7	1.09	.4	.69	.59	61.0	54.8	.60	TL11.2
2	270	73	.16	.18	1.71	3.5	1.83	2.3	.45	.58	49.3	54.5	.60	C2.2
52	299	81	.15	.17	1.68	3.5	1.60	1.9	.58	.59	51.9	55.0	.60	E9.5
25	307	83	.15	.17	1.66	3.4	1.53	1.7	.68	.59	57.8	54.9	.60	PS4.7
32	307	83	.15	.17	1.82	4.1	1.73	2.3	.59	.59	48.2	54.9	.60	TW6.3
39	307	83	.15	.17	1.09	.6	1.09	.4	.68	.59	56.6	54.9	.60	AT7.1
33	304	82	.14	.17	1.48	2.6	1.36	1.2	.65	.59	56.1	55.0	.60	TW6.4
5	283	76	.12	.17	1.64	3.3	1.79	2.2	.48	.58	48.7	54.6	.60	C2.5
63	304	82	.12	.17	1.08	.5	1.06	.3	.70	.59	63.4	55.0	.60	TL11.7
73	304	82	.12	.17	1.25	1.5	1.34	1.2	.64	.59	61.0	54.8	.60	N12.7
43	309	83	.10	.17	1.07	.5	1.05	.3	.68	.59	60.2	55.0	.60	AT7.5
65	305	82	.10	.17	.90	-.6	.88	-.3	.71	.59	59.8	55.1	.60	TL11.9
9	315	84	.10	.17	1.42	2.4	1.42	1.4	.53	.58	50.0	55.0	.60	BC3.3
69	305	82	.09	.17	1.3	1.8	1.37	1.2	.66	.58	59.8	54.9	.60	N12.3
64	303	81	.08	.17	.93	-.4	.91	-.2	.74	.58	58.0	55.2	.60	TL11.8

Table 2 *(continue)*

10	315	84	.08	.17	1.42	2.3	1.37	1.3	.56	.58	50.0	55.2	.60	BC3.4
40	307	82	.08	.17	.88	-.7	.88	-.3	.72	.58	53.7	55.1	.60	AT7.2
24	310	83	.08	.17	1.09	.6	.99	.1	.72	.58	59.0	55.0	.60	PS4.6
42	310	83	.08	.17	1.04	.3	1.04	.2	.72	.58	55.4	55.0	.60	AT7.4
12	319	85	.06	.17	1.80	4.1	3.28	5.3	.48	.58	43.5	55.1	.60	BC3.6
21	292	78	.05	.17	1.28	1.6	1.14	.5	.72	.59	62.8	55.2	.6	PS4.3
71	307	82	.04	.17	1.43	2.4	1.47	1.5	.66	.58	57.3	55.0	.60	N12.5
53	304	81	.03	.17	1.51	2.7	1.34	1.1	.62	.58	61.7	55.2	.60	RB10.1
55	304	81	.03	.17	1.43	2.3	1.28	1.0	.65	.58	53.1	55.2	.60	RB10.3
16	312	83	.03	.17	1.35	2.0	1.30	1.0	.57	.58	49.4	55.1	.60	BC3.10
74	308	82	.02	.17	1.32	1.8	1.38	1.3	.64	.58	58.5	55.0	.60|	N12.8
36	309	82	.01	.17	1.31	1.8	1.22	.8	.65	.58	59.8	55.2	.60	TW6.7
57	309	82	.00	.17	1.27	1.6	1.20	.7	.64	.58	61.0	55.3	.60	TL11.1
75	309	82	-.01	.17	1.87	4.3	1.85	2.4	.58	.58	54.9	55.0	.60	N12.9
41	302	80	-.01	.17	.97	-.1	.99	.1	.68	.58	61.3	55.0	.60	AT7.3
29	314	83	-.02	.17	1.30	1.7	1.26	9	.65	.58	56.6	55.1	.60	FX5.4
61	310	82	-.03	.17|	.98	-.1	.93	-.1	.73	.58	58.5	55.5	.60	TL11.5
48	307	81	-.04	.17	1.30	1.7	1.18	.7	.68	.58	58.0	55.5	.60	E9.1
56	307	81	-.04	.17	1.47	2.5	1.37	1.2	.66	.58	50.6	55.5	.60	RB10.4
27	315	83	-.05	.17	1.07	.5	1.14	.6	.68	.58	56.6	55.4	.60	FX5.2
59	311	82	-.05	.17	1.23	1.4	1.19	.7	.67	.58	57.3	55.5	.60	TL11.3
11	320	84	-.05	.17	1.40	2.2	3.26	5.0	.50	.58	54.8	55.4	.60	BC3.5
13	322	84	-.11	.17	1.95	4.7	3.61	5.4	.56	.57	46.4	55.8	.60	BC3.7
34	318	83	-.12	.17	1.46	2.5	1.34	1.1	.67	.57	59.0	55.9	.60	TW6.5
37	319	83	-.14	.17	1.09	.6	1.03	.2	.68	.57	57.8	56.1	.60	TW6.8
31	320	83	-.17	.17	1.57	3.1	1.39	1.2	.66	.5	53.0	56.2	.60	TW6.2
30	321	83	-.20	.17	1.39	2.2	1.32	1.0	.62	.5	61.4	56.3	.60	TW6.1
62	317	82	-.20	.17	.87	-.8	.88	-.3	.70	.57	56.1	56.3	.60	TL11.6
60	318	82	-.23	.17	1.06	.4	.97	.0	.71	.57	53.7	56.4	.60	TL11.4
35	323	83	-.25	.17	1.58	3.1	1.55	1.6	.60	.56	43.4	56.5	.60	TW6.6
28	324	83	-.27	.17	1.27	1.6	1.40	1.2	.61	.56	53.0	56.9	.60	FX5.3
8	328	84	-.27	.17	1.35	2.0	1.35	1.1	.50	.56	46.4	56.6	.60	BC3.2
7	333	85	-.28	.17	1.64	3.4	3.85	5.4	.44	.56	49.4	57.0	.60	BC3.1
23	326	83	-.28	.18	1.27	1.6	1.14	.5	.70	.56	54.2	57.2	.60	PS4.5
20	327	83	-.33	.18	1.41	2.3	1.28	.9	.65	.56	50.6	57.8	.60	PS4.2
18	281	70	-2.12	.08	9.60	2.9	6.55	7.8	.57	.64	37.1	75.3	1.62	BC3.12
14	332	83	-2.15	.09	9.90	3.8|	8.20	9.9	.51	.70	26.5	72.8	1.49	BC3.8
6	337	78	-2.18	.12	9.90	6.1	|9.90	9.9	-.04	.73	28.2	73.1	1.16	C2.6
Mean	305.6	81.7	.00	.17	1.69	2.0	1.81	1.81			53.8	55.8		
S.D.	14.4	2.5	.48	.01	1.67	1.2	1.56	2.21			7.0	3.8		

Person-Item Map

Figure 2 shows the Wright Map (person-item distribution map), where the person (contractor or construction practitioner) is plotted on the left and the item (generic skill competency by APM and PMI) is plotted on the right of the logit ruler. This allows both person's ability and item difficulty to be measured and placed on the same logit ruler. The Wright Map shows high item difficulty as low level of agreement with the item, meaning that the items at the top of the scale are harder to agree with, while items at the bottom of the scale are easier to agree with. Persons at the top of the scale were in closer agreement with the items in the questionnaire, while persons at the bottom of the scale were less in agreement with the easiest or common generic skill competency requirement.

The item map (see Figure 2) shows the hierarchy on the generic skill competency for construction management graduates as required by contractors. From 75 elements of generic skill competency identified, only 32 were required by Malaysian contractors for construction management graduates. In this research, elements ranked from logit 0 and below were accepted as required by the contractors. This rank was due to the item separation value (2.28 logit), which identified two important points of agreement marked by the respondents. Therefore, a negative logit was counted as important and a positive logit as not important.

Figure 2 shows that the person with the most high requirement on the generic skill competency measured -0.85 logit. The person with the least soft skill required from construction management graduates measured -9.29. The difference between Maxperson and Minperson was 10.14 logit. Item CT8.2, "Applies complex concepts (e.g. root-cause analysis, portfolio analysis, natural selection) or applies knowledge of past discrepancies, trends, and relationships to look at different situations," seemed to be the item most difficult to agree with as being important, while item (PS4.2), "Listens to and respects the views and questions of others," was the item that was most easily agreed with as being important. Eight constructs with 28 items, as shown below, were rated by the majority of the respondents as being important:

1. Negotiation (2 items)
2. Problem-solving (4 items)
3. Relationship building (2 items)
4. Team leadership (8 items)
5. Analytical thinking (1 item)
6. Entrepreneurship (1 item)
7. Flexibility (3 items)
8. Teamwork (6 items)
9. Behavioural characteristics (1 item)

The Wright Map shown in Figure 2 shows that G-1 was an item-free person because of the different psychometric, which indicates

homogeneity despite the differences in the generic skill competency requirement. It can be concluded that the person who fell under the G-1 category was someone who thought that generic skill competency by APM and PMI was not important or was not required in performing the roles and tasks of entry-level construction managers.

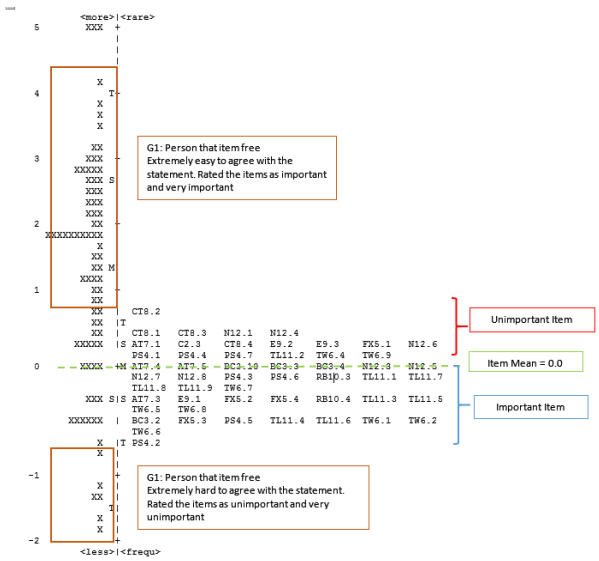

Figure 2. Person-item map (hierarchy) on generic skill competency from APM and PMI required by contractors

CONCLUSION

This study showed that the Rasch Measurement Model provided a suitable platform for measuring the requirement of construction practitioners for construction management graduates. Thirty-two generic skill competencies listed by APM and PMI were required by contractors from construction management graduates. This analysis will help students to identify the important generic competencies required by the industry so that they can build up their generic competency from the beginning of their studies.

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REFERENCES

Andrich, D. (1978). A rating formulation for ordered response categories. *Psychometrika, 43*(4), 561-573.

Aziz, A. A. (2010). *Rasch model fundamentals: Scale construct and measurement structure*. Kuala Lumpur: Advance Planning Sdn. Bhd.

Badawy, M. (1995). *Developing managerial skills in engineers and scientists: Succeeding as a technical manager* (2nd ed.). New York: John Wiley.

Bridgstock, R. (2011). Skills for creative industries graduate success. *Education and Training, 53*(1), 9-26.

Certo, S., & Certo, S. T. (2009). *Modern management: Concept and skills* (11th ed.). New Jersey: Pearson.

Davies, H., & Poon, L. (1999). Employers' expectation of the performance of construction graduates. *International Journal of Engineering Education, 15*(3), 191–198.

Gould, F. E., & Joyce, N. E. (2009). *Construction project managemen*t (3rd ed.). New Jersey: Pearson.

Green, K. (1996). Application of the Rasch model to evaluation of survey data quality. New Direction for Evaluation, 81–92.

Harvey, L., Moon, S., Geall, V., & Bower, R. (1997). *Graduates' work: Organisation change and students' attributes*. Birmingham: Centre for Research into Quality (CRQ) and Association of Graduate Recruiters (AGR).

Katz, R. (1974). *Skills of an effective administrator*. Harvard Business Review.

Love, P. E., Haynes, N. S., & Irani, Z. (2001). Construction managers' expectations and observations of graduates. *Journal of Managerial Psychology, 16*(8), 579-593.

Mat Isa, S. S. (2007). *A study on role and tasks of construction managers in the Malaysian construction industry*. (Master's thesis). Universiti Teknologi MARA, Shah Alam, Malaysia.

Project Management Institute. (2004). *A guide to the project management body of knowledge*. Pennsylvania: Project Management Institute, Inc.

Rose, J. H. (1988). *Self assessment, management development and training needs in technical, human and conceptual skills areas: An exploratory study.* Retrieved from files.eric.ed.gov/fulltext/ED361532.pdf

Smallwood, J. (2000). Practicing the discipline of construction management: Knowledge and skills. *Proceedings of the 2nd International Conference of the CIB task Group 29(TG29) on Construction in Developing Countries*, Gaberonne, Botswana.

Stephen, P. R., & Mary, C. (2009). *Management* (10th ed.). Upper Saddle River, New Jersey: Prentice Hall.

Tan, A. A. (2004). *Why project fail? 1001 reasons.* Selangor: Venton Publishing (M) Sdn. Bhd.

Tan, A. A. (2005). *Successful project management in Malaysia*. Kuala Lumpur: Asia Pasicfic Media & Publication Sdn. Bhd.

United States Department of Labour. (2009). *DOL annual report, fiscal year 2009: Performance and Accountability Report*. Retrieved from www.dol.gov/_sec/media/reports/annual2009/SG2.htm#.UIDyL1EyCuI

Wright, B., & Master, G. (1982). *Rating Scale Analysis.* Chicago: MESA Press.

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The Problem of Quality of Electrical Work in Malaysian Construction Projects

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ABSTRACT

In Malaysian building construction projects, quality assessment is important to ensure the success of a project. The Quality Assessment System for Building Construction Work (QLASSIC) introduced by the Construction Industry Development Board (CIDB) covers four main components, which are structural works, architectural works mechanical and electrical works and external works. This paper examines problems in assessing the quality of building construction work in electrical work. This research used the concurrent triangulation design, which implemented the quantitative and qualitative methods. Three instruments were used in this preliminary research, which were the focus group, interview and QLASSIC assessment questionnaire. A total of 69 respondents comprising clients, contractors and QLASSIC assessors took part in the questionnaire survey. Focus group discussions and semi-structured interviews were held with 20 site supervisors and five site supervisors from the Selangor State Development Corporation, respectively. The data analysis shows two main problems faced by construction site supervisors, which are lack of quality assessment training held by the company and incompetence of site supervisors in assessing electrical work quality. Thus, the quality of building construction projects can be influenced by on-site competency and training.

Keywords: Competency, defects, electrical work, inspection,quality assessment

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INTRODUCTION

In the construction industry, the construction phase is important because most of the project budget is expanded during construction (Oberlander, 2000). Poor quality resulting from non-conformity during construction leads to extra costs and time for all members of the project team (Abdul Rahman, 1995). Quality has become a very popular subject in recent years due to conceptual changes in the industry. The elements affecting building construction projects are design, contract, material, labour, equipment, sub-contractors, site layout, systems, site staff and execution (Abdul-Razeq, 2001). There are many problems that affect the quality of construction projects such as standard reduction, increased cost, project delay, unskilled workers and less qualified construction technologists (Memon, 2010). To address issues concerning quality, the Construction Industry Board of Malaysia (CIDB) introduced a Quality Assessment System in Construction (QLASSIC) as an independent method to assess and evaluate the quality of workmanship of construction work based on an approved standard (CIDB, 2006). Hence, the introduction of QLASSIC is expected to address several predominant quality issues that prevail in construction (Mukhtar, 2010).

Quality Assessment System in Construction (QLASSIC)

QLASSIC is an independent method to assess and evaluate the quality of workmanship of a building project based on the CIS 7:2006 document. The Quality Assessment System for Building Construction Work covers four main components, which are structural works, architectural works, mechanical and electrical works and external works (CIDB, 2006). Appointed assessors conduct physical assessments using appropriate tools for building inspection (Mukhtar, 2010). The QLASSIC assessment of a construction project is carried out by competent assessors appointed by CIDB.

Any person who is a construction practitioner can attend the QLASSIC assessment training to become a QLASSIC assessor (CIDB, 2006). Construction projects require coordination between many different contributors or construction practitioners as labourers, managers, supervisors, clients and other stakeholders work together to ensure that the projects proceed as planned. The responsibilities of site supervisors include assessing construction projects by completing quality inspections of the construction works at project sites.

Electrical Work Quality in Construction

The quality of electrical and mechanical works is important because they increase high-cost proportion and impact on the performance of a building (CIDB, 2006) and the highest percentage of defects in construction comes from electrical and mechanical works, and can be as high as 55% (JKR, 2009). Electrical design documents are schematic in nature and require an educated, experienced sub-contractor to understand in order to complete the work (Smith & Hinze, 2010). The focus on electrical work quality is important because

the scope of work in electrical work is often the most technical and confusing work of a project (Smith & Hinze, 2011).

METHODOLOGY

This research adopted the triangulation design, which implemented the quantitative and qualitative methods simultaneously, giving them equal priority and merging them during the interpretation (Plato & Creswell, 2008). The triangulation design is a one-phase design in which researchers implement the quantitative and qualitative methods in the same time frame with equal weight. The triangulation design is also referred to as the concurrent triangulation design (Creswell et al., 2003).

In the qualitative phase, the instruments used were the focus group and interviews. The focus group method entails engaging a small group of participants in a moderated group discussion on a certain topic (Bloor, 2001). This research also used the semi-structured interview. Semi-structured interviews are often used when the researcher wants to delve deep into a topic in order to understand it thoroughly (Newton, 2010).

The qualitative data collection involved a group of site supervisors from the Selangor State Development Corporation. Site supervisors were chosen because their scope of work is based on the site and they have specialised experience in building construction projects. Four focus groups assisted in this study. A total of 20 site supervisors participated in these focus group sessions. The semi-structured interviews were conducted with five experienced site supervisors in building construction projects.

Quantitative research work utilised a set of QLASSIC assessment questionnaires. The descriptive analysis of the collected questionnaires was used to as data in this study. The mean value was used to represent the results of the questionnaire. A set of 100 questionnaires was prepared and distributed to respondents in the construction industry. A total 69 responses from 17 clients, 29 contractors and 23 QLASSIC assessors were returned.

RESULTS AND DISCUSSION

Focus Group Analysis

The results from the focus group revealed 11 problems faced by construction site supervisors, which were: (1) There are too many amendments and procedures; (2) There are no correct guidelines or procedures based on the work and no updated guidelines; (3) The course or workshop that they attend does not include practical training; (4) Need training in quality control for staff or the team that handles a project; (5) Have a problem with the contractor and consultant; (6) The contractor chosen lacked experience and was not competent; (7) Bad attitude of contractor; (8) The contractor failed to finish the job; (9) The consultant had low competency; (10) The consultant was not focussed on the ongoing project; (11) Workload for the site supervisor was increased. Lack of competency was frequently cited as a problem in the focus groups, followed by lack of training i.e. practical and quality control training, lack

of procedures and lack of guidelines for the site supervisor to do the job.

Analysis of Interview Sessions

The results of the interviews showed that the problems of site supervisors were: (1) There is no ISO staff at the project site; (2) Any amendments in ISO are not informed to site supervisors; (3) There is not enough training; (4) Site supervisors need more training in quality and in every aspect of construction work; (5) Workload is heavy because site supervisors need to supervise everything from infrastructure, architecture, mechanical and electrical work and landscape; (6) Site supervisors do not have enough skill and knowledge of mechanical and electrical work. For instance, according to one of the interviewees, "We need to assess all work that is, architectural work, structural work, mechanical and electrical work. But, we have difficulty in assessing mechanical and electrical work because it is not our expertise. If there is any problem in mechanical and electrical work, we have to assess it based on our experience or refer to seniors who have faced the problem before. So, this can lead to a problem in quality assessment." This finding was supported by Serpell and Ferrada (2007), who that stated that due to lack of training, workers generally learnt skills on the job from their more experienced peers. The respondents frequently cited the problem of lack of skill or competence in construction works and assessing quality, especially of electrical work. Another problem that was frequently cited was lack of training in technical and quality assessment. The quality of site supervision is indeed a major influence on the overall performance and efficiency of construction projects (Ahzahar et al., 2011).

QLASSIC Assessment Questionnaire Analysis

The Statistical Package for the Social Sciences (SPSS) programme version 20.0 was used to analyse this questionnaire. The analysis was used to rank the degree of importance of the factors that were a barrier to the QLASSIC assessment and generated suggestions for improving the QLASSIC assessment. Table 1 shows the factors that hindered the QLASSIC assessment and Table 2 shows the suggestions for improving it.

Table 1 shows that a total of seven items were regarded as being important factors that hindered QLASSIC assessment. The results showed that the most important factor was difficulty in getting the right skilled sub-contractors/tradesmen to carry out the work and lack of competent quality supervisors to control the project quality and architect as a consultant team does not possess adequate competency to manage the quality of work at the project site. Skill has been one of the most important issues in the construction industry. Lack of training for implementing quality management according to QLASSIC standards was shown to be an important factor that hindered QLASSIC assessment.

Table 2 shows that QLASSIC training was very important to ensure that a project could achieve a good QLASSIC rating. It is suggested that sub-contractors, consultants

Table 1
Factors that hindered the QLASSIC assessment

Items	Mean Scale	Description
Difficulty in getting the right skilled sub-contractors/tradesmen to carry out the work.	3.7667	Considerably important
Absence/weakness of effective quality management system within the project	3.6500	Considerably important
Contractors lack competent quality supervisors to control the project quality.	3.7288	Considerably important
Lack of training to implement quality management according to QLASSIC standard	3.1167	Important
The following consultant teams do not possess adequate competency to manage the quality of work at the project site:		Considerably important
i) Architects	3.6102	
ii) Civil & Structural Engineers	3.0667	Important
iii) Mechanical & Electrical Engineers	3.1000	Important

Table 2
Suggestions for improving the QLASSIC assessment process

Items	Mean Scale	Description
It is important for consultants and the Superintending Officer (SO) to also take part in QLASSIC training to ensure that the project will receive a good QLASSIC rating.	4.2712	Very important
It is important for sub-contractors to also take part in QLASSIC training to ensure that the project will receive a good QLASSIC rating.	4.4833	Very important
It is important for the project management team to have an in-house QLASSIC officer so that the project will receive a good QLASSIC rating.	4.3333	Very important

and the Superintending Officer (SO) should take part in QLASSIC training as it would give a positive impact on their performance in quality assessment. Jraisat et al. (2016) revealed that education and training are the most important elements affecting quality, while Sharmma and Gudanne (2002), studying Australian construction companies, stated that an ongoing quality training programme was an important quality strategy. QLASSIC training is an opportunity for construction practitioners to expand their knowledge and skill in quality assessment. When completed, the training will surely boost the skill of every worker (Ling et al., 2007).

CONCLUSION

A construction site supervisor is responsible for project site operations. His performance impacts directly on the productivity and final quality of the construction project. The data

analysis carried out in this study showed there were two main problems faced by construction site supervisors, which were lack of quality assessment training held by the company and incompetency of site supervisors in assessing electrical work quality. Site supervisors are responsible for assessing construction work i.e. architectural works, structural works, mechanical and electrical works and external works. However, their knowledge of electrical work is basic. They shared that they had difficulty identifying types of defect and the course of action to correct them. Thus, the quality of building construction projects can be influenced by the competency and training of site supervisors.

REFERENCES

Abdel-Razeq, R. H.-D. (2001). A proposed method to measure the quality of construction projects. *International Exhibition Conference for Building and Construction*. Egypt.

Abdul Rahman, H. (1995). The cost of non-conformance during a highway project. *Journal of Construction Management and Economics, 13*(1995) 23–32.

Ahzahar, N., Karim, N., Hassan, S., & Eman, J. (2011). A study of contributing factors to building failures and defects in the construction industry. *International Building Control Conference, 20*(2011), 249–255.

Bloor, M. (2001). *Focus groups in social research*. London: Thousand Oaks; California: Sage Publications.

Clack, V. L. P., & Creswell, J. W. (2008). *The mixed methods reader*. California: Sage Publications.

Creswell, J. W., Plato Clark, V. L., Gutmann, M., & Hanson, W. (2003). *Advanced mixed methods research designs*. Thousand Oaks, California: Sage Publications.

Jabatan Kerja Raya Malaysia (JKR). (2009). *Laporan Audit 2009*. Kementerian Kerja Raya Malaysia, Putrajaya.

Jraisat, L., Jreisat, L., & Hattar, C. (2016). Quality in construction management: An exploratory study. International *Journal of Quality and Reliability Management, 33*(7), 920–941.

Ling, F. Y. Y., & Bui, T. T. D. (2010). Factors affecting construction project outcome: Case study of Vietnam. *Journal of Profesional Issues in Engineering Education and Practice, 136*(3), 78–90.

Memon, A. H., Abdul Rahman, I., Abdullah, M. R., & Abdu Azis, A. A. (2010). Factors affecting construction cost in MARA large construction projects: Perspective of project management consultant. *International Journal of Sustainable Construction Engineering and Technology, 1*(2), 41–54.

Mukhtar, C. A. (2010). Understanding the underlying principles of QLASSIC assessment. *Bulletin TheIngenieur, 45*(March-May), 51–54.

Oberlender, G. (2000). *Project Management for engineering and construction* (2nd ed.). New York: McGraw-Hill Education.

Serpell, A., & Ferrada, X. (2007). A competency framework for construction supervisors in developing countries. *Personnel Review, 36*(4), 585–602.

Sharmma, B., & Gudanne, D. (2002). An inter-industry study of quality practices and performance. *Magazine of Managing Service Quality, 12*(6), 394–404.

Smith, J. G., & Hinze, J. (2010). *Construction management: Subcontractor scopes of work*. Boca Raton, Florida: CRC Press.

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A Comparative Study of Malaysian Public Project Management Training

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ABSTRACT

Public projects have been found to be short on quality, incurring endless cost overruns and guilty of extensive time delays, as highlighted in the annual Auditors' General Reports. One critical aspect that has been emphasised is the conduct of the public officers managing the projects, and it has been concluded that the effectiveness of the training provided to them is questionable. A Project Management Reference Framework was developed to assess the training provided to project managers and the framework was validated by construction professionals. This paper continues a study on the assessment of the training modules provided for public project management officers. The aim of this study is to give an overview of what is being offered compared to what is required in real practice. The mixed method was used for this study, which employed the concurrent exploratory technique. The training modules that were assessed were obtained from the National Institute of Public Administration (INTAN), the Construction Industry Development Board (CIDB) and also the Public Works Department (PWD). The findings of this study show that the focus of the training that was assessed was not aligned with what is required by the industry. This study suggests that training providers need to have a plan and a common recognised term of reference for developing training and the training should emphasise on industry needs

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so that the industry benefits from effective training to produce a reliable and competent workforce.

Keywords: Project management training, public projects, reference framework, training adequacy

INTRODUCTION

The 2015 annual report of the Construction Industry Development Board (CIDB) stated that public projects represented more than 20% of the total projects awarded in 2015 (CIDB, 2016). The value of public projects amounted to RM16 billion, of which a large portion was spent on non-residential and residential projects. Other types of project such as infrastructure and social amenities projects are also developed by the government but in small numbers.

Regrettably, the delivery of infrastructure and facilities requiring construction has been poor. This underperformance was detailed in the Auditors' General Report (National Audit Department, 2016), which assessed the performance of public projects and highlighted numerous issues that contributed to the poor performance of public projects. From the review of the Auditors' General Report (NAD, 2016; NAD, 2015; NAD, 2014; NAD, 2013; NAD, 2012), it can be summarised that the majority of the projects underperformed in terms of quality, cost and time.

Among the notable issues that were further highlighted in these reports are the lack of monitoring/supervision by responsible parties, insufficient technical expertise and complete reliance on consultants/contractors, lack of coordination among agencies involved and internal problems faced by contractors. What is more, the same findings are reported year after year, as reviewed from past Auditors' General Report over the last five years from 2011 to 2015. It is quite worrying that little has been done to revamp the sector.

This study looked into the underlying factors affecting the performance of public projects. One particular area considered relevant for investigation related to the competencies of the people responsible for managing these projects. To gain competency, a worker must receive on-the-job training to elevate his knowledge and understanding of the work being done (Boyatzis, 2008). Training should be aligned to what is required and needed within the practice in order to produce a competent workforce. However, the training that was developed was questionable for its effectiveness in delivering the desired outcome.

Hence, this study focussed on assessing the adequacy of the training offered to public officers who are managing public projects. This assessment serves as an overview of the adequacy of the current training modules, and the findings may help suggest further improvement in areas that are still lacking in the training of public project officers.

Public Project Management Trainings

Training is an essential part of improving the performance of the workforce (Boyatzis, 2008). Training for public officers is

primarily provided by the National Institute of Public Administration (INTAN), the Public Works Department (PWD) and the Construction Industry Development Board (CIDB). The training structure and modules used are completely different from one another; nonetheless the training objectives are the same, which is to produce competent officers. However, a study by Mustaffa Kamal, Mohd Affandi and Hassan (2015) showed that the training lacked in delivering in key knowledge areas in managing projects. The findings of the study provided an overview of the areas that needed more attention and improvement.

In practice, Malaysian public project management generally utilises the available international standards in developing training module. However, the adaptation of these standards appears to be not delivering the desired performance required of the officers managing the projects. Project management training modules developed by different key agencies such as INTAN, PWD, CIDB etc. have been found to show variations. This variability is believed to be caused by differences in how project management is conceived and interpreted (Implementation Coordination Unit, 2013).

It has also been identified that the absence of a common recognised reference framework has rendered the training inadequate (Kamal, Hassan, Affandi, & Ismail, 2012), and this lack has indirectly contributed to the performance of public projects (NAD, 2012; NAD, 2013; NAD, 2014). This has drawn criticism due to the fact that the training provided has been short on delivering key knowledge and skills required on the job (Hassan, 2012). These issues have been discussed at national level (Economic Planing Unit, 2015) and it is important for corrective measures to be taken.

Training Reference Framework

Developing a reference framework is a critical early step in designing training. In the narrowest sense, it is the basis for arrangement of activities, though it should first be developed as a means of clarifying the process that should be in place. The time and effort spent in preparing a good reference framework provide big returns in terms of the quality, relevance and usefulness of the training. The depth and details of the reference framework will, of course, vary. The standard for the reference framework, which involves many stakeholders, would need to be quite detailed, while for an activity, it could be a simple outline.

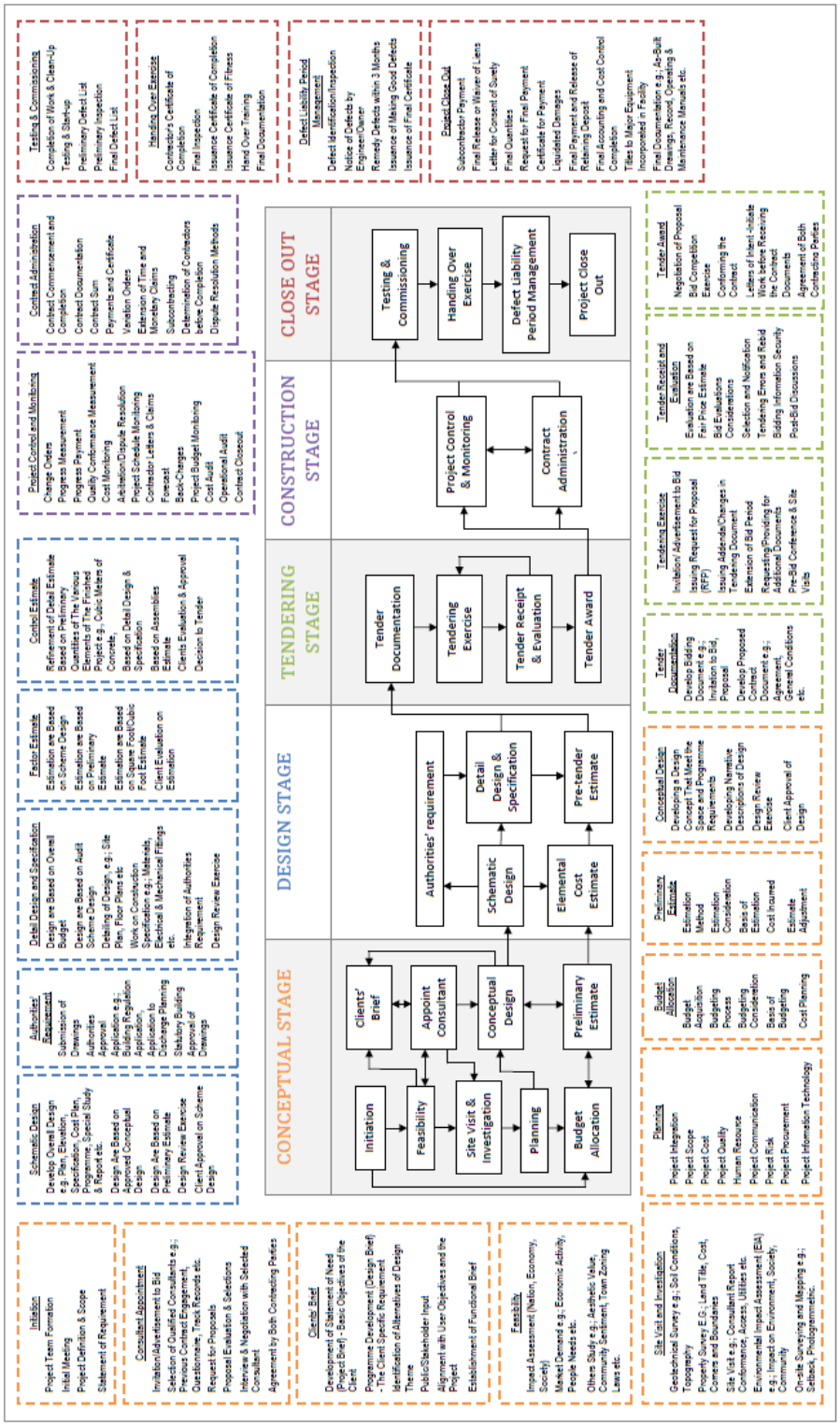

Figure 1. Project management reference framework
Source: Mustaffa Kamal, 2016

The reference framework adopted for this study is as illustrated in Figure 1. This reference framework was developed to address the lack of a common recognised term of reference in public project management in Malaysia (Mustaffa Kamal, 2016). The framework consists of the typical project activities found in the traditional procurement method. The framework provides a tool to assess current training modules and also to develop future training modules, providing an overview of the critical area that needs to be focussed on.

METHODOLOGY

The mixed method design was adopted for this study, which employed the concurrent exploratory technique. This technique utilises and complements both the quantitative and the qualitative data collection methods to obtain the results (Creswell, 2009). For this study, the function of the quantitative part was to identify the level of importance of each item in the framework according to real practice, while the qualitative part served to identify the coverage of the training modules according to the item in the framework. Both of these results were then being compared and the adequacy of each training module was compared with real practice and the data were obtained.

The main instrument used for this study was the questionnaire survey and the training modules itself. The questionnaire was distributed to the designated sample, which were project managers who had more than 20 years of experience in managing projects. The training modules that were analysed were chosen were from the National Institute of Public Administration (INTAN), the Public Works Department (PWD) and the Construction Industry Development Board (CIDB).

The Rasch Measurement Model was used for the analysis of the quantitative data. Item measurement analysis was carried out on the data in order to identify the level of importance of each item in the reference framework (Bond & Fox, 2015). The results were in the form of measure scoring to define the level of importance of each item. The qualitative data were analysed using the document analysis technique with the assistance of the N-Vivo software. The training modules were transcribed and themed into predetermined themes using the software. Once the process had been completed, the number of items covered in the training modules based on theme was recorded and converted into percentage. This percentage was the indicator to gauge the level of adequacy of the training modules. The results of the analysis are presented in the next section.

RESULTS

The results of this study are shown in Table 1. The score in the second-left column is for the ideal important activities in construction management practice based on the findings of the survey. A negative value under items measured indicates that the item was more important, while a positive value indicates the item was less important (Linacre, 2011). This measure was the basis to gauge the training modules and to see whether the

modules being developed were aligned to what is required in real practice. The other three columns represent the coverage of the training modules compared to real practice. The training modules were mapped onto the framework to identify the coverage level.

Table 1
Trainings adequacy compared to the actual practice requirements

Item	Measure of Importance	Coverage of Public Training Modules		
		INTAN (%)	PWD (%)	CIDB (%)
Project monitoring	-1.56	29	7	79
Contract administration	-1.17	0	0	100
Tender document	-1.17	100	0	100
Tender receipt & Evaluation	-1.00	50	34	0
Tender award	-0.84	20	20	40
Planning	-0.84	0	89	100
Testing & Commissioning	-0.69	20	0	100
Budget allocation	-0.54	20	89	80
Tendering exercise	-0.41	17	50	7
Detail design & Specification	-0.41	0	0	0
Clients' brief	-0.41	17	0	83
Conceptual design	-0.27	0	0	50
Site visit & Investigation	-0.14	0	0	100
Control estimate	0.10	0	0	20
Factor estimate	0.45	0	0	25
Defect liability Period	0.56	17	50	100
Authority requirement	0.56	0	0	40
Preliminary estimate	0.56	20	0	100
Handing over	0.78	0	0	0
Initiation	0.92	100	50	50
Closeout	1.00	0	0	45
Feasibility study (macro)	1.00	100	0	100
Scheme design	1.41	0	0	20
Consultant appointment	2.10	0	0	17

DISCUSSION

The comparison recorded in Table 1 shows a variable outcome for the training modules that were assessed. The CIDB training module covered most of the important items according to real practice compared to the INTAN and PWD training modules. However, this does not guarantee that the training is sufficient. This is due to the fact that their training level focusses

on participant with a technical education background and experience in managing projects. As the majority of public representatives are not well versed in managing projects, the training was found to be insufficient.

The PWD training module had the lowest coverage compared to the framework. However, this does not mean that their training was not sufficient. PWD is a unique organisation that designs their training according to their needs. It is a technical organisation. The majority of their staff come from a technical background and it is only natural that their training focusses on the management of projects. Although they claimed that their training is suitable for the public sector, the results show otherwise.

The INTAN training module covered less than half the items in the framework. INTAN as the main training provider for the public sector should cater for the needs of the public sector with more holistic training, but the analysis shows that the module is severely insufficient. Due to this, improved training is needed to cater for the needs of the public sector.

The findings suggested that the structure of the current training provisions does not align itself with what is required by the industry. It can be suggested that in order to develop proper and holistic training, input from stakeholders, namely, industry players, is very important. In addition, critical key knowledge areas must be incorporated in the training provisions. This action is crucial as training is considered a long-term investment for the benefit of the organisations and improvement in overall performance.

REFERENCES

Bond, T., & Fox, C. M. (2015). Applying the Rasch model: Fundamental measurement in the human sciences. Routledge.Boyatzis, R. E. (2008). Competencies in the 21st century. *Journal of Management Development, 27*(1), 5–12.

Construction Industry Development Board. (2016). *2015 Annual Report*. Kuala Lumpur: CIDB.

Creswell, J. W. (2009). *Research design: Qualitative, quantitative and mixed method approaches* (3rd. ed.). United States of America: Sage Publication Inc.

Hassan, F. P. (2012). *Proposed future plans for development project: Malaysian five-year plan. New approach lab workshop.* Putrajaya: Prime Minister's Department.

Implementation Coordination Unit. (2013). *Bengkel penggubalan modul dan kaedah pelaksanaan kursus pensijilan pengurusan projek sektor awam: Pengurusan projek sektor awam*. Putrajaya: ICU.

Kamal, M. F., Hassan, P. F., Affandi, H. M., & Ismail, Z. (2012). Technical competency of client project manager in managing public projects in Malaysia. *IEEE Colloqium on Humanities, Science and Humanities Research*, (48–51). Kota Kinabalu: IEEE.

Linacre, J. M. (2011). *A user's guide to Winstep ministep* (3.72.3 ed.). Chicago: MESA Press.

Mustaffa Kamal, M. *Project management reference framework (RF) for Malaysian public projects*. (Doctoral dissertation). Universiti Teknologi MARA, Malaysia.

Mustaffa Kamal, M. F., Mohd Affandi, H., & Hassan, P. F. (2015). The adequacy of public client project manager's (PCPM) training provisions in Malaysia. *Advances in Education Research: Psychology, Information Science and Library Science,* (15–20). Tokyo, Japan: IERI and PRESS, USA.

National Audit Department. (2012). *Auditors' general report for the year 2011*. Putrajaya: Prime Minister's Department.

National Audit Department. (2013). *Auditors' general report for the year 2012*. Putrajaya: Prime Minister's Department.

National Audit Department. (2014). *Auditors' general report for the year 2013*. Putrajaya: Prime Minister's Department.

National Audit Department. (2015). *Auditors' general report for the year 2014*. Putrajaya: Prime Minister's Department.

National Audit Department. (2016). *Auditors' general report for the year 2015*. Putrajaya: Prime Minister's Department.

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Obstacles Facing Learners in Speaking English: Non-English Teachers' Perspective, Putra Batam School

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ABSTRACT

Teachers who did not major in English in Batam face several obstacles to speaking English. The researcher observed less participation from these teachers in daily communication using English in school. This influences the competency in English of students. The purpose of this research was to explore the obstacles to speaking English among these teachers in Sekolah Putera Batam, Kepri. This naturalistic-qualitative method research uses the one-on-one interview as the technique of collecting data. In analysing the data, this research uses the descriptive qualitative method to capture the obstacles. Analysis of the descriptive data analysis show 27 categories of external and internal obstacles to speaking English that the teachers faced. The internal obstacles, which arise from the cognitive, affective and psychomotor domains, are poor English grammar mastery, fear and limited English-speaking skills, while the external are former English teachers, materials, time and facilities.

Keywords: Affective, cognitive, competency, English speaking, learners' obstacles, non-English major teacher, psychomotor

INTRODUCTION

Obstacles faced by teachers who did not major in English (hereon referred to as non-English major teachers) are caused by internal and external factors. The internal factors are found in the teachers themselves, while the external factors are their former English teachers, the teaching materials, teaching method, time, space and facilities. In this case study, the non-English major

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teachers who were selected were adult learners who studied English in Sekolah Putera Batam as an extra activity.

The internal factors that were obstacles to these teachers were knowledge (cognitive), interest (affective) and skill (psychomotor). Adult cognition is a mental process of knowing that includes aspects such as intelligence, memorising, categorising, describing situations verbally, connecting and gathering ideas and solving problems. Bloom described three domains of learning i.e. the cognitive domain (knowledge classification), the psychomotor domain (physical skills or task classifications) and the affective domain (attitude and values) (Micklich, 2011, p. 263).

The aspects related to the affective domain that are obstacles to speaking English for these teachers are attitude and interest. Teachers who are keen to speak English and who have positive attitudes in learning English will enthusiastically participate in learning and speaking English. A large number of variables are implied in considering the emotional aspect of human behaviour in the language learning process (Brown, 2007, p. 144).

Obstacles to speaking English that are related to the psychomotor domain include the mastery of general and linguistic skills. The general skills include asking, answering and expressing ideas, while the linguistic skills include reading, listening, speaking and writing. These skills are necessary for implementing English as a communication tool.

Another factor that is an obstacle for these teachers is gender. Jacobsen, Eggen and Kauchak (2009, p. 155) claimed that males relied heavily on bottom-up reading strategies more than females. They are likely to be more interested in challenge, while females value the feeling of achievement (p. 155). In addition, males ascribe less importance to foreign language acquisition than females.

The teachers themselves raise obstacles to their ability to speak English. These obstacles stem from the affective domain and include the teachers' interest and sense of responsibility, self-discipline, commitment to the profession, confidence, respect, honesty and self-control. Good attitude exhibited by teachers creates a conducive environment and facilitates smoother delivery of teaching materials in the English classroom, while poor attitude displayed by teachers causes their students to not pay attention when they are conducting classes.

Teachers' skills are also important. Skillful teachers are adept at classroom management, teaching creativity, delivering learning materials, using suitable teaching methods, using learning media, empowering students and evaluating their teaching abilities and students' learning. Teachers who have mastered teaching skills can deliver material and conduct classes well. Those who have not experience difficulties in delivering material, causing students to feel bored. English teachers should have competence and performance; competence

refers to knowledge of the language and how to use it well, while performance refers to actual production (speaking and writing) and comprehension (listening and reading) of linguistic events (Brown, 2007, p. 246).

The obstacles teachers face in speaking English in terms of the learning process are related to the quality and quantity of teaching materials. Quantity of teaching materials refers to the amount of materials needed for use within the class period. Loading too much content on students in too short a period is not conducive for achieving learning competencies. However, if the teaching materials brought to the classroom are insufficient, on the other hand, students will have difficulties in achieving the competencies for lack of support. The appropriate amount of materials will significantly help students achieve the basic competencies determined. Quality of teaching materials is also important and is related to the level of difficulty and whether the materials can engage the students' interest or not. Materials that are appropriate will help students develop the targeted competencies. If the materials are too difficult for students to understand, they will impede the progress of the students as the students would lose confidence and feel incapable and desperate. On the other hand, if the materials are too simple, the students would become complacent. Interesting materials that suit the level of the class and provide some challenge for students are necessary for ensuring that students make progress in the English classroom.

Another component that affects students' learning is the teaching methods. Obstacles in this area are related to the suitability of the teaching methods, the clarity of the methods and the students' involvement in the learning activities. The selection and application of teaching methods should suit the teaching materials, teachers' ability, students' level and characteristics and the facilities. The clarity of the teaching method is important to prevent student boredom and disengagement in the learning process. Teachers' mastery of teaching methods directly impact the quality of the learning process.

This case study set out to discover the obstacles that non-English major teachers in Sekolah Putra Batam faced in speaking English in order to provide a clear description of those obstacles so that solutions can be found to overcome them. This research was conducted among non-English major teachers who were enrolled as adult learners of the English as a Foreign Language (EFL) course in Sekolah Putera Batam, Batam.

Obstacles Faced by non-English Major Teachers

An obstacle is a material or nonmaterial thing that stands in the way of literal or figurative progress, blocking the way ahead, while a hindrance interferes with progress, delaying it and an impediment interferes with the proper functioning of a system.

Speaking as a skill. Speaking is one of two productive skills in language teaching.

Speaking is the interactive act of constructing meaning that involves producing, receiving, processing and utilising both verbal and non-verbal components (Burns & Joyce, 1997, p. 76). Speaking consists of producing systemic verbal utterances to convey meaning (Nunan, 2003, p. 98). Based on this definition, speaking emphasises the use of language interactively in order to make meaning of what is said. It shows that speaking concerns meaning, which involves both verbal and non-verbal symbols in the process of interaction. According to Bygate (1987, p. 5), there are two basic features that make speaking a skill. He distinguished between motor-perceptive skills, which are concerned with correctly using the sounds and the structures of a language and interactional skills, which involve using motor-perceptive skills for the purpose of communication.

Speaking, therefore, can be considered a skill for several reasons: Firstly, we do not know how to assemble sentences in the abstract. Secondly, we have to produce sentences based on prevailing circumstances. Harris (as cited in Imanin, 2010, p. 8) mentioned five important competencies in speaking i.e. pronunciation, grammar, vocabulary, fluency and comprehension. It is important to learn these competencies in order to speak fluently and to communicate meaningfully. van Ek and Trim (1998, pp. 22–23) declared that there are two objectives of comprehensive foreign language learning. They are first, communicative ability, which encompasses linguistic competence, sociolinguistic competence, discourse competence, strategic competence and socio-cultural competence and second, social competence, which encompasses optimal development of personality, cognitive development and affective development. The communicative approach to learning language aims to enable learners to use a foreign language for their own purposes (van Ek & Trim, 1998, p. 22).

Problems with speaking and speaking activities. According to Brown (2007, p. 256), the characteristics of spoken language can make oral performance easy or difficult. Problems with speaking are caused by clustering, redundancy, reduced forms, use of colloquial language, stress, rhythm and intonation, affective factors and interaction. Problems that can arise from speaking activities include inhibition, having nothing to say, low participation and mother-tongue interference.

METHODOLOGY

The naturalistic qualitative approach was used for this research, which involved collecting data, analysing it and interpreting it. As the method involved observing what people did and said, it was also subjective. This research also used the descriptive method in describing the data.

The sample consisted of 55 adult learners (21 males and 34 females) who worked as teachers of non-English courses at primary and high-school levels at Sekolah Putera Batam, Batam, Kepri, Indonesia and

studying English. Their ages ranged from 27 to 47 years of age. The research used open-ended questions to collect primary qualitative data (Johnson & Christensen, 2014, p. 234). The respondents were asked about the obstacles they faced in speaking English in school. In-depth interviews were conducted with the respondents to consolidate the data, while observation was done to capture their attitude in speaking English (Berg, 2001, p. 52). The data were then grouped into external and internal factors that acted as obstacles. Reduction was used to avoid capturing the same data. Categorical data analysis was made to find the grand substantive theory to discover the primary obstacle to speaking English faced by these adult learners. The findings were then explained descriptively.

RESULTS

Internal Obstacles

The obstacles to speaking English caused by the learners were identified as arising from three major domains: cognitive, affective and psychomotor domains.

Cognitive domain

The most number of obstacles to speaking English seemed to stem from the learners' cognitive domain. Teachers should use different teaching methods for EFL and ESL learners and should indeed be aware of the different needs of the two groups of students (Lightbown & Spada, 1993, p. 66). Data on the cognitive domain revealed five problem areas among the respondents: grammar, vocabulary, pronunciation, structure and meaning. Of these, grammar seemed to be the most difficult challenge for the respondents. This was followed by vocabulary, structure, pronunciation and meaning. The problems were identified as being (1) low mastery of grammar, (2) limited vocabulary mastery, (3) poor pronunciation, (4) difficulty in structuring sentences, and (5) weak semantics.

Affective domain

The second biggest problem area for the respondents was the affective domain. They explained that they were often held back by negative emotions and feelings such as (1) shyness, (2) fear, (3) nervousness, (4) lack of confidence, and (5) doubt.

Psychomotor domain

Obstacles stemming from the psychomotor domain were fatigue, habit and limited skill in speaking English. The respondents explained that their job was tiring because of the long working hours and the workload, which included having to check students' assignments after work. In addition, they also had to attend to their families. The strain was such that they had little strength left to deal with the stress of having to master a foreign language. In addition, it was habitual for them to speak the language they were familiar with and fluent in, that is, the language they used daily to meet all their communication needs. Finally,

the respondents elaborated that they had trouble with listening, writing and speaking English. They believed that they needed to master these skills as well to be able to speak English well.

External Obstacles

External obstacles that affected the respondents were their former English teachers, materials, time and facilities.

In terms of the cognitive domain, the respondents explained that their teachers of English had lacked knowledge and mastery of the language, and this had created a deficit in their own knowledge and mastery of the language. In terms of the affective domain, the respondents said that their teachers had been lazy and had not given them good materials when teaching them English. Finally, in terms of the psychomotor domain, the respondents stated that their teachers had not been able to effectively explain the language items they taught. Their approach to teaching had not been good.

The respondents explained that they had not received good materials when learning English and this had affected their learning. The teaching methods had also not been effective. They had also not had sufficient time to learn and master English. In addition, they had received little support in learning English.

Evidence

The chart below shows all the obstacles as identified by the respondents in this study.

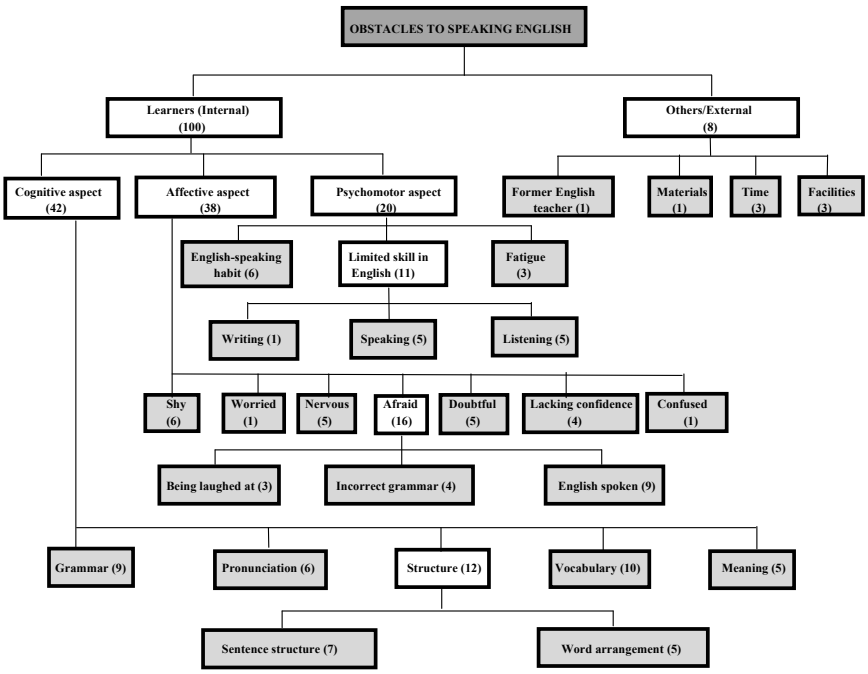

Figure 1. The 27 obstacles the respondents faced in speaking English

DISCUSSION

The study identified internal and external obstacles that prevented the respondents from speaking English. The internal obstacles stemmed from the cognitive domain, the affective domain and the psychomotor domain. In terms of the cognitive domain, the respondents struggled with low grammar mastery, and lack of knowledge regarding the parts of speech. In addition, they did not understand the use of English tenses. They also had very limited vocabulary and their pronunciation was poor. Morley (as cited in Zhang & Yin, 2009, p. 141). Poor pronunciation is one factor that makes EFL learners reluctant to speak English. They were also not able to structure sentences properly. Finally, the respondents were not able to identify the meaning of English sentences in oral activities.

In terms of the affective domain, the respondents were psychologically affected by negative feelings and emotions such as shyness, worry, nervousness, especially of speaking in public, fear of making mistakes and being laughed at, lack of confidence and doubt, and these made them reluctant to speak English. They experienced these feelings and emotions when they attempted to speak English.

Finally, in terms of the psychomotor domain, the respondents stated that fatigue because of work, not speaking English habitually and their limited English skills were the reasons they preferred not to speak English.

The external obstacles that kept the respondents from speaking English were having poor teachers of English, being given poor materials, having too short a time to study the language and not having adequate support facilities to aid them in learning the language.

Grand Substantive Theories

The 27 substantive theories identified in this study can be grouped into four grand substantive theories namely, (1) inadequate grasp of vocabulary and grammatical rules, (2) negative feelings and emotions that affected them psychologically, making them reluctant to speak English, (3) fatigue, and (4) limited skills in English.

CONCLUSION

The respondents in this study identified 27 categories of obstacles they faced in speaking English. The main obstacles came from the respondents themselves; these internal obstacles stemmed from the cognitive, affective and psychomotor domains. The significant obstacles to speaking English were identified as poor grammar and vocabulary mastery, negative emotions and feelings, fatigue and lack of proper support. These obstacles were narrowed down to four grand substantive theories namely, inadequate grasp of vocabulary and grammar, negative emotions and feelings, fatigue, seldom speaking English as a habit, limited English skills and lack of support.

Research Implications

The implications of this research are:

a. Inadequate grasp of English grammar and vocabulary can be caused by the students themselves, early experience of learning English, poor teachers or poor materials.

b. Inadequate grasp of English grammar and vocabulary is the main obstacle that prevents learners from speaking English.

c. Learners' affective weaknesses can be caused by lack of knowledge of English.

d. Affective weaknesses such as shyness, worry, nervousness, especially at having to speak in public, fear of making mistakes and being laughed at, lack of confidence and doubt are obstacles to speaking English.

e. Fatigue makes learners feel lazy and sleepy during the language activities, and prevents them from acquiring skill in speaking English.

f. Learners need adequate time to pick up English.

g. Limited skill in writing and listening can affect the speaking skills of learners.

h. Language learners need a supporting structure to help them pick up the language and become skillful users of it. Such a structure includes materials, a conducive environment and other users of the language with whom the learners can practice speaking English.

REFERENCES

Berg, B. L. (2001). *Qualitative research methods for the social sciences*. USA: Pearson Education Company.

Brown, H. D. (2007). *Teaching by principles: An interactive approach to language pedagogy* (3rd ed.). San Francisco, USA: Pearson Longman.

Burns, A., & Joyce, H. (1997). *Focus on speaking*. Sydney: National Centre for English Language Teaching and Research.

Bygate, M. (1987). *Speaking (Language teaching: A scheme for teacher education)*. Oxford: Oxford University Press.

Imanin. (2010). *The use of group discussion in speaking instruction*. Bandung: UPI Library.

Jacobsen, D. A., Eggen, P., & Kauchak, D. (2009). *Method for teaching: Promoting Student learning in K-12 classrooms* (8th ed.). Boston: Pearson Education, Inc.

Johnson, R. B., & Christensen, L. (2014). *Educational research: Quantitative, Qualitative, and mixed approaches* (5th ed.). Alabama: SAGE Publications Inc.

Krashen, S. D. (1982). *Principles and practice in second language acquisition*. California: Pergamon Press Inc.

Lightbown, L. P., & Spada, N. (1993). *How languages are learned* (4th ed.). Oxford: Oxford University Press.

Micklich, D. L. (2011). Examining the cognitive, affective, and pscycomotor dimension in management skill development through experiential learning: Developing a framework. *Developments in Business Simulation and Experiential Learning, 38*(2011), 263.

Nunan, D. (2003). *Practical English Language Teaching*. New York: McGraw Hill.

van Ek, J. A., & Trim, J. L. M. (1998). *Threshold 1990*. Cambridge: Cambridge University Press.

Zhang, F., & Yin, P. (2009). A study of pronunciation problems of English learners in China. *Asian Social Science, 5*(June, 2009), 141. Retrieved from www.ccsenet.org/journal.html

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Severity of the Casing and Cementing Operation with Associated Potential Hazards in the Drilling Process in the On and Offshore Oil and Gas Industry: A Cross-Sectional Investigation into Safety Management

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ABSTRACT

This paper discusses the major hazardous activities during the casing and cementing operation with potential associated hazards in the on and offshore oil and gas industries of Malaysia, Pakistan and Saudi Arabia. The researcher adopted the explanatory research approach for the quantitative (survey questionnaire) and qualitative research methods (semi-structured interview) in the data collection process. Eighty drilling crew were randomly selected for quantitative research, while three safety officers were purposively selected for qualitative research from each targeted industry. According to the findings of this study, running casing to wells and circulation cementing activity is considered highly hazardous at the offshore site. At the Saudi Arabian onshore domain, running casing to holes is more hazardous, while at offshore domains, installation of casing and casing accessories is more hazardous than in Malaysia and Pakistan. The participants from the Pakistani offshore industry reported that installation of casing and circulation of cementing activity were highly hazardous. In the context of overall casing and cementing operation among the focus industries, the Malaysian on and offshore oil and gas industry considers the casing and cementing operation as more hazardous compared to that of other industries, with a total mean range of 3.37 for onshore and 3.45 for offshore sites that lie under a moderate level of the mean range.

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The dangers are associated with potential ergonomic, chemical and safety hazards during on and offshore operation.

Keywords: Casing, cementing, drilling, hazard, offshore, onshore

INTRODUCTION

Advancement in the oil and gas industry has evolved over time and the various uses of these fuels have likewise extended and turned into an essential part of today's worldwide economy (Blackley et al., 2014). Oil inevitably supplanted coal as the world's main fuel in the early 20th century (Bennear, 2015). The methods and procedures involved in producing and dispersing oil and gas are very unpredictable and critical and they require state-of-the-art technologies (Ingraffea et al., 2014). One of the major and most important operation in the oil and gas industry is the oil-well drilling process. In this process, an oil well is bored in the earth to conduct petroleum oil hydrocarbons to the surface. There are several operations and activities involved in the drilling operation. Each activity comes with physical, ergonomic, safety and chemical hazards that can cause injuries and also lead to immediate death (Blackley et al., 2014).

According to statistical data, most of the hazards were reported during the casing and cementing operation (Brenner & Cawley, 2015). The casing and cementing operation occusr intermittently during the drilling process initiated with the surface casing and intermediate casing and ending with the production string, which takes place during well completion (Wiseman, 2009). The number of critical injuries and fatalities is high during installation of well surface casing in on and offshore drilling in the petrochemical extraction industry (Skogdalen & Vinnem, 2012).

PROBLEM STATEMENT

The casing and cementing operation is considered hazardous due to the nature of the job, in which drilling crew and workers have to deal with heavy casing accessories, tools and toxic and harmful drilling fluids such as oil base mud, silica and radioactive materials (Kargbo,Wilhelm, & Campbell, 2010). According to accident cases reported by the USA Occupational Health and Safety Department, many fatalities have been recorded due to loose casing due to wire rope and slings having fallen and become unstuck and tripping due to heavy casing accessories (Medina & Krasuk, 2015). Accidents during the casing and cementing operation are unpredictable and can differ greatly one from another due to the installation environment and installation equipment (Livingston et al., 2016). Although casing and cementing activity represents less than 10% of well cycle time, the injury rate during this phase is more than 10%; indeed, 50% of fatal accidents on a drill rig happen during casing, according to International Association of Drilling Contractors (IADC) (Medina & Krasuk, 2015). Before performing casing and cementing activities, special services crew and safety officials perform risk

assessment to avoid accidents but they are unable to fully eliminate the hazards. Consequently, researchers have suggested that because there is a need for adequate hazard identification, risks rising from the frontier conditions in which the cementing and casing operation is carried out need to be eliminated or controlled through pooling and comparing the severity and hazard level of the casing and cementing activities from different drilling fields, regions and affected industries i.e. multiple effective hazard identification approaches can be used (Asad & Hassan, 2015).

This paper identifies major potential hazardous activities in the casing and cementing operation carried out by on and offshore drilling crew in the Malaysian, Saudi Arabian and Pakistani oil and gas industries. The quantitative and qualitative research approaches are used.

RESEARCH OBJECTIVE

The main purpose of this study was to identify the most hazardous activities in the casing and cementing operation involved in the drilling process of the offshore and onshore oil and gas industries of Malaysia, Saudi Arabia and Pakistan. The main objectives of this study were:

1. To identify hazardous activities during the casing and cementing operations involved in the on and offshore drilling operation of the Malaysian, Saudi Arabian and Pakistani oil and gas industries;
2. To analyse the potential hazards associated with the casing and cementing operation involved in the drilling process of the Malaysian, Saudi Arabian and Pakistani oil and gas industries.

RESEARCH QUESTION

The main purpose of this study was to seek answers to the following research questions:

1. What are the major hazardous activities during the casing and cementing operation in the drilling process in the on and offshore oil and gas industries in Malaysia, Saudi Arabia and Pakistan?
2. What are the potential hazards associated with drilling activities during the casing and cementing operation in the drilling process in the on and offshore oil and gas industries in Malaysia, Saudi Arabia and Pakistan?

METHODOLOGY

The population used in this study were health and safety experts and drilling crew from major onshore and offshore oil and gas industries from Malaysia (Petronas), Saudi Arabia (Saudi Aramco) and Pakistan (OGDCL). These three countries were selected for data collection because of the variety of environmental aspects and the different international safety act and regulatory bodies like OSHA that are involved.

The explanatory mix method approach was adopted in this quantitative study where 80 drilling crew were randomly selected to answer the research questionnaire to identify the most hazardous activities during the on

and offshore casing and cementing operation in the drilling process. For the qualitative study, three health and safety experts from each industry were selected through purposive sampling to participate in a semi-structured interview as shown in Table 1.

Table 1
Participants of the study

Country	Industry	No of Respondents	
		Quantitative	Qualitative
Malaysia	Petronas	80	3
Pakistan	OGDCL	80	3
Saudi Arabia	Saudi Aramco	80	3
Total		240	9

Instrument Development

The correct study instrument or measuring instrument was essential to achieve the research objectives[12]. The instruments used in this study were a survey questionnaire and interview questions validated by health and safety experts. In this research study, both qualitative and quantitative methods of data collection were used for the justification of results and findings. The researcher designed the survey questionnaire and interview questions based on the casing and cementing activities that were identified in pervious research and the health and safety regulatory body OSHA, and validated by five drilling professionals using the rubric assessment approach. Thus, the quantitative research instrument was divided into nine sections using a 4-point Likert scale for onshore and offshore oil and gas drilling activities such as rig assembling, well drilling, tripping, hole cementing and casing, equipment maintenance, well control, hydrogen sulfide (H2S) and chemical monitoring, marine operation and helicopter operation.

DATA ANALYSIS

The quantitative research data were analysed using the Statistical Package for the Social Sciences 20 software for descriptive statistical techniques, mean, standard deviation and level of percentage for presenting and justifying achieved outcomes. As Babbie (1990) concluded, the descriptive analysis is an often used process in survey research. For the qualitative data analysis, the thematic analysis approach was used for each casing and cementing activity. Details of the analysis are listed below in Table 2.

Table 2
Research question analysis approach

Research Question	Approach	Method of Analysis
Research Question One	Quantitative	Descriptive Analysis
Research Question Two	Qualitative and Quantitative	Descriptive and Thematic Analysis

RESULTS AND DISCUSSION

First Research Question: Identification of Hazardous Activities

To answer the first research question, a table of specifications was adapted from Landell (1997) as a guide to measure the appropriateness level of the mean range of hazardous activities in the casing and cementing operation at the on and offshore oil and gas industries in Malaysia, Saudi Arabia and Pakistan. The levels according to range are shown in Table 3.

Table 3
Appropriate levels

Category	Mean Range	Level
1	1.00-2.33	Low
2	2.34-3.67	Moderate
3	3.68-5.00	High

Malaysian context

According to the descriptive statistical results obtained from the survey questionnaire of the Malaysian oil and gas industry drilling crew as shown in Table 4, the installation of casing accessories is considered more hazardous in the onshore operation, with a mean score of 3.52, which is below the moderate level of the mean range according to Table 3. Meanwhile, for the offshore casing and cementing operation, the installation of casing tools activity, circulating and cementing is considered highly hazardous at offshore sites rather than at onshore sites, with both having a moderate level of mean range i.e. 3.50.

Saudi Arabian context

According to the on and offshore Saudi Arabian oil and gas industry drilling crew, as shown in Table 4, running the casing to hole is the most hazardous activity, and injuries were experienced by the onshore drilling workforce with a mean score of 3.57. This was below the moderate level of the mean range as seen in the table of mean range specifications. Likewise, in offshore operation, installation of casing accessories was thought by drilling crew to be more hazardous and the cause of major accidents with a moderate level of mean score, 3.57.

Pakistani context

In reference to the Pakistani oil and gas industry based on the quantitative response from respondents as shown in Table 4, more hazards were observed during the circulating and cementing operation compared to during other activities at onshore drilling sites, with a moderate level of mean score,

3.67. Also, the survey response for offshore cementing and casing operation indicated that installation of casing tools activity was seen as being the most hazardous, with a moderate level of mean score, 3.62.

Table 4
Mean of response from targeted industries

Activities	Hole Casing and Cementing Operation					
	Malaysia		Saudi Arabia		Pakistan	
	Onshore	Offshore	Onshore	Offshore	Onshore	Offshore
Installation of casing tools	3.40	3.50	3.12	3.55	3.35	3.62
Running the casing into the well hole stage	3.27	3.45	3.50	3.25	3.10	3.35
Installing the casing accessories	3.52	3.35	3.45	3.57	3.30	3.40
Circulating and cementing risk factor	3.27	3.50	3.02	3.40	3.67	3.00
Total	3.36	3.45	3.12	3.44	3.35	3.34

According to the overall quantitative results, almost all the activities were moderately hazardous, but respondents from the Pakistani oil and gas industry indicated that the installation of casing is considered more hazardous during onshore casing and cementing operation, with a moderate mean range of 3.35. However, respondents from Saudi Arabia highlighted that casing installation activity at the offshore domain with a mean score of 3.55 was more hazardous than that carried out in the Malaysian and Pakistani oil and gas industries. Similarly, in rating the activity of running the casing into the well hole, respondents from Saudi Arabia reported it as being a risky activity at onshore sites, with a moderate mean range of 3.50. In the context of offshore sites, respondents from the Malaysian oil and gas industry reported that they experienced the running casing to hole activity as being highly hazardous compared with a moderate mean range of 3.45.

Respondents from the onshore Malaysian oil and gas industry specified that installation of casing accessories was more hazardous than that carried out in Saudi Arabia and Pakistan, with a moderated mean range of 3.52. Respondents from Saudi Arabian offshore sites also considered this activity as being hazardous, with a mean value of 3.57. Furthermore, the circulating and cementing activity was recorded as being more risky at onshore sites according to respondents from the Pakistani oil and gas industry, with a mean range of 3.67. Respondents from Malaysia identified this as the source of major injuries during offshore operations, giving it a mean value of 3.50.

Second Research Question: Potential Hazard Associated with Hole Cementing and Casing operation

Table 5 shows the potential hazards associated with hole cementing and casing operation at Malaysian, Saudi Arabian and Pakistani oil and gas drilling sites. According to the findings, 45% of respondents from Malaysian, 38% from Saudi Arabian and 35% from Pakistani onshore oil and gas industry have considered ergonomic hazards are potentially hazardous during hole cementing and casing operation. A total of 33% of the respondents from the Malaysian and 48% from the Saudi Arabian and 25% from the Pakistani oil and gas industries reported that ergonomic hazards were the cause of injuries during offshore operations.

A total of 55% of the respondents from the Malaysian onshore oil and gas industry, 52% from the Saudi Arabian and 65% from the Pakistani indicated that safety hazards such as falling, getting stuck and tripping were potential hazards, while 67 % of the respondents from the Malaysian, 52% from the Saudi Arabian and 75% from the Pakistani offshore oil and gas industries answered that safety hazards were potential hazards during the hole cementing and casing operations.

Table 5
Hazard Associated with On and Offshore Cementing and Casing Operation

Country	Domain	Ergonomic Hazard	Safety Hazard
Malaysia	Onshore	45%	55%
	Offshore	33%	67%
Saudi Arabia	Onshore	38%	62%
	Offshore	48%	52%
Pakistan	Onshore	35%	65%
	Offshore	25%	75%

Qualitative Results

A thematic analysis of the semi-structured interviews was conducted. Each participant was assigned a code number for recognising the industry and country based on designation during data analysis and interpretation, as shown in Table 6.

Table 6
Respondents of the qualitative study

S.NO	Malaysia	Saudi Arabia	Pakistan
1	MY01	SA1	PK1
2	MY02	SA2	PK2
3	MY03	SA3	PK3
Total	3	3	3

Ergonomic and Safety Hazards Associated with Installation of Casing Tools

The qualitative findings showed that the participants agreed that hazards such as slipping and falling were related to handling of heavy casing that could harm the workers during running the casing into the hole, as shown in the block diagram (Figure 1). Participants MY1 and MY2 from Malaysia stated that there were safety hazards to take note of during onshore casing installation, while participant MY3 from Malaysia and PK3 from Pakistan agreed on the safety hazards at offshore operation as shown in the table. Participant SA2 from the Saudi Arabian oil and gas industry referred to injuries suffered by the drilling crew to their face and hand, such as crushing, during handling heavy casing.

The interview participants also acknowledged falling from the stabbing board as a hazard. Well control was also highly hazardous and, most of the time, affected personnel lost their lives due to deep head injuries if they were not wearing proper personal protective equipment. Participant MY2, SA1 and PK3 highlighted falling from stabling and well control as potential hazards at offshore sites but Participant SA3 from Saudi Arabia considered onshore sites to be more hazardous.

Safety and Ergonomic Hazards Associated with Installing the Casing Accessories

Participants from Malaysia, Saudi Arabia and Pakistan identified dropping accessories such as entralisers, scratchers, guide shoes and float collars as hazards during installation of casing accessories in the interview. Participants MY1 and MY2 from Malaysia and SA2 from Saudi Arabia highlighted dropping accessories as hazards and pointed to critical injuries suffered by crew on the feet and hands during offshore casing accessories installation, but Participant PK1 from Pakistan during the interview referred to dropping objects as a hazard at onshore sites, as shown in block diagram Figure 2.

Likewise, pinched points and wrong body posture were hazards that have a high probability of occurrence at offshore sites. According to Participants MY1 from Malaysia and SA1 from Saudi Arabia, these hazards could cause crushed fingers and legs or hand fractures. Meanwhile, Participants PK1 and PK3 from Pakistan pointed out that pinched points and wrong body posture were hazards during onshore casing accessories installation. However, Participants MY2 from Malaysia and SA3 from Saudi Arabia stated that pinched points were likely to happen at both on and offshore sites.

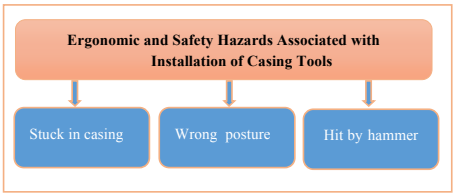

Figure 1. Block diagram for ergonomic and safety hazards

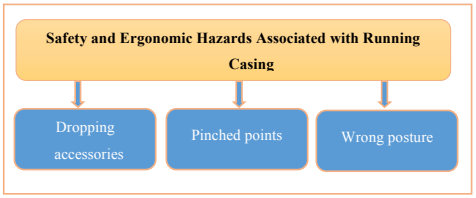

Figure 2. Block diagram for ergonomic hazards

Chemical Hazards Associated with Circulating Cementing and Casing Accessories

The qualitative findings showed that the participants had indicated cement and additive dust as hazards associated with the activity of circulating cementing and casing accessories. Participants MY2 from Malaysia and PK2 and PK3 from Pakistan indicated that cement dust hazards during onshore cementing activity could cause respiratory and shortness of breath. Participants MY3 from Malaysia and SA1 and SA2 from Saudi Arabia pointed out the hazards experienced during offshore cementing activity, as shown in Figure 3.

The participants also agreed that they had observed hazards due to chemical exposure and blowout during cementing. Participant MY3 from Malaysia and participant SA1 from Saudi Arabia agreed that chemical hazards are repeatedly reported at onshore sites, and that these hazards led to health problems such as skin infections and burns.

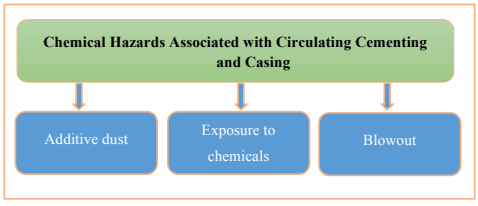

Figure 3. Block diagram for chemical hazards

CONCLUSION

The qualitative and quantitative results obtained from this study on the Malaysian, Saudi Arabian and Pakistani oil and gas industries indicated four activities as being hazardous in on and offshore sited. The participants of the study were drilling crew and safety professionals from the three countries. The respondents from Malaysia considered the hole casing cementing operation as being the most hazardous operation, with a total mean range of 3.37 for onshore and 3.45 for offshore sites, both lying under the moderate level of the mean range, and were associated with potential ergonomic, chemical and safety hazards during on and offshore operations. The qualitative findings showed that safety hazards related to installation of casing tools such as getting stuck in casing, wrong body posture and being hit by tools and equipment were also prominent. In the activity of running casing into holes, the participants reported that dropping, pinched points and wrong body posture at both on and offshore sites were hazards. In addition, addictive dust, chemical exposure and blowout hazards were equally prominent as hazards during the activities of circulating cementing and casing accessories in the Malaysian, Saudi Arabian and Pakistani on and offshore sites.

REFERENCES

Asad, M. M., & Hassan, R. (2015). Development of KBES with hazard controlling factors and measures for contracting health and safety risk in oil and gas drilling process: A conceptual action plan. *Proceedings of the 9th Malaysian Technical Universities Conference on Engineering and Technology*, Johor Baharu, Malaysia. Retrieved from http://eprints.uthm.edu.my/7583/1/5.pdf

Babbie, E. R. (1990). *Survey research methods*. Belmont, California. Wadsworth Publishing.

Bennear, L. S. (2015). Offshore oil and gas drilling: A review of regulatory regimes in the United States, United Kingdom, and Norway. *Review of Environmental Economics and Policy*, reu013.

Blackley, D. J., Retzer, K. D., Hubler, W. G., Hill, R. D., & Laney, A. S. (2014). Injury rates on new and old technology oil and gas rigs operated by the largest United States onshore drilling contractor. *American Journal of Industrial Medicine, 57*(10), 1188–1192.

Brenner, B., & Cawley, J. C. (2015). Occupations most at-risk in fatal overhead power line incidents: Using OSHA data to get a better understanding. *Electrical Safety Workshop (ESW)*, 2015 IEEE IAS, 1–6. IEEE.

Ingraffea, A. R., Wells, M. T., Santoro, R. L., & Shonkoff, S. B. (2014). Assessment and risk analysis of casing and cement impairment in oil and gas wells in Pennsylvania, 2000-2012. *Proceedings of the National Academy of Sciences, 111*(30), 10955–10960.

Kargbo, D. M., Wilhelm, R. G., & Campbell, D. J. (2010). Natural gas plays in the Marcellus shale: Challenges and potential opportunities. *Environmental Science and Technology, 44*(15), 5679–5684.

Landell, K. (1997). *Management by menu*. London: Wiley and Sons Inc.

Livingston, D. A., Andes, D., Czerneski, M., Bauer, S., Castro, B., Gorr, K., & Beebe, L. (2016). Team approach to horizontal drilling optimization in the Marcellus delivers record setting performance. *Proceedings of IADC/SPE Drilling Conference and Exhibition*, Texas, USA. Retrieved from http://toc.proceedings.com/32198webtoc.pdf

Medina, J., & Krasuk, R. (2015). Cementing operation in underbalanced casing drilling: A successful case history in an unconventional shale reservoir in Argentina. *Proceedings of SPE/IADC Managed Pressure Drilling and Underbalanced Operations Conference and Exhibition*, Dubai, UAE. Retrieved from http://toc.proceedings.com/27708webtoc.pdf

Skogdalen, J. E., & Vinnem, J. E. (2012). Quantitative risk analysis of oil and gas drilling, using Deepwater Horizon as case study. *Reliability Engineering and System Safety, 100*, 58-66.

Wiseman, H. J. (2009). Untested waters: The rise of hydraulic fracturing in oil and gas production and the need to revisit regulation. *Fordham Environmental Law Review, 20*, 115.

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Reformation of Offenders in Nigerian Correctional Institutions

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ABSTRACT

This study examined the correlations between rehabilitation and reformation programmes such as moral instruction and counselling and medical services in Nigerian correctional institutions. A survey design was adopted. The participants were 224 offenders selected from seven correctional institutions in Nigeria. Questionnaire items were administered. Pearson correlation was used to examine the relationships between the variables. The findings reveal a moderate positive significant relationship between moral instruction and rehabilitation; there is a strong positive significant relationship between counselling services and rehabilitation and there is a strong positive relationship between medical care and rehabilitation. It is therefore recommended that Nigerian correctional institutions be in compliance with international best practice. More effort should also be given towards the teaching of moral instruction that has been identified as moderate because the higher the moral instruction given to offenders the higher the offender rehabilitation.

Keywords: Correctional institutions, offenders, reformation, rehabilitation, moral instruction

INTRODUCTION

Correctional institution is a general term used to describe any institution designed for confinement or reformation as well as reintegration of offenders. They are meant to mould the character or behaviour of inmates for a better life after incarceration. According to the European Commission (2012), the rationale for establishing correctional institutions globally including in Nigeria was to provide treatment and training to the offenders, thereby providing a conducive atmosphere to reduce the risk of recidivism.

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The main features of correctional institutions are reformation, rehabilitation and reintegration of offenders (Bonta, Bourgon, Rugge, Scott, Yessine, Gutierrez & Li, 2010). Both reformation and rehabilitation are carried out within the correctional institutions, while reintegration is carried out after the offender has been successfully reformed and rehabilitated and re-united with the larger society. Reformation refers to the process of giving treatment to convicts through inculcating right habits as well as religious guidance to change their bad attitudes to good ones. It involves infusing in them the will to refrain from criminal behaviour. According to the United Nations' standard on minimum rules in offender reformation, correctional institutions should utilise all forms of assistance that are appropriate and available and should seek to apply them to the individual treatment and training needs of the prisoner (United Nations of Human Rights, 1990).

Reformation of offenders in correctional institutions is carried out through programmes such as moral instruction and counselling services to offenders including medical services as well. Moral values developed from moral instruction are the standard or principles derived from a philosophy, religion or culture or it can be derived from a standard that a person believes should be unusual (Davis, 2012). Counselling refers to the services offered to inmates to identify reasons for his/her criminal behaviour in order to provide intervention action and try to prevent recidivist activity. The counsellor also provides individual counselling sessions for inmates who might be having trouble coping with the correctional institutions. Medical services refers to the services offered to inmates in correctional institutions that are carried out by medical physicians who work in the prison system to provide medical care, examine, diagnose and treat inmates and their illness or injuries (Tanimu, 2010).

Rehabilitation implies the reformation of personality and behaviour of convicted offenders through general education and vocational training to ensure that individual offender returns to society as a complete self-supporting and accepted member of the society (Hassan, 2013). The purpose of vocational training in prison institutions is to train inmates in developing vocational skills that will help them acquire employment after release from custody for successful settlement with their families. Vocational education and training are offered in various trades including building construction, electrical and electronics, mechanical trades, plumbing and piping. The choice of vocational training available in prison institutions depends on inmate's interests, availability of teaching staff and funding, while offenders' participation in vocational training will differ from institution to institution.

In Nigeria, correctional institutions are considered centres for rehabilitation charged with the responsibility of ensuring that prisoners are reformed and rehabilitated. Some factors have made this a difficult or ineffective task despite official claims

that correctional institutions are operating on the principles of reformation and rehabilitation. However, studies indicate that these institutions are largely retributive in nature. These retributive traits are expected to be similar in other Nigerian prisons. Ayodele (1993) reported that the rate of revolving-door arrests of offenders is quite significant; as such, there is need to examine the relationship between correctional programmes and rehabilitation of offenders in Nigerian correctional institutions to determine the strengths and weakness of each correctional programme to prosper remedy. In this study, a correlation between correctional programmes was conducted to identify associations between variables and to suggest possible causal relationships.

STATEMENT OF THE PROBLEM

Despite the Nigerian government's efforts towards effective reformation, rehabilitation and reintegration of offenders, up untill now there is no serious evidence to show that offenders are properly reformed, rehabilitated and reintegrated back to the larger society to continue with a crime-free life because most of the offenders who are released become more hardened criminals and commit crimes more serious than before. The high rate of recidivism is because they were not properly reformed and rehabilitated (Tanimu, 2010). The expectation is that correctional institutions in Nigeria have not impacted positively on the lives and vocations of offenders, which raises questions on the system functions and existence that have not yet been answered.

According to Ugwuoke (1994), Nigerian correctional institutions are in a dilemma because rehabilitative and retributive practices are incompatible. It is therefore inconclusive whether correctional institutions are actually rehabilitating convicts or are still depending on punitive practice. That is why correctional instituions find it difficult to perform their duties of reformation, rehabilitation and reintegration of offenders (Nigerian Prison Service, 2010). In light of this situation, this study seeks to examine the relationship between rehabilitation and reformation programmes such as moral instruction, counselling services and medical services on the reformation of offenders in Nigerian correctional institutions.

Research Questions

The study had three research questions:

1. Are there any significant relationships between moral instruction and rehabilitation in Nigerian correctional institutions?
2. Are there any significant relationships between counselling and rehabilitation in Nigerian correctional institutions?
3. Are there any significant relationships between medical care and rehabilitation in Nigerian correctional institutions?

LITERATURE REVIEW

The popular offender change models used in correctional institutions are the Risk-Need-Responsivity (RNR) model and the Good Lives Model (GLM), both of which

are discussed in the literature because they have been used globally in assessing and rehabilitating offenders. The Risk-Need-Responsivity (RNR) model is a popular offender rehabilitation model that has been used with increasing success to assess and rehabilitate offenders worldwide. As the name implies, the RNR is based on three principles: risk, need and responsivity.

The Risk Principle

The treatment intervention should be appropriate to the level of the risk factor to match an offender's risk of reoffending. The institution should give more resources to higher-risk offenders, and those interventions should target the individual's specific criminal risk factors. In Nigeria, high-risk offenders are kept separately in maximum security prisons where more resources are devoted to reform and rehabilitate them while low-risk offenders are kept separately to prevent them from mixing with hard-core criminals as this is likely to influence them negatively.

According to the Risk-Need-Responsivity (RNR) model, low-risk offenders should receive minimal treatment compared to high-risk offenders. Factors such as age, gender, criminal history and age at first arrest are called static risks because they are not dynamic through intervention treatment, while dynamic risks are behaviour that can be changed through successful intervention, and they include substance abuse, education deficiencies, antisocial personality patterns and pro-criminal attitudes.

Rand Researcher's Graduate School (2013) reported that several studies were conducted supporting the risk principle and also discussed their own research that tracked over 13,000 offenders in 53 community-based correctional treatment facilities. The results of the study showed a decrease in recidivism by 32% for high-risk offenders and an increase in recidivism of 29% for low-risk offenders. The likely reasons for increase in reoffending among low-risk offenders were pro-criminal attitudes and disruptions to pro-social networks and support mechanisms.

The Need Principle

The need principle has to do with the assessment of an offender's criminogenic needs, which are popularly called dynamic risk factors, and administers treatment for the major risk factors. In Nigeria, determination of the need principle of correctional institutions is conducted prior to the commencement of a reformation programme. Major risk factors include:

(i) Antisocial personality pattern indicated by impulsivity, adventure or pleasure-seeking and restless aggression and irritability

(ii) Pro-criminal attitudes indicated by rationalisation for crime and negative attitudes towards the law and social supports for crime indicated by criminal friends and isolation from positive social influencers

(iii) Substance abuse

(iv) Negative family and marital relationships

(v) Poor school and/or work performance and a low level of satisfaction

(vi) Lack of involvement in positive social recreational or leisure activities.

These risk factors are different from static risk factors that are related to reoffending; however, they cannot be altered through the delivery of services. Numerous studies and meta-analysis have identified the first three factors as the dynamic risk factors most predictive of reoffending. Some factors that might seem to be related to reoffending have a very limited or no relationship to recidivism such as self-esteem, personal/ emotional stress, major mental disorders and physical health issues (Andrew & Bonta, 2010).

The Responsivity Principle

The responsivity principle concerns the provision of the right treatment at the right level. Correctional institutions can utilise an offender's ability to learn from rehabilitative intervention by providing cognitive behavioural treatment and support and matching intervention to the offender's learning style, motivation, abilities and strengths. An assessment was conducted in Nigerian correctional institutions to identify the type of treatment to be given to each offender.

The responsivity principle has two parts, general and specific responsivity. While general responsivity calls for the use of the cognitive social learning approach to influence behaviour, cognitive responsivity calls for social learning strategies that are most effective regardless of the type of offender. Core correctional practices such as pro-social modelling, the appropriate use of reinforcement and disapproval and problem solving spell out the specific skills represented in the cognitive social learning approach. Specific responsivity is a fine tuning of cognitive behavioural intervention. It takes into account strengths, learning style, personality, motivation and bio-social characteristics (e.g. gender, race) of the individual.

Bonta et al. (2010) reported a meta-analysis of 374 statistical tests of effects of judicial and correctional interventions on reoffending and found nearly a six-fold reduction on reoffending when behavioural approaches (including social learning and cognitive behavioural types of programme) were used. Behavioural approaches require convicts to practise the skills they acquired in custody and rely on strategies such as modelling/demonstrating a skill and the extinction of inappropriate behaviour. Meta-analysis of the effectiveness of sanctions such as intensive supervision, electronic monitoring, boot camps and incarceration that do not include behavioural intervention components show little or no reduction in recidivism and in some cases, the sanctions have been found to actually increase recidivism (Bonta et al., 2010).

Taken together the three preceding RNR principles call for assessing an offender's risk of reoffending, matching supervision and treatment to the offender's risk level and targeting the offender's criminogenic needs or dynamic risk factors with the

social learning and cognitive-behavioural programmes that likely effect change in the offender's behaviour, given specific offender characteristics. Research has demonstrated that adherence to any of the three principles is associated with a reduction in recidivism rate, and adherence to all three principles is associated with the greatest reduction i.e. 26% in recidivism rate. A potential decrease of even 5% or 10% in the rate of recidivism is significant, given current rates of reoffending.

Several correction institutions adopted the Risk Need Responsivity model for several years (Bonta et al, 2010), but asserted that their effective use of these principles was limited, in part, by the terms of the sentencing decisions and conditions of probation specified by the judge. When the judge's sentence is inconsistent with the RNR principles (e.g. the judge sentences a low-risk offender to boot camp or requires participation in a non-skilled-based education programme), the correctional institution is required to implement the sentence even if it is not going to be effective in the use of resources and may even increase the offender's likelihood of recidivism.

METHODOLOGY

This is a correlational study that utilised the questionnaire as an instrument for data collection.The study used a sample of 224 offenders from correctional institutions from across Nigeria. The sampling technique used was cluster sampling. Nigeria is divided into six geo-political zones; one of the zones was selected. The selected zone has seven states; one correctional institution was selected from each state. Pearson correlation was used to analyse the data.

RESULTS

Relationship Between Moral Instruction and Rehabilitation

The findings showed a moderately positive significant relationship between moral instruction and rehabilitation. This was evidenced by the Pearson correlation coefficient (r) values, which were equal to 0.246 and $p<0.001$ when a two-tailed test was conducted. Table 1 shows the numerical values of r and the significance level. This implies that a moderate increase in moral instruction will enhance increase in rehabilitation.

Table 1
Correlation between moral instruction and rehabilitation

Variables	Significance level (Two-tailed)	Pearson correlation	N
Moral instruction and Rehabilitation	0.000	0.246**	224

Relationship Between Counselling and Rehabilitation

The findings showed a strong positively significant relationship between the two variables. This was evidenced by the Pearson correlation coefficient (r) values, which were equal to 0.616** and $p<0.001$

when a two-tailed test was conducted. Table 2 shows the numerical values of r and the significance level. This implies that a higher increase in counselling services will enhance increase in rehabilitation.

Table 2
Correlation between counselling services and rehabilitation

Variables	Significance level (Two-tailed)	Pearson correlation	N
Counselling and Rehabilitation	0.000	0.616**	224

Relationship Between Medical Services and Rehabilitation

The findings showed a strong positively significant relationship between the two variables. This was evidenced by the Pearson correlation coefficient (r) values, which were equal to 0.972** and $p<0.001$ when a two-tailed test was conducted. Table 3 below shows the numerical values of r and the significance level. This implies that a high increase in medical services will enhance the increase in rehabilitation.

Table 3
Correlation between medical services and rehabilitation

Variables	Significance level (Two-tailed)	Pearson correlation	N
Medical services and Rehabilitation	0.000	0.927**	224

DISCUSSION

The need for offenders to be morally upright cannot be overemphasised because individuals with high moral values are accorded more respect than individuals who lack morality. Therefore, moral values are a reflection of the individual's character and spirituality, and to achieve better results in offender reformation programmes, moral instruction needs to be enhanced (Tanimu, 2010). Individuals with good moral values enjoy high recognition and serve as role models in society, including among those who have not been exposed to moral instruction.

Moral instruction in correctional institutions prepares offenders for unconditional love, kindness, honesty, hard work, respect for others, cooperation, compassion and forgiveness. Every individual offender is brought to understand that life is important, hence he/she needs moral values, which act as a guiding principle. The expectation is that once an offender is reformed, he or she would not return to prison due to a change in values, behaviour and attitude, from immoral to moral. These relationships were established through the scientific methods of inquiry and supported by previous and similar studies. The empirical evidence presented here shows that increase in moral instruction will increase the offender's rehabilitation.

According to Carls (2015), the essence of counselling services in prison is to identify criminal behaviour, provide

appropriate intervention and try to prevent reoffending activity. He maintained that counselling services in prison are a series of direct contact sessions with the individual offender aimed at offering him assistance in changing his negative attributes and behaviour. According to Ogunleye (2014), who reported that there is a significant relationship between the role of correctional counselling and prison inmates, as correctional counselling promotes "readiness to engage in education and vocational skills acquisition programmes." Sara and Umar (2011) asserted that correctional counselling has a role to play in prisoner rehabilitation, and with proper counselling, prisoners learn vocational skills that might help them when they are finally free from incarceration.

For a prisoner to be properly rehabilitated there is need for him/her to be free from all sorts of substance abuse and addiction and he/she needs to be physically and mentally fit. Medical services in correctional institutions provide emergency care for illness or injury to ensure that all offenders get appropriate referrals to healthcare providers, to monitor and control the spread of communicable diseases and to provide education and counselling on a variety of health and wellness topics. Donmall, Jones, Davies and Barnard (2009) reported that in-prison medical services enhance inmate's motivation for change or prepare them to use drug abuse treatment services once they are in the community or in a transitional setting. It is therefore evident that moral values, counselling services and medical services help in offender reformation in correctional institutions.

CONCLUSION

The relationship between moral instruction, counselling services and medical services in the treatment of offenders in correctional institutions is a determinant factor in offender rehabilitation. Therefore, there is need for correctional institutions in Nigeria to improve the teaching of moral values and delivery of counselling services as well as medical services to offenders to enable them to acquire educational and vocational training while in custody in compliance with the objective of reforming and rehabilitating offenders that they may become law abiding citizen with marketable skills for employment opportunities.

RECOMMENDATIONS

The following recommendations are made:

a) Correctional institutions should strengthen all their correctional programmes to facilitate proper rehabilitation of offenders.

b) Qualified facilitators, correctional counsellors and physicians should be recruited and motivated to put in their best towards changing offenders' behaviour and attitude to acceptable societal norms.

c) Correctional institutions should also strengthen educational and training programmes to equip offenders with literacy and vocational skills for employability.

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REFERENCES

Andrews, D. A., & Bonta, J. (2010). Rehabilitating criminal justice policy and practice. *Psychology, Public Policy and Law, 16*, 39–55. doi: 10.1037/a0018362.

Ayodele, T. (1993). *Challenges of prisons institutions in Nigeria.* An annual report on human rights in Nigeria. Nigeria: Civil Liberty Organization.

Bonta, J., Bourgon, G., Rugge, T., Scott, T. L., Yessine, A. K., Gutierrez, L., & Li, J. (2010). *The strategic training initiative in community supervision: Risk-need-responsivity in the real world* (User Report 2010-01). Ottawa, Canada: Public Safety Canada.

Carls, A. Y. (2015). *Social interaction in Nigeria Inc.* (Unpublished MSc thesis). Ahmadu Bello University, Zaria, Nigeria.

Davis, L. M., Bozick, R., Steele, J. L., Saunders, J., & Miles, J. N. V. (2012). *Evaluating the effectiveness of correctional education. A meta-analysis of programs* that provide education to incarcerated adults. USA: RAND Corporation. Retrieved from https://www.bja.gov/publications/rand_correctional-education-meta-analysis.pdf

Donmall, M., Jones, A., Davies, L., & Barnard, M. (2009). *Summary of key findings from the drug treatment outcomes research study (DTORS)* (Research Report 23). London. Home Office.

European Commission. (2012). *European business forum on vocational training*. Retrieved from http://ec.europa.eu/dgs/education_culture/repository/education/policy/vocational-policy/doc/forum-survey_en.pdf

Hassan, A. B. (2013). *Instructional skills development manuals*. Kano, Nigeria: Training and Development Centre.

Nigeria Prison Service. (2010). *Nigerian prison service manual.* Federal Ministry of Internal Affairs, Nigeria: Abuja Press, Nigeria.

Ogunleye, T. (2014). Perceived contributions of vocational skills acquisition to prison inmates' reintegration into society. *American International Journal of Social Science, 3*(2), 241–245.

Rand Researcher's Graduate School (2013). *Vocational education and training.* USA: Rand Publishers Inc.

Sara, H. A., & Umar, M. K. (2011). Ways of enhancing behaviour modification through vocational rehabilitation in correctional institutions. *Academic Discourse: An International Journal.* Retrieved from http://www.globalacademicgroup.com/journals/academic%20discourse/WAYS%20OF%20ENHANCING%20BEHAVIOUR%20MODIFICA.pdf

Tanimu, B. (2010). Nigerian convicts and prison rehabilitation ideals. *Journal of Sustainable Development in Africa, 1*2(3). Retrieved from http://www.jsd-africa.com/Jsda/V12No3_Summer2010_A/PDF/Nigeria%20Convicts%20and%20Prison%20Rehabilitation%20Ideals%20(Tanimu).pdf

Ugwouke, C. U. (1994) *Recidivism in Nigerian prisons: A case study of the Enugu prison.* (MSc thesis). University of Nigeria, Nsukka, Nigeria.

United Nations of Human Rights. (1990). *Basic principles for the treatment of prisoners*. Adopted and proclaimed by General Assembly Resolution 45/111 on 1990, December 14. Retrieved from http://www.ohchr.org/EN/ProfessionalInterest/Pages/BasicPrinciplesTreatmentOfPrisoners.aspx

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Championing TVET Malaysia through Leadership, A Malaysian Leader's Experience

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ABSTRACT

Societal stigma attached to Technical and Vocational Education and Training (TVET) is difficult to erase. Many around the world have labelled vocationaleducation as an unpromising field and a place to pool non-performers. Although much has been done to promote TVET as legitimate education,the negative perception lingers in the mind of many. Gradually, that negative perception is being discarded as many becomeaware ofthe benefitsof TVET. This paper explores the leadership approach of champions of TVET based on their true experience of championing TVET in Malaysia. Malaysian TVET leaders have demonstrated transformational leadership and have won awards locally and globally..

Keywords: Championing TVET (Technical and Vocational Education and Training),leadership,transformati onal approach

INTRODUCTION

Technical and Vocational Education and Training (TVET) has been thought as the only salvation for under-achievers, non-performers and the"forever dead" (Brennan, 2014). Ever since TVET was branded as being an unreliable option in education and an unprofitable career path, truly resourceful personnel have gone to work to raise its image and prove its credibility (Hallinger, 2014). The champions of TVET have been effective change agents in pushing it as a reliable option in Higher Education (Hallinger, 2014). Northouse(2013) classified change agents as role models who portray good character, can create and articulate a clear vision for an organisation, provide empowerment to followers to meet higher standards, gather trust from followers to build integrity and give meaning to organisational life.

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The pivotal role of leaders, especially those who reform,is to propel transformation. It appears that the champions of TVET have put in amazing effort to reform it (Brennan, 2014). Many studies on leadership do not integrate what is known, what has been possessed and what the theory says (Van der Mescht, 2004). Studies on leadership in TVET mainly coverdeans, instructors, trainers and studentsand give very little space to higher ranking leaders (Rabindarang, 2014; Sirat, 2012). This has created a gap in the literature as there is little written on top management. The process of transformation in TVET was urged by challenges inside and outside the field and this led to explorations of leaders dealt with such pressure(Brennan, 2014; Wilson, 1993).This study looks at the extraordinary experience of champions of TVET in Malaysia and how their transformational leadership has impacted the field.

METHODOLOGY

Research Design

This study employed qualitative research methodology usingphenomenological inquiry. Qualitative research is best employed when 'Yes' and 'No' answers would notbe sufficient. Qualitative research is a means to gain understanding of meaning from individuals or people through exploration thatinvolves questions and procedures and data that are typically collected in participant settings(Creswell, 2009). The inquiry of leadership characteristics requires researchers to uncoverthe lived experience of participants; this makes phenomenological inquiry the most appropriate design for this research. A phenomenon is 'a thing in itself'. This type of research inquiry fits the search for meaning, structure and the essence of lived experience of individuals or groups of people in the phenomenon they wish to understand (Aspers, 2009).

Interview Protocol

The in-depth interview allows participants to share their experience. To conduct an in-depth interview, the researcher outlines an interview protocol for both the researcher and the participant to adhere to. The interview protocol consists of three sections, namely,the introduction, the questions and the closing. In the introduction section, details such as the participant's name, designation, the venue, time and date arerecorded. The introduction section also informsthe participant ofthe aim of the study along with the benefits and potential risks that might arise from their participation.

Sampling

This study followed the recommendation of qualitative research experts that the number of sampling in qualitative research does not matter because of the uniqueness ofthe design itself. It could range from one to hundreds. More importantly, the subjects must be individuals who have all experienced the phenomenon being explored and can articulate their lived experience. The more diverse the characteristics of the individuals, the more difficult it will be for the researcher to find common experiences, themes and an

overall essence of experience that would cover all the participants (Creswell, 2009).

The application of purposive sampling fit the study well. When developing a purposive sample, researchers use their special knowledge or expertise about agroup to select subjects who represent the population (Saldana, 2009). Participantsinthis study possesseda greater amount of experience asall of them were higher ranking leaders in organisations andinstitutions in Malaysia. They could actually recountthe experience of championing organisations inMalaysia from scratch, how policy wasbuilt in the earlystages of the organisation'sstart up and who the experts of the organisation in Malaysia were. There were three participants who occupied the top position in various organisations and they had more than 11 years of leadership experience. The identity of the participants are protected through anonymouslabelling as L1, L2 and L3.

Data Analysis

The transcription of the interview lasting two and a half hours provided a bulk of findings. The information provided encompassed true meaning, hidden meaning and explicit and implicit values. Each component was scrutinised thoroughly during data analysis. Data processing was conducted manually.

Numerous types of data coding can be applied in qualitative research; we picked open coding, attribution coding and feeling coding forthe first cycle. In the second cycle, we employed pattern coding to get the categorisation of the coded data. The second cycle began with pattern coding to group all the coded data into smaller sets. This happened in analysis to draw out various themes where we couldtransform raw data into manageable form. The findings on transformational leadership with components classifiedare presented in Table 1.

RESULTS AND DISCUSSION

This study looked at leadership approach. Table 1 presents personal outcome (followership) andthreetransformational components (inspirational motivation, idealised influenced and intellectual stimulation) and one transformational strategy (creative deployment).

Table 1
Personal Outcome

Approach	Verbatim Quotes
Followership (Willing follower, gaining support from followers and gaining commitment from subordinates)	"I think that would entail you being able to influence ya…to move things…I mean you cannot be a leader if you do not have followers, you need to have team, people, followers, members that you can influence and which you can motivate, and get them to move along with you" ***(L3)***

The excerpt proves that leaders assume that to be a transformational leader entails gaining followers, acquiring trust and working in harmony as a team to achieveexcellence in TVET. Followership is important to a leader and the organisation for achieving exemplary leadership includes challenging the existing process and status quo, creating a shared vision by looking ahead to the future and sharing goals (Marinova, Van Dyne, & Moon, 2015).

Paying heed to the power of personal outcomes mentioned, transformational leaders can influence and motivate the behaviour of employees in such a way that the resultant behaviour has a positive impact on the organisation. Transformational leadership facilitates the creation of harmonious leader-follower relationships particularly for job design and job performance (Rowley, 2012). Thus, L3 in the excerpt given in Table 1 emphasised gaining followers as this helps to propel forward the organisation's vision together with the cooperation of all.

Table 2
Personal Outcome

Approach	Verbatim Quotes
Inspirational motivation (Communicate high expectation to followers, inspire them through motivation to become committed and share the vision)	"So far, we managed them to get them understanding enough but as a person I realised that I really organised to place family as closed as possible but education system is the same everywhere." ***(L1)***
	"To me, I play my role, I do things accordingly and then I fulfil my people, I give full support." ***(L2)***
	"Every new officer will come here for example. I will them, 'You have a chance here to change lives, you have a chance to make difference, regardless whether you are." ***(L3***)

In the context of inspirational motivation, leaders have their own way in providing meaning and challenge their followers work. The spirit of enthusiasm and optimism can be sparked when leader always communicate their expectation and demonstrated their commitment towards the shared vision. As excerpted from L1, leaders were found to be concern, sympathy and empathy on the wellbeing of his subordinate when they are placed far from the family. Besides the hurdles, leader motivate the employees that they have to adapt and cope with the current systems as at the end, it will benefited people.Inspirational motivation describe the transformational approach are characteristically drawn towards providing best managerial behaviour that will encourage the employee to offer more of his energies towards work (Bass, 1999).

L2 identified his inspirational motivation as give them full support to be committed as they preferred in a way can satisfy them. Meanwhile, the inspirational

motivation from the source quoted in L3 demonstrated that he is being compassion by putting the remarks of pull out life from poverty and chances of ordinary people to make changes.Inspirational motivation facilitates in more conducive learning environment in organisation and it creates sharing knowledge among members (Akpotu&Amadi, 2013).

Table 3
Idealised Influence

Approach	Verbatim Quotes
Idealised influence (Charisma includes being firm and encouraging, setting an example, being optimistic anda decision maker, mobilising resources and transforming situations)	"I have to take pride, my personal responsibility are delivering excellence, so when you want to be excellence, you must go for new ideas, see what is out there, you cannot do business as usual." *(L1)* "We don't have one prescriptive ways on how doing it, all the directors have their own way and of course they have to abide the treasury guidelines, but they can adjust." ***(L1)*** "Some need to be enhance, some need to be reminded, some need to be trained, so part of the positive culture is everyone must be trained, must be given the opportunity to excel and not just be happy with basic qualification." ***(L2)***

Idealised influence portrays leaders as beingcharismatic who instil pride and respect in their followers and who gain thetrust of their followers for TVET reformation. Charismaticleaders display the attributes of vision, trust, respect, risk-sharing and integrity.In the excerpt above, L1 seems a wise decision maker as he tweaks changes to fit the system. Idealised influence in leadership also involves integrity in the form of ethical and moral conduct (Bass, 1999). Such a portrayal shows the ability of leaders to abide by the rules and, at the same time, be flexible. Idealised influence is the charismatic element of transformational leadership in which leaders become role models who are admired, respected and emulated by their followers (Stone, Russell, & Patterson, 2004).

L2 believed that he portrayed the charismatic approach by being positive and firm about TVET programmes. Idealised influence encourages employees to offer more of theirenergies towards work(Akpotu&Amadi, 2013). L2 is a motivation booster as he offers constant motivation and always reminds everyone to go beyond their comfort zone.

Table 4
Intellectual Stimulation

Approach	Verbatim Quotes
Intellectual stimulation (Stimulation for both leader and follower to become creative and innovative, challenge their own beliefs and values and be empowered)	"I think you may have to give the trust, you have to give the autonomy, the leeway to your colleagues to try new things. Just go out and do it. That is why we challenged them. Change! Try to do it differently, make mistakes never mind, we rectify it." ***(L3)***

Intellectual stimulation pictured in the findings indicates the degree to which the leader challenges assumptions, takes risks and solicits followers' ideas. Leaders with this style stimulate and encourage creativity in their followers. They nurture and develop people who think independently. Transformational leaders stimulate their followers' efforts to be innovative and creative by questioning assumptions, reframing problems and approaching old situations in new ways (Stone, Russell, & Patterson, 2004). L3 identified his intellectual stimulation as being creative and innovative by gearing various initiatives to lift up the image of TVET, give autonomy to subordinates to think and act and push them to achieve more in terms of education or promotions and challenge their thinking. Transformational leadership is concerned with the process of how certain leaders are able to inspire followers to accomplish great things (Northouse, 2013).

Table 5
Intellectual Stimulation

Approach	Verbatim Quotes
Creative deployment (Assessing strengths and weaknesses)	"You can sense it so leaders should be able to hopefully sense what is right, what is working or what is not working and tweak it accordingly. It is not just one way, there are so many ways and many paths to achieve the greatness of success." ***(L1)***

Creative deployment is the strategy used by leaders as excerpted in the findings, whereby leaders focussed on their strength and nottheir weaknesses.Creative deployment involves leader showing self-competence in dwelling with weaknesses and strengths (Northouse, 2013). They express creative deployment as the ability to become adaptive if something unexpected occurs and adjust the way they perform based on the changes that happen. Creative deployment emphasises their strengths rather than dwells on their weaknesses based on theawareness of their own competence.Effective leaders

areable to immerse themselves in their tasks and the overarching goals of their organisations (Stone, Russell, & Patterson, 2004).

CONCLUSION

The transformational leadership approach delineates the extraordinary characteristics possessed by higher ranking leaders consisting of followership, inspirational motivation, idealised influence and creative deployment. The verbatim quotes proved that all three leaders championing TVET in Malaysia who were included in this study were doing so by recognising their followers' needs and then defining the exchange process for meeting those needs. Apart from gaining the trust, commitment and cooperation of their followers, they demonstratedthe appropriateactions of leaders that can inspire others in their pursuit of knowledgeand meaning. They were effective role modelsas they were charismatic leaders who possessed integrity. Championing TVET in Malaysia has faced many difficulties. The leaders of TVET in Malaysia have been encouraging innovation and creativity in thinking and action.

This exploration was based exclusively on the lived experience of three higher ranking leaders ofTVET in Malaysia. Their experience can help us understand better the characteristics of leadership in TVET and how these leadersconductthemselves in facing the challenges of TVET in Malaysia. It is recommended for future studies to employ other qualitative research inquiries with a bigger sample size and to go beyond the prescribed leadership approach for new discoveries. This study proves that the role of followers isnot to be neglected, thus, it is suggested that in future, the voice of followers be included for exploration. These findings cannot be generalised to a bigger population as it draws from minimal sources.

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REFERENCES

Akpotu C.,& Amadi T. (2013). Transformational leadership and knowledge sharing in ICT based organizations in Nigeria. *International Journal Business Social Science,* 4(12), 100–106.

Aspers, P. (2009). Empirical phenomenology: A qualitative research approach (The Cologne Seminars). *Indo-Pacific Journal of Phenomenology, 9*(2), 1-12.

Bass, B.M. (1999). Two decades of research and development in transformational leadership. *European Journal of Work and Organizational Psychology,8*(1), 9–32.

Brennan, P. (2014). Raising the quality and image of TVET: Lower-level training or motor for inclusive and sustainable growth? *Prospects,44*(2), 183–195. doi:10.1007/s11125-014-9312-3

Creswell, J. W. (2009). *Research design: Qualitative, quantitative and mixed method approaches* (3rd). Los Angeles: SAGE.

Hallinger, P. (2014). Riding the tiger of world university rankings in East Asia: Where are we heading? *International Journal of Educational Management, 28*(2), 230–245. doi: 10.1108/IJEM-11-2012-0126

Marinova, Van Dyne, & Moon (2015). Are good citizens good transformational leaders as well? An employee-centric perspective on transformational leadership. *Group and Organization Management, 40*(1), 62–87. doi: 10.1177/1059601114561257

Northouse, P. G. (2013). L*eadership: Theory and practice*(6th ed.). Thousand Oaks: SAGE.

Rabindarang, S., Bing, K.W., & Yin, K.Y. (2014). Educators' reflection on organizational commitment in technical and vocational education. *International Journal of Scientific and Research Publications, 4*(2), 2–5.

Rowley, C., & Ulrich, D. (2012). Introduction: Setting the scene for leadership in Asia. *Asia Pacific Business Review, 18*(4), 451–463. doi: 10.1080/13602381.2012.694726

Saldana, J. (2009). *The coding manual for qualitative researchers.* London: SAGE.

Sirat, M., Ahmad, A.R., &Azman, N. (2012). University leadership in crisis: The need for effective leadership positioning in Malaysia. *Higher Education Policy, 25*(4), 511–529. doi:10.1057/hep.2012.10

Stone, A. G., Russell, R. F., & Patterson, K. (2004). Transformational versus servant leadership: A difference in leader focus. *Leadership and Organization Development Journal, 25*(4), 349–361. doi: : 10.1108/01437730410538671

Van der Mescht, H. (2004). Phenomenology in education: A case study in educational leadership. *Indo-Pacific Journal of Phenomenology, 4*(1), 1–16.

Wilson, D.N. (1993).Reforming technical and technological education. *The Vocational Aspect of Education, 45*(3), 265–284. doi:10.1080/0305787930450307

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Emotional Intelligence and Commitment of Vocational Teachers

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ABSTRACT

Teacher's organisational commitment is important for school effectiveness and, indirectly, is able to affect student outcomes. Thus, this study intended to identify the emotional intelligence of teachers and organisational commitment among vocational college teachers. Also, this work tested the relationship between emotional intelligence and teachers' organisational commitment. This study used the survey method of the quantitative approach using a questionnaire as instrument and surveyed 170 teachers as respondents. The outcomes of the survey show that there is a positive, significant relationship between teachers' emotional intelligence and organisational commitment. The outcomes can assist teachers and organisations in enhancing the teachers' job satisfaction and the organisational commitment of teachers.

Keywords: Emotional intelligence, job satisfaction, organisational commitment

INTRODUCTION

In the 21st century, the roles of schools and teachers have changed and the quality of teachers has become a decisive factor in providing students with the necessary skills and with quality education. All the changes are towards quality education for realising the goals of vision 2020. Universities play a substantial role in upholding this vision. Teachers play a significant role in increasing the quality of education. The quality of education is constantly undergoing modification in terms of changes to the curriculum so that the development of students' potential is in line with the national education philosophy.

Abraham (2000) explored the idea that individuals possessing higher emotional intelligence were more devoted to their

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organisations. It was important to mention that their loyalty to the employing organisation was higher in the absence of some kind of control, dictating a stronger and internalised form of loyalty which can be said to be one of the affective factors. It is worthwhile to mention that Abraham (2000) further hypothesised that the social skill facets of emotional intelligence may exercise a firm control on organisational commitment by helping to build strong working relationships among peers. This strong relationship between colleagues in an organisation may enhance emotionally intelligent workers relative to their organisation. This kind of commitment associated with emotional intelligence is alleged to be affective commitmet, which employers value most.

Jordan, Ashkanasy, Haretl and Hooper (2002) found that organisational commitment was mediated by emotional intelligence; therefore, high affective commitment was expressed by those people with higher emotional intelligence in the face of stress and instability. Cherniss (2001) emphasised that emotional intelligence takes on a central part in contributing to organisational strength by enhancing commitment, improving morale and upgrading the health of individuals.

Teaching is a very demanding profession, and it involves immense emotional labour and exhaustion on the part of teachers (Shafiq & Rana, 2016). It places a heavy professional burden on teachers and tests their ability to manage mischievous students. As a result, teachers may experience frustration and dissatisfaction with both teaching and their educational organisation.

The teaching profession is not confined to teaching and learning; teachers are also required to do clerical work and governance, organise, oversee and participate in extra-curricular activities and also be actively involved in the affiliation of parents and teachers (Nadeem et al., 2011). In addition, teachers in the field of technical and vocational preparation, particularly vocational colleges, also come under pressure due to the transformation of vocational training. In addition to daily teaching duties, teachers who conduct workshop teaching must deal with preparing the workshop. Teachers' workload is bound to have an impact on job satisfaction and job performance.

The mental strength to deal with odd situations instructors tend to face in the classroom requires emotionally intelligence. Emotional intelligence equips teachers with an optimistic outlook (Shafiq & Rana, 2016) as they are required to manage their emotions so that it does not interfere with their work. Studies on the relationship between emotional intelligence and organisational committees have found positive links in the area of instruction, as well as overall organisational contexts.

This study was undertaken to distinguish emotional intelligence and commitment in the organisation of vocational college teachers working in the state of Johor. It hoped to identify the dimensions of emotional intelligence of the teachers using Goleman's (1999) model of emotional

intelligence. The model measures emotional self awareness, emotional self control, self motivation, empathy and social skills. The study also measured the commitment of the teachers, their organisational commitment, and dedication to teaching and learning and commitment to the teaching profession.

THE PURPOSE OF THE STUDY

The purpose of this study was to determine the emotional intelligence and organisational commitment of teachers who work in a vocational college in the state of Johor and the relationship between emotional intelligence and organisational commitment based on the teachers' views.

METHODOLOGY

This study utilised the survey method and was descriptive in nature. A self report questionnaire was used to collect data related to the aims of the survey. The items measuring emotional intelligence were adapted from Goleman (1999), with modification to suit the purpose of the study. The items comprised self awareness, self control, self motivation, empathy and social skills. The commitment of teachers that was measured consisted of school organisational commitment, commitment to teaching and learning and commitment to the teaching profession. The samples were drawn from three vocational college. Using random cluster sampling, a sample size of 170 was specified. The Pearson's correlation coefficient (r) was used to measure the relationship between emotional intelligence and teachers' commitment.

RESULTS

The results obtained from this study are shown in the tables below.

Table 1
Comparison between the dimensions of Emotional Intelligence

Dimensions of Emotional Intelligence	Mean	Level Mean Score
Emotional self awareness	4.122	High
Emotional self control	4.074	High
Self motivation	3.931	High
Empathy	4.075	High
Social skills	4.045	High
Overall Total	4.049	High

Table 1 presents the comparison between the five dimensions of emotional intelligence. The study found that the emotional intelligence of teachers in vocational colleges had a high level mean score for all the dimensions.

Table 2
Comparison between dimensions of Organisational Commitment

Dimensions of Organisational Commitment	Mean	Level Mean Score
Commitment to the college organisation	4.206	High
Commitment to teaching and learning	4.232	High
Commitment to the teaching profession	4.229	High
Overall Total	4.223	High
Social skills	4.045	High
Overall Total	4.049	High

Table 2 shows the comparison between three dimensions of organisational commitment. It was found that all three dimensions, commitment to the college organisation, commitment to teaching and learning and commitment to the teaching profession, had a high level mean score.

Table 3
The relationship between Emotional Intelligence and Organisational Commitmentin the implementation of Vocational College Teachers

		Teachers' Commitment
Emotional Intelligence	Pearson correlation coefficient	0.628**
	Significance	0.000

Table 3 shows that there was a significant relationship that was strong and positive between emotional intelligence and commitment in the implementation of vocational college teachers working in the state of Johor.

DISCUSSION AND CONCLUSION

The findings of this research was that there was a significant relationship between teachers' emotional intelligence and their organisational commitment. The teachers who had higher levels of emotional intelligence displayed higher degrees of organisational commitment to the college in which they were teaching. These findings are supported by Rangriz and Mehrabi (2010), Ates and Buluc (2015) and Shafiq and Rana (2016), proving that teachers who have a higher level of emotional intelligence tend to be more committed, develop good working relationships, are tolerant when facing emotional labour or emotional pressure and can manage emotions without losing their temper. Emotionally intelligent personnel show a moderate degree of continuance commitment and tend to stay with the organisation.

The results of this study showed a positive and statistically significant

relationship of emotional intelligence to the components of organisational commitment. Therefore, it is recommended that emotional intelligence be included in the selection and recruiting standards for teachers in vocational colleges at all points. In this way, we may get teachers of higher emotional intelligence levels and higher commitment to their teaching organisation and the teaching profession. As emotional intelligence demonstrates effects up to a reasonable extent, to enhance the organisational commitment of prospective and in-service teachers, emotional intelligence may be taught to them, as it will definitely contribute to a conducive environment in teaching organisations. A high level of emotional intelligence can enable teachers to function well in any conditions such as stress, heavy workload, challenging work environment, disciplinary problems, and technological change and shifting educational policies. In addition, teachers can work with more commitment and effort to achieve the goals of the school and also contribute to the development of their organisation.

REFERENCES

Abraham, R. (2000). The role of job control as a moderator of emotional dissonance and emotional intelligence-outcome relationships. *Journal of Psychology, 134*(2), 169.

Ates, O. T., & Buluc B. (2015). The relationship between emotional intelligence, motivation and organizational commitment of primary school teachers. *Middle Eastern African J Edu Res. 2015, 17*(31), 49.

Cherniss, C. (2001). Emotional intelligence and organizational effectiveness. In C. Cherniss & D. Goleman (Eds.), *The emotionally intelligent workplace* (pp.3–12). San Francisco: Jossey-Bass.

Goleman, D. (1999). *Working with emotional intelligence.* New York: Bantam Books.

Jordan, P. J., Ashkanasy, N. M., Haretl, C. E. J., & Hooper, G. S. (2002). Workgroup emotional intelligence scale development and relationship to team process effectiveness and goal focus. *Human Resource Management Review, 12*, 195–214.

Nadeem, M., Shaheen, M., Lone, A., Maqbool, S., Khan, A., Naz, K., & Ali, A. (2011). Teacher's competencies and factors affecting the performance of female teachers in Bahawalpur (Southern Punjab), Pakistan. *International Journal of Business and Social Science, 2*(19) [Special Issue - October 2011], 217.

Rangriz, H., & Mehrabi, J. (2010). The relationship between emotional intelligence, organizational commitment and employees' performance in Iran. *International Journal of Business and Management, 5*(8), 50–56.

Shafiq, M., & Rana, A. R. (2016). Relationship of emotional intelligence to organizational commitment of college teachers in Pakistan. *Eurasian Journal of Educational Research, 62*, 1–14.

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The Secret to A Successful Homestay Development: Lesson from Miso Walai Homestay (MWH) Kinabatangan Sabah, Malaysia

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ABSTRACT

The homestay, as community tourism, can become a catalyst for economic development of rural communities. However, the issue of sustainability of the homestay programme in the context of community development remains debatable. Previous studies revealed that the actual impact of homestay on the local community, especially in terms of the economy, remains at a minimum, and most of the homestay programme is not competitive or it is short-lived, especially when there is less or no help from external parties such as the government, NGOs etc. This study was conducted to explore the secret to successful homestay programmes using Miso Walai Homestay (MWH) in Kinabatangan, Sabah as a case study. A total of 15 key informants from the local community and external bodies who had been involved in the MWH starting from its early development were selected as research respondents. The data were collected using the semi-structured interview and analysed based on theme. The analysis revealed that the involvement of the local community in the initial development process utilising the bottom-up approach was the key to the successful operation of Miso Walai Homestay, which has received domestic and international recognition. The sense of ownership among the local community stimulated the whole community to participate in and to sustain the homestay.

Keywords: Development, homestay, secret, success

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INTRODUCTION

In Malaysia, after the manufacturing sector, the tourism industry is the next most highly contributing sector to the national income (Ministry of Tourism, 2010). The tourism sector has continued to grow rapidly with active involvement by all

parties including the Ministry of Tourism and other agencies over the last six decades (Tourism Malaysia, 2011). The homestay programme was introduced officially in Malaysia in 1995 through the launching of the Village Homestay Programme in Desa Murni, Temerloh, Pahang. Subsequently, the Ministry of Tourism officially made the homestay programme one of Malaysia's tourism products and is actively promoting it to the world. The idea itself came from the Japan youth exchange programme that made the village of Desa Murni its base in 1988 for housing the foreign students during their study in Malaysia. In 1995, the concept began to be expanded. Homestays do not merely provide accommodation but also allow visitors to experience the lifestyle of the host family (Ministry of Tourism, 2010).

Homestays can be categorised as a catalyst for socio-economic development of communities, especially rural areas (Abdul Razzaq et al., 2012, p. 10; Mitchell & Ashley, 2010; Ibrahim & Abdul Razzaq, 2009, p. 8; Scheyvens, 2007). The wealth of natural resources due to location factors especially in remote areas as well as the cultural life of the local community transformed the homestay experience into a unique alternative tourist attraction. Theoretically, community tourism such as the homestay is capable of contributing to sustainable community development, but in actual fact, the homestay was mainly acknowledged as a form of rhetoric as the previous studies revealed the weakness of the homestay in staying competitive and earning an economic income for the local community (Harrison & Schipani, 2007). Community tourism projects that were termed successful contributed moderately to the economic development of the local community (Ashley & Goodwin, 2007; Butler & Hinch, 2007). This is supported by Goodwin and Santilli (2009) whose study of over 15 community tourism projects in Asia, Africa and America, categorised only five as being successful based on their ability to manage governance, ownership and economic impact for the benefit of the local community.

The continuous attitude of dependency of the community on external parties partially reflected the failure of the related agencies to train the local community to be independent at the early stage. Previous studies had demonstrated that certain community tourism projects were not able to carry on after the termination of external assistance (Mitchell & Muskoy, 2008; Blackstock, 2005; Kiss, 2004). The study conducted by Goodwin and Santilli (2009) showed the problems stated above, in which, nine of the 15 community tourism projects were still depending on external assistance even though they had been in operation for more than five years. Hamzah and Khalifah (2009) used the term "handout mentality" to describe the effects of dependency of the community on external parties that often become the barrier to the success of the homestay programme. In the Malaysian context, Mohd Nor and Kayat's (2010, p. 70) study on Malaysia's homestay programme demonstrated that the community was not able to move alone without assistance from

the government. The practice of depending on government subsidies is still high, and not surprisingly, there are communities that participate in the homestay programme merely for the government subsidies. Another study conducted by Zapata, Hall, Lindo and Vander-Schaeghe (2011, p. 736) on community tourism projects in Nicaragua that intended to eradicate poverty also revealed that the rate of contributing to direct employment generation was below satisfaction. This is contrary to the concept of community-based tourism projects developed, managed and controlled by local communities (Goodwin & Santilli, 2009) because the development of the homestay programme is able to empower local communities to deal with economic, social, political and environmental matters (Scheyvens, 2007). Based on the above stated challenges, this paper discusses what makes a homestay sustainable. Sustainable here refers to development that contributes to socio-economic development of the local community and ecology. For these purposes Miso Walai Homestay was chosen as a case study.

METHODOLOGY

This qualitative research was carried out by selecting Miso Walai Homestay (MWH) as a single case study. A total of 15 key informants were interviewed using the semi-structured format. The informants comprised the chairman of MESCOT (Model of Ecological Sustainable Community Tourism) (Respondent 1), an NGO (Respondent 2), pioneer members of MESCOT (Respondents 3-14) and a Sabah Forestry Officer (Respondent 15), all of whom were involved in developing Miso Walai Homestay from the early stages. All the interview sessions were tape-recorded, transcribed, coded, categorised and themed and reported as research findings.

Location of the Research Site (Case Study)

Miso Walai Homestay is located in Mukim Batu Puteh, Kinabatangan in Sabah. It started operation in the year of 2000. It has received domestic and international recognition. It was among 20 community-based tourism projects that received recognition in the form of awards such as the Equator Prize (UNDP) Award, Best Cooperative in the State of Sabah (Travel Category), National Cooperative Award (Tourism Services Category) and the UNDP Equator Prize-Equator initiative case study local sustainable development solution for people, nature and resilient communities, among others. 'Miso Walai' is a combination of two words taken from the language of the indigenous people, the *Orang Sungai* from Sabah. 'Miso' means 'live' or 'stay' and 'Walai' means 'together'. The combination of these two words means 'staying together with the host'. The Miso Walai Homestay programme involved several villages in Mukim Batu Puteh, namely Batu Puteh Village, Menggaris Village, Perpaduan Village and Paris Village. Batu Puteh is a sub-district located near the edge of the Kinabatangan River that itself is a tourist attraction. In terms of location, Miso

Walai Homestay is situated on the main road connecting Sandakan city to the town of Lahad Datu. It takes about two hours to travel from Sandakan to the research location, while from the town of Lahad Datu, it is approximately one hour. This area is the 'entrance' to nature because there are several forest reserves, including the Pin Supu Forest Reserve, located nearby. In addition, the area is also home to the Lower Kinabatangan Wildlife Sanctuary. The villages that make up Miso Walai Homestay are located near the Kinabatangan River, which is the longest river in Sabah and the second longest in the country. The area around the river stretching 560 km from the mountains in southwestern Sabah to the Sulu Sea in the east covers some of the most important tourist attractions in Sabah. This has made Kinabatangan one of the most famous ecotourism destinations in the world. Figure 1 shows the location of the Miso Walai Homestay.

Figure 1. Location of Miso Walai Homestay

RESULTS AND DISCUSSION

MESCOT Initiative

The development of Miso Walai Homestay started with the initiative of MESCOT (Model of Ecological Sustainable Community Tourism). The purpose of MESCOT at the early stages was to develop ecotourism activities that acted as a catalyst for generating economic resources for local communities while contributing to conservation work in the area (UNDP, 2012). MESCOT initiative began in 1997, focusing on tourism development planning. A task force was formed to plan and develop tourism. MESCOT initial task force comprised young people from several villages in Batu Puteh sub-district including Menggaris Village, Batu Puteh Village, Perpaduan Village and Batu Puteh Village who displayed awareness and interest in tourism development. At the early stage, one volunteer from the NGO, Mr. M, was responsible for assisting these groups of youth. Besides being the main architect in the developmental planning of Miso Walai Homestay, members of MESCOT were also involved in the work of conservation and restoration of forests. They were involved in helping the recovery efforts of the wildlife corridors over 1,000 hectares of Pin Supu Forest especially after its destruction by fire in 1998. Members of MESCOT acted as

volunteers and helped JPS to put out the fire. They were also involved in restoring and conserving lakes around the Kinabatangan River from infestation of the water weed, Salvaniav Molesta, which can destroy the system of freshwater aquatic life and wildlife, especially in the vicinity of Lake Tungong (UNDP, 2012).

Bottom Up Planning Approach

This study revealed that the development of Miso Walai Homestay was based on the bottom-up planning approach. This means the existence of MWH is a result of local community planning made up of the members of the MESCOT. Initially, the members of MESCOT were involved in several phases as follows:

Research phase. The findings of this study showed Miso Walai Homestay started with an information gathering phase conducted by members of MESCOT. Members of MESCOT were divided into three groups, namely, the nature study research group, the Orang Sungai cultural study group and the business review group. This study allowed the members of MESCOT to accumulate knowledge and skills to carry out their own research and understand the attractions around them. All information collected was vital to enhance their capability to identify the factors that contributed to the success of the project development.

Experiential learning phase through field trips. The MESCOT representative from the NGO, Mr. M, tried to enhance the understanding of the local communities towards tourism by arranging field trips to tourist destinations and recreation centres in Sabah dan Sarawak. A series of visits were organised by MESCOT in 1998 and 1999 that included a visit to Tanjung Aru, the Danum Valley, Mount Kinabalu and Mount Mulu in Sarawak (Respondent 1). According to Respondent 5, the experience of joining tours and participating in recreational activities enabled him to understand the needs of a tourist and the process of managing tourism activities. The knowledge gathered from the series of visits was a very useful input during the tourism planning. A few respondents also mentioned in particular that Mr. M also arranged for them to stay in several hotels in Sabah to expose them to the experience of hotel accommodation and the hotel management works.

Capacity building phase. Besides going on tours, the members of MESCOT were also exposed to tourism information through seminars and courses. Courses organised for MESCOT members included English proficiency and computer literacy. Mr. M was responsible for organising the courses after conducting a needs analysis. The members of MESCOT were also informed of current tourism development matters, tourism policies and legal issues regarding tourism-related matters. Several government agencies such as the Ministry of Rural and Regional Development (KKLW), the Ministry of Tourism, Culture and Environment, the Sabah Wildlife Department and the Department of Forestry,

Sabah were invited to speak to the group. The idea of a homestay programme was mooted by an officer from the Ministry of Tourism during one of the talks, who cited the Ministry's experience of implementing the programme in Peninsular Malaysia. The respondents stated that the presence of the tourism officials and government agencies increased their motivation to develop a homestay project.

Brainstorming session. Once the information was collected by MESCOT through research, tours, seminars and courses, the next step was to discuss and generate ideas to determine appropriate forms of tourism development. The information collected by MESCOT was finalised in a workshop guided by Mr. M. Ideas generated during the workshop were recorded. The participants were then divided into several discussion groups with Mr. M facilitating the discussion. Each group prepared a presentation on their proposed tourism activities. The workshop ran from morning to evening to give the group enough time to understand the requirements and types of tourism activity that suited them. The workshop also, indirectly, inculcated positive values such as open-mindedness, openness to criticism, self-confidence and respect for the views of others among the workshop members (Respondent 1). Several suggestions were listed down, and they included the homestay, kayaking activities, boat rides down the Kinabatangan River, recreational activities in the forest, handicraft and cultural activities, among others. The group finally settled on the homestay as their main activity, with other activities to supplement the endeavour.

Miso Walai Homestay implementation stages. The Miso Walai Homestay programme was implemented as early as year 2000. A few respondents agreed that the homestay programme was the prime project, while the other activities, boat rides, kayaking, handicraft, cultural shows and tourist guiding, were supporting activities. Initially, all these tourism activities were placed under the responsibility of associations such as the Association of Mayah De Talob Boat Service, The Association of Tulun Tokon Handicraft and the MESCOT Kayaking Club, while the Association of Miso Walai Homestay acted as the 'umbrella' (Vogel & Abdul Hamid, 2005). However, these associations were not registered. Each association had its own logo created by MESCOT. Figure 2 below shows some of these logos, which displayed the creativity of MESCOT members (Respondent 1).

Figure 2. Some of the logos of the participating bodies

According to Respondent 1, he was elected as chairman of the Miso Walai Homestay Association in 2000. In the early stage, only seven households participated as members under the flagship of MESCOT (Respondent 1, Respondent 3, Respondent 4, Respondent 5, Respondent 7, Respondent 8, Respondent 11). The number increased every year due mainly to the fact that the confidence of the local community increased after they observed the returns of the pioneer homestay. Currently, there are 34 households participating in the homestay programme (KOPEL, 2010). Interested households have to undergo assessment by the Ministry of Tourism before they are awarded a licence to operate a homestay. The same process was also undergone by the pioneer group in 2000. The Miso Walai Homestay programme was officially launched by the Minister of Tourism, Culture and Environment, Sabah at the end of 2000 in conjunction with the programme, 'One Stop Tourism Fair' in Kota Kinabalu.

CONCLUSION

The sustainable development of MWH was due mainly to the involvement of local communities in the planning, development and implementation stages of the programme. The involvement of local communities is a process of empowerment to the community and acts as a strong foundation to sustain a community tourism project like MWH. The bottom-up approach in planning compared with the top-down approach established a sense of belonging to the local community, and the community viewed the success of the programme as a shared achievement that stemmed from the efforts of all seen as a core responsibility of the whole community. The success of this homestay project encourages all local communities that seek to establish such a project to be fully involved as a community in the early planning stages as well as the later stages of the project. This will ensure that the community homestay programme is sustainable.

REFERENCES

Abdul Razzaq, A. R., Mustafa. M. Z., Suradin, A., Hassan, R., Hamzah, A., & Khalifah, Z. (2012). Community capacity building for sustainable tourism development: Experience from Miso Walai Homestay. *Community Capacity Building, 2*, 1–10. ISSN 2047-0398.

Ashley, C., & Goodwin, H. (2007). *Pro poor tourism – What's gone right and what's gone wrong?* London: Overseas Development Institute.

Blackstock, K. (2005). A critical look at community based tourism. C*ommunity Development Journal, 40*(1), 39–49.

Butler, R., & Hinch, T. (2007). Conclusions: Key themes and issues in indigenous tourism. *Tourism and indigenous peoples: Issues and Implications*, 322-331.

Goodwin, H., & Santilli, R. (2009). Community-based tourism: A success? *International Centre for Responsible Tourism (ICRT) Occasional Paper 11, University of Greenwich*. Retrieved from http://www.haroldgoodwin.info/uploads/CBTaSuccessPubpdf.pdf

Hamzah, A., & Khalifah, Z. (2009). *Handbook for community based tourism: How to develop and sustain CBT*. Asia Pacific Economic Cooperation Tourism Working Group (APEC TWG).

Harrison, D. H., & Schipani, S. (2007). Lao tourism and poverty alleviation: Community-based tourism and the private sector. *Current Issues in Tourism, 10*(2&3), 194–230.

Ibrahim, Y., & Abdul Razzaq, A. R. (2009). Homestay program and rural community development in Malaysia. *Journal of Ritsumeikan Social Sciences and Humanities, 2*, 7–24.

Kiss, A. (2004). Is community-based ecotourism a good use of biodiversity conservation funds? *Trends in Ecology and Evolution, 19*(5), 232–237.

KOPEL (2010). Laporan Mesyuarat Agong Tahunan Koperasi Pelancongan Mukim Batu Puteh Kinabatangan Berhad.

Mitchell, J., & Ashley, C. (2010). Tourism and poverty alleviation. Pathways to prosperity. *Earthscan, London*.

Mitchell, J., & Muckosy, P. (2008). *A misguided quest: Community based tourism in Latin America*. Retrieved from http://www.dfid.gov.uk/R4D/PDF/Outputs/COPLA/tourism-OpPaper.pdf

Mohd Nor, N., & Kayat, K. (2010). The challenges of community-based homestay programme in Malaysia. Proceedings of regional conference on tourism research. 2010, December 13-14. Universiti Sains Malaysia, 66–73.

Scheyvens, R. (2007). Exploring the tourism-poverty nexus. In M. C. Hall (Ed.), *Pro-poor tourism: Who benefits? Perspectives on tourism and poverty reduction* (1–8). Clevedon, UK: Channel View Publications.

UNDP. (2012). *MESCOT Malaysia equator initiative case study series*. New York, NY.

Vogel, M. P., & Abdul Hamid, M. H. (2005). Developing community based tourism at the Kinabatangan basin: A review of the MESCOT project. *Paper presented at International Conference on Pro Poor Tourism: Mechanism and Mainstream* (pp. 1–8), Universiti Teknologi Malaysia, 2005, May 4-6.

Zapata, M. J., Hall, C. M., Lindo, P., & Vander-Schaeghe, M. (2011). Can community-based tourism contribute to development and poverty alleviation? Lessons from Nicaragua. *Current Issues in Tourism, 14*(8), 725–749.

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Students' Knowledge of Risk Management Practices in Sport

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ABSTRACT

Vocational education and extra-curricular activities such as sport are important in life. The transformation of vocational education has been attracting more students into this stream. Sport activities in vocational and technical colleges are co-curricular activities and require coaches to be skilled in sound risk management to ensure that they are safe and free of risk for participants. Professional sport is authorised by the public to make judgements in preparing and ensuring safe sport environments due to the nature of their specialised knowledge and training. The development of students' knowledge of risk management practices will help students to identify potential risk factors in sport, and to prevent, control and minimise the risk of accident and injury. This research aims to develop college students' knowledge of the practice of risk management in sport (DCSK-PRMS). This study is a survey, and involved a total of 120 respondents who were students of the College of Teacher Education (CTE) trained as sport coaches in vocational and technical colleges. The instrument used was a questionnaire and data were analysed using the Rasch Measurement Model to measure the implementation of four analyses for the purpose of examining the functionality of the items. The findings of the pilot study showed the reliability of the individual, while the Cronbach's Alpha reliability was 0.92 (very good) and the reliability was 0.72, indicating a good level. The findings show that the DCSK-PRMS is at a high level and is the dominant element in the supervision and training of sport activities.

Keywords: Development of knowledge of sport risk management practices, Rasch Measurement Model, vocational and technical colleges

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INTRODUCTION

Vocational education and extra-curricular activities such as sport are important in

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life (Hashim, 2016). The transformation of vocational education has been attracting more students into the vocational stream. Sport activities also contribute to good education and knowledge (Hishan, 2016; Zuber, 2003). Sport activities in vocational and technical colleges are co-curricular activities that require coaches to be aware of sound risk management to ensure that they are safe and free of risk for students (Australian Skill Quality Authority, 2015).

In educational institutions, including vocational and technical colleges in Malaysia, there teachers, coaches and sport administrators do not have a standard model to develop college students' knowledge of the practice of risk management in sport (DCSK-PRMS). Such a standard model would help to create zero risk in sport, in addition to increasing community involvement in sport. The Ministry of Education should plan the development of knowledge of risk management practices to ensure the safety of all facilities and equipment as well as the needs of sport activities (Esa & Mustaffa, 2015). Educational institutions, including vocational and technical colleges in Malaysia and colleges of special education, are guided by professional circulars, which are issued when the need arises (Ministry of Education [MOE], 2012). Therefore, coaches only build risk management models based on their creativity, knowledge, skills and professional experience. Circulars stress the importance of safety regulations in the field, on the court and in the pool (Esa & Mustaffa, 2015; Hassan, 2014; Surat Pekeliling Ikhtisas [SPI], 1988, 2000). In addition, some general aspects of security such as safety, partners, security tools and regions (Nord & Moore, 2008), which are issues that are important, need to be addressed to ensure a safe working environment to prevent accidents resulting in injury (Bafirman, 2014; Daroji & Chia, 2012; Rund, 2008). As there is no DCSK-SRMP model for use in Malaysia, the researchers conducted this research to produce one.

BACKGROUND

A coach is a significant factor in influencing athletic performance (Harter, 1981; Weiss, Ebbeck, & McAuley, 1990). Harter's theory (1981) explains that in knowledge development practice coaches identify significant risk is an element of performance in student development behaviour. Students who receive either consistent or inconsistent positive feedback from coaches will develop competence and ability to improve their athletic performance (Harter, 1981). This means that a coach who competently performs DCSK-PRMS can improve athletic performance in sport, and vice versa. These findings are supported by Esa, Padil and Hassan (2015), Hassan (2014), Smith, Smoll and Hunt (1979), Sander (1981) and Weiss (1987), who all state that the behaviour of the coach affects students' cognitive perception and attitude towards competition in sport.

According Esa and Mustaffa (2016), steps taken towards legal action against teachers is an element that has seeped into the field of education in Malaysia. As there is no risk management model, the

parent or student often claims in court that teachers were negligent and failed to carry out a precautionary measure. In one case involving negligent supervision of students, the student was blinded in the left eye during a game of hockey and in another, a student drowned (Esa & Mustaffa, 2015). In yet another case, the teachers failed to examine the rope during an abseiling activity, and this led to a student to suffering a foot fracture (Institut Pendidikan Guru Kementerian Pendidikan Malaysia [IPGKPM], 2011). According to Ang (2007) and Zuber (2003), the community, including teachers, still lacks clarity about aspects of risk management and security, which are extremely important and should always come first.

According to Hassan (2014), Bafirman (2014) and Rothe (2009), the model design is the development of risk management knowledge and methods to prevent accidents and injuries as well as to protect individuals as it can be used to serve as a guideline in the present and the future. The design focusses on the aspects of prevention, protection and security of schools that are free from negative elements, such as injury during sport programmes. Most risk management models are concerned with risk management in buildings, transport, the environment and business (MOE, 2012; MOE, 2002). However, risk management is not emphasised in sport. According to Thye (2010) and Rund (2008), the schools' management and the Department of Education, representing employers, have general responsibility for ensuring the safety and welfare of teachers and support staff as well as for protecting the students and visitors.

PURPOSE OF THE STUDY

The study was conducted for the DCSK-PRMS in a College for Teacher Education (CTE) that training sport coaches for vocational and technical colleges. Training involves supervision, training and sport activities.

OBJECTIVES

This research aimed to achieve the following objectives:

i. To develop a model for college students to develop their knowledge of the Practice of Risk Management in Sport in Malaysian CTEs where they are trained as sport coaches for vocational and technical colleges.

ii. To identify the dominant factors for the development of college students' knowledge of the Practice of Risk Management in Sport.

iii. To identify the reliability of the DCSK-PRMS.

Conceptual Framework

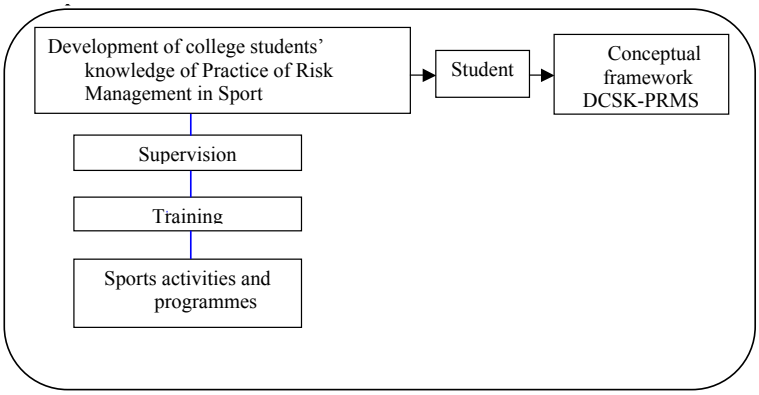

Figure 1. Conceptual framework

METHODOLOGY

This study is a survey, undertaken after identifying the research problem and defining the objectives and scope of the study. The instrument used was a questionnaire and a pilot study data analysis using the Rasch Measurement Model for the purpose of carrying out four diagnosis functionality checks on the items. In the pilot study the researcher used all the samples (purposeful sampling) as recommended by Jones (2009). The Cronbach's Alpha reliability and trustworthiness of individuals was 0.92 (very good) and the reliability was 0.72, indicating a good level. The actual study was conducted once the results of the pilot study were analysed. This study was a survey, and a total of 120 respondents were surveyed. They were from a CTE that trained sport coaches for vocational and technical colleges. The respondents comprised 67 males and 53 females. When the results were obtained, the researchers determined the dominant factors based on the analysis of the data using the Rasch Measurement Model.

RESULTS, DISCUSSION AND CONCLUSION

The main objective of this work was to develop a guide for college students' knowledge in the Practice of Risk Management in Sport for Malaysian CTEs that train sports coaches for vocational and technical colleges, and to identify the dominant factors for the development of college students' knowledge in the Practice of Risk Management in Sport.

Table 1
Overall implementation of DCSK-PSRM

Label	DCSK-PRMS	Mean	Level
SP	Supervision	4.27	High
TP	Training	4.32	High
SAP	Sport activities and programme	4.33	High

Based on the overall analysis of the DCSK-SRM, Table 1 shows that the respondents' approval was at a high level. Table 2 shows that the level of supervision of the implementation of DCSK-PSRM received the highest approval level. The findings are in line with Robinson (2012), who explained that risk is always present in activities and sport programmes i.e. no sport programme or physical education activity can really avoid accidents. Therefore, there should be systematic supervision of college students in developing knowledge by personnel who have risk management training to minimise risks and risk-related charges. Bafirman (2014), Robinson (2012), Hassan (2014) and Stephen and James (2012) explained that it was the responsibility of coaches and administrators to develop college students' knowledge in the implementation of systematic supervision in sport and physical education programmes. According to Bezdicek (2009) and Baker, Connaughton, Zhang and Spengler (2007), although the organisation may have an emergency action plan, the administrator needs to develop college students' knowledge in ensuring this plan is adopted and should provide training such as conducting emergency simulations. The study found that managers of sport facilities have inadequate training in developing students' knowledge, while studies of college students ound that more than half of the respondents had never received proper training in handling cases of risk management. In developing the knowledge of college students, instructors must always be with the participants, and may not leave them during the activity. Were coaches to leave the participants, in the event of an injury during their absence, they could be sued.

Table 2
Analysis of the level of supervision of the implementation of DCSK-PSRM

No	Supervision	Mean	Level
1.	Provides a comprehensive risk management plan for all sport programmes	4.52	High
2.	Emergency support network to know when an incident occurs	4.19	High
3.	Be able to assess the health of participants before starting the activity	4.21	High
4.	Able to act in accordance with the standard emergency plan	4.23	High
5.	The ability to use various forms of supervision	4.31	High
6.	Know the limitations of each sport programme	4.25	High
7.	Know your own limitations	4.28	High
8.	Knowledgeable use of warning signs	4.30	High
9.	Capable of recording medical reports and injuries occurring during an activity	4.30	High
10.	Capable of supervising a team of sport programmes outside emergency phone numbers by collecting certain parties	4.31	High
11.	Reports health status before carrying out activities	4.34	High
12.	Each exercise is carried out only under the supervision of a coach	4.36	High
13.	Always uses a true instrument in the supervision of teachers	4.36	High

Table 3
Analysis of the level of training of the implementation of DCSK-PSRM

No.	Training	Mean	Level
1.	Knowledgeable in applying the principles of risk management	4.21	High
2.	Knowledgeable about the capabilities of the equipment selected for a particular activity	4.27	High
3.	Able to organise training programmes that can use local resources	4.32	High
4.	Ready to follow the annual security training workshop for a period of 6-8 hours	4.33	High
5.	Capable of providing safety education to participants	4.34	High
6.	Trained in managing risk	4.34	High
7.	In-service training unit (UST) should offer incentives to increase the willingness to manage risk	4.36	High

Table 3 shows that the level of training of the implementation of DCSK-PSRM received the highest approval level. Risk management training should be practised at least once a year. The individuals who should be involved in this practice include student trainers, consulting team doctors, students training in sport activities and programmes, school and institutional security staff, administrators, coaches and other relevant personnel as prescribed by Bafirman (2004), Bezdicek (2009) and Drezner, Courson, Roberts, Mosesso, Link and Maron (2007). This finding was also supported by Gettle (2009), Galbraith and Fouch (2007) and Clement (1988; 1998). They recognised the importance of education and training as a key contributor to the identification, evaluation and effective control of risk.

Lachapelle (2004) found that the coaches surveyed had not been given the opportunity to improve their safety practices and/or their organisations had failed to carry out safety briefings. Coaches should be provided risk management training to ensure effective supervision of activities/sport programmes. This is in line with Lachapelle (2004), who states that the organisation should establish a risk awareness and safety programme that ensures all players have the opportunity to achieve the same level of security.

Table 4
Analysis of the level of sports programme activities of the implementation of DCSK-PSRM

No.	Sport activity and programme	Mean	Level
1.	Risk management after an activity	4.27	High
2.	Proper warm-up practice under the supervision of coaches at least 15 minutes before activity	4.28	High
3.	Practice regimen complete with cooling of the body under the supervision of trainers for 15 minutes after activity	4.28	High
4.	The practice of allowing the players to rest and take a drink of water	4.33	High
5.	Capable of controlling the behaviour of players	4.33	High
6.	Skilled care tentative sport programme	4.43	High
7.	Able to evaluate the effectiveness of an exercise programme	4.43	High

Table 4 shows that the level of sport programmes and activities in the implementation of DCSK-PSRM received the highest approval level. Fuller (1999) explained that in the development of knowledge of college students, there should be laws/regulations that specify how the management and supervision of each sport and activity should be conducted. Beach (2003) explained that supervision should focus on the needs of the various levels of competition and the different groups of participants in each sport programme. Therefore, in every sport programme, there should be thorough training, supervision and standards, as stated by Martens, Gulikers and Bastiaens (2004). With the development of a model for developing college students' knowledge, careful supervision and efficient and effective risk management practices, a safe environment for activities and programmes can be created.

The researchers recommend that the development of the knowledge of college students as well as the supervision and training of sport programmes be made standard practice. Coaches would be more confident in carrying out supervision and training if they were given sound risk management training.

This study found that the DCSK-PRMS had a Cronbach's Alpha reliability and trustworthiness of individuals of 0.92 (very good) and a reliability of 0.72, indicating a good level. This suggests that the systematic development of knowledge of college students (DKCS-SRMP) needs to be formulated to ensure safety of all during sport programmes.

REFERENCES

Ang, K. K. (2007). *Competence sports secretary and risk management practices and safety of high school sports program in Malaysia*. (Unpublished doctoral thesis). Universiti Putra Malaysia.

Bafirman, B. (2014). Influence of Sports, Physical Education and Health Teacher Professionalism in Developing Students' Character. *Asian Social Science, 10*(5), 7.

Baker III, T., Connaughton, D., Zhang, J., & Spengler, J. (2007). Perceived risk of terrorism and related risk management practices of NCAA. Division I-A football stadium managers. *Journal of legal Aspects of Sport, 17*(1), 27–51.

Beach, A. F. (2003). Dying to play: School liability and immunity for injuries that occur as a result of school-sponsored athletic events. *Sports Law. J., 10*, 275.

Bezdicek, P. W. (2009). *Risk management practice in high school athletic department*s. (Unpublished doctoral dissertation). University of Wisconsin-LA-Crosse.

Clement, A. (1988). *Law in sport and physical activity*. Indianapolis: Benchmark Press.

Clement, A. (1998). *Law in sport and physical activity* (2nd ed.). Tallahassee, Florida: Sport and Law Press.

Daroji, I., & Chia, C. M. (2012). *Outdoor education*. Selangor: Multimedia.

Drezner, J., Courson, R., Roberts, W., Mosesso, V., Link, M., & Maron, B. (2007). Inter-Association task force recommendations on emergency preparedness and management of sudden cardiac arrest in high school and college athletic programs: A consensus statement. *Prehospital Emergency Care, 11*(3) 253–271.

Esa, A., & Mustaffa, F. (2015, August). Sport risk management competence manager Institute of Teacher Education. International conference on new horizons in education. *TOJET: The Turkish Online Journal of Educational Technology,* 496–501.

Esa, A., & Mustaffa, F. (2016). Identification of the elements of risk management practices kn sport at teacher education institute. *TOJQIH: The Online Journal of Quality in Higher Education,* 3(2), 44–51.

Esa, A., Padi, S., & Hassan, S. S. S. (2015). Employability skills in engineering programs: A case study in Malaysian polytechnics. *Advanced Science Letters, 21*(7), 2442–2445.

Fuller, C. W. (1999). *Safety in sport: Guidance for UK national governing bodies.* United Kingdom: UK Sport.

Galbraith, D. D., & Fouch, S. E. (2007). Principles of adult learning: Application to safety training. *Professional Safety, 52*, 35–40.

Gettle, M. K. (2009). *Examining the relationship between safety training and incidence of occupational injury.* (Unpublished doctoral dissertation). Capella University.

Harter, S. (1981). A model of mastery motivation in children: Individual differences and developmental change. In *Aspects of the development of competence: The Minnesota symposia on child psychology* (Vol. 14, pp. 215-255). Hillsdale, NJ: Erlbaum.

Hasan, M. A. K. (2014). Sport knowledge management and its role in promoting the electronic marketing decision making process. *Asian Social Science, 10*(14), 8–12. doi:10.5539/ass.v10n14p8

Hashim, M. M. H. (2016). The advantages of Reserve Officer Training Unit (ROTU)'s activities for future TVET teachers. *Asian Research Journal of Arts and Social Sciences 1(3), 1–8, 2016, Article no. ARJASS 27125.*

Institut Pendidikan Guru Kementerian Pendidikan Malaysia (IPGKPM). (2011). *Reports of special education and human development teacher special education KDC KPLI LPBS uptake, 2010 November.*

Jones, S. R. (2009). Constructing identities at the intersections: An autoethnographic exploration of multiple dimensions of identity. *Journal of College Student Development, 50*(3), 287–304.

Lachapelle, G. (2004). GNSS indoor location technologies. *Journal of Global Positioning Systems, 3*(1-2), 2-11.

Martens, R., Gulikers, J., & Bastiaens, T. (2004). The impact of intrinsic motivation on e-learning in authentic computer tasks. *Journal of Computer Assisted lLearning, 20*(5), 368–376.

Ministry of Education (MOE). 2012. Malaysia national education for all review: Report end of decade review. Retrieved from http://unesdoc.unesco.org/images/ 0022/002297/229719E.pdf

Nord, N., & Moore, T. H. (2008). CPSC releases the "top five hidden home hazards" popular magnetic toys on the list of deadly dangers. *Consumer Product Safety Review, 12*(1), 1–2.

Robinson, C. (2012). Student engagement: What does this mean in practice in the context of higher education institutions? *Journal of Applied Research in Higher Education,* 4(2), 94–108.

Rothe, J. P. (2009). The voluntary use of physical education safety guidelines in schools. *Journal of Physical Education, Recreation and Dance, 80*(3), 43–49.

Rund, J. (2008). Creating and maintaining safe college campuses: A sourcebook for evaluating and enhancing safety programs (review). *Journal of College Student Development, 49*(3), 265–268.

Sander, R. (1981). Coaching style and the athlete's self-concept. *The Athletic Journal, 13*(5), 34–38.

Smith, R. E., Smoll, F. L., & Curtis, B. (1979). Coach effectiveness training: A cognitive-behavioral approach to enhancing relationship skills in youth sport coaches. *Journal of Sport Psychology, 1*(1), 59–75.

Surat Pekeliling Ikhtisas (SPI). (1988). Safety of the students in the school. *Kuala Lumpur: Ministry of Education. Professional Circular Bil.8/1988.*

Surat Pekeliling Ikhtisas (SPI). (2000). Guide the personal safety of students during the teaching of physical education and sports in co-curricular activities in and outside school. *Putrajaya: Ministry of Education. Professional Circulars Bil. 9/2000.*

Stephen, J. T., & James A. P. (2012). *ACSM's health/fitness facility standard and guidelines: American College of Sports Medicine.* United States: Human Kinetics.

Thye, L. L. (2010, May 28). *Safety Program: Health workers should be extended to schools. Plan; Daily news,* p. 2.

Weiss, M. R. (1987). Self-esteem and achievement in children's sport and physical activity. *Advances in Pediatric Sport Sciences, 2*, 87–119.

Weiss, M. R., Ebbeck, V., McAuley, E., & Weise, D. (1990). Self-esteem and causal attributions for children's physical and social competence in sport. *Journal of Sport and Exercise Psychology, 12*, 21–36.

Zuber, H. (2003). *PE teacher education in Malaysia: A case study.* (Doctoral thesis). University of East Anglia, United Kingdom. Retrieved from http://ethos.bl.uk/OrderDetails.do?uin= uk.bl.ethos.399838

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Exploration of Element Risk Management Outdoor Education in Technical and Vocational Education

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ABSTRACT

The objective of Technical and Vocational Education (TVET) is to form individuals who have good technical skills. Various efforts have been made in TVET to prepare individuals who are skilled, knowledgeable and capable and who can apply what they have learnt in outdoor education. Risk management is important in outdoor education to ensure a safe environment for every programme that is run outdoors. Risk management seeks to control, prevent and reduce the occurrences of accidents and injuries. This study was conducted to explore Risk Management Elements in Outdoor Education (RiMOE). The study employed the qualitative method to obtain data by using semi-structured interviews to explore the risk management elements that could further function as expert evidence and be aligned with the thoughts, ideas and opinions generated from experts in the field of outdoor education. The analysis showed that this study had successfully determined four dominant elements associated with risk management in outdoor education. Therefore, this study showed the RiMOE elements required by the lecturer, with the dominant elements being identification, selection of operations, implementation and evaluation.

Keywords: Lecturer, outdoor education, risk management, Technical and Vocational Education (TVET)

INTRODUCTION

Risk is part of human experience and exists in nearly every environment and event (Conrow, 2003; Blaikie, Cannon, Davis, & Wisner, 2004). Risk management focusses on how to be safe from dangers; in education, sport and recreation, risk management concerns safe practices to avoid or prevent injury to the body. Risks

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can be categorised as high or low; high-risk physical activities are sport or adventure activities, while low-risk physical activities are light sport or adventure activities e.g. a bushwalk. Risk management in education covers a very wide spectrum of risks from high to low levels of risk.

According to the International Risk Management Standard, ISO 31000, risk management covers legal issues, the activities carried out and the design of programmes from weather factors to scenario analyses of events (Dickson & Gray, 2012). Risk management is the best way to manage weaknesses during outdoor education sessions while maximising zero risk during each activity (Eng, 2013). Other than that, according to the national standards of Australia and New Zealand, risk management is a process that includes identification, analysis, evaluation, treatment and monitoring of risks proactively. The risk management process, in fact, can be used in any situation. In the context of education, it is ultimately a step approach towards developing risk management strategies.

The aspects of risk and safety have always been an emphasis in outdoor education. Scotland, for instance, introduced two safety guidelines specifically for outdoor educational activities, the Outdoor Education, Safety and Good Practices guidelines and the Safety in Outdoor Education guidelines. The safety measures contained in the Outdoor Education, Safety and Good Practices guidelines focussed on the supervision of student engagement against losses that occurred, while those contained in the Safety in Outdoor Education focussed on the diversity of activities and locations implemented by lecturers (Higgins, Loynes, & Crowther, 1997, p. 26–27).

Scholars recognise that outdoor education programmes are very effective in creating a positive impact on the development of the individual, society and the state (Edward & George, 2008; Priest & Gass, 2005). Indeed, extra-curricular activities have long been emphasised in teaching and learning processes abroad. Extra-curricular activities have been proven to generate a positive attitude, good values and the ability to solve problems wisely (Marsh & Kleitman, 2009). This indicates that the learning process continues over time, including during periods of rest and during holidays from studies. Therefore, students gain by improving their skills and knowledge during holidays through activities that cannot be developed in the classroom. This ensures that students are not overly stressed and that they spend their holidays in a productive manner.

However, risk management is not emphasised in education by lecturers, and this has led to accidents during outdoor activities and has raised concerns among students when it comes to participating in outdoor activities (Zimmerman, 2007). Lecturers play a dominant role in the process of teaching and learning and in sharing knowledge of risk management, particularly that concerning outdoor activities (Attarian,

2012). Lecturers also have the responsibility to mitigate risks that can occur during an event.

In modern education, outdoor education is designed to enable students to learn outside the framework of formal education in order to enrich and to enhance skills, knowledge and experience. The organisation of outdoor education is a great challenge and a matter of concern as most lectureres are responsible for happenings during outdoor activities; they will be held accountable for incidents and accidents involving students when outdoor activities are carried out. According to Esa and Mustaffa (2015), risk management is very important in sport and outdoor activities. The Guidelines for Prevention of Accidents in the Workplace defines accidents as mishaps that can lead to injury, illness, death or damage to property, while risk is the probability of a hazard to cause harm.

Risk is a key element used in outdoor education for the development of individual potential. Outdoor education exposes students to the element of risk. However, the risk element can be prevented in many ways, and some agencies have been established in Malaysia to prevent the risk of accidents in rural education. Among the agencies are the National Institute of Occupational Safety and Health (NIOSH), the Department of Occupational Safety and Health (DOSH), the Social Security (SS) Services and the Ministry of Health (MOH). These agencies have functions within their own security perimeters.

In this study, the researchers applied Chickering's Theory. The theory of psychosocial development by Chickering states that the involvement of students in outdoor education is a very important dimension. Chickering's Theory is effective in implementing programmes or activities in outdoor education. The Chickering Model (1993) outlines seven stages (vectors) that can be used for conducting outdoor education, namely, (1) develop competence, (2) manage emotions, (3) motivate oneself, (4) build mature interpersonal relationships, (5) build an identity, (6) build purpose and function, and (7) build integrity. The Chickering Model encourages continuous learning through knowledge, experience and environment in the development of students' personality.

Other than that, outdoor activities can improve soft skills such as problem solving, risk intake, teamwork, self-esteem and interpersonal communication. Their advantages include participation in higher learning by trainers, the opportunity to experience real emotions and adopt a new mindset, the ability to encourage experimentation in problem solving and the promotion of awareness and confidence in a group.

RESEARCH OBJECTIVES

This study determined the research methods deemed appropriate to explore the elements of risk management in outdoor education from lecturers' perspective.

Conceptual Framework

The conceptual framework of a study indicates the direction and guidance for researchers for carrying out research. The conceptual framework of this study is shown in Figure 1.

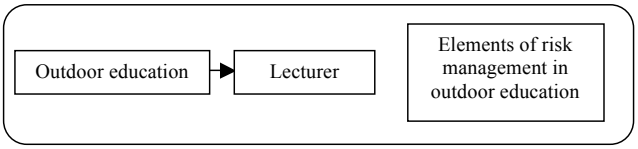

Figure 1. Conceptual framework

METHODOLOGY

In this study, the researchers used the qualitative method to collect data. There are three types of interview for research, the structured interview, the semi-structured interview and the unstructured interview. For this study, the researchers decided to use the semi-structured interview. The researchers asked the subjects a number of structured questions before the interviews were conducted in order to probe each answer more deeply.

The interview approach, one of the main methods of gathering information in this study, was used to support the findings of the instrument. Before the interviews were conducted, the researchers made appointments with the respondents for the interviews. During the interviews, the researchers used the recording process to collect and preserve information.

The respondents of this study consisted of experts who were directly involved in outdoor education. Their selection was based on their area of expertise and their ingenuity in TVET. The criteria for their selection were: (i) a trainer of curriculum/ education who has served for more than 10 years and is directly involved in teaching and supervision of risk management education, and (ii) is directly involved in outdoor education. The number of experts in this study was three. Table 1 shows the analysis method used in this study.

Table 1
Data analysis methods

Experts	Text	Element
Expert 1	"hmm...risk management is very important for student and lecturer during carried out outdoor activities. The main element of risk management outdoor activities are....hmm...identification the equipment and facilities, evaluation, election of operation and also implementation.."	1) Identification 2) Election operation 3) Implementation 4) Evaluation

Table 1 *(continue)*

Expert 2	"ooo...very important for lecturers...must have the element of risk management...example, identification, the implementation, evaluation, election operation and also treatment the risk..."
Expert 3	"mmm for me...a risk is a key element used in outdoor education for the development of individual potential..the main element includes identification, implementation for the safety training and staffing, election operation of risk, evaluation..."

RESULTS

This study found four elements of risk management in outdoor education. Each element has its own function and construct. Identification, selection of operations, implementation and evaluation were the main elements contained in risk management in outdoor education. These four elements of risk management in outdoor education are required by lecturers to avoid accidents during outdoor activities, as shown in Figure 2.

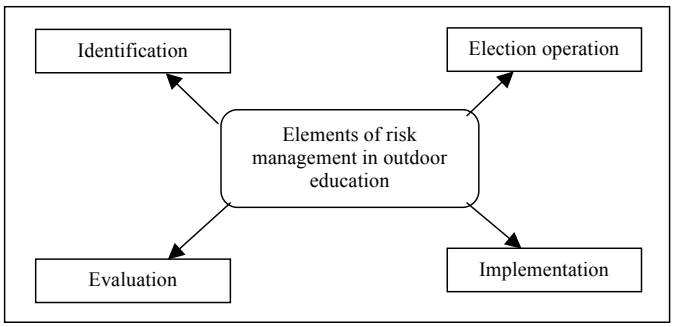

Figure 2. Elements of RiMOE

DISCUSSION

Risk management is indeed important in outdoor education. This study successfully determined the appropriate research methods to pin-point the risk management elements in outdoor education for lecturers. The research questions developed for this study were answered. The emphasis on risk management in education helps students in TVET to understand and use their skills and knowledge for activities carried out in outdoor education to reduce the risk in such activities to zero. In addition, this knowledge can help improve their employbility in securing a job in the future (Esa, Padil, & Hassan, 2015). The researchers hope that this finding will help students to improve their soft and extra-curricular skills, thus reducing the accident rate during outdoor activities.

REFERENCES

Attarian, A. (2012). *Risk management in outdoor and adventures programmes: Scenarios of accidents, incidents and misadventures*. Leeds, United Kingdom: Human Kenetics.

Blaikie, P., Cannon, T., Davis, I., & Wisner, B. (2004). *At risk: Natural hazards, people's vulnerability and disaster*s (2nd ed.). London and New York: Taylor & Francis Books Ltd.

Chickering, A. W., & Reisser, L. (1993). *Education and identity*. San Francisco, California: JosseyBass Publishers.

Conrow, E. H. (2003). *Effective risk management: Some keys to success* (2nd ed.). Library of Congress Cataloging Publication.

Dickson, T. J., & Gray, T. L. (2012). *Risk management in the outdoors: A whole-of-organisation approach for education, sport and recreation.* Australia: Cambridge University Press.

Edward, M., & George, B. P. (2008). Tourism development in the state of Kerala, India: A study of destination attractiveness. *European Journal of Tourism Research, 1*(1), 16–38.

Eng, J. A. J. (2013). *Pengurusan aktiviti luar sekolah: Panduan pengurusan aktiviti di luar sekolah* (1st ed.). Kuala Lumpur: PTS Publications & Distributors.

Esa, A., & Mustaffa, F., (2015). Sport risk management competence coaches institute of teacher education. *Turkish Online Journal of Educational Technology, 3*(8), 496–501.

Esa, A., Padil, S., & Hassan, S. S. S. (2015). Employbility skills in engineering programs: A case study in Malaysian polytechnics. *Advanced Science Letters, 21*(7), 2442–2445.

Higgins, P., Loynes, C., & Crowther, N. (1997). Safety and risk in outdoor education. In C. Loynes & P. Higgins. *A guide for outdoor educators in Scotland* (pp. 26–27). Great Britain. Adventure Education.

Priest, S., & Gass, M. A. (2005). *Effective leadership in adventure programming* (2nd ed.). New Zealand: University of New Hampshire.

Zimmerman, E. P. (2007). Risk Management Practices of Collegiate Athletic Trainers: An Examination of Policies and Procedures.

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Framework for Equivalence Checking between Academic and Skills Through APEL Processes

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ABSTRACT

The Accreditation of Prior Experiential Learning (APEL) acknowledges and affirms an individual's past experiences and learning as well as their value through equivalence checking. This research was conducted to determine and develop preliminary descriptions for Levels 1 to 3 of qualification in the Malaysian Qualifications Framework (MQF), which will be proposed for use for equivalence checking between skills and academic and also to design a research framework of equivalence between academic and skills through APEL. Equivalence checking can facilitate the entry of an individual into institutions of higher learning by affirming the individual's pre-existing abilities relevant to the intended course of study. A qualitative approach was adopted for this research, and data were collected through three channels: document analysis, interviews and a questionnaire. The questionnaire was administered to 54 respondents from various institutions (UTHM, ADTEC, KKTM and IKBN), while the interview involved three respondents. The data collected was analysed using the software, Statistical Package for Social Sciences 20.0 (SPSS 20.0). This study found that the descriptions proposed in this study are suitable for describing the learning outcomes for Levels 1 to 3 in the aspects of knowledge, skills and competencies. Finally, an equivalence checking framework was developed based on feedback from the respondents and also synthesised from the collected data.

Keywords: Accreditation of Prior Experiential Learning (APEL), equivalence checking, Malaysian Qualifications Framework (MQF), qualification levels

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INTRODUCTION

Technical and Vocational Education and Training (TVET) is a branch of education offered in many countries around the world

to enhance opportunities for students who opt for science and technology education to meet the needs of professionals and semi-professionals. According to Mohd Tahir and Mustafa (2009), TVET benefits dropouts from the study of academic subjects but is an excellent avenue for the development of human skills in different fields and, therefore, is crucial for the development of the national economy as a whole. In view of this, Malaysia should move away from a higher education system that only focusses on conventional university education to include TVET as well as a legitimate official curriculum. The implementation of lifelong learning programmes should be enhanced to promote the improvement of skills among all levels of society. Mohamed Rashid and Mohd Nasir (2003) stated that articulation is an important feature in education and training today as it leads to benefits and opportunities for extensive study for those who can afford to continue their studies. The Accreditation of Prior Experiential Learning (APEL) is an assessment method by which students can get recognition for knowledge, understanding, skills and competencies they already have. Kaprawi (2011) stated that students can use this official accreditation or certification to enrol in programmes in place of the usual entry qualifications or as a part of the final qualification to prevent them from repeating courses they have already mastered.

The education system in Malaysia should not be hindered only by the absence of a mechanism that allows the pursuit of higher TVET through leveraging knowledge and experience already acquired. Armed with experience and skills in the field of study, students should be eligible for credit transfer. This was supported by Mohammad (2002), who stated that the experience gained during work can be likened to knowledge acquired through formal education at university. Kaprawi (2011) mentioned that Malaysian universities do not as yet have in place a system that can assess and recognise prior learning and skills of groups who seek to pursue higher studies.

The problem for individuals who have experiences of more than three years who want to further their studies at a higher level is the award of credit hours. Balli and Razally (2011) stated that such individuals do not need the same number of credit hours as beginner students who enrol in the same programme. Prior learning and experience needs to be translated to provide an alternative route in preparation for higher studies and also to enable mobility between different fields of skills/vocational and academic modules. The problem is in assessing and recognising the prior learning and experiences of an individual possessing skills/vocational competencies in order for him or her to continue his/her studies in an academic institution. What is needed is a mechanism of equivalence checking between skills/vocations and academic for mobility and credit exemption to be possible.

To implement equivalence checking, determination of the level of qualifications held by these individuals should be based on the Malaysian Qualifications Framework

(MQF), which outlines the learning outcomes that should be possessed at each level of qualification. However, there are some issues in the implementation of equivalence checking, in which the first three qualification levels of the MQF, which consists of eight qualification levels, have no descriptors as do Levels 4 to 8, as in the Qualifications Framework of several other countries. This has created a barrier to the equivalence process; thus, it is difficult for APEL to be implemented.

Apart from that, the descriptors for each qualification level of the MQF based on three main domains i.e. knowledge, competencies and skills have also not been developed, as has been done in the established qualification frameworks like the European and Australian qualification frameworks. Thus, this study aimed to determine and develop the descriptors of three levels i.e. Level 1 to Level 3 of the eight levels of the MQF. The preliminary descriptors of qualification levels developed through this study will be proposed for use for equivalence checking between skills/ vocational and academic in Malaysia. This study also developed a framework for equivalence checking between the fields of skills/vocational and academic promoting mobility between skills/vocational and academic in Malaysia. The main objectives of this study were to identify descriptors for each qualification from Level 1 to Level 3 of the MQF that will be proposed for use for equivalence checking between academic and skills/vocational programmes through the APEL process. This research also designed a framework of equivalence checking between academic modules and skills/vocational through the APEL process.

METHODOLOGY

This study used a qualitative research design that involved exploration methods. Samples were selected based on purposive sampling. The population for this study was composed of the Dean, Deputy Dean and Head of Department of the faculty where they were individuals who were involved in curriculum development in academia at UTHM. As for skills, the population of this study was composed of the Director of the Institution, the Deputy Director and the Head of Programmes of three institutions, Kolej Kemahiran Tinggi MARA (KKTM), Pusat Latihan Teknologi Tinggi (ADTEC) and Institut Kemahiran Belia Negara (IKBN). All three institutions have individuals who are involved in the formation and development of the curriculum in vocational institutions. Fifty-four respondents returned feedback survey forms that were distributed.

The instruments used in this study were document analysis, questionnaires and semi-structured interviews. The researchers analysed the MQF documents using the European Qualifications Framework (EQF) and the Australian Qualifications Framework (AQF) as a benchmark for determining the description of the eligibility level for the MQF that could be proposed for use. The semi-structured interview was used to support the questionnaires and was

conducted with three personnel who had extensive knowledge and experience in the formation and development of academic curricula and research skills.

RESULTS

The details of the descriptors of the qualification level for each domain, knowledge, skills and competency, in the MQF is shown in Tables 1 to 3. The data analysis was obtained through questionnaires and semi-structured interviews. The analysis shows the descriptors of the qualifications for Level 1 to Level 3 for each domain, knowledge, skills and competency. in the MQF.

Table 1
Descriptors of the Qualification Levels of the 'Knowledge' Domain

KNOWLEDGE			
Items/Descriptors	MQF Level	Score Min	Suitability Level
Basic knowledge in the field of learning or work	1	4.70	* * *
Knowledge and understanding of basic facts in the field of learning or work	2	4.70	* * *
Knowledge of the facts, understanding, interpretation and use of technical information in a particular field of work and/or study	3	4.70	* * *

Table 2
Descriptors of the Qualification Levels of the 'Skills' Domain

SKILL			
Items/Descriptors	MQF Level	Score Min	Suitability Level
Basic skills in business processes and operations	1	4.61	* * *
Basic cognitive and practical skills to use information and appropriate techniques in scientific work processes, engineering design and problem solving	2	4.67	* * *
Cognitive and practical skills for using information and methods appropriate for the scientific work processes, engineering design, operational decision making and problem solving.		4.69	
Using self-study skills for further education	3	4.54	* * *

Table 3
Descriptors of the Qualifications Levels of the 'Competency' Domain

COMPETENCY			
Items/Descriptors	MQF Level	Score Min	Suitability Level
Apply knowledge and skills in delivering information, ideas, problems to experts and non-experts through effective communication with supervision	1	4.65	* * *
Apply knowledge and skills in delivering information, ideas and problems to experts and non-experts through effective communication with some limited autonomy		4.67	* * *
Teamwork and interpersonal skills that are appropriate for the job	2	4.63	* * *
Apply knowledge and skills in delivering information, ideas, problems and solutions to specialists and non-specialists through effective communication by taking into account social, scientific and ethical issues relevant to limited autonomy		4.63	* * *
Teamwork and interpersonal skills relevant to employment and to becoming responsible members of society	3	4.61	* * *

*** Very suitable

DISCUSSION

Based on the findings of the items that describe description eligibility levels for each domain, knowledge, skills and competency, in the MQF, the score for the overall description of the qualifications that can be proposed for implementation was very high. Most of the respondents strongly agreed with the descriptors of the qualifications level for the MQF that were intended for use for equivalence checking between skills and academic programmes in the three domains. The MQF consists of eight qualification levels, with each level having a descriptor except for Level 1 to 3, a fact that is a barrier for the implementation of the equivalence process. Thus, this study identified and developed the preliminary descriptors for qualification Levels 1 to 3 of the MQF, as is available in other qualification frameworks in countries such as Germany, Australia and South Africa. These countries have adopted the system of APEL and have implemented equivalence checking between skills and academic fields. The European Qualifications Framework (EQF) and the Australian Qualification Framework (AQF) have specific qualification descriptions for Levels 1 to 3. In this study, the researchers developed qualification descriptors for Levels 1 to 3 through benchmarking with the EQF and AQF descriptors and validated the descriptors with APEL practioners in Malaysia. The development of the equivalence framework (see Figure 1) will help the Malaysian government's mission to mainstream TVET. Equivalence checking should be supported by several core principles.

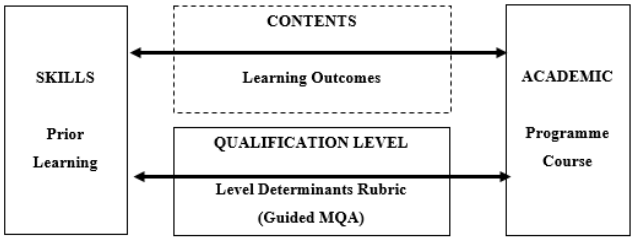

Figure 1. Framework for equivalence checking between skills/vocational and academic (Adapted and modified from OAM, Musken, 2006)

First, the learning modules should be mapped based on the content and levels of learning outcomes. Second, assessment must be based on evidence, equality, fairness (no prejudice), flexibility, validity and reliability. The evaluators should assess the extent to which the content and level of the learning outcomes of the skills/ vocational graduate corresponds to the academic programme and the value of credit to be awarded. For the implementation of equivalence checking, determination of the level of qualifications of each individual could be based on three main domains i.e. knowledge, skills and competency, each level should have specific descriptions.

CONCLUSION

It is hoped that the suggestions and recommendations set out by the researchers in this study can be addressed by the relevant authorities in establishing the APEL system in Malaysia. Among its recommendations is that Malaysian higher education institutions and agencies become involved with APEL, which regularly monitors and plans the APEL system, which must be implemented carefully. In addition, new guidelines must be developed for individuals with experience from skills/industry to further their studies in academic fields. Finally, collaboration between institutions specialising in skills and those specialising in academic studies is also important to improve mobility between skills/vocational and academic modules through the APEL processes.

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REFERENCES

Australian Qualifications Framework Implementation Handbook (AQF). (2005). *Australian Qualification Framework*: Second Edition. Retrieved from http:// www.aqf.edu.au/implem.htm.

Balli, B., & Razally, W. (2011). *Instrumen penilaian bagi Pengiktirafan Pengalaman Pembelajaran Terdahulu (PPPT) dalam konteks pembelajaran sepanjang hayat: Transformasi pendidikan politeknik di Malaysia.* CIE-TVT 2011, 2011, November 16-17, Pulau Pinang.

Garnett, J., Portwood, D., & Costley, C. (2004). *Bridging rhetoric and reality: Accreditation of Prior Experiential Learning (APEL) in the UK.* Bolton: University Vocational Awards Council.

Kaprawi, N. (2011). *Syarahan perdana 2011: Leveraging Accreditation of Prior Experiential Learning (APEL) for human capital development.* Batu Pahat: Universiti Tun Hussein Onn Malaysia Publication.

Maclean, R., & Pavlova, M. (2013). *Vocationalization of secondary and higher education: Pathways to the world of work.* UNESCO-UNEVOC: Revisiting Global Trends in TVET.

Malaysian Qualification Agency. (2007). *Malaysian qualifications framework*. Retrieved from http://www.mqa.gov.my/mqr/english/ePengenalanMQF.cfm

Mohamed Rashid, N. B., & Mohd Nasir, A. H. (2003). Lifelong learning in Malaysia. In International Policy Seminar Co-Organised by IIEP/UNESCO and KRIVET on Making Lifelong Learning a Reality, 2003, June 24-26, Seoul.

Mohammad, M. (2002). *Credit for work experience.* International Postgraduate Facilitator Management CENTRE, Malaysia.

Mohd Tahir, L., & Mustafa, N. Q. (2009). *Pendidikan teknik dan vokasional untuk pelajar berkeperluan khas*. Retrieved from http://web.usm.my/education/publication/JPP24_LokmanTahir_73-87.pdf

Muskens, W. (2006). P*ermebility between VET and HE: The experience of module level indicator in Germany and its application in Austria*. University Oldenburg.

National Qualifications Framework. (2009). *European Frameworks: The Bologna Framework and the European Qualifications Framework (EQF)*. Retrieved from http://www.nfq.ie/nfq/en/frame_action/europe.html

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Student's Readiness on Self-regulated Learning Implementation for 21st Century Learning Approaches

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ABSTRACT

Self-Regulated Learning (SRL) is one of the learning strategies in Student-Centred Learning (SCL). Although the theoretical success stories of SRL have been well documented, there are few stories from actual practice and implementation of SRL, especially in technical and vocational education. Hence, this paper investigates postgraduate students' readiness for the implementation of SRL. The results of the investigation are encouraging; students appear ready for the implementation of SRL for specific subjects and levels. This is a good indicator for educators to improve teaching and learning, steering it away from a teacher-centred to a student-centered orientation. Hence, in the future, students will become student-centred learners and apply SRL in the learning process to increase the quality of their academic achievement and vocational qualification.

Keywords: Readiness, Self-Regulated Learning (SRL), Student-Centred Learning (SCL), teaching and learning

INTRODUCTION

Student-Centred Learning (SCL) is a learning approach that gives students autonomy to control their own learning and to gain knowledge without being fully monitored by their teachers (Olsen & Pedersen, 2005). SCL trains students to apply deep learning in their studies, especially among polytechnics student (Mustapha, Bunian, Rahman, Hussain, & Ahamad Bahtiar, 2014). Technical and Vocational Education and Training (TVET) also focusses on SCL to guide each student in attaining appropriate learning and life skills. Self-Regulated Learning (SRL) is SCL approach that provides these advantages.

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The present century is indeed conducive for the implementation of SRL as a more effective learning strategy for students. Information and Communication Technology (ICT) provides the appropriate tools for students to manage their learning effectively (Teo, Tan, Lee, Chai, Koh, & Chen, 2010). Students need to have a suitable learning strategy in order to gain knowledge. In SRL, students actively build cognitive knowledge in and evaluate their learning based on accurate content and correct knowledge (Mega, Ronconi, & De Beni, 2013). According to Sahdan and Abidin (2017) and Hassan and Puteh, (2017), the use of advanced technology requires good strategies and an effective lesson plan to succeed as advanced technology in itself will not guarantee a student success in his/her studies.

Previous studies have highlighted that many activities can be implemented during teaching and learning using SRL such as setting goals before starting to study, managing the learning strategy, monitoring one's progress and lastly, evaluating the results using one's own strategies. This kind of activity can be conducted through group work, individual assignments and presentations. Activities such as peer assessment can be implemented in the SRL process as it can increase the efficiency of cognitive and metacognitive processes (Abidin & Sahdan, 2017). These activities are based on the basic phases that should be conducted in order to implement SRL, which are forethought, performance and self-reflection (Ross, 1999). These activities serve as stimuli that improve SRL among students. Some of these stimuli are Information-Technology integration (IT-integration) in the learning environment, student-teacher interactions, motivational beliefs, self-regulative knowledge, information literacy and attitudes toward IT (McCombs, 1989; Schunk, 1989; Czaja & Sharit, 1998; Salomon & Almog, 1998; Kwon, 2001; Ee, 2002).

However, previous studies highlighted several challenges in implementing SRL due to stakeholders' (teachers'/students') perception and readiness. These included low level of students' acceptance and lack of confidence in applying SRL. Yusri, Rahimi, Shah, Wah and Hassan (2012) found that students did not have confidence in applying the strategies of SRL and lacked time to help their friends. This caused them to totally not accept SRL. In addition, students had a problem determining the correct techniques and effective learning strategies for themselves (Kailani & Ismail, 2010). If a strategy were not applied properly, the students' achievement and motivation to learn were also affected, although it is believed that SRL strategies can improve students' performance in learning (Skaalvik & Skaalvik, 2005).

More specific evidence from previous studies indicated that the level of students' readiness in applying SRL was at a moderate level (Tri, 1993; Klunklin, Viseskul, Sripusanapan, &Turale, 2010; Yusri et al., 2012). Several studies found that students were not prepared (Chen, 2002; Litzinger, Wise, & Lee, 2005) to implement SRL.

However, Daud, Rahman and Samsudin (2013) found that all students were ready to apply SRL in learning, including students of engineering. The study found that there were various issues concerning practices of SRL strategies among students. For example, students did not accept SRL as they found that it was not suitable for topics that were difficult, had difficulty choosing a learning style that was suitable and lacked confidence in applying SRL in the learning process. These challenges will make SRL difficult to apply in learning institutions. The results of previous studies also showed that problems in implementing SRL among students still exist. Hence, a survey was conducted to investigate the level of students' readiness for the implementation of Self-Regulated Learning.

SRL can be defined as an affective rule implemented in the learning process of an individual in order for him or her to achieve his/her goals (Nietfeld, Shores, & Hoffmann, 2014). Put simply, SRL is a student-centred learning strategy and students who implement this strategy will control and manage their own study plan to achieve their own goals. There are several learning theories related to SRL. One is constructivist. Constructivist theory related to SRL states that students should be allowed to learn from past experience, looking for information for their learning process from what they have themselves experienced (Briner, 1999). In the context of SRL, students find their own methods of learning and getting knowledge such as searching information via the Internet, books and previous experience. Another theory related to SRL is Gagne's learning theory. Gagne's theory focusses on the students' method in their process of finding new knowledge and new people (Gagne, 1985). Hence, when students implement SRL, they have the ability to search new knowledge on their own, acting independently.

METHODOLOGY

A quantitative survey study was conducted involving descriptive and inference statistics analysis. A set of questionnaires was used to identify the readiness of students in applying SRL. The questionnaire, measured by the Likert scale, was used because it coincided with the objectives of the study and respondents could choose their response within an appropriate time frame in order to provide better information (Sabitha, 2005).

The population of this study were the postgraduate students of the Master of Technical and Vocational Education (TVE) programme at Universiti Tun Hussein Onn Malaysia (UTHM) who had enrolled as full-time students. A total sample of 86 postgraduate students had been chosen as the samples of the study. To obtain the total sample of 86 individuals, a simple random sampling was used. Scheduled random numbers is a tool for conducting random sampling. The sample will be choosen randomly based on the number in the name list of students (Zikmund, Babin, & Griffin, 2010).

The questionnaire consisted of two sections, Section A and Section B. Section A contained questions on demographic

data relating to basic information of the respondents i.e. age, gender, race, semester of study and specialization. Section B contained questions that investigated the level of readiness of students in applying SRL. It used a 5-point Likert scale. The Self-Directed Learning Readiness Scale (SDLRS) was used in answering questions that were developed by Gugleilmino in 1977. Thirty-two items were used to study level of readiness for SRL and 32 positive items were selected based on items used by Hamid, Junoh, Mad and Balwi (2004), which were summaries of items proposed by Gugleilmino (1977).

The questionnaire was validated by three experts in order to check the style of language and sentence structure. The pilot study was conducted before the actual study was run. The Cronbach's Alpha (α) for the SDLRS was 0.879, which indicated that the relationship between the items was very good and suitable for use in the study.

The main method of analysing the data was descriptive and inference statistical. The analysis of data collected from Section A used frequency and percentage analysis, while data collected in Section B were analysed using descriptive analysis of mean and standard deviation. Inferential analysis involved several steps to determine the appropriate tests to validate the hypothesis. The first step was to determine whether the data collected were normal or not. According to the Central-Limit Theorem (CLT), the estimated data distribution is normal regardless of the initial distribution of data as long as the sample size is large enough i.e. held at least 30 people (Rumsey, 2011). Data can also be seen as normal or not based on the value of skewness and kurtosis. Data are normally distributed if the skewness and kurtosis of each datum in the study is between 1.0 and -1.0.

RESULTS

Out of 86 returned questionnaires, a total of 80 questionnaires were analysed and six were incomplete. The response rate for this study was 93%; according to Dommeyer, Baum, Hanna and Chapman (2004), a 75% response rate is acceptable. Hence, the response rate for this study was acceptable for use.

The results for Section A, which was on demographics, showed that the majority of the respondents were women (60 respondents), while male respondents numbered only 20. This suggested that females were the dominant gender in the postgraduate programme, the Master of TVE, in UTHM. Distribution by gender of the respondents is given in Table 1.

Table 1
Number of respondents by gender

Gender	Respondents (Frequency)	Percentage (%)
Male	20	25
Female	60	75
Total	80	100

TVE postgraduate students are divided into three semesters. The TVE programme runs for a year and a half. Respondents for this study were drawn from the three

semesters in order for full representation of the overall population. The majority of the respondents were students in their final semester, the third semester, totalling 50 students. This was followed by students in Semester 1 (17) and Semester 2 (13). This distribution is seen in Table 2.

Table 2
Number of respondents by semester

Semester of Study	Respondent (Frequency)	Percentage (%)
Semester 1	17	21.3
Semester 2	13	16.3
Semester 3	50	62.5
Total	80	100

The result for the overall mean score for the level of readiness of students to apply SRL as derived from Section B was 4.09 (Standard Deviation=0.36), which was high. This indicated that the students were ready to practise SRL and they were willing to apply SRL strategies. The mean scores according to item were also high, from 4.25 to 3.85. However, one item, item 21, had an average mean score of 3.74. Item 21 refers to factors that made the students open to learning opportunities. Hence, these factors gave less impact on the level of readiness of students towards SRL practice. However, the overall mean score was still high. A summary of the data analysis on the readiness of the postgraduate students of the TVE Master's programme are summarised in Table 3.

Table 3
Mean scores for students' readiness for SRL

No	Item	Score	SD
1	I have a great respect for people who love to learn new things. (Item no 12)	4.25	0.67
2	I tried to find a relationship between what I had learnt and my long-term goal. (Item no 14)	4.23	0.57
3	I am responsible for my studies. (Item no 28)	4.23	0.57
4	Learning is a pleasure. (Item no 26)	4.19	0.64
5	I have no problem using any kind of learning method. (Item no 16)	3.94	0.68
6	My study was less effective because in every test, I got low marks. (Item no 10)	3.85	0.86
7	I like being the leader during group study. (Item no 21)	3.74	0.85
Overall Score		4.09	0.36

Descriptive analysis was conducted to identify the differences in readiness of students to apply SRL according to gender. Based on the mean scores, the difference in the mean of male and female students in readiness to apply SRL was 0.10, indicating that there was indeed a difference in the level of readiness to apply SRL. However,

a more thorough test was run using the independent sample t-test to further clarify the difference. Table 4 shows the mean score for the level of readiness.

Table 4
Mean score of TVET students

Level of Readiness	Mean	Standard Deviation
Male	4.01	0.31
Female	4.11	0.37

The independent sample t-test was selected to see whether there was a difference in readiness to apply SRL by gender. The results of the analysis showed that the significant value of Levene's test for equality of variances was p=0.118, where the value was greater than 0.05, indicating that the variance for the two groups was similar. The analysis of data on the first line was used as a reference. Next, the value of (p) Sig. (two-tailed) was referred to i.e. 0.261; this value was greater than the value of α=0.05, indicating that the null hypothesis failed to be rejected. Two groups were derived from the same population because there were no significant differences seen, t (78)=-1.133, p>0.05. Therefore, there were no significant differences in readiness to apply SRL among the students by gender. This means that readiness to apply SRL among female and male students was equal. A summary of the analysis of the independent-sample t-test can be seen in Table 5.

Table 5
Analysis of independent-sample T-test

		Levene's Test for Equality of Variances				
		F	Sig.	t	df	P value
Readiness	Equal variances assumed	2.501	0.118	-1.133	78	0.261
	Equal variances not assumed			- 1.243	38.837	0.221

DISCUSSION

TVE postgraduate students' readiness for the implementation of SRL was high and they were ready to apply SRL strategies. The results of this study have led to the students beginning Level 4 of SRL, rated Grow, where they were able to set directions for themselves, with the instructor or teacher acting as consultant. This showed that the students were ready to implement SRL. Student activities at this stage included individual work, group SRL and practical work. However, these findings contradict the findings of previous studies such as that by Yusri et al. (2012), who found that the level of readiness of students to apply SRL was average. According to Litzinger et al. (2005), students are not ready to implement SRL due to difficulty in learning subjects that need the full guidance of teachers. In

conclusion, the results of this study show a positive change in our education system as students seemed to have gained exposure to the advantages of using the strategy of SRL.

A further finding of the study was that there was no difference in readiness to apply SRL among students by gender. This proves that the level of readiness for SRL practice was not affected by gender. This findings of this study are supported by the work of Yukselturk and Bulut (2009), who in their study "Gender Differences in Self-Regulated Online Learning Environment", found that there was no significant difference in interest to apply SRL according to gender and achievement of students. The findings also contradict previous studies that found that female students were more ready to apply SRL than male students (Bezzina, 2010). The findings had shown that male preferred to be guided by teachers and that they lacked confidence to practise SRL.

CONCLUSION

It can be concluded that TVET students are ready for implementation of Self-Regulated Learning (SRL) in and out of the classroom. In addition, gender did not make a difference in student readiness to practise SRL. This suggests that students today are aware that they should choose an effective learning strategy in order to succeed in their academic achievement and personal skills.

REFERENCES

Abidin, N. A. B. Z., & Sahdan, S. (2017). Peer assessment: A challenge in the new generation. *Advanced Science Letters, 23*(2), 908–911.

Bezzina, F. H. (2010). Investigating gender differences in mathematics performance and in self-regulated learning. *Equality, Diversity and Inclusion: An International Journal, 29*(7), 669–693.

Briner, M. (1999). *What is constructivism?* University of Colorado: Denver School of Education.

Chen, C. C. (2002). Self-regulated learning strategies and achievement in an introduction to an information systems course. *Information Technology, Learning, and Performance Journal, 20*(1), 11–23.

Czaja, S. J., & Sharit, J. (1998). Age differences in attitudes toward computers. *Journal of Psychological Science, 5*3(5), 329–340.

Daud, K. A., Rahman, M. B., & Samsudin, M. A. (2013). E-Solms: *Kajian tentang tahap pembelajaran terarah melalui sistem pengurusan pembelajaran berorientasikan pelajar*. Retrieved from http://umkeprints.umk.edu.my/2849/1/artikel%20Teniat%20FTKW.pdf

Dommeyer, C. J., Baum, P., Hanna, R. W., & Chapman, K. S. (2004). Gathering faculty teaching evaluations by in-class and online surveys: Their effects on response rates and evaluations. *Assessment and Evaluation in Higher Education, 29*(5), 611–623.

Ee, J. (2002). *How teachers relate to high-achieving students.* Retrieved from http://www.el-usm.my/academic/sp100/02.pdf

Gagne, R. M. (1985). *Th*e conditions of learning and theory of instruction (4th ed.). New York: Holt, Rinehart & Winston.

Guglielmino, L. M. (1977). *Development of the self-directed learning readiness scale.* (Doctoral thesis). Available from university Microfilms International Theses database, Record No. 78–6004.

Hamid, M. A., Junoh, A., Mad, I., & Balwi, M. K. (2004). *Self-Directed learning and its relationship with awareness toward e-learning: A research among academic staff in Universiti Teknologi Malaysia, Skudai.* (Master's Thesis). Universiti Teknologi Malaysia, Malaysia. Retrieved from eprints.utm.my/2719/1/71977.pdf

Hassan, N. F., & Puteh, S. (2017). A survey of technology enabled active learning in teaching and learning practices to enhance the quality of engineering students. *Advanced Science Letters, 23*(2), 1104–1108.

Kailani, I., & Ismail, K. (2010). Mengenal pasti faktor-faktor yang menyebabkan pelajar kurang cemerlang dalam mata pelajaran sains. Satu kajian tinjauan di sekolah menengah luar bandar (1–7).

Klunklin, A., Viseskul, N., Sripusanapan, A., & Turale, S. (2010). Readiness for self-directed learning among nursing students in Thailand. *Nursing and Health Sciences, 12*(2), 177–181.

Kwon, S. Y. (2001). *Investigating the relationship between motivational factors and self-regulatory strategies in the knowledge construction process.* Graduate school of Ewha- Women's University, Seoul, Korea. Retrieved from http://www.icce2001.org/cd/pdf/poster3/krola.pdf

Litzinger, T. A., Wise, J. C., & Lee, S. C. (2005). Self-directed learning readiness among engineering undergraduate students. *Journal of Engineering Education, 94*(2), 215–221.

McCombs, B. L. (1989). Self-regulated learning and achievement: A phenomenological view. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement: Theory, research and practice*. New York: Springer-Verlag.

Mega, C., Ronconi, L., & De Beni, R. (2013). What makes a good student? How emotion, self-regulated learning, and motivation contribute to academic achievement. *Journal of Educational Psychology, 106*(1), 121–131. doi:10.1037/a0033546

Mustapha, R., Bunian, S., Rahman, S., Hussain, Y., & Ahamad Bahtiar, R. (2014). Environmental factors and students' learning approaches: A survey on Malaysian polytechnics students. *Journal of Education and Learning, 8*(4), 387–398.

Nietfeld, J. L., Shores, L. R., & Hoffmann, K. F. (2014). Self-regulation and gender within a game-based learning environment. *Journal of Educational Psychology, 106*, 961–973.

Olsen, P. B., & Pedersen, K. (2005). *Problem oriented project based learning: A workbook.* Roskilde University Press.

Ross, J. D. (1999). *Regulating hypermedia: Self-regulation learning strategies in a hypermedia environment. Components.* Virginia Polytechnic Institute and State University.

Rumsey, D. J. (2011). *Statistics for dummies* (2nd ed.). United States: Ohio State University.

Sabitha, M. (2005). *Kaedah Penyelidikan Sains Sosial*. Selangor: Pearson Prentice Hall.

Sahdan, S. B., & Abidin, N. A. B. Z. (2017). Self-Regulated learning: A literature review for 21st century learning technology. *Advanced Science Letters, 23*(2), 912–915.

Salomon, G., & Almog, T. (1998). Educational psychology and technology: A matter of reciprocal relations. *Teachers Collage Record, 100*(1), 222–241.

Schunk, D. H. (1989). Social cognitive theory and self-regulated learning. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement: Theory, research and practice.* New York: Springer-Verlag.

Skaalvik, S., & Skaalvik, E. M. (2005). Self-concept, motivational orientation, and help-seeking behavior in mathematics: A study of adults returning to high school. *Social Psychology of Education,* 8, 285–302.

Teo, T., Tan, S. C., Lee, C. B., Chai, C. S., Koh, J. H. L., & Chen, W. L., (2010). The self-directed learning with technology scale (SDLTS) for young students: An initial development and validation. *Computers and Education, 5*5(4),1764–1771.

Tri, D. (1993). *Readiness for self directed learning and achievenment of the student of universiti terbuka.* (Doctoral thesis). University of Victoria. Retrieved from http://repository.ut.ac.id/6276/

Yukselturk, E., & Bulut, S. (2009). Gender differences in a self-regulated online learning environment. *Educational Technology and Society, 12*(3), 12–22.

Yusri, G., Rahimi, N. M., Shah, P. M., Wah, W. H., & Hassan, A. T. (2012). Penggunaan strategi belajar bersama rakan dalam kalangan pelajar kursus Bahasa Arab di UniversitiTeknologi MARA (UiTM). *Asia Pacific Journal of Educators and Education, 27*, 37–50.

Zikmund, W. G., Babin, B. J., & Griffin, M. (2010). *Business research methods* (8th ed.). Canada:South-Western, Cengage Learning.

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Involvement of Mainstream Teachers in Inclusive Education: Are We Ready?

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ABSTRACT

The implementation of inclusive education is a challenging task because the teachers involved in inclusive education must equip themselves with field knowledge and pedagogical skills and, more importantly, they must have great passion for inclusive education. This research attempts to investigate the readiness of mainstream teachers who engaged in an inclusive education programme. Readiness was measured in three different aspects: (i) field knowledge, (ii) pedagogical skill, and (iii) attitude. A total of 128 mainstream teachers who were actively involved in inclusive education programmes in primary schools were invited to participate in this research. A questionnaire was constructed to measure the level of readiness among the participating teachers. The results revealed that although the readiness level in terms of pedagogical skill was high, the readiness for field knowledge and attitude were at medium level. Our findings suggest that more effort and pragmatic actions are required to facilitate mainstream teachers who teach in inclusive classes to enhance their field knowledge and strengthen their positive attitude towards inclusive education.

Keywords: Attitude, field knowledge, inclusive education, pedagogical skill, readiness

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INTRODUCTION

In the context of special needs, the Inclusive Education Programme (IEP) is a programme prepared for students who require special needs in learning where the students study together with normal students in classes taught by general teachers at mainstream schools (Madan & Sharma, 2013; Selamat, 1994). Historically, IEP for special-needs

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students was started in 1987 by the Ministry of Education (MoE) in accordance with the National Educational Philosophy. However, many schools face various issues and challenges in implementing IEP as a whole.

Most mainstream teachers do not understand why it is ideal for special-needs students to receive education together with mainstream students (Ammer, 1984) as teachers for special-needs children were specially trained and even receive an extra allowance to teach. This assumption has become an excuse for separating learning of special-needs students from that of normal students in mainstream classrooms. The situation is made worse when mainstream teachers who do not understand the situation are burdened with the presence of special-needs students in their own classrooms (Newton, Hunter-Johnson, Gardiner-Farquharson, & Cambridge, 2014). In fact, mainstream teachers tend to have questions regarding why special needs teachers cannot teach their students. Another question that may arise in their minds may be why special-needs students should be sent to mainstream schools when they are special needs. Sometimes, parents of normal students also carry misconceptions that the presence of special-needs students in mainstream classrooms may interfere with the teaching and learning (T&L) process. Worse, some may perceive special-needs students as 'problematic' students.

The fact that mainstream teachers already have a target and Take-Off Value (TOV) for their students may further contribute to some problems since they may be reluctant to accept special needs students as reports and special documentation may need to be prepared (Schultz, 1982), thus increasing their workload in school. In addition, the problem of achieving good examination results for special-needs students is questioned especially during grading of examination papers and giving marks according to the specific scheme. Sometimes, when special-needs students receive good marks in their examinations, the special-needs teachers are thought to have furnished some answers or have facilitated the students in the examination due to the misconception about the student's abilities. Moreover, the rights of special-needs students to be given extra time in examinations are denied as they are required to follow the examination rules set for all students.

Negative perceptions may arise from various quarters since special-needs students are seen as a group who cannot achieve success or excellence in their studies. Therefore, the success of IEP is not only dependent on the efforts, initiatives and motivations of the teachers who implement the programme, but also on the attitude, knowledge and skills mastered by the teachers to help special-needs students. To date, it is still unclear whether mainstream teachers have sufficient teaching skills, attitude and field knowledge to carry out this huge task. Therefore, this study was carried out to investigate the readiness level (teaching skills, attitude, and field knowledge) of mainstream teachers in teaching special-needs students in IEP.

LITERATURE REVIEW

Inclusive Education Programme (IEP)

The Inclusive Education Programme (IEP) is implemented in certain schools throughout the country to fulfil the needs of special-needs students and also based on the requests of parents who have special-needs children. The present policies that stress on the rights for formal education for special-needs students have been firmed up by the Compulsory Education and Education for All policies that have now become the basis for planning prediction in implementing Special Needs Education in Malaysia (Ministry of Education Malaysia, 2004).

The Education Act 1996 prepared by the MoE underlined the ministry's responsibility in providing education services for special-needs students. Individuals identified by registered medical practitioners as "having disability that can interfere with the learning process in a normal classroom" due to problems of eyesight, hearing and learning are categorised as students in need of special education.

Table 1 shows the formula for the education and status and the agencies involved of various categories of special-needs students (Ministry/Department) that provide educational programmes based on the specific categories.

Table 1
Categories of special-needs students and allocation for education programmes

No	Categories of special-needs students	Status	Agency/Placement
1	Cognitive (Light): Learning problem	Special-needs students	MoE/Integration and Inclusive
2	Physical (Normal cognitive)	Non-special-needs students	MoE/Inclusive
3	Emotion and Behaviour (Light/ Moderate) [Autism and Attention-Deficit/ Hyperactivity Disorder (*ADHD*)]	i Included in "problem" category if mental ability is below that of normal ii Non-special-needs students: If capable	MoE/Integration (learning problem) Inclusive (normal students)
4	Dyslexia (Light/Moderate)	i Included in the category of Learning Problem if mental ability is below the normal limit ii Non-special-needs students: if detected before diagnosis	MoE/Integration (learning problem) Inclusive (normal students)

Besides Special Education Schools and integration programmes (Special Education classroom in mainstream schools), the Inclusive Education approach is among several choices available for special-needs students in Malaysia. In the context of Special Education in Malaysia, the approach is still limited in implementation as it is

available in certain schools only. As shown in Table 1, there are only four categories of special-needs students who participate in IEP. IEP is a programme offered to students with special educational needs to learn with their normal friends in the same classroom and school, enjoying all the learning facilities in a normal situation regardless of status (MacKichan & Harkins, 2013). Based on "The Statement", Art 2 (UNESCO, 1994, p. ix), "regular schools with this inclusive orientation are the most effective means of combating discrimination, creating welcoming teaching-learning environments, building and inclusive society and achieving education for all…."

From the perspective of philosophy, education is a fundamental human right since it is the basic right of all humans in the world to learn. The handicapped, who also have the same level of interests, desires and ambitions as that of normal individuals, must be given equal opportunities as other individuals in order not to be left out of the national learning streams. After all, some of them have cognitive intelligence at the same level as that of normal individuals, with some even able to exceed the level of achievements of other normal students (Lipsky & Gartner, 1996). The objectives of IEP are as follows:

i) To increase the awareness of normal students that special-needs students are also part of the community;

ii) To provide opportunities to special-needs students to adapt to learning with their normal peers and to join prepared activities together;

iii) To give similar knowledge and skills to special-needs students as given to normal students to increase their self-confidence; and

iv) To avoid discrimination among students in education and/or facilities provided by the MoE.

The effectiveness of teaching and learning in the classroom is mostly dependent on the interaction styles between teacher and student, student and student as well as student and teaching materials. In order to fulfil the requirement of special-needs students in the classroom, mainstream teachers must make some adaptation in the aspects of teaching strategies and teaching materials (Denning & Moody, 2013).

METHODOLOGY

Research Sampling

The study was conducted among mainstream teachers in Ayer Hitam zone, Johor, Malaysia. Teachers who were involved in the study were those who taught special-needs students in IEP in primary school. The number of respondents was 128 teachers. The majority (84.4%) were females, with the remaining (15.6%) being males.

Research Instrument

The research instrument utilised was self-developed questionnaires that consisted of 35 items based on the study's objectives. The questionnaire applied a 5-point scale (1="Strongly Disagree", 2="Disagree", 3="Less Agree", 4="Agree"

and 5="Strongly Agree") to assist the respondents in choosing their options to the questions asked. The reliability coefficient for the questionnaire was good (α=0.96).

RESULTS

The research findings are presented in three parts based on the studied aspects.

Readiness Level in Terms of Teaching Skills

There was medium-to-high readiness levels in terms of teaching skills for teaching specials-needs students (see Table 2).

Table 2
Readiness levels in teaching skills

No	Item	Mean (M)	Standard Deviation (SD)	Readiness Level
1	I understand the teaching strategy for the Inclusive Education Programme (IEP).	3.55	0.71	Medium
2	I use an appropriate teaching strategy for the teaching and learning process for IEP.	3.62	0.74	Medium
3	I arrange the seating arrangement of students according to the classroom model practised in the IEP.	3.64	0.73	Medium
4	I use coloured cards and photographic materials during teaching and learning.	3.68	0.74	High
5	I conduct group activities based on students' abilities.	3.83	0.75	High
6	I make sure assignments given to the students are on par with their abilities.	3.92	0.74	High
7	I prepare teaching materials that are suitable for the students' ability level.	3.97	0.72	High
8	I always provide opportunities for low achieving students to interact with high achieving students.	3.96	0.74	High
9	I often give encouragement and support to special-needs students.	3.99	0.74	High
10	I believe that the social development of students may influence students' academic performance.	4.05	0.74	High
	Mean	3.82	0.60	High

Seven items regarding the readiness level of teaching skills investigated in the questionnaire achieved a "high" readiness level. The item with the highest readiness level (M=4.05, SD=0.74) was the 10th item, which stated teachers' belief that the students' social development may influence their achievement in the academic field. The item that achieved the lowest mean score (M=3.55, SD=0.71) was teachers'

understanding of the teaching strategy for IEP. Overall, the mean readiness level of teaching skills was 3.82 (SD=0.60), which is rather high.

Readiness Level in Terms of Teachers' Attitude

The readiness level in terms of teachers' attitude was generally lower than that of teaching skills (see Table 3).

Table 3
Readiness level of teacher's attitude

No	Item	Mean (M)	Standard Deviation (SD)	Readiness Level
1	I pay full attention in teaching during inclusive class.	3.63	0.83	Medium
2	I like to read materials related to special-needs students' development.	3.39	0.82	Medium
3	I am interested in attending courses related to teaching special-needs students.	3.28	0.92	Medium
4	I often search information related to learning problems among special-needs students available in the mass media.	3.20	0.81	Medium
5	I always discuss and share the idea of teaching methods with other special education teachers.	3.42	0.89	Medium
6	I do not feel depressed when dealing with special-needs students.	3.48	0.88	Medium
7	I am interested in inclusive education as more opportunities are given for further education and career development.	3.41	0.81	Medium
8	I am always ready to attend enhancement courses related to inclusive education.	3.19	0.92	Medium
9	I am caring and friendly when communicating with special-needs students.	3.69	0.71	Medium
10	I think that educating special-needs students is a new challenge for a teacher.	3.57	0.85	Medium
	Mean	3.43	0.71	Medium

Mainstream teachers who are always caring and friendly when communicating with special-needs students tend to achieve the highest mean score of 3.69 (SD=0.71). Nevertheless, mainstream teachers who showed interested to attend training to enhance their knowledge on Inclusive Education achieved the lowest mean score of 3.19 (SD=0.92). On the whole, all the mainstream teachers showed a medium readiness level (M=3.43, SD=0.71) in terms of attitude towards involvement in IEP.

Readiness Level in Terms of Field Knowledge

The readiness level in terms of field knowledge of mainstream teachers towards involvement in IEP involvement ranged from low to medium (see Table 4).

Table 4
Readiness level in terms of field knowledge

No	Item	Mean (M)	Standard Deviation (SD)	Readiness Level
1	I attended the basic special education course.	2.20	1.06	Low
2	I understand the different types of learning problem faced by special-needs students.	2.89	0.82	Medium
3	I know the techniques to manage special-needs students in the classroom.	2.92	0.77	Medium
4	I know the characteristics of an autistic student.	2.97	0.85	Medium
5	I know the characteristics of a spastic student.	2.94	0.86	Medium
6	I know the characteristics of an intelligent student.	3.24	0.87	Medium
7	I know the characteristics of a dyslexic student.	3.02	0.88	Medium
8	I know the way to identify a special-needs student in an inclusive class.	2.95	0.84	Medium
9	I know the types of inclusive education implemented in school.	2.98	0.86	Medium
10	I know the strategies that should be practised for a successful inclusive education programme.	2.97	0.86	Medium
	Average of Mean	2.95	0.82	Medium

Overall, the readiness level of mainstream teachers in field knowledge was the lowest (M=2.95, SD=0.82) compared to teaching skills and attitude. Specifically, the readiness level of mainstream teachers in identifying the characteristics of special-needs students who were categorised as "intelligent" showed the highest level (M=3.24, SD=0.87). Mainstream teachers who had attended basic training in Special Education yielded the lowest mean score of 2.20 (SD=1.06). On the whole, the mean readiness level of field knowledge for mainstream teachers involved in IEP was medium (M=2.95, SD=0.82).

DISCUSSION AND CONCLUSION

The present findings showed that there was a high readiness level in terms of teaching skills among mainstream teachers who engaged in IEP. This finding was different from other findings obtained in other parts of the world. In South Africa, Hay, Smith and Pualsen (2001) found that teachers were not prepared to teach in inclusive classes due to lack of teaching experience, training and

facilities. Teaching skills is an important component in inclusive education. This is in line with the statement from the European Agency for Development in Special-Needs Education (2010, p. 7): "Underlying the process of inclusion is the assumption that the general classroom teacher has certain knowledge and understanding about the needs of different learners, teaching techniques and curriculum strategies."

Apart from teaching skills, the present results indicated that the mainstream teachers had a medium readiness level in terms of attitude. This outcome was not in line with the findings from Subban and Sharma (2005) and Ahsan, Sharma and Deppeler (2012), who found that regular-education teachers had a positive attitude towards the idea of an inclusive programme and perceived the inclusive programme to be beneficial for all participants. The current findings revealed that mainstreams teachers did not show interest in understanding the needs of IEP generally and students with special needs specifically. This might affect the effectiveness of IEP implementation. According to Agbenyega (2007), the elements of concern as well as attitude are important to ensure high commitment among teachers in IEP implementation. The change in attitude and belief can be promoted by providing generic support as well as training services related to inclusive education.

In the aspect of field knowledge, the current findings indicated that mainstream teachers had a relatively low level of readiness compared to teaching skills and attitude. This discovery contradicted the outcome of Bari, Mohd Yasin and Hamzah (2014), who noticed that the special-education trainees had shown a high level of knowledge for teaching in an inclusive programme. The teachers of inclusive programmes are required not only to master new knowledge but also to acquire knowledge continuously. Support from their school and the MoE in the form of training is one of the effective ways to equip teachers with knowledge (Alias, Harrington, Paimin, Sern, Foong, Mohamed, & Mohamed, 2016). Apart from this, it is even more important for teachers to engage in self-directed learning to gain more profound knowledge. This can be achieved through receiving relevant information from the mass media (Saad, Abd Hamid, & Ismail, 2014). As mentioned by Reynold (2009), teachers' knowledge plays a pivotal role in creating an effective and conducive learning environment and in critically influencing the development of inclusive education.

Taken together, the readiness of teachers in IEP in terms of teaching skills, attitude and knowledge has to be improved in order to make sure that IEP is a successful and sustainable programme. As Biamba (2016) stated, a successful special education within a mainstream setting is largely dependent on teachers' attitude, knowledge and skills, teaching technique and materials and of course, time.

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REFERENCES

Agbenyega, J. (2007). Examining teachers' concerns and attitudes to inclusive education in Ghana. *International Journal of Whole Schooling, 3*(1), 41–56.

Ahsan, M. T., Sharma, U., & Deppeler, J. M. (2012). Exploring pre-service teachers' perceived teaching-efficacy, attitudes and concerns about inclusive education in Bangladesh. *International Journal of Whole Schooling, 8*(2). Retrieved from http://files.eric.ed.gov/fulltext/EJ975715.pdf

Alias, M., Harrington, I., Paimin, A. N., Sern, L. C., Foong, M. F., Mohamed, M., & Mohamed, W. A. W. (2016). Understanding current situations: Facilitating inclusive education implementation. *Advanced Science Letter, 22*(5/6), 1677–1682.

Ammer, J. J. (1984). The mechanics of mainstreaming: Considering the regular educators' perspective. *Remedial and Special Education, 5*(6), 15–20.

Bari, S., Mohd Yasin, M. H., & Hamzah, M. N. (2014). The readiness of special education trainees to teach in inclusive program. *International Education Studies, 7*(13), 206–211.

Biamba, C. (2016). Inclusion and classroom practices in a Swedish school: A case study of a school in Stockholm. *Journal of Education and Practice, 7*(3), 119–124.

Denning, C. B., & Moody, A. K. (2013). Supporting students with autism spectrum disorders in inclusive settings: Rethinking instruction and design. *Electronic Journal for Inclusive Education,3*(1), 6.

European Agency for Development in Special Needs Education. (2010). *Teacher education for inclusion – International literature review.* Odense, Denmark: European Agency for Development in Special Needs Education.

Hay, J. F., Smit, J., & Paulsen, M. (2001). Teacher preparedness for inclusive education. *South Africa Journal of Education, 21*(4), 213–218.

Lipsky, D. K., & Gartner, A. (1996). Inclusion, school restructuring, and remaking of American society. *Harvard Educational Review, 66*, 762–796.

MacKichan, M. D., & Harkins, M. J. (2013). Inclusive education: Perceptions of parents of children with special needs of the individual program planning process. *Electronic Journal for Inclusive Education, 3*(1). Retrieved from http://corescholar.libraries.wright.edu/ejie/vol3/iss1/7/

Madan, A., & Sharma, N. (2013). Inclusive education for children with disabilities: Preparing schools to meet the challenge. *Electronic Journal for Inclusive Education, 3*(1). Retrieved from http://corescholar.libraries.wright.edu/ejie/vol3/iss1/4/

Ministry of Education Malaysia. (2004). *The development of education: National report of Malaysia.* Retrieved from http://www.ibe.unesco.org/International/ICE/natrap/Malaysia.pdf

Newton, N., Hunter-Johnson, Y., Gardiner-Farquharson, B. L., & Cambridge, J. (2014). Bahamian teachers' perceptions of inclusion as a foundational platform for adult education programs. *International Journal of Special Education, 29*(3), 26–37. Retrieved from: http://files.eric.ed.gov/fulltext/ej1045963.pdf

Reynold, R. (2009). *Teaching studies of society and environment in the primary school*. South Melbourne: Oxford University Press.

Saad, S., Abd Hamid, S. R., & Ismail, K. (2014). Knowledge of learning disabilities among pre-service and in-service trainee teachers in Malaysia. *IIUM Journal of Educational Studies, 2*(2), 22–39.

Schultz, L. R. (1982). Educating the special needs student in the regular classroom. *Exceptional Children, 48*(4), 366–68.

Selamat, A. R. (1994, June). *Strategi-strategi bagi pelaksanaan pendidikan inklusif*. Paper presented at the Bengkel Kebangsaan Pertama Pendidikan Inklusif, Langkawi, Kedah, Malaysia.

Subban, P., & Sharma, D. U. (2005). Understanding educator attitudes toward the implementation of inclusive education. *Disability Studies Quarterly, 25*(2). Retrieved from http://dsq-sds.org/article/view/545/722

Unesco. (1994). *The Salamanca statement and framework for action: On special needs education.* Retrieved from http://www.unesco.org/education/pdf/SALAMA_E.PDF

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Narrowing Communication Gaps in Teaching International Students

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ABSTRACT

Research into the adjustment experiences of international students in higher education institutions has been undertaken over the past 50 years. In the related literature, much of the discussion has focussed on academic challenges that international students have encountered during their transition. Debate has also centred on the methods of support that academic staff could provide to assist the transition of international students. This paper highlights the findings of a case study on pedagogical approaches of academic staff in a Malaysian Technical University in narrowing communication gaps when teaching international students. Nine academic staff were interviewed to explore their experiences on communication challenges in the classroom and methods they implemented in encountering those issues. Findings illustrated that low English proficiency was the most significant challenge these staff encountered in teaching international students, and two specific pedagogical approaches were implemented in assisting this issue, namely, (i) using simple English with teaching aids, and (ii) teaching in two languages were. These methods were perceived to have assisted not just the learning of international students, but also to have narrowed communication gaps between the students and academic staff.

Keywords: Academic staff, adjustment, international students, pedagogical approaches

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INTRODUCTION

Malaysia has become one of the more active countries in recruiting international students. In 2008, there were 49,916 international students in public universities in Malaysia, 45% of whom were from countries in the Middle East and Africa. This number increased to 89,919 international students

in 2010 and it was targeted that in 2020, there would be approximately 200,000 international students studying in Malaysia (Knight & Sirat, 2011, cited in Bhandari & Lefébure, 2015). Therefore, researching the experiences of this growing population is an important undertaking not only to understand the students' points of view, but also to ascertain how academic staff and institutions are responding to having more international students in the Malaysian higher education classroom.

In relation to linguistic proficiency, international students encounter difficulties in understanding the language and using English as expected by the institution (Akazaki, 2010; Bolton & Kuteeva, 2012; Dao, Lee, & Chang, 2007; De Foote, 2010; Fritz, Chin, & De Marinis, 2008; Sawir, Marginson, Deumert, Nyland, & Ramia, 2008). These issues have arisen because international students are not familiar with the use of English in a particular culture, especially when communication in English involves several different non-English speakers, for example in the Malaysian Technical University (MTU, a pseudonym).

The Malaysian Technical University is located more than 200 kilometres from Kuala Lumpur, which is the capital city of Malaysia. It was first developed as a training institution and then established as a focussed university in 2007. MTU offers diplomas and undergraduate and postgraduate courses in engineering, technology management, teacher training and information technology. To date, MTU has more than 15,000 students (including approximately 500 international students) learning in various TVET programmes offered at the institution. Its local staff and student population represent multi-ethnic Malaysians in the local communities, with approximately 70% students and staff being Malay, while the remaining 30% are of Chinese, Indian and indigenous ethnicity. The majority of international students (approximately 95%) originally come from the Middle East and Africa. The formal and common language used in MTU is Bahasa Melayu; however, MTU mandates English as the language of instruction in all lectures involving international students.

METHODOLOGY

This qualitative research involved nine academic staff (lecturers and tutors) from three different engineering faculties in MTU. They each had between three and 10 years of teaching experiences, and each had at least a Bachelor's Degree in Engineering. All of them taught subjects that required students to be involved in individual or group assignments and projects to conduct case studies, solve engineering problems with numerous calculations and conduct laboratory experiments. At the start of each interview, the academic staff were asked to describe their foundational teaching philosophies. All the participants indicated that their principal philosophy was "to transfer knowledge" so that students were able to "demonstrate their understanding." They described teaching as "delivering knowledge with satisfaction," with the satisfaction derived from succeeding in

making "students understand." Another important aim was to be "just" and "fair to all their students," regardless of whether they were international or local. This was conveyed through statements that stressed that their teaching must "be fair" or must "be equal" to all their students.

RESULTS

The teaching experiences of the academic staff in relation to teaching international students were characterised by a range of challenges. The most challenging was communicating with international students in English. In particular, the academic staff raised three issues related to communicating in English. Firstly, they said it was difficult because they believed their level of English proficiency was inadequate for teaching in English. Secondly, they raised concerns about the English proficiency of local students. The final challenge was related to their difficulty in understanding the English used by international students, which differed from Malaysian English in terms of accent, rhythm, intonation, expressions and structure, among other language features.

The research data indicated that academic staff used two basic strategies to adjust to having international students in their classes. Firstly, they used 'simple English' together with teaching aids. Secondly, they taught in two languages. Both approaches were driven by objectives that were fundamental to their teaching philosophy, that is, to gain satisfaction when they taught and to be fair to all students.

Using Simple English with Teaching Aids

The majority of the academic staff indicated that teaching using simple English together with teaching aids helped the international students to better understand their teaching. Zulkifli shared his experiences:

> International students usually don't know what I was talking about … So I have to lower my expectations so that I can make sure they can receive knowledge easier … I have to ask them a lot of questions and simplify my teaching by using simple English and examples … Usually as a part of my introduction in class, I showed them structures of buildings … I have to make the effort to browse the Internet and show them the pictures of buildings and structures … I also have to ask them many times, "Do you understand what I was talking about?" … Let's say, I was talking about a building and asked them to look at the structure or design of the building. I have to give simple ideas like, "Where is this building? Is it next to X?" … Or, "What do you think about the design?" … "How do you think of this floor plan?"

Mastura and Zubaidah also used teaching aids in addition to using simple English. They used diagrams and videos to assist international students' learning. Mastura explained:

> I always use diagrams and simple English. They seem to understand better.

> If I have to teach in laboratories and conduct experiments, I will show them some videos on how the application of some lab work is used in real life. I also did some extra lab sessions for them.

Zubaidah stated:

> Before I had international students in class, I didn't use videos to aid my teaching … But when I have international students, I was afraid they will not understand what I'm teaching, so I used teaching aids. I did not make any obvious change to my teaching slides, just put simple notes on the slides and searched for videos on the Internet … They enjoyed it, they liked it, they understood, they liked watching pictures and diagrams, and they were saying 'OK, OK'.

Mastura and Zubaidah perceived that their international students understood the lessons better when diagrams and videos were used in teaching. The responses of the international students showed that they enjoyed and understood this approach; this helped to make the staff feel satisfied with their teaching. They also believed that they were being fair to the local students when they taught using simple English. Shahrul explained:

> I use simple English when I teach and deliver teaching slowly … Of course, because when I was in the UK I had hard times to understand my lecturer … But I don't use Bahasa Melayu at all … So I am sure that whatever I teach is equally understood [by international students and local students].

Shauki supported Shahrul's statement. He too taught entirely in English using simple language. He said, "We tried to use simple sentences, we give simple analogies, sometimes local students' English is just as bad, but it's fine, both [local and international students'] English is the same."

The experiences of academic staff suggested that their intention to teach using simple English together with teaching aids was perceived to benefit not only the understanding and learning of international students, but also that of local students. Hence, this was the most common strategy implemented by the staff when teaching international students.

Teaching in Two Languages

Apart from using simple English, there were also times when the academic staff did not feel confident enough to teach in English, or when they observed that teaching in English did not help the local students. In such cases, they used another approach, which was to teach in two languages. The academic staff who used this strategy as an adjustment effort initially taught the class using Bahasa Melayu and then taught their international students in English. Some of the staff implemented this by holding separate sessions for the international

students and the local students. Fahmi was one of the lecturers who used this method. He explained:

> I said to him [the international student], "Please bear with me for a while, let me finish where I started, and I would like to see you after this class." So, after the session, I met the student and asked whether we can have our class separately from the other local students at a different time … He said, "Yes." I was so relieved! I can teach using Bahasa Melayu to the class, and teach him personally in English … My English will not be exposed then … But after individual sessions with that student, I realised we have common issues in speaking English … He used the African kind of English. I used the Malaysian kind of English. I think that was a challenge but in an interesting way … Because we have the same difficulties in speaking. We don't know the correct verbs or grammar. But that made me feel free to speak English as well.

Fahmi believed that it was a good decision to teach in Bahasa Melayu and then in English because he could ensure that both the local and international students benefitted when they were separated. In addition, Fahmi perceived that it helped him not to "expose" his limited English proficiency. Marina had a similar strategy. However, she separated the class because of her sense of inadequacy in teaching in English. She elaborated:

> I was not confident [teaching in English] … So I requested that the classes be divided into two smaller classes. There was one lecturer who was willing to teach international students, so I asked international students to register in her class. I took the class which had no international students so that I can teach in my mother tongue.

In a follow-up interview, Marina indicated that despite her desire to teach classes without any international students, there was one international student who pleaded to be in her class. She confessed to the student her weakness with regards to teaching in English, but she accepted the student in her class on the condition that her class would be conducted partly in English and partly in Bahasa Melayu.

In addition to separating local and international students, another method of teaching in two languages was by teaching the whole class initially in Bahasa Melayu and then repeating the content in English immediately afterwards. However, this was dependent on the response of the students. Fauziah expressed the following, "All teaching slides are in English, the explanations are also in English. When there are Malay students who did not understand, I will explain in Bahasa Melayu. But whenever I explain in Bahasa Melayu, the

foreigners [international students] will say they are lost." She added, "The problem is, when I speak in English, the local students will not like it. They hardly understand my English. So, if I explain anything in English, I will have to repeat the same information in Bahasa Melayu."

Both Zubaidah and Fauziah clearly illustrated their dilemma. While Zubaidah described the international students as being 'lost' when she taught in Bahasa Melayu, Fauziah stated that local students disliked it when she taught in English. This situation often forced the lecturers to teach in two languages because they were aiming to fulfil their fundamental teaching philosophy of being fair to students and ensuring that they understood the lectures.

Shahrul provided a clear example of how repeating information in two languages was in line with his teaching approach:

> They [local students] were having problems last time, so I will explain it in Malay. I explain in English first, I will talk in Malay after that, and I will explain again in English. Just for the sake of accommodating the international student so that they won't miss any information.

Although teaching in two languages provided a sense of satisfaction for the staff, the situation created a predicament for them, stretching their capacity to comply with the mandated use of English as the language of instruction in MTU. Repeating lectures in two languages required extra time and energy, and it added to the workload of the staff; however, not teaching in two languages would have violated the philosophy of the staff i.e. that they needed to be fair to all their students.

DISCUSSION

The English language, which has been identified as an indispensable competence for international students in previous research (Fritz et al., 2008; Andrade, 2010; Vanderford & Grote, 2012; Zhang & Mi, 2010), is also critical in this study of the academic adjustment of participants. The majority of participants argued that limited and different styles of speaking English led to incidents of miscommunication and misinterpretation, which further interrupted the process of learning and teaching. The tensions surrounding language issues among the international students were supported by extensive literature, which argues that English is the major factor that influences international students' ability to adjust when tuition is in English. Previous studies have argued that the level of English proficiency and the differences in grammar, syntax and accents between local variations of English can create confusion, which strongly affects the experiences of international students (Andrade, 2010; Hennebry et al., 2012; Robertson et al., 2000). Some studies have emphasised that English academic writing is a significant major obstacle for international students' academic progress, in addition to English in the oral mode (Arkoudis & Tran, 2010; Zhang & Mi, 2010; Hennebry et al., 2012). Other studies have agreed that linguistic issues are, to some degree,

related to culture and are not necessarily due to language proficiency (Hennebry et al., 2012).

The majority of the academic staff in this study moved between two languages, English and Bahasa Melayu, to satisfy their philosophy and needs and those of the local students who struggled with English. This decision in turn increased their workload because they had to repeat classes in two languages. These findings support the argument that academic staff who are non-native speakers who have to use English as the language of instruction have a greater task than do native speakers of English who teach in a non-English language setting (Teekens, 2003; Bolton & Kuteeva, 2012). Given the widespread use of English as the instructional and social language, non-native English-speaking academic staff who work with culturally diverse and internationalising classrooms are also faced with the complex effects of language. In the case of MTU, the complexity of the situation was not just due to the limited English proficiency of the international students but also the inability of the academic staff to effectively teach in English. However, Teekens (2003) and Singh, Pandian and Singh (2015) argued that this effect has been greatly underestimated, given that there has been limited research and policy development in this area.

CONCLUSION

Most related studies on English relative to the experiences of international students who are non-native English speakers have been conducted in Western English settings. This paper highlights findings on deeper complexities in a situation where English is used among non-native English international students in a non-English setting that includes diverse non-English speakers. One of the challenges encountered was to provide a pedagogical approach that could suffice the needs of staff's own English proficiency and their teaching philosophy as well as solve issues related to English language proficiency among international students (and local students). In this study, these struggles led to actions that increased the workload of the academic staff involved in terms of time and energy. The predicament revealed in this study suffered by teaching staff at MTU, nevertheless, has revealed a more complex undertaking that goes beyond much of the contemporary understanding of the use of the English language in international higher education.

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REFERENCES

Akazaki, M. (2010). Negotiating different assumptions: The experience of mature Japanese students in British universities. *Journal of Studies in International Education, 14*(4), 355–370.

Andrade, M. S. (2010). Increasing accountability: Faculty perspectives on the English language of nonnative English speakers. *Journal of Studies in International Education, 14*(3), 221–239.

Arkoudis, S., & Tran, L. T. (2010). Writing blah blah blah: Lecturers' approaches and challenges in supporting international students. *International Journal of Teaching and Learning in Higher Education, 22*(2), 169–178.

Bhandari, R., & Lefébure, A. (Eds.). (2015). *Asia: the next higher education superpower?* New York: Institute of International Education.

Bolton, K., & Kuteeva, M. (2012). English as an academic language at a Swedish university: Parallel language use and the "threat" of English. *Journal of Multilingual and Multicultural Development, 33*(5), 429–447.

Dao, T. K., Lee, D., & Chang, H. L. (2007). Acculturation level, perceived English fluency, perceived social support level, and depression among Taiwanese international students. *College Student Journal, 41*(2), 287–295.

De Foote, D. E. (2010). *The increased necessity of augmenting the teaching of commonly used English language idioms, cliches, proverbs, slang words, and expressions with context examples in the ESL academic setting*. Pittsburgh: RoseDog Books.

Fritz, M. V., Chin, D., & De Marinis, V. (2008). Stressors, anxiety, acculturation and adjustment among international and North American students. *International Journal of Intercultural Relations, 32*(3), 244–259.

Hennebry, M., Lo, Y. Y., & Macaro, E. (2012). Differing perspectives of non-native speaker students' linguistic experiences on higher degree courses. *Oxford Review of Education, 38*(2), 209–230.

Oliver, R., Vanderford, S., & Grote, E. (2012). Evidence of English language proficiency and academic achievement of non-English-speaking background students. *Higher Education Research and Development, 31*(4), 541–555.

Robertson, M., Line, M., Jones, S., & Thomas, S. (2000). International students, learning environments and perceptions: a case study using the Delphi technique. *Higher Education Research and Development, 19*(1), 89–102.

Sawir, E., Marginson, S., Deumert, A., Nyland, C., & Ramia, G. (2008). Loneliness and international students: An Australian study. *Journal of Studies in International Education, 12*(2), 148–180.

Singh, M. K. M., Pandian, A., & Singh, S. K. G. (2015). International graduate students' experience in academic listening practices in a Malaysian public university: Challenges and overcoming measures. *The Asia-Pacific Education Researcher, 24*(1), 91–102.

Teekens, H. (2003). The requirement to develop specific skills for teaching in an intercultural setting. *Journal of Studies in International Education, 7*(1), 108–119.

Zhang, Y., & Mi, Y. (2010). Another look at the language difficulties of international students. *Journal of Studies in International Education, 14*(4), 371–388.

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Developing an Instrument for Assessing Learning Efforts among Engineering Students

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ABSTRACT

Assessment of learning efforts is important in providing a better understanding of learners of different disciplines. Lack of a valid and reliable instrument is making the assessment of learning efforts difficult. This paper describes the design and development process of a learning efforts instrument to be used among engineering students. The learning efforts items were generated based on Carbonaro's learning efforts model. He proposed that learning efforts constitute three components, namely, intellectual effort, rule-orientated effort and procedural effort. The draft instrument was judged by experts on its face validity and was subsequently distributed to 360 engineering students, who were instructed to rate their agreement to given statements. The subsequent reliability analysis and exploratory factor analysis supported the existence of two components. In conclusion, the data provided evidence that the efforts construct may be different from the learning efforts model proposed by Carbonaro in 2005. However, further analysis showed the existence of two components instead of three for the learning efforts construct that would fit the Malaysian education context. Thus, this paper provides evidence that replication research using the same instruments in cultural differences can provide differences in answers and outcomes.

Keywords: Exploratory factor analysis, instrument development, learning efforts

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INTRODUCTION

Intuition suggests that learning efforts are associated with academic achievement. Thus, learning efforts are of great interest to educators. Findings from studies on associations between learning efforts and academic achievement have not been consistent. While some have found positive

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associations (Mijid, 2014, pp. 11–14; Li, 2012, p. 178), others have failed to do so (Patron & Lopez, 2011, p. 6; Von Konsky, Ivins & Robey, 2005, p. 8). The inconsistency could be due to the lack of a valid and reliable instrument for assessing learning efforts as the constructs have not been adequately established. Indicators used to measure learning efforts vary from one study to another and choice of indicators seems to be based on the preference of researchers rather than on solid theoretical foundations. Among the indicators used are time spent on homework and attentiveness in class (Ceballo, 2004), total time spent finishing homework (Mijid, 2014, p. 8), attitude towards a course (Li, 2012), total time spent online (Patron & Lopez, 2011, p. 3) and self-report on efforts made to finish given assignments (Von Konsky, Ivins, & Robey, 2005). Mixed results have been found on the relationship between learning efforts and academic achievement depending on the indicators used. Total time spent on a course was not found to be associated with students' academic achievement (Patron & Lopez, 2011, p. 6). Total time spent on homework was also not found to be associated with success on the course (Mijid, 2014, pp. 11–14). Overall efforts based on self-reports were also not found to be associated with grades (Von Konsky, Ivins, & Robey, 2005, p. 8). Time spent on individual questions and the number of attempts students made to complete a question were associated with their grades (Mijid, 2014, p. 11–14). Attitude towards a course was also found to be associated with grades as shown by Li (2012, p. 179) in a study on the relationship between efforts and grades in a research methods course. Li's attitude scale is made up of four dimensions of attitude namely, affect, cognitive competence, value and interest. In summary, if learning efforts are indeed associated with learning achievement, then some indicators are better indicators for learning efforts than others. Thus, there is a need to identify valid indicators for a learning efforts construct to better assess learning efforts.

The ability to assess learning efforts will help in providing greater understanding on how efforts contribute to academic achievement among students (Li, 2012). Furthermore, some students and teachers feel that there is a need to include learning efforts in allotting grades for students' work (Weimer, 2012) as learning efforts on its own could be an indicator of learning outcomes. However, before the contributions of efforts can be considered in determining grades, they must first be assessed and quantified. To do that, there is a need to have a valid instrument to measure efforts, such as a construct but this has yet to be operationally defined. The purpose of this paper was to provide evidence for the validity and reliability of a new learning efforts instrument that was based on the learning efforts model proposed by Carbonaro (2005).

Carbonaro proposed that a comprehensive model of learning efforts

should consist of three components namely, rule-orientated effort, procedural effort and intellectual effort. The rule-orientated effort entails students' compliance with the most basic rules and norms required by their learning institutions as well as refraining from misbehavior (Carbonaro, 2005). It can be viewed as students' attitude when bound by rules set by an institution. This component seems reasonable as compliance with rules has been shown to benefit learning; it has been shown that those who attend school regularly are at the advantage of performing better academically than those who fail to display this attitude (Korir & Kipkemboi, 2013, p. 90). Compliance efforts, however, can be influenced by other factors. For example, quality of relationship between students and teachers was also one variable that significantly predicted learning for the entire racial or ethnic group (Lundberg & Schreiner, 2004). It was the strongest predictor in the model of Asian/Pacific students, Mexican and American students. In designing the rule-orientated effort items for the new instrument, frequency of attendance, compliance with rules and adhering to norms by institutions were the main indicators used.

The second component i.e. procedural effort refers to the effort made in relation to meeting the demands of a specific course. The procedural effort requires students to try to meet specific demands set forth by a teacher, including completing assignments on time and participating in class discussion (Carbonaro, 2005). Procedural effort is an important indicator as student and faculty interactions, peer involvement and accessibility cues are significantly related to GPA. For the new instrument, data on respondents' procedural efforts were gathered from a report on students' tendency to follow rules set by lecturers.

The last component, intellectual effort, refers to efforts made in overcoming learning challenges. When students apply their cognitive faculties towards understanding any intellectual challenges posed by the curriculum, they are said to be making intellectual effort (Carbonaro, 2005). An example of intellectual effort is drill and practice, which is good for learning new skills as people become more proficient at what they practise. Such indicators for intellectual effort are easier to measure since any sort of training and self-development is considered individual behaviour that helps one to face challenges. A strong positive and consistent relationship has been found between the time students spent on and engaged in learning and their subsequent achievement performance (Ceballo, 2004). Figure 1 illustrates Carbonaro's model for learning efforts. Carbonaro also provided the sources that were used to establish the indicators for a learning effort model. The references and sources used by Carbonaro to support and explain the learning efforts model are Cullinan (1992), Ceballo (2004), Bloom (1974), Korir and Kipkemboi (2013) and Lundberg and Schreiner (2004).

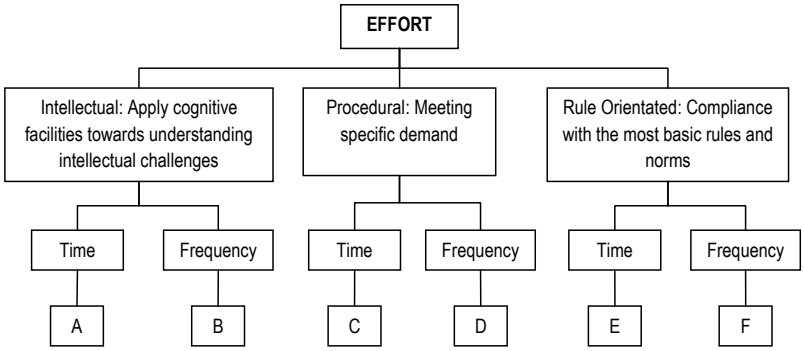

Figure 1. Carbonaro's tri-componential learning efforts model

METHODOLOGY

Best practice on instrument development suggests a three-stage instrument development process namely, designing (formulating a conceptual definition, choosing an operational definition, identifying indicators, developing test items), evaluating and validating, refining and confirming. Based on Carbonaro's (2005) conceptual definition of efforts, 30 items were constructed initially. The items were refined in terms of language accuracy and grammar. The draft instrument was printed on A4 paper and prepared for evaluation. A 5-point Likert scale was used for recording responses from respondents. The respondents were asked to state their level of agreement to given statements, where 1 indicated 'Strongly disagree' and 5 indicated 'Strongly agree'.

The initial draft instrument was evaluated by experts on its content and face validity. Items found to be lacking were subsequently refined. Only qualitative feedback was gathered at this stage. After the first revision, instrument evaluation was carried out on a group of engineering students. Questionnaires were distributed to 400 respondents, who were first-year engineering diploma students from Universiti Tun Hussein Onn Malaysia (UTHM) and University of Malaysia Perlis (UniMAP). First-year students were chosen as they were at the stage where intentional effort is at the highest due to being newly enrolled in a university. Three hundred and sixty questionnaires were completed and analysed. Subsequently, reliability coefficients were estimated using Cronbach's Alpha and exploratory factor analysis was conducted on the completed questionnaires.

Thirty items were divided into three constructs, each construct having 10 items. Efforts were measured in terms of intellectual, procedural and rule-orientated aptitudes. The measurement conditions followed a set of measurable actions of time and frequency. In the frequency consideration, the respondent's repeatability or consistency in tasks was considered as effort, while time spent on

learning and practicing to obtain knowledge was considered one of the measureable components. Demographic background was used as descriptive information regarding the respondents. The reliability measure using Cronbach's Alpha was conducted to estimate the reliability of the scales. Due to redundancy and weak inter-item correlation, seven items were deleted from the original instrument, resulting in only 23 items being retained in the final draft. The reliability estimates for each component of the effort scale are shown in Table 1.

Table 1
Reliability estimates for the effort scale

Item	Number of items	Alpha value
Intellectual scale	9	0.84
Procedural scale	7	0.84
Rule-Orientated effort	7	0.82
Total	23	0.92

Exploratory Data Analysis (EDA) was conducted to ensure that the data were screened with respect to sampling distribution, accuracy of data entry, detection of mistakes and missing data treatment. Statistical tests including normality and homogeneity were carried out to ensure suitable data for further analysis. The analysis of data began with descriptive statistics.

RESULTS

The demographic characteristics of respondents relating to gender, age, institutions and programme taken are shown in Table 2.

Table 2
Demographic profile (n=360)

Variables	*f*	%	Variables	*f*	%
1. Gender			2. Institutions	246	68.30
Male	185	51.40	UTHM	114	31.70
Female	175	48.60	UniMAP	360	100.00
Total	360	100.00	Total		
3. Age (years)			4. Programme of study		
18-20	279	77.50	Mechanical Engineering	144	40.00
21-25	76	21.10	Civil Engineering	137	38.10
26 and above	5	1.40	Electrical Engineering	79	21.9
Total	360	100.00	Total	360	100.00

Further investigation into the structure and validity of the items was carried out using the Exploratory Factor Analysis (EFA) method. EFA was used to access the underlying structure of a new construct for Carbonaro's (2005) learning effort model. The EFA helped to reduce the numerous variables to a limited number of latent variables that were inter-correlated. Prior to conducting the Exploratory Factor Analysis (EFA), statistical assumptions such as univariate normality, adequate sample size, linearity, factorability and others were conducted to check the suitability of the data. First, the researchers checked the normality tests using skewedness and kurtosis, and the results showed that the sample distribution was normal. Sampling adequacy was proven using the Kaiser-Myer-Olkin measure of sampling adequacy (KMO) and sphericity was tested using Bartlett's test. The results indicated that the KMO measure was 0.910, which is greater than 0.5, while Bartlett's test of sphericity was significant ($p<0.5$, $P=0.00$), thus the null hypothesis was rejected. Bartlett's test suggested that the sample inter-correlation matrix did not come from the same population, while the KMO result suggested that there was correlation among the items tested and the degree of common variance among the variables was "marvelous." Since the KMO measure of sampling adequacy and Bartlett's test of sphericity were fulfilled, factorability was assumed. According to Salleh, Sulaiman and Gloeckner (2015), the KMO index ranges are from 0 to 1, and if the KMO value is above 0.60, it is considered suitable for factor analysis. Similarly, Beavers et al. (2013) suggested that the KMO measure of sampling adequacy is a test of shared variance between the items. They suggested the guideline for assessing the measure that is shown in Table 3.

Table 3
Interpretation guideline for the Kaiser-Meyer Olkin Test (Beavers et al., 2013)

KMO Value	Degree of Common Variance
0.90 to 1.00	Marvelous
0.80 to 0.89	Meritorious
0.70 to 0.79	Middling
0.60 to 0.69	Mediocre
0.50 to 0.59	Miserable
0.00 to 0.49	Unacceptable

The EFA, using the maximum likelihood method with oblique rotation, was conducted to assess the underlying structure for 23 items. The correlation matrix indicated that the correlation coefficients were over 0.4. In this analysis, the factor extraction method using the Eigen value and scree plot were employed to determine how many factors would remain. Two factors were eventually extracted when the Eigen value was greater than 1 and was prefixed along with the scree plot breaking point (or elbow) at two factors. Figure 2 illustrates the scree plot with Eigen values on the y-axis and factor numbers on the x-axis. The figure suggests that two factors may have been appropriate

for retention of the breaking point where the curve flattens. The post-rotation sum of squared loading explains the comparison between the two factors, with each factor having almost similar small loadings. Thus, the communalities after factor extraction were acceptable.

A rotated factor loading of at least 0.40 or greater is to be considered in new variables, with loadings less than 0.40 omitted to improve clarity. Additionally, the direct oblimin rotation method with Kaiser Normalisation was performed. After removing all items with standardised loadings of less than 0.40, the resulting two factor solutions appeared. The factor pattern matrix showed the two factors and consequently, 18 items were retained in the new construct. The result from the pattern matrix was used to interpret the factors. The factors reproduced 38.82% of the variance of the measured variables in Factor 1 compared to 9.02% in Factor 2. The total communality coefficients for the overall factors were 47.84%. Finally, the factor saturation in the EFA revealed the presence of a two-factor solution, with a ninth loading preferentially on Factor 1 and a ninth on Factor 2. The first factor appeared to represent Intellectual Effort, while the second factor represented 'Compliance Effort'. Table 4 shows the new factors and explains the percentage of variance.

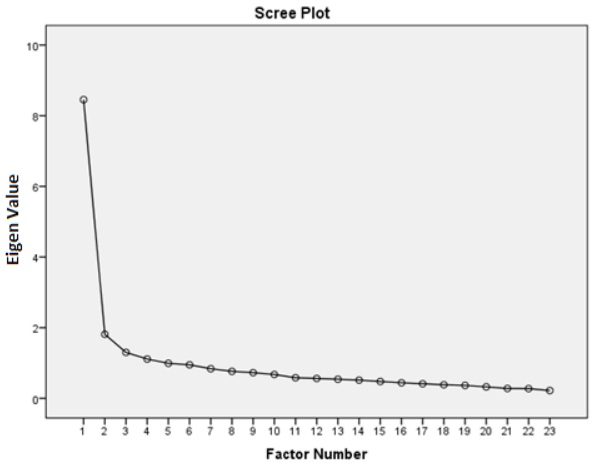

Figure 1. Scree plot for effort items

Table 4
New construct of effort with percentage of variance

Scale Items	Factor Loadings		Com
	Factor 1	Factor 2	
I am keen to ask whenever I do not understand a lesson.	0.733		0.469
I spend time practicing in order to enhance my skills before any test.	0.643		0.427
I always desire to adopt the techniques of learning of friends who are successful.	0.632		0.367
I always contribute to ideas during brainstorming sessions in a group.	0.587		0.319
Whenever I study, I tend to write notes in order to remember and answer successfully in exams.	0.587		0.358
I spend time asking friends questions in order to make sure that I understand everything regarding the lesson whenever I have time to do so.	0.571		0.347
I always join small study groups before an examination.	0.505		0.242
I spend time to learn consistently.	0.489		0.333
I follow a schedule for class.	0.449		0.393
I always send most of my assignments on time.		0.853	0.674
I always send my assignments on time.		0.847	0.610
I always finish my assignments according to the specifications set by the lecturer.		0.730	0.602
I am always on time for classes.		0.634	0.515
My attendance for a year has never been less than 80%, qualifying me to sit the final examination.		0.621	0.338
I always try to achieve 100% university attendance.		0.620	0.375
I always abide by the attire code set by the university.		0.586	0.450
I always abide by university rules.		0.485	0.300
I consult the schedule for class.		0.466	0.353
Eigen values	6.988	1.624	
% of variance	38.824	9.021	

Note: Loadings < 0.40 are omitted
Com = Communalities

DISCUSSION AND CONCLUSION

The findings of this study contradicted with Carbonaro's proposed model. While Carbonaro proposed that three factors constitute learning efforts, data from the Malaysian study only confirmed two factors namely, intellectual effort and compliance effort. Although the findings were different from the proposed model (Carbonaro, 2005), the findings were expected. In Asian culture, compliance with social norms is expected. A person who is wise would abide by their society's norms (such as an institutional regulations) and would be less likely to go

against them (Salleh & Sulaiman, 2012). Anyone who respects social norms would also tend to abide by procedures set by people in authority such as lecturers or teachers since the culture respects and values authority and their set rules. This is in contrast with Western culture, where personal freedom of choice is highly valued. So a person orientated to Western culture, who abides by an institutional rule may not act similarly when confronted by a set of prescribed procedures. As a consequence, the two components, which may be observed as two separate constructs based on responses from a Western-based culture, merge to become one construct for data based on responses from the East. Thus, the two-component construct for learning efforts is supported.

The instrument can be said to be valid and reliable for assessing learning efforts of engineering students in Malaysia. This study is of great relevance as it provides evidence for differences in construct definition where cultural differences exist; this highlights the need to reassess the validity and reliability of an instrument when used on a new target group that is different from the original intended application. Further confirmatory studies can be conducted to establish the generalisability of the findings.

REFERENCES

Beavers, A. S., Lounsbury, J. W., Richards, J. K., Huck, S. W., Skolits, G. J., & Esquivel, S. L. (2013). Practical considerations for using exploratory factor analysis in educational research. *Practical Assessment, Research and Evaluation, 18*(6), 1–13.

Bloom, B. S (1974, September). Time and learning. *American Psychologist, 29*(9), 682–688.

Carbonaro, W. (2005). Tracking, student's effort, and academic achievement. *Sociology of Education, 78*(1), 27–49.

Ceballo, R. (2004). From Barrios to Yale: The role of parenting strategies in Latino families. *Hispanic Journal of Behavioral Science, 26*(2), 171–186.

Cullinan, B. E. (1992). Read to me: Raising kids who love to read. New York: Scholastic, Inc.

Korir, D. K., & Kipkemboi, F. (2013). The contribution of students' personal effort in their academic performance in Vihiga county, Kenya. *Journal of Emerging Trends in Educational Research and Policy Studies, 5*(1), 87–90.

Li, K. Y. (2012). A study of the attitude, self efficacy, effort and academic achievement of CityU students toward research methods and statistics. *SS Student e-Journal, 1*, 154–183.

Lundberg, C. A., & Schreiner, L. A. (2004). Quality and frequency of faculty-student interaction as predictors of learning: An analysis by student race/ethnicity. *Journal of College Student Development, 45*(5). 549–565.

Mijid, N. (2014). Student effort and learning outcome in principles of microeconomic course. *Social Science Research Network.*

Patron, H., & Lopez, S. (2011). Student effort, consistency and online performance. *The Journals of Educators Online, 8*(2), 1–11.

Salleh, K. M., & Sulaiman, N. L. (2012). Diversity and the changing role of human resource in Malaysian organization. *International Journal of Human Resource Management and Research, 2*(4), 1–8.

Salleh, K. M., Sulaiman, N. L., & Gloeckner, G. W. (2015). The development of competency model perceived by Malaysian human resource practitioners' perspectives. *Asian Social Science, 11*(10), 175–185.

von Konsky, B. R., Ivins, J., & Robey, M. (2005, January). Using PSP to evaluate student effort in achieving learning outcomes in a software engineering assignment. In *Proceedings of the 7th Australasian conference on Computing education-Volume 42* (pp. 193-201). Australian Computer Society, Inc..

Weimer, M. (2012). Should student effort count? Faculty Focus. *Higher Ed Strategies from Magna Publication*. Retrieved from http://www.facultyfocus.com/articles/educational-assessment/should-student-effort-count/

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The Difference between Polytechnic Students' Learning Styles and Their Higher Order Thinking Skills Level

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ABSTRACT

In order to help students learn thinking skills more effectively and improve their academic performance, learning styles preferred by students must be identified. The research purpose of this work was to analyse the difference between polytechnic students' learning styles and the level of their higher order thinking skills (HOTS). A descriptive quantitative methodology study was conducted among 368 diploma students studying in three polytechnics in Malaysia. The students' learning styles were identified through the Kolb Learning Styles Inventory while their HOTS level was identified through a set of questionnaires adapted from the Marzano Rubrics for Specific Tasks or Situations. The results indicated that 'Doer' is the most dominant learning style among polytechnic students. The results also showed that polytechnic students perceived their HOTS level to be moderate. The Cramer V analysis showed that there was no relationship between students' learning styles and eight Marzano HOTS levels. There was also no significant difference between the Kolb Learning Styles and the Marzano HOTS levels. This indicated that regardless of the learning style possessed by the technical students i.e. Doer, Watcher, Thinker or Feeler, the level of HOTS of all the students was the same. This suggests that each student has a different learning style but that all of them possess equal opportunity and capability to learn and master HOTS.

Keywords: Difference, higher order thinking skills (HOTS), learning styles, polytechnic students, relationship

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INTRODUCTION

The higher education system in Malaysia has been improved over the decades. In the past 10 years, there has been an increase in student enrolment in higher education institutions around the country, increasing global recognition for local publications, research and patents and a rise in the quality of these institutions, as well as an explosive growth in the number of international students in local institutions have also been apparent (Ministry of Education, 2015). Hence, the need for the transformation of higher education is crucial as these large numbers of youth need to be adequately prepared to face the challenges of the future.

The Malaysian Education Ministry launched the Education Development Plan 2015-2025 (Higher Education) or PPPM-PT on 7 April, 2015 as a guideline for confronting the challenges faced by the higher education system. PPPM-PT outlines 10 thrusts to achieve the aspirations of students and the nation. The first four thrusts stress that successful people have to focus on higher education, which can be accessed through academic studies, technical and vocational education and training, being involved with the academic community and lifelong learning. The other six thrusts focus on the ecosystem variables of higher education, fund financing, governance, innovation, online learning, internationalization and delivery.

Successful Technical and Vocational Education and Training (TVET) students must show these features: holistic development, entrepreneurial character, balanced attitude and commitment to excellence and lifelong learning. The National Education Philosophy expects graduates to be disciplined, practise morality and adopt the appropriate mind-set and behaviour to develop themselves in ways that would enable them to contribute to the harmony and progress of family, community and the national and global communities. This quality is highlighted through six key attributes: ethics and spirituality, leadership skills, national identity, language skills, thinking skills and knowledge.

Optimal use of thinking skills involves using higher order thinking skills (HOTS) as skills for analysis, synthesis, evaluation and creation (Anderson et al., 2001). HOTS refers to the continued use of the mind when dealing with new challenges (Rajendran, 2009). HOTS allows students to make comparison, evaluation, justification and inferences (Sykes, Floden, & Wheeler, 1997). The HOTS transformation process happens when students combine facts and ideas through the ability to synthesise, generalise, explain, hypothesise or produce conclusions and interpretations (Tee, 2012). The process of manipulating information and ideas will enable students to solve problems, find understanding and gain new insights in learning (Anderson et al., 2001). The application of HOTS can enhance a student's next observation to process new information to publish various alternatives, ideas, actions and design solutions to solve a problem (Yee, 2015).

According to Mohd and Hassan (2005), two main processes in learning thinking

skills are level of perception and level of processing. However, the ability and propensity of individuals to organise and process information is different from one another (Abd. Razak & Azman, 2012). This is because some people more easily understand concrete information while others more easily understand the abstract (Yee, 2015). In the learning environment, Rogers (2009) defined learning style as the tendency to see concrete and abstract information.

Learning style refers to the method people collect, organise and transform data and information into useful information (Kolb, 1984). According to Dunn and Dunn (1994), learning styles are defined as the unique methods or ways used by an individual to learn and scan information. Gremli (1996) stated that learning style involves aspects of personality, information processing, social interaction, the use of guidelines and the focus of attention on something new and unique. Learning style also explains the behaviour of a person in performing a learning task (Rassool & Rawaf, 2007).

According to Yee (2015), cognitive learning style and learning strategies are two fundamental aspects of behaviour and learning style. Cognitive learning style is one's way of thinking, while learning strategies are the demonstration of the process of conducting the learning activities. In other words, individual learning style is a strategy the individual uses to deal with environmental and educational materials. Therefore, we may define learning style as students' tendency in thinking, communicating with others and performing classroom activities (Rogers, 2009).

Since learning style is closely related to thinking skills, the proper application of learning styles among students is crucial (Yee, 2015) as it helps them develop their potential and achieve better academic performance (Abd. Razak & Azman, 2012; Cano-Garcia & Hughes, 2000; Habib & Azizan, 1997). In order to help students practise the application of HOTS and improve their academic achievement, their learning styles should first be identified (Othman & Rahman, 2011).

TVET is an important route for vocational education and skills development. To fulfil the needs of Malaysia's Economic Transformation Programme (ETP), the country must increase its TVET enrolment by 2.5 times by the year 2025 (Ministry of Education, 2015). However, the human resources to meet this demand is insufficient at the moment. In addition, TVET is considered less attractive than conventional university education. This has led to a shortage of TVET students, especially highly qualified ones. Therefore, Malaysia needs to shift from the widely accepted belief that conventional university education is the only career path for Malaysian youth, and also emphasise TVET as a legitimate option for higher education.

The fourth thrust in PPM-PT outlines the Ministry of Education's intention to produce quality TVET graduates by 2020. In the working world, quality is as important to employers as quantity of work. According

to Husain et al. (2010), the requirement for knowledge workers or K-Workers is a top priority among employers for business and economic growth. Employers have reported that most graduates lack critical thinking skills and communication (Ministry of Education, 2015).

According to Ariffin et al. (2008), critical thinking skills, which is an element of HOTS, is an important skill for any profession. Thus, the application of HOTS among students in institutions of higher learning is necessary as preparation for working life in the future. In fact, failure to apply HOTS causes lack of creativity among students in solving problems (Yee, 2015). HOTS is indispensable among students for the generation of creative ideas (Othman & Rahman, 2011). Thinking skills help students to build and execute plans effectively.

Findings by Yee et al. (2010) obtained from a study that was conducted among 131 students from the Faculty of Technical Education in the University of Tun Hussein Onn Malaysia (UTHM) concluded that the students rarely used HOTS. The respondents also perceived that the level of HOTS application among them was low. Another study conducted by Yee et al. (2011) among 375 students from four technical universities in Malaysia found that the students only applied four Marzano HOTS levels at moderate level and nine Marzano HOTS levels at low level.

HOTS should be applied by technical and vocational students (McCaslin & Parks, 2002). Technical and vocational education provides real-world cognitive development. In addition, career needs are increasingly dependent on cognitive ability (Tee, 2012). For students to apply HOTS, educators should be wise in choosing strategies for delivering knowledge in the teaching and learning process. These strategies should be based on the learning styles identified (Claxton & Murrell, 1987) so that learning objectives can be achieved.

Failure to identify students' learning styles will impact on the effectiveness of the teaching and learning process (Yee, 2015). Furthermore, lack of understanding of learning styles could cause a problem in applying the appropriate and effective learning styles among students (Ikhasan & Sapar, 2007). As a result, academic performance will be affected (Rashid, 2007). Unfortunately, most educators conduct teacher-centred learning sessions that cause fewer students to be involved in the learning process and activities (Yee, 2015).

Therefore, learning style is an important matter for students' success. Learning style can ensure a student learns well (Kamaruddin & Mohammad, 2011). Students need to identify their learning style so that they can tap into their potential and expand their cognitive skills. Educators also need to help students identify their learning styles by providing a task or using teaching methods that involve a variety of teaching styles (Abu et al., 2007).

Consequently, learning styles and HOTS should be identified among students so that they acquire an effective learning environment (Tapsir et al., 2012). In the

technical field, students need to master skills besides understanding the related theory (Felder & Spurlin, 2005) to ensure that graduates are able to apply the learning content in the working environment. However, it is difficult for students to master skills if the learning process is not effective. Most students have problems improving their performance because their learning style does not fit their learning process (Rashid, 2007). Therefore, this study was undertaken to identify patterns of student learning style and their HOTS level. Specifically, the objective of this study was to identify:

1) The pattern of Kolb Learning Styles based on the student demographics,
2) The students' Marzano HOTS level,
3) The relationship between students' learning styles and their HOTS level, and
4) The difference between students' learning styles and their HOTS level.

METHODOLOGY

The study design was a survey using the quantitative approach. All data were collected directly from the respondents. Commonly, in survey research, the population characteristics can be described through the distribution of frequencies, percentages and mean score.

Population and Sample

The population for this study was a group of individuals who met the criteria that were set that would allow the researcher to generalise the findings (Idris, 2013). The target population was the students of Year 1, 2 and 3 of the Diploma of Civil Engineering, Mechanical Engineering and Electric and Electronic Engineering programmes of three polytechnics in Malaysia.

The sampling method used was simple random sampling, which is the best way to get a sample from a population of large size (Idris, 2013). Every member of the population was given equal opportunity of being selected for inclusion in the sample. Based on the Table Sampling by Krejcie and Morgan (1970), the number of samples in this study was 368 students, all of whom were currently enrolled in the diploma course for each semester. The distribution of the sample size is shown in Table 1. However, only 307 sets of data were successfully collected by the researcher.

Table 1
Population and sample number of technical students in three Polytechnics in Malaysia

Polytechnic	Population	Sample
Port Dickson Polytechnic	3959	167
Melaka Polytechnic	1206	51
Merlimau Polytechnic	3551	150
Total	8716	368

Research Instrument

One set of questionnaires was used as the research instrument. The questionnaire consisted of three parts: Part A comprised five items, Part B comprised 18 items consisting of two-choice answers, 'Yes' and 'No', and Part C comprised 25 items based on the eight Marzano HOTS levels, with a 4-point scale for responses (Table 2). Prior to the actual research, a pilot test was conducted to determine the reliability of the instrument and to achieve the desired objectives of this study. The reliability of the Kolb Learning Styles Inventory was above 0.90 in all cases. However, the reliability of the questionnaires adapted from the Marzano Rubrics for Specific Tasks or Situations was 0.75.

Table 2
Number of items in three parts of the questionnaire

Part	Item	Number of Items
A	Demographic factors including gender, hometown, parents' gross income, semester of study and academic achievement	5
B	Kolb Learning Styles Inventory (2000)	18
C	Questionnaire adapted from Marzano Rubrics for Specific Tasks or Situations (1993)	25

DATA ANALYSIS

All collected data were analysed using the Statistical Package for Social Sciences (SPSS) software. The statistics selected for data analysis were based on the research questions recorded in Table 3. The Kolb Learning Styles used in Research Question 1 was data nominal. In order to analyse data nominal trends, a descriptive statistic was best for presenting data in frequencies and percentages.

Table 3
Summary of research questions and statistical techniques used in the study

No	Research Questions (RQ)	Statistical Techniques
RQ1	What is the pattern of the Kolb Learning Styles based on the student demographics?	Frequencies and Percentages
RQ2	What is the students' Marzano HOTS level?	Mean scores
RQ3	Is there any significant relationship between the Kolb Learning Styles and the Marzano HOTS levels?	Cramer V
RQ4	Is there any significant difference in the Kolb Learning Styles and the Marzano HOTS levels?	MANOVA

For Research Question 2, the Marzano HOTS level was data interval, which was analysed as the mean of the average score for a given set of data. According to Sternberg (2008), mean scores are the most appropriate value representing a data set. Interpretation of the range of the mean for the Marzano HOTS level was adapted from Wiersma and Jurs (2005) as shown in Table 4.

Table 4
Interpretation of the range of the mean for the Marzano HOTS levels

Range of the Mean	HOTS Level
1.00-2.00	Low
2.01-3.00	Moderate
3.01-4.00	High

For assessing the relationship between two variables, the Kolb Learning Styles and Marzano HOTS levels, in Research Question 3, the Cramer V Correlation Test was used. In this case, the non-parametric test was used because both variables were on the nominal scale. The findings suggested that the students had one dominating Kolb Learning Style out of the four (Doer, Watcher, Thinker and Feeler) and applied each Marzano HOTS level in one of three levels (low, moderate and high). To analyse the data collected to answer Research Question 3, strength of correlation were used (Table 5).

Table 5
Strength of the correlation coefficient

Correlation Coefficient	Correlation Strength
0.91 sehingga 1.0	Very Strong
0.71 sehingga 0.90	Strong
0.51 sehingga 0.70	Medium
0.31 sehingga 0.50	Low
0.01 sehingga 0.30	Very Low
0.00	No Correlation

The MANOVA analysis test was used for Research Question 4 to assess whether the means of eight dependent variables (eight Marzano HOTS) were significantly different in four groups of the Kolb Learning Styles (independent variable). In this case, the means of eight Marzano HOTS levels were used as the interval scale.

RESULTS AND DISCUSSION

Both descriptive and inferential statistics were used as analytical tools. Non-parametric and parametric statistical techniques were used with the inferential statistics in Research Questions 3 and 4.

The Pattern of Kolb Learning Styles Based on Student Demographics

Descriptive analysis was used to determine the students' learning styles. The results showed that the majority of the technical students (45.3%) had the dominant learning style of Doer (Table 6). This was followed by Feeler (20.5%), Thinker (18.6%) and

Watcher (15.6%). This pattern seems appropriate for technical courses, which emphasise applying knowledge or skills to solve a practical problem. The method of processing information actively via trial and exercise in the practical application of new ideas (Kolb & Kolb, 2005; Grochow, 1973; Stabell, 1973) by Doer and Feeler students is commensurate with their respective fields. This finding is consistent with the Kolb Learning Styles pattern, which explains that students who practise the Doer and Feeler learning styles are suited to the professions of educator, technician and engineer and have a background in education, technical studies and engineering (Kolb & Kolb, 2005).

Table 6
Pattern of Kolb learning styles

Student Demographics		Kolb Learning Styles								Total	
		Doer		Watcher		Thinker		Feeler			
		f	%	f	%	f	%	f	%	f	%
Gender	Male	74	24.1	29	9.4	23	7.5	32	10.4	158	51.5
	Female	65	21.2	28	9.1	25	8.1	31	10.1	149	48.5
	Total	139	45.3	57	18.6	48	15.6	63	20.5	307	100
Academic Achievement	CGPA≥3.70	3	1.0	0	0.0	0	0.0	1	0.3	4	1.3
	3.00≤CGPA≤3.69	43	14.0	14	4.6	14	4.6	18	5.9	89	29.0
	2.70≤CGPA≤2.99	40	13.0	18	5.9	14	4.6	24	7.8	96	31.3
	2.00≤CGPA≤2.69	47	15.3	23	7.5	19	6.2	19	6.2	108	35.2
	CGPA≤1.99	6	2.0	2	0.7	1	0.3	1	0.3	10	3.3
	Total	139	45.3	57	18.6	48	15.6	63	20.5	307	100
	Poor	51	16.6	20	6.5	15	4.9	23	7.5	109	35.5
	Moderate Poor	19	6.2	8	2.6	10	3.3	15	4.9	52	16.9
	Not Poor	69	22.5	29	9.4	23	7.5	25	8.1	146	47.6
	Total	139	45.3	57	18.6	48	15.6	63	20.5	307	100

Students' HOTS Level

The findings from the study revealed that none of the students perceived their thinking skill levels to be high. Only three Marzano HOTS levels were rated moderate, while five Marzano HOTS levels were rated low namely, classifying, analysing errors, constructing support, abstracting and analysing perspectives (see Table 7). Technical courses involve practical exercises and tasks, experiments, research and the writing of reports (Othman & Johari, 2007). Technical students usually need to make comparisons between objects to find similarities and differences (Sulaiman, Aziz, & Mok, 2011; Nor & Mohd Ramli, 1998) as this information is needed in their work. Induction is also required when writing

reports and articles, providing criticism, doing research and making medical diagnoses (Mohd & Hassan, 2006) in order to make interpretations and conclusions or constructing concepts for an experiment or study. Therefore, these HOTS are used more often than others by technical students, and they should master them.

Table 7
The level of Marzano HOTS levels

Marzano HOTS	Mean	HOTS Level
Comparing	2.92	Moderate
Classifying	2.86	Moderate
Inductive Reasoning	2.79	Moderate
Deductive Reasoning	2.95	Moderate
Analysing Errors	2.63	Moderate
Constructing Support	2.86	Moderate
Abstracting	2.72	Moderate
Analysing Perspectives	2.77	Moderate

Relationship between Kolb Learning Styles and Marzano HOTS Levels

Using the Cramer V Correlation Test, it was found that there was no relationship between the Kolb Learning Styles and the eight Marzano HOTS levels (see Table 8). This finding is also consistent with the findings of Sabtu et al. (2011), who found that there was no correlation between four Kolb Learning Styles and four Sternberg Thinking Styles.

Table 8
Relationship between Kolb learning styles and Marzano HOTS levels

Relationship	X^2	*p*	Cramer V	Correlation Strength
Comparing vs. Kolb Learning Styles	4.60	0.60	0.09	Very Low
Classifying vs. Kolb Learning Styles	5.14	0.53	0.09	Very Low
Inductive Reasoning vs. Kolb Learning Styles	2.32	0.89	0.09	Very Low
Deductive Reasoning vs. Kolb Learning Styles	3.75	0.71	0.08	Very Low
Analysing Errors vs. Kolb Learning Styles	9.42	0.15	0.12	Very Low
Constructing Support vs. Kolb Learning Styles	5.65	0.46	0.10	Very Low
Abstracting vs. Kolb Learning Styles	1.16	0.98	0.04	Very Low
Analysing Perspectives vs. Kolb Learning Styles	8.59	0.20	0.12	Very Low

The MANOVA analysis test showed that there was no significant difference between the Kolb Learning Styles and the eight Marzano HOTS levels (Table 10). These findings also prove that there is no one specific learning style that can ensure that HOTS can be managed well by a student and that learning styles should be appropriate to students' field of work. Each student has a different learning style and equal opportunity to learn and master HOTS, and this ensures fair and healthy competition among students.

Difference Between Kolb Learning Styles and Marzano HOTS Levels

Table 9 shows the descriptive statistics for Kolb Learning Styles and Marzano HOTS levels.

Table 9
Descriptive statistics for Kolb learning styles and the Marzano HOTS levels

Marzano HOTS	Kolb Learning Styles	Mean	Std. Deviation	N
Mean (Comparing)	Doer	2.9041	0.68483	139
	Watcher	2.9942	0.63149	57
	Thinker	2.8750	0.72322	48
	Feeler	3.0317	0.63278	63
	Total	2.9425	0.67043	307
Mean (Classifying)	Doer	2.8363	0.63182	139
	Watcher	2.9123	0.57378	57
	Thinker	2.9167	0.54170	48
	Feeler	2.8413	0.65731	63
	Total	2.8640	0.61173	307
Mean (Inductive Reasoning)	Doer	2.7746	0.76478	139
	Watcher	2.9064	0.66594	57
	Thinker	2.7708	0.80529	48
	Feeler	2.7196	0.78564	63
	Total	2.7872	0.75717	307
Mean (Deductive Reasoning)	Doer	2.8873	0.70717	139
	Watcher	3.0292	0.60841	57
	Thinker	2.9583	0.60191	48
	Feeler	2.9894	0.61629	63
	Total	2.9457	0.65509	307
Mean (Analysing Errors)	Doer	2.5971	0.70365	139
	Watcher	2.5965	0.89028	57
	Thinker	2.6667	0.74058	48
	Feeler	2.7090	0.72708	63
	Total	2.6308	0.74960	307

Table 9 *(continue)*

Mean (Constructing Support)	Doer	2.8129	0.65952	139
	Watcher	2.9708	0.59188	57
	Thinker	2.9167	0.58951	48
	Feeler	2.8360	0.61017	63
	Total	2.8632	0.62689	307
Mean (Abstracting)	Doer	2.7050	0.71004	139
	Watcher	2.6784	0.72365	57
	Thinker	2.7361	0.64121	48
	Feeler	2.7619	0.67316	63
	Total	2.7166	0.69208	307
Mean (Analysing Perspectives)	Doer	2.7170	0.76762	139
	Watcher	2.9357	0.73311	57
	Thinker	2.6319	0.68499	48
	Feeler	2.8254	0.75931	63
	Total	2.7666	0.75032	307

The MANOVA analysis test showed that there was no significant difference between the Kolb Learning Styles and the eight Marzano HOTS levels (Table 10). These findings also prove that there is no one specific learning style that can ensure that HOTS can be managed well by a student and that learning styles should be appropriate to students' field of work. Each student has a different learning style and equal opportunity to learn and master HOTS, and this ensures fair and healthy competition among students.

Table 10
Difference between the Kolb learning styles and the Marzano HOTS levels

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Kolb Learning Styles	Comparing	1.078	3	0.359	0.798	0.496
	Classifying	0.405	3	0.135	0.358	0.783
	Inductive Reasoning	1.133	3	0.378	0.657	0.579
	Deductive Reasoning	1.000	3	0.333	0.775	0.509
	Analysing Errors	0.672	3	0.224	0.396	0.756
	Constructing Support	1.194	3	0.398	1.013	0.387
	Abstracting	0.250	3	0.083	0.172	0.915
	Analysing Perspectives	3.059	3	1.020	1.826	0.142

*Difference is significant at the 0.05 level

CONCLUSION

This study revealed that the most dominant learning style among technical students in polytechnics is Doer, followed by Feeler, Thinker and Watcher, in that order. Also, the findings illustrated that the students perceived that their practice of eight Marzano HOTS was at moderate level. There was no relationship or difference between the Kolb Learning Styles and the Marzano HOTS levels. Nevertheless, learning style is a factor that can influence the level of HOTS among technical students. The results of this study suggest that future studies should be conducted to examine other factors related to the practice of HOTS among technical students because this study could not identify a change of more than 90% in the independent variables.

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REFERENCES

Abd. Razak, A. Z., & Azman, N. (2012). Stail berfikir dan stail pembelajaran pelajar jururawat: Satu kajian kes di kolej jururawat murni. ASEAN *Journal of Teaching and Learning in Higher Education (AJTHLE), 4*(1), 14–31.

Abu, B., Md Johan, O., Syed Mansor, S. M. S., & Jaafar, H. (2007). *Kepelbagaian gaya pembelajaran dan kemahiran belajar pelajar universiti di fakulti pendidikan, UTM Johor* (Research grant vote no: 71881, Universiti Teknologi Malaysia, Malaysia). Retrieved from http://eprints.utm.my/3680/1/71881.pdf

Anderson, L. W., Krathwohl, D. R., Airasian, P., Cruikshank, K., Mayer, R., Pintrich, P., ... & Wittrock, M. (2001). A taxonomy for learning, teaching and assessing: A revision of Bloom's taxonomy. *New York. Longman Publishing. Artz, AF, & Armour-Thomas, E.(1992). Development of a cognitive-metacognitive framework for protocol analysis of mathematical problem solving in small groups. Cognition and Instruction, 9*(2), 137-175.

Ariffin, S. R., Abdul Majid, R., Haron, Z., Idris, R., Samsuri, S., Hassan, B. & Abdul Hamid, N. A. (2008). Kemahiran pemikiran kritikal dan penyelesaian masalah pelajar-pelajar sains di Malaysia. In Arbaat (Eds.), *Proceeding of Science and Mathematics Education Regional Conference 2008 (SMERec 2008)*, (pp. 15–20). Serdang, Malaysia: Universiti Kebangsaan Malaysia.

Cano-Garcia, F., & Hughes, E. H. (2000). Learning and thinking styles: An analysis of their interrelationship and influence on academic achievement. *Educational Psychology, 20*(4), 413–430.

Claxton, C. S., & Murrell, P. H. (1987). *Learning styles: Implication for improving educational practices.* Retrieved from http://files.eric.ed.gov/fulltext/ED293478.pdf.

Dunn, R., & Dunn, K. (1994). *Teaching young children through their individual learning styles.* Massachusetts: Prentice Hall.

Felder, R. M., & Spurlin, J. (2005). Applications, reliability and validity of the index of learning styles. International *Journal Engineering Education, 21*(1), 103–112.

Gremli, J. (1996). Tuned in to learning styles. *Music Educator Journal, 83*(3), 24–27.

Grochow, J. (1973). *Cognitive style as a factor in the design of interactive decision-support systems*. (Unpublished Master's thesis). Massachusetts Institute of Technology, Cambridge, USA.

Habib, A. R., & Azizan, R. (1997). Hubungan antara stail pembelajaran dengan pencapaian matematik dan sains pelajar sekolah menengah. *Jurnal Pendidikan, 22*, 39–49.

Husain, M. Y., Mokhtar, S. B., Ahmad, A. A., & Mustapha. R. (2010). Importance of employability skills from employers' perspective. *Procedia Social and Behavioral Sciences. 7*(C), 430–438.

Idris, N. (2013). *Penyelidikan dalam pendidikan* (2nd ed.). Selangor, Malaysia: McGraw-Hill Education (Malaysia) Sdn. Bhd.

Ihkasan, M. N., & Sapar, H. (2007). Gaya pembelajaran di kalangan pelajar-pelajar sarjana muda pendidikan teknik dan vokasional di Universiti Tun Hussein Onn. *Seminar Penyelidikan Pendidik Institut Perguruan Batu Lintang Tahun 2007,* (pp. 1–17). Kuala Lumpur, Malaysia: Kementerian Pelajaran Malaysia.

Kamaruddin, M. I., & Mohamad, A. (2011). Kajian gaya pembelajaran dalam kalangan pelajar UTM. *Journal of Educational Psychology and Counselling, 2011, June 2*, 51–77.

Kolb, A. Y., & Kolb, D. A. (2005). *The Kolb learning style inventory-version 3, technical specifications.* Cleveland, Ohio: Case Western Reserve University.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development.* New Jersey: Prentice Hall.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for reaserch. *Educational and Psycgological Measurement, 30*, 607–610.

McCaslin, N. L., & Parks, D. (2002). *Teacher education in career and technical education: background and policy implications for the new millennium.* Ohio: National Dissemination Center for Career and Technical Education.

Ministry of Education Malaysia. (2015). *Malaysia education blueprint 2015-2025 (Higher education)*. Retrieved from http://www.kooperation-international.de/uploads/media/3._Malaysia_Education_Blueprint_2015-2025__Higher_Education__.pdf

Mohd. A., & Hassan A. (2005). *Pemikiran reka cipta: Kaedah mengajar dan bahan latihan untuk guru dan jurulatih.* Pahang, Malaysia: PTC Publications and Distributors Sdn. Bhd.

Mohd. A., & Hassan, A. (2006). *Belajar berfikir.* Kuala Lumpur, Malaysia: Percetakan Zafar Sdn. Bhd.

Nor, S., & Mohd Ramli, M. D. (1998). *Kemahiran berfikir secara kritis dan kreatif.* Selangor, Malaysia: Longman.

Othman, F., & Rahman, S. (2011). Kepentingan penyebatian kemahiran berfikir secara kritis dan kreatif (KBKK) dalam proses pengajaran dan pembelajaran. *Seminar Serantau Ke 5/2011,* Indonesia: Pekanbaru-Riau. Retrieved from https://faizahothman.wordpress.com/2011/12/04/pembentangan-seminar-serantau-ke-52011-di-riau-indonesia-bertajuk-kepentingan-penyebatian-kbkk-dalam-proses-pp/

Othman, W., & Johari, F. M. (2007). *Curriculum planning in technical and vocational education.* Kuala Lumpur: Open University Malaysia.

Rajendran, N. S. (2009). Reconstructing the teaching of higher-order thinking. *Proc. of International Conference on Teaching and Learning in Higher Education 2009 (ICTHLE 2009)*, (pp. 98–114). Tanjong Malim, Malaysia: Penerbit Universiti Pendidikan Sultan Idris.

Rashid, R. (2007). *Hubungan antara gaya pembelajaran dengan motivasi dalam kalangan pelajar di sebuah sekolah menengah luar bandar, Sabah.* (Unpublished doctoral thesis). Universiti Teknologi Malaysia, Malaysia.

Rassool, C. H., & Rawaf, S. (2007). Learning style preferences of undergraduate nursing students. *Nursing Standard, 21*(32), 35–41.

Rogers, K. M. A. (2009). A preliminary investigation and analysis of student learning style preferences in further and higher education. *Journal of Further and Higher Education, 33*(1), 13–21.

Sabtu, M. F., Yee, M. H., Md Yunos, J., & Tee, T. K. (2011). Gaya pembelajaran Kolb dan bentuk gaya berfikir Sternberg dalam kalangan pelajar di fakulti pendidikan teknikal. *Prosiding Seminar Pasca Ijazah yang Pertama 2011* (pp. 1–18). Johor: Penerbit Universiti Tun Hussein Onn Malaysia.

Stabell, C. (1973). *The impact of a conversational computer system on human problem solving behaviour.* (Unpublished Master's thesis). Massachusetts Institute of Technology, Cambridge, USA.

Sternberg. W. J. (2008). *Statistical alive.* Thousand Oaks, Ca: Sage Publications.

Sulaiman, R., Aziz, M., & Mok, S. S. (2011). *Kemahiran berfikir.* Selangor: Penerbitan Multimedia.

Sykes, G., Floden, R., & Wheeler, C. (1997). *Improving teacher learning in Thailand: Analysis and options.* Bangkok: The National Educational Commission.

Tapsir, R., Abdul Rahman, K., Saat, A., Ab Wahab, K., Boon, M. H. A., Ahmad, S., & Mahmood, S. F. (2012). Assessment of preferred learning styles of form four students from various schools in the state of Selangor and Federal Territory, Malaysia. *Procedia-Social and Behavioral Sciences, 42*, 82–91.

Tee, T. K. (2012). *Pengintegrasian kemahiran berfikir dan peta minda Buzan bagi penguasaan kemahiran berfikir aras tinggi.* (Unpublished doctoral thesis). Universiti Tun Hussein Onn Malaysia, Malaysia.

Wiersma, W., & Jurs, S. G. (2005). *Research methods in education : An introduction.* Boston: Allyn and Bacon.

Yee, M. H. (2015). *Kesan manual pengintegrasian strategi pembelajaran dan kemahiran berfikir aras tinggi terhadap penjanaan idea dalam kalangan pelajar teknikal.* (Unpublished doctoral thesis). Universiti Tun Hussein Onn Malaysia, Malaysia.

Yee, M. H., Md. Yunos, J., Osman, N., Ibrahim, S., & Tee, T. K. (2010). The perception of students on mastering the level of higher order thinking skills in technical education subjects. *Proceeding the 3rd Regional Conference on Engineering Education and Research in Higher Education (RCEE 7& RHEd 2010)*, (pp. 5–10). Skudai, Johor: Penerbit Universiti Teknologi Malaysia.

Yee, M. H., Othman, W., Md Yunos, J., Tee, T. K., Hassan, R., & Mohamad, M. M. (2011). The level of Marzano higher order thinking skills among technical education students. *International Journal of Social Science and Humanity, 1*(2), 121–125.

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Metacognitive Strategies in Promoting the Development of Generic Competences in High TVE in Malaysia

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ABSTRACT

This study focusses on generic competencies that have been considered to be lacking in graduates of Malaysian polytechnics, a crucial type of institution in High Technical and Vocational Education (TVE). Four competencies are highlighted in this study that are considered important in the workplace. They are problem solving, critical thinking, communication skills and team building. This study is aimed at establishing an alternative pedagogical strategy in teaching engineering subjects in polytechnics. As such, metacognitive strategies are proposed in order to consider whether this would enhance students' generic competencies. The study sample consisted of 92 first semester students studying Civil Engineering courses in three polytechnics. The study was constructed utilising both qualitative and quantitative approaches in order to obtain a comprehensive data set. The methods included a survey with two sets of questionnaire and student diaries. Findings from this study showed that after introducing metacognitive strategies, students' ability to master relevant competencies appeared to improve, seen in their active involvement in the learning process. The best contribution of the metacognitive strategies used was in terms of the development of communication and team-building skills. In contrast, problem-solving and critical-thinking skills showed a lower ranking than communication and team-building skills. This could indicate that the application of metacognitive strategies in engineering subjects needs further development. Above all, the study showed that metacognitive strategies helped students to think critically, solve complex problems, write and speak effectively, have respect for others, be able to adapt to change and be ready to engage in life-long learning.

Keywords: Generic competencies, metacognitive strategies, pedagogical strategies

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INTRODUCTION

According to Juri, Wan Abdullah, Zakaria and Darusman (2006), in an era of globalisation and rapid technology changes, life-long learning is a necessity for all. Therefore, the Technical Vocational Education (TVE) sector should develop and upgrade its potential for providing workers who are not only knowledgeable, but who are also skilful and able to adapt to the demands of their job. This is supported by Sipon (2003), who believes that one of the main challenges for TVE is to provide graduates who are able to demonstrate professional competencies as well as possess academic qualification. In simple terms, qualification is a grade on a piece of paper, while competence is what is demonstrated in the workplace.

Malaysian polytechnics, as one group of High TVE institutions, are actively utilising specific strategies to prepare their graduates for employment situations that call for qualified and competent employees, with a proper attitude to work. It is recognised to an increasing degree that a well-rounded educated individual also needs to have cultivated the correct attitudes to work, as well as to be in possession of the competencies to perform particular tasks in the workplace. To fulfil this need for competent workers, Sipon (2003) suggested that technical content should be included with "competencies in planning, design and communication, methods of problem solving, teamwork and social networking" (p. 4). Hence, theoretical knowledge and practice, as well as learning and working, have to be integrated. The more traditional ways of teaching and learning that separate theoretical knowledge from practical aspects should merge these two aspects.

TVE subjects differ from core academic subjects that have traditionally had a strong theoretical emphasis, as the content is more relevant to the world of work. The TVE curriculum and teaching methodology, in theory, focusses on students' interest in tasks that have direct relevance to real-world practices (Ministry of Education [MOE], 2004). Teachers and students of polytechnic programmes are diverse with different backgrounds, academic achievements, skills and expectations. Thus, there is a need to incorporate elements of generic competencies into pedagogical content at the polytechnic level to help students acquire the necessary skills. It is important to integrate theoretical knowledge and practice, as well as to relate to learning and the working environment (Sipon, 2003). In the traditional way of teaching and learning that separates theoretical knowledge from practical aspects, a merger of these is unlikely to take place. There is a need, therefore, to narrow the gap between the education system and the workplace, and the aim should be to help students understand and face the variety of issues and challenges they will meet in their future working lives.

This study is, therefore, important as a means to establishing alternative pedagogical strategies, which are metacognitive strategies for teaching engineering subjects at the polytechnic level. The approach is expected to help students improve their learning and to achieve a deeper understanding of

their subjects. It will also emphasise the positive impacts of a wide range of generic competencies that are critically needed in today's workplace, specifically in the areas of communication, problem-solving, critical thinking and team building.

The Need for Generic Competencies

Malaysia is rapidly moving towards becoming an economically developed nation, with 'Vision 2020' highlighting the principal industrial and developmental aims that the government wishes to achieve by 2020. With a vision of becoming an industrialised nation by 2020, it is considered that Malaysia must be prepared to develop a well-educated, skilled and competitive workforce (Mustapha & Abdullah, 2001). From the perspective of education, this entails educating a highly-skilled and multi-skilled workforce, consisting of individuals who will have global mobility and who should be highly competitive, flexible and independent as well as critical thinkers who are able to use their knowledge as a commodity to survive within a context of intense global competition (Sipon, 2003).

According to the National Centre for Vocational Education Research (NCVER, 2003), there is high demand for generic competencies in the workplace. Employers seek to ensure business success by recruiting and training employees who have a variety of skills and personal attributes as well as technical skills. Proficiency in the broad range of competencies has become the main requirement for the modern worker (NCVER, 2003). Therefore, all education sectors, specifically the TVE system, have a role to play in providing sufficient competencies to students. While TVE has made significant progress to meet workforce demands, further efforts need to be made to improve employability skills of students as required by employers. Teaching and learning strategies employed in TVE and training have not been able to equip students with adequate competencies to enter the job market (Bakar & Hanafi, 2007).

Generic competencies are increasingly important for economic development. Therefore, a more expansive education system is needed, with students taking responsibility for their own learning in order to achieve a more generically skilled workforce capable of adapting to changing technologies and work demands (Abu Hassan & NaviBax, 2003).

The curriculum in TVE and training should include both technical skills and social factors to provide students with the balanced competencies that can influence their future work (Wu, 2003). Providing persons with general competency is the main focus of this study, rather than the specific, narrow competencies required for success in a given occupation. The generic competencies highlighted in this study include the ability to work with others, good communication skills, problem solving and thinking critically, which are equally important for academic success as they are to workplace success.

Metacognitive Strategies and Its Benefits for Successful Learning

The study of metacognition is generally attributed to John Flavell. The term metacognition as proposed by Flavell (1979) is used to refer to the awareness (consciousness), monitoring (controlling) and regulating (reflection or evaluation) of one's cognitive processes. The first serious discussion and analysis of metacognition on mental operations emerged during the middle and late 1970s. The term metacognition itself consists primarily of an understanding of the ways different factors act and interact to affect the course and outcome of cognitive enterprises (Flavell, 1979). In Malaysia, the emphasis on cognition and metacognition can be traced back to the late 1980s, with emphases on critical and creative thinking, which were supposed to be hallmarks of secondary education provision at the time. Metacognition is an important concept in cognitive theory. It includes self-reflection, self-responsibility and initiative, as well as goal setting and time management (Subramaniam, 2009). Therefore, attention should be given to incorporate this strategy into the teaching and learning process.

Metacognitive refers to an organising cognitive principle through which individual cognitive processes are controlled. Metacognitive components consist of self-awareness, monitoring and evaluating; these components can enhance a student's ability to be a better problem solver. Mental operations direct the cognitive function of a person and support problem solvers during the solution process, improving the person's ability to achieve a goal (Mevarech & Kapa, 1996). Mazzoni and Nelson (2000) refer to the term 'metacognition' as being the knowledge concerning one's own cognitive processes and products or anything related to them. There are three main processes involved in the metacognition system namely, awareness, monitoring and regulating, all of which function to aid understanding, as shown in Figure 1.

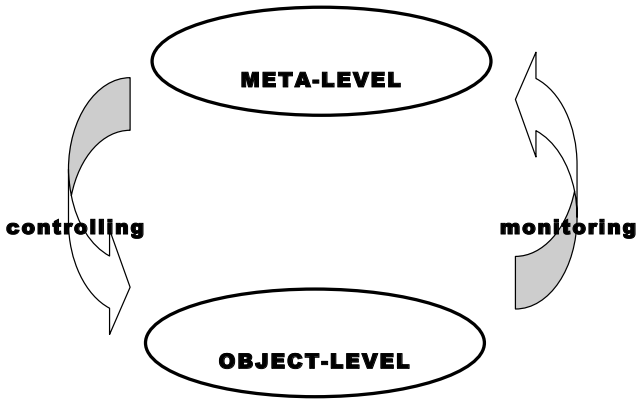

Figure 1. System view of metacognition (Nelson & Narens, 1990, p. 126)

Figure 1 shows metacognition as the interplay between an object-level system and a meta-level system. Metacognition is perceived as the dynamic interaction between object-level and meta-level information flow (Nelson & Narens, 1990). In this way, metacognition can be construed as a supervisory system that enables top-down control of information processing. This model could be useful for understanding and conceptualising the components of metacognitive strategies that could be applied in the learning process and also the role of consciousness and the restructuring of memory while solving a problem.

The benefits of the metacognitive teaching strategy lie in its enhancement of the ability to transfer responsibility for monitoring learning from teachers to students and in promoting positive self-perception and motivation among students (Phelps, Graham, & Kerr, 2004). A metacognitive system also facilitates the planning, reflection and self-evaluation of students, making them less dependent on the teacher's guidance. The metacognitive system assists students in becoming more aware of their current attitudes towards learning goals. In this study, metacognitive strategies refer to the actual processes and strategies that guide the student in how to think about a particular problem, what the student knows about his or her cognition and, above all, the student's ability to control these cognitions.

As a teaching approach, metacognition has a number of inherent advantages that could greatly enhance teaching and learning. Some of its obvious advantages, such as the ability to transfer the responsibility of monitoring learning from the teacher to the student, are well chronicled by Phelps, Graham and Kerr (2004). Other advantages lie in the promotion of self-esteem and self-efficacy as students take control of their own learning. As students take greater responsibility for their own learning, there is the possibility of the development of more lasting learning states in the students that could benefit the students in their future working life. It thus becomes essential that useful metacognitive approaches to teaching need to be supplemented and complemented by equally useful learning approaches that could produce a platform through which individual metacognitive processes could be given full expression.

RESEARCH METHOD AND INSTRUMENTATION

The study employed the case-study approach with a small-scale quasi-experimental design. There are various data collection methods and instruments for qualitative and quantitative approaches. To identify the benefits of the metacognitive strategy on generic competencies, a pre- and post-questionnaire were given to students, who completed them anonymously.

Ten questions were asked in relation to students' experience of learning, with both traditional and metacognitive strategies. The questions examined how those strategies influenced the students' choice of learning practice and how it helped them to actively participate in their learning. Both pre- and

post-questionnaires were constructed with the same questions. The same questions were asked with the purpose of identifying any differences in the feedback obtained between previous approaches (traditional approaches) and metacognitive strategies. The students were asked to rate their preferences using a 5-point Likert scale, with options for 'Strongly Agree', 'Agree', 'Not sure', 'Disagree' and 'Strongly Disagree', with 1 indicating least agreement and 5, most.

During the intervention process, the students were also asked to reflect on their learning experience in a log sheet (diary). The log sheet was formulated with the aim of recording their observations, reactions and perceptions to help to obtain a systematic record of their reflections on the learning process. In this sheet, questions were constructed in a structured form to focus on the topic under study, which required students to provide a rating based on a 4-point Likert scale ranging from Low (1) to High (4). This question was asked at the end of every learning session for every task.

The population of this research comprised 92 first semester Civil Engineering students in Malaysian polytechnics. Only three polytechnics were chosen. They were located in three different areas. The selection of each polytechnic depended on the year in which the polytechnic was founded (the year of operation) and its geographical location. The selection of the sample was achieved using stratified purposive sampling. The course moderator helped in identifying the respondents who were available for participation in the research.

The new intervention teaching approach, metacognitive strategies, was introduced to the students after they had completed the pre-questionnaire. The intervention process took over six weeks to complete. Five learning activities of those designed referred to the Bloom's Taxonomy level of thinking. Task 1 was required for the lower level of thinking, knowledge, while Task 5 was for the highest level, synthesis and evaluation. During the intervention process, the students' diary (the log sheet) was used to obtain their perspectives of the learning process and to determine how the new approach might help to increase their generic competencies. After completing the intervention within the six-week period given to complete the investigation, a second set of questionnaires was given to the students to get a better understanding of the new approach, metacognitive strategies. After completing the treatment, students were allowed to revert to their regular classroom structure and continued learning using their regular classroom practices.

RESULTS

The collated data were useful in evaluating the effectiveness of metacognitive strategies in helping students with their learning. Findings from both pre- and post-questionnaires were shown in Table 1. The pre-questionnaire focussed on traditional approaches, while the post-questionnaire referred metacognitive strategies.

Table 1
Descriptive statistics of traditional approaches and metacognitive strategies

		Traditional Approaches		Metacognitive Strategies	
		M	SD	M	SD
Communication and team-building skills					
1.	Comfortable doing any learning tasks in a group rather than individually	2.330	0.692	3.350	0.582
2.	Will accept and respect opinions and contributions from friends	2.796	0.878	3.370	0.590
3.	Will be able to be a good leader	2.660	0.823	3.350	0.663
4.	Will have no problem in terms of ability to communicate well with other group members	2.524	0.827	3.260	0.451
Critical thinking and problem-solving skills					
5.	Try to relate everything that has been learnt to existing knowledge	2.544	0.872	3.010	0.638
6.	Can solve a given problem without help from the lecturer	2.534	0.838	3.070	0.676
7.	Able to accomplish a task in a given time	2.718	0.912	3.160	0.774
8.	Have the initiative to understand a taught lesson without reliance on the lecturer's notes	2.679	0.782	2.680	0.678
9.	Likes to explore and simplify the taught lesson in own way	2.961	0.816	3.170	0.567
10.	Do revision by referring to many sources	3.000	0.863	3.160	0.560

Table 1 shows, in general, different mean scores between traditional approaches and metacognitive strategies. Obviously, the pattern for all the items suggests that the metacognitive strategies provided higher mean scores than did the traditional strategies. To summarise, the overall findings showed that, in general, communication and team work seemed to have been improved through the hybrid learning environment. On the other hand, students' critical-thinking and problem-solving skills displayed rather different mean values. Major differences were found in terms of competencies regarding working independently (item 6). Students, in general, were able to solve the given task that was assigned to them but although the scores with regards to students' abilities to complete any task in the given time, as well as to plan and organise systematically were high, they, nonetheless, felt it was important to have assistance from the lecturer to successfully solve the task.

The t-test Paired Sample Statistics method was then used to compare the different modes of learning and to confirm if there were statistical differences between the metacognitive strategies and the traditional approaches. Results were obtained as shown in Table 2.

Table 2
Paired samples statistics and paired sample test for the metacognitive strategies and traditional approaches

Paired Samples Statistics								
	Mean	N		Std. Deviation		Std. Error Mean		
Pair 1 Metacognitive Strategies	3.036	92		0.437		0.044		
Traditional Approaches	2.661	92		0.506		0.051		
	Paired Differences			95% Confidence Interval				
	Mean	Std. Dev.	Std. Error Mean	Lower	Upper	T	Df	Sig. (2-tailed)
Paired Samples Test								
Pair 1 Metacognitive Strategies – Traditional Approaches	0.375	0.639	0.064	0.248	0.502	5.868	99	0.000

Table 2 shows that the mean score for the metacognitive strategies, M=3.036, SD=0.437, was different statistically and significantly (t=5.868, 2-tailed value, ρ=0.000) from that of the traditional approaches (M=2.661, SD=0.506). This result tells us that the metacognitive strategies were significantly different when compared with the more traditional approaches, with the difference between pairs being M=0.375. This indicated that the metacognitive strategies, rather than the traditional approaches, were able to help students improve their generic competencies.

DISCUSSION AND CONCLUSION

A study by Martinez, Weigel and Collins (2007) contended that the ability to learn and understand is considered one of the important competencies required by many types of employment in all employees, whether they are self-employed or work in the private or public sector. Results from this study suggested that metacognitive strategies are able to help students to systematically improve their own learning practices. It was apparent from these findings that all the students agreed that they were committed towards their learning and had the ability to administer their own learning in ways to improve and develop the level of generic competencies.

Of the four generic competencies (communication, critical thinking, problem solving and team building), communication and team building skills appear to be the most affected in this study. Students from all three polytechnics agreed that the strategy helped them to improve in these two key skills. The other two competencies (problem solving and critical thinking) could perhaps

have been expected to be the main two competencies to improve. These were improved, but not to such a marked extent. Metacognitive strategies have the additional benefit of promoting life-long learning. This skill also appeared to be well developed among the students.

The most important finding was that the metacognitive strategies helped students to be more independent in their learning when they were directly involved in the process. The students indicated that the new strategy helped them to become more aware and independent of their learning and to be more responsible for their own learning. This finding suggests that students would be able to learn more independently and become more aware of their own learning if they were guided with a good teaching strategy that could help them in handling tasks in their future work.

To summarise, the overall findings indicated that students were able to manipulate existing knowledge and develop more lasting knowledge that might be very useful for application in the workplace of the future. The students indeed showed that they possessed sufficient skills that could boost their employability.

The metacognitive strategies introduced in this study did at least introduce the students to generic competencies related to working experience, and the students had the opportunity to experience and develop those competencies. Therefore, it is hoped that this learning mode is introduced in polytechnics to prepare students for real-life situations and to provide them opportunities for optimal intellectual and academic development as well as the development of generic competencies relevant to the workplace of the 21st century.

REFERENCES

Abu Hassan, M. N., & NaviBax, M. R. (2003). Lifelong learning in Malaysia. *International Policy Seminar*, Co-organised by IIEP/UNESCO and KRIVET on Making Lifelong Learning a Reality, Seoul, 2003, June 24–26.

Bakar, A. R., & Hanafi, I. (2007). Assessing employability skills of technical-vocational students in Malaysia. *Journal of Social Sciences, 4*(3), 202–207.

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist, 34*(10), 906–911.

Juri, A. H., Wan Abdullah, W. M., Zakaria, A., & Darusman, H. (2006). Facilitating lifelong learning in technical vocational education and training. *Proceeding of the International Conference in Technical Vocational Education and Training*, Kuala Lumpur, Malaysia.

Martinez, M., Weigel, T., & Collins, K. (2007). The concept for competence in the development of vocational education and training in selected EU member states: A critical analysis. *Journal of Vocational Education and Training,* (59), 67–88.

Mazzoni, G., & Nelson, T. O. (2000). Metacognition and cognitive neuropsychology: monitoring and control processes. *American Journal of Psychology, 1*(113), 142–147.

Mevarech, Z. R., & Kapa, E. (1996). The effect of a problem solving based logo environment on children's information processing components. *British Journal of Educational Psychology, 66*, 181–195.

Ministry of Education. (2004). *The development of education: national report of Malaysia*. Putrajaya: Ministry of Education Report.

Mustapha, R., & Abdullah, A. (2001). Globalization and Its Impact on Technical-Vocational Education and Training in Malaysia.

National Centre for Vocational Education Research. (2003). *At a glance: Defining generic skills*, Adelaide.

Nelson, T. O., & Narens, L. (1990). Metamemory: A theoretical framework and new findings. Reviewed in G. Bower (Ed.). *The Psychology of Learning and Motivation, 26*, 125–174. San Diego, California: Academic Press.

Phelps, R. Graham, A., & Kerr, B. (2004). Teachers and ICT: Exploring a metacognitive approach to professional development. *Australian Journal of Educational Technology, 1*(20), 49–68.

Sipon, A. (2003). Educational strategies for the k-economy: Laying the foundation for a flexible and competent workforce. *Journal of Technical Education, 1*(2), 1–6.

Subramaniam, S. R. (2009). Metacognition in teaching. *14th International Conference on Thinking*, University of Malaya, Malaysia.

Wu, R. T. Y. (2003). A comparative study of the trends in career and technical education among European countries, the United States, and the Republic of China. *Journal of Industrial Teacher Education, 3*(40), 1–12.

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George Swan[1] and Nayan Kanwal[2]
[1]Department of Biology, Faculty of Science, Duke University, Durham, North Carolina, USA.,
[2]Office of the Deputy Vice Chancellor (R&I), Universiti Putra Malaysia, Serdang, Malaysia.

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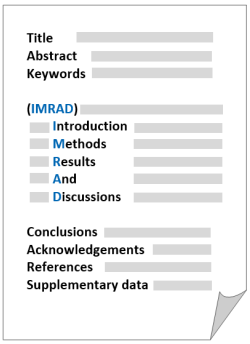

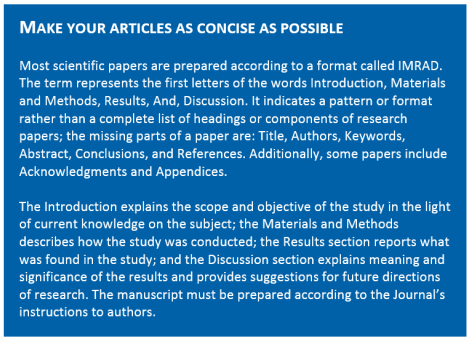

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