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About the Journal
The International Journal on E-Learning Practices (IJELP) (ISSN 2289-4926) is an international peer-reviewed journal. It is also the latest flagship journal of Universiti Malaysia Sabah (UMS). IJELP is the 12th journal of UMS since its establishment on 24 November 1994. IJELP is published once a year. IJELP is published in English and it is open to all local and international authors.

Goal of IJELP
The primary goal of IJELP is to publish and share all forms of e-learning practices among e-learning practitioners around the world.

Quality
We aim for high quality journal publishing. We strive to ensure a decision for a paper submission not later than 12 weeks from the date of submission.

Vision
The journal aspires to be internationally recognised as one of the leading e-learning practices journals.

Aims and Scope
IJELP is an online open access journal aimed at disseminating and sharing of e-learning practices to worldwide audience. IJELP accepts manuscripts in the area and sub-area of e-learning such as teaching and learning with technology, mobile learning, e-learning technology and innovation, multimedia-based learning, Computer-Assisted Language Learning (CALL), best practices in e-learning using social networking, PLE, management, assessment, administration and leadership. The journal aims to be indexed by SCOPUS (Elsevier) and EBSCO after six periodic issues are published.

Editorial Statement
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EDITORIAL PREFACE

Welcome to the inaugural issue (Volume 1/2014) of the *International Journal of International Journal of e-Learning Practices* (IJELP). IJELP is one of the online open access journals published by Universiti Malaysia Sabah, Sabah, Malaysia. IJELP is aimed at sharing and disseminating e-learning practices such as teaching and learning with technology, mobile learning, e-learning technology and innovation, multimedia-based learning, Computer-Assisted Language Learning (CALL), best practices in e-learning using social networking, PLE, management, assessment, administration and leadership to worldwide audience.

For the first volume of IJELP, we have selected articles reporting on the results of a range of e-learning practices carried out by researchers from all over Malaysia. The studies have examined a range of topics: from fostering Thinking Skills among Malaysian Secondary schools supported by e-Portals based on case examples of Blended Mode Problem-based Learning (PBL); developing Listening and Speaking skills of student teachers via the amalgamation of Quick Response (QR) Codes and Mobile Technology; examining perceived usefulness of social media (Facebook) among undergraduates; scrutinizing participations in online discussions amongst undergraduates; observing academic staff usage in employing learning management system in teaching and learning in higher education (Learning Management System also known as *SmartUMS*); examining language teachers' usage of ICT in classrooms; through to reviewing the development of a prototype E-learning portal to support the writing needs of English as a Second Language (ESL) pre-service teachers in Malaysia.

We hope you will enjoy reading these collected articles and that you will find the research findings and instructional implications relevant to your own research interests and teaching purposes. We are indebted to several colleagues, and to whom we are grateful for the generous contribution of their time and effort in reviewing and proofreading the articles that were submitted for consideration.

Sincerely,

Associate Professor Dr Tan Choon Keong
Editor-in-Chief

Dr Lee Kean Wah
Deputy Chief Editor

Fostering Thinking Skills Supported by e-Portals with Case Examples of Blended Mode Problem-based Learning (PBL) Participated by Secondary School Learners

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ABSTRACT

The integration of Information and Communication Technology (ICT) in science learning has been identified as an important component in the transformation process of many educational systems to impart the technology skills that is an essential 21st century skills to serve the new learning paradigm among the Net Generation students. In the advent of digital era, World Wide Web has spawned a wealth of new network-based applications with an overarching vision that supports specific blended mode learning programmes incorporating interactive e-platforms and m-learning. Student-centred learning opportunities were widened with more interactive activities that could engage their interest for science learning in the ever expanding knowledge-based societies. This article analyses the roles of e-portals incorporating Open Educational Resources (OERs) that foster thinking skills of learners through 'Problem-based Learning' (PBL) programmes. Cases are extracted from a bigger scale of longitudinal study that examined students' participation in the blended mode PBL anchored on social constructivist and socio-cultural framework. Blended learning activities were implemented leveraging on the effective use of OER to enhance learners' investigative skills with transformation of values-based classroom practices beyond formal teaching. PBL scenario (six contextual problems) adapted from secondary science entitled 'Water and Solution' was presented to project teams from two case study schools. Problem case 4 using 'within-case dynamic matrix' was further reported with exemplars elaborated. Students were administered with 'Fluid Intelligence Test'(FIT) encompassing evaluation of creative, critical/logical thinking and reasoning skills prior to PBL through scaffolded instruction (SI)(PBL-SI) with evaluation guided by POSITIVE rubric (accessible at http://forum.sp3aceman.net). Four aspects of PO**SIT**IV**E** rubric guide, '**S**kills' enhancement (scientific/ICT), '**I**nformation', '**T**raining/transfer of Higher Order Thinking' (HOT) and '**E**valuation/exchange/enrichment/ exposure' are illustrated with evidence of students' enhanced HOT. Innovative

learning designs and on-line assessment with evidences of exemplary students' creative potentials involved in investigation using OER were identified which include interviews findings from two students who created web-portals using OER effectively. 'More/moderately successful students' were involved actively in mini science fair, congress/competitions and e-forum (http://forum.maays.net). Other pedagogical issues concerning of the importance of PBL and blended learning that promote thinking skills in line with research evidence as reported in TIMSS and PISA studies are also deliberated.

Keywords: Fostering thinking skills, Problem-based Learning (PBL), Open Educational Resource (OER), within-case and exemplary case analysis, blended mode of learning, transforming instructional practices with flexible assessment

INTRODUCTION

The study on human's thinking capacity has always been a prime concern of many educational psychologists and researchers who are interested to stimulate Higher Order Thinking (HOT) and promote innovative performance among learners with transformation of identity. In the advent of digital era, interactive e-portals as major *trends* of technology-enhanced learning were shown to be effective to widen student-centred learning opportunities in the ever expanding knowledge-based society. The issue lies on how educators could harness the effective use of Open Educational Resources (OER) and new paradigms of teaching approaches to foster creativity among young learners and digital natives. Hence the *problems* of practice through e-platforms have been important research focus areas for educational researchers. Many blended mode of learning initiatives (i.e. both digital/on-line and non-digital/off-line) provide useful tools for effective and ever-expanding global learning platforms to promote web-based collaborative projects involving contextual problem-solving skills as reflected in project-based activities (PBA), problem-based learning (PBL) and participatory inquiry (PI). All these approaches combine investigation, education and purposeful action with knowledge creation and transformation through shared blended learning in contrast to the transmission approach. Participants in these aforementioned activities are capable of growth, change and creation (Briton, Collett & Cooney, 2010).

BACKGROUND

This paper illustrates on two e-portals that aim at promoting HOT especially creativity through blended learning activities leveraging on available OER, i.e. '**S**cience **P**roject/problem/programme-based **A**ctivities in**C**orporating **E**xperiment **MAN**agement' (SP3ACEMAN) and '**M**agnificent **A**dvancement of **Y**oung **S**cientists' (MAAYS). Case studies are extracted from part of a bigger scale of longitudinal study that examined secondary students' participation in a specially designed PBL programme through

scaffolded instruction (henceforth abbreviated as PBL-SI) activities via ICT integration incorporating student-centred learning approaches using social constructivist and socio-cultural theories as framework of reference.

OBJECTIVES

The following are the objectives of the research activities reported here:

- To illustrate the blended learning activities that were implemented in this PBL programme facilitated through SP3ACEMAN and MAAYS e-portals with effective use of OER.
- To report on within-case analyses of the enhanced HOT as measured in the fluid intelligence of students who had participated in PBL programme with exemplars elaborated.

LITERATURE REVIEW AND FRAMEWORK OF STUDY

The nature and key theoretical perspectives of creativity, definition/research on OER will be reviewed with identification of framework of study that guides direction of research activities.

The Essential Elements of Creativity as an Aspect of Fluid Intelligence or Higher Order Thinking

Human's thinking is illustrated in numerous ways. The term Higher Order Thinking (HOT) is often defined operationally as the thinking that requires learners to reconstruct the information and ideas so that their meaning and implications can be transformed in a logical manner. This process of transformation occurs during scientific reasoning or when students combine facts and ideas in order to explain, apply, analyze, synthesize, generalize, hypothesize or arrive at some conclusion or interpretation. Students may demonstrate HOT through tangible products or projects as learning output. The intangible (e.g. creative ideas) learning output may involve students' ability to perform various tests with evidences of lateral thinking, metaphorical thinking or use of analogies and metacognition (e.g. monitoring and evaluating own thinking). There is thinking that concerned with description (e.g. verbal fluency) (Bloom, Hasting & Madaus, 1971; de Bono, 1985; Sale, 2008; Sill, 2001; Torrance, 1974). There is thinking based on action such as participation in active learning and problem-solving (PBS) activities in PBL through blended mode of instruction. There is also integrative thinking including synthesis, creative/critical thinking, decision making (Baird, 1990 in Fensham, Gunstone & White, 1994; Phillips, 2007) that influence intelligence, learning, and motivation (Nigam, 2009; Paris & Winograd, 1990; Scruggs, Mastropieri, Monson & Jorgenson, 1985).

The concepts of creativity overlap with those of intelligence and thinking (Linn, 1989). It is believed that creativity could also be fostered to a certain extent using appropriate instructional pedagogies. However, research showed that creativity is a complex construct that can be expressed in many ways (Treffinger, Young, Selby, & Shepardson, 2002). Hence it poses great difficulties to identify creative strengths among students in a fair and meaningful way especially for those from diverse socio-cultural background and achievement. Creativity tests were mostly designed based on review of theories and research findings by prominent psychologists [e.g. Amabile (1983), Gardner (1993), Guilford (1987), Torrance (1974)] who revealed that students may demonstrate any of the four sets of characteristics in varied ways. There are four personal creative characteristics suggested by Treffinger *et al*. (2002), i.e. people who are able to 'generate many, varied and unusual possibilities' are defined as creative thinkers. The characteristics in 'digging deeper into ideas' include such as analyzing, synthesizing, evaluating, seeing relationships. The characteristics in 'openness/courage to explore ideas' including sensitivity, curiosity, humour, imagination, and risk-taking in trying new ideas, e.g. science learning/investigation supported by non-digital/digital resources. The characteristic of 'listening to one's inner voice' is often associated with self-awareness of creativeness, perseverance and motivation. Researchers should also bear in mind that it is vital to use varied methods and multiple data sources to evaluate creativity (de Bono, 1985; Treffinger *et al*., 2002).

Manipulating information and ideas through numerous processes of HOT allows students to discover new meaning for their learning and solving difficult problems. When students are engaged in the construction of knowledge, e.g. in PBL integrating ICT harnessing on OER, an element of uncertainty is introduced. Therefore it makes instructional outcomes not always predictable, i.e. the teacher is not certain what will be produced by them. In helping students to become knowledge producers, the teacher's main task is to create activities or environments that allow them the opportunities to engage. It was suggested that there is a need for the researcher to define the specific types of thinking to be assessed before identifying appropriate sources of performance evidence, subsequently producing valid and practical scoring system (Sale, 2008). However, there are also constraints and limitations to be acknowledged for evaluation of certain aspects of HOT. For example, researchers believe that '*creativity can be expressed variedly; no one person possesses or displays all creativity characteristics all the time*' (Treffinger *et al.*, 2002).

Evaluating Problem-based Learning using Open Educational Resource

In this study, the effect of PBL on HOT was evaluated on three main aspects, i.e. to illuminate evidence on change of '*ability, achievement* and *aptitude'* as manifested by the students. An example is the use of free web software (e.g. WordPress and phpBB) [URL: http://wordpress.org/about/] to create websites as platforms for e-learning. OER are digitized materials being offered freely and openly for educators, students and self-

learners to use and reuse for teaching, learning and research. OER include different kinds of '*digital assets*'. The '*implementation resources*' include intellectual property licenses that govern open publishing of materials, design-principles, and localization of (e.g. learning) content. They also include materials on best practices such as stories, publication, techniques, methods, processes, incentives, and distribution. The '*learning content*' includes courses, course materials, content modules, learning objects, collections, and journals. 'Tools' include software that supports the creation, delivery, use and improvement of open learning content, searching and organization of content, content and learning management systems, content development tools, and on-line learning communities (e.g. open and distance education via blended mode of learning activities) (Wikipedia, 2011).

According to Carter (2005), psychometric tests can be broadly divided into two main categories, i.e. tests of 'maximum' performance and potential in a number of areas, e.g. ability or aptitude; and tests of 'typical' performance, e.g. personality or interest. '*Ability*' is defined as 'what the student is able to demonstrate at present'. For example, the student's *'ability*' to perform various challenging tasks related to PBL was evaluated using the evaluation rubric adapted from the PBL support tool (Ng, 2009; Ng, 2010) involving metacognition, i.e. HOT that includes active control over the cognitive processes engaged in learning (Phillips, 2007). '*Achievement*' is 'what the students have accomplished in the past' [e.g. that was evaluated using 'Higher Order Thinking Test in Science' (HOTTIS) (Ng, Fong, & Soon, 2009)]. '*Aptitude*' means 'how quickly or easily the student will be able to learn in future' [e.g. that was evaluated using 'Fluid Intelligence Test' (FIT) (Ng, Fong & Soon, 2010) that includes creativity].

In this PBL programme integrating ICT, the aspect of '*aptitude*' was assessed. Numerous tests on Creative/Critical Thinking (CCT) skills were devised to test several constructs identified in creative/critical thinking as examples of HOT. These include two kinds of ability, i.e. 'fluid-analytic and crystallized intelligence' (Cattell, 1963 in Grieve, 2008). 'Crystallized ability' [e.g. 'Crystallized Intelligence Test' (CIT) that is another aspect being assessed but not elaborated in this article] referred to those areas influenced by experience and training, i.e. students' acquired procedural/conceptual knowledge and skills that are strongly dependent upon exposure to culture. It is the knowledge gained through experience that reflects overlearned behaviors and the products of 'fluid intelligence' (Detterman & Sternberg, 1982; Richard & Zimbardo, 2002). 'Fluid intelligence/ability' (as reflected in FIT, i.e. a paper-and-pencil test that require culture-free mental efficiency) referred to the aspects of intelligence or potential that involves the ability to see complex relationships and solve new problems creatively. It is the successful adaptation in situations whereby previously learned skills are of no extra advantages. According to Haladyna (1999), 'fluid intelligence' could also be evaluated through some common 'fluid abilities' like reading, writing (e.g. e-forum posts), speaking and listening.

The key principles in 'constructivism' (Vygotsky, 1978) that 'knowledge is embedded in the authentic tasks in realistic context (as emphasised in PBL) in which it is used and learning is an active process of constructing knowledge with learners engaged

in using tools' are supported by various framework. For example, 'situational approach' is a commonly used pedagogy incorporating social constructivist teaching with emphasis on problem-solving in everyday life. This type of learning is also elaborated as social mediation with participatory knowledge construction whereby interaction among group members (e.g. peer group) serves as the socially shared vehicles of thought with possible support/coach from facilitator (e.g. teacher) who helps an individual to learn. Social mediation could be elaborated by cultural scaffolding [in which the emphasis is on use of non-digital (e.g. books) or digital resources including ICT tools in mediating learning] and with the social entity as a learning system that may bring about changes in its underlying values and norms (McConnell, 2000). Successful learning enriches the experience universe and stimulates further inquiry learning. The output or product of problem-solving activities and PBL integrating ICT (e.g. use of graphic tools and e-portals using OER) in the form of projects allow students to experiment, make decisions, form and re-form hypothesis, test and examine ideas, seek solutions, and most importantly, learn more about themselves and their world (Asimov, 1990). By the end of the twentieth century, the development of 'core/key' skills as explained from constructivist theories, such as problem-solving and decision-making, was found to be embedded in primary and secondary school curricula (VWSCRE, 2000). For example, a thinking skills structured programme namely 'Cognitive Acceleration through Science Education' (CASE) was introduced in UK targeting students aged 11+ to 13+. It is an intervention strategy combining curriculum tasks and pedagogy within the context of science emphasizing two main tasks in HOT. Firstly, students should be able to identify things that matter ('variables'), connections ('relationship', a vital trait of creativity) and types of relationships. Secondly, they should also be able to group things ('classify'), describe, differentiate, explain, predict/hypothesize, compare, infer and summarize (VWSCRE, 2000). Cutler (2004) also stressed the importance to teach knowledge and understanding of how science works through developing key skills, e.g. communication, cooperating, reasoning, enquiry and creative thinking. Thus fostering creativity is a vital aspect to be considered in problem-based science learning.

RESEARCH METHODOLOGY AND DATA COLLECTION

Blended learning activities were implemented in this PBL programme harnessing on effective use of OER to enhance learners' investigative skills and creativity. This section elaborates on research activities aiming at fostering creativity beyond formal teaching.

Developing Research Instrument to Evaluate Creativity

'Fluid Intelligence Test' (FIT) was constructed as an aptitude test to evaluate HOT skills of Form 2 students (ages about 13 or 14) before (pre-) and after (post-) PBL in 2008. FIT was adapted from some validated research instruments, i.e. Torrance's thinking

test (1974), 'creative product evaluation' by Gardner (1993), 'creative logic' by Carter (2005) and Eberle (1991), also 'Finding relationship' by Roadrangka, Yeany and Padilla (1982). Table 1 summarizes the content of FIT that evaluate three areas of HOT, i.e. creative and critical thinking (CCT), logical thinking and reasoning (LTR). The specific areas being evaluated are also outlined in the table with indication of 'question number and percentage of marks allocated' in the respective sections (http://forum.sp3aceman.net/search.php?st=0&sk=t&sd=d&sr=posts&author_id=54&start=20). The questions include areas such as 'diagram completion illustrating various creative traits' (e.g. items that evaluate the aptitude of 'originality, flexibility'); 'subjective questions requiring open-ended answers', 'fill in the blanks with identification of correct variables or things that matter with indication of types of relationships' (fluency/flexibility); and 'analysis of picture or figure logically with reasoning or explanation of rationale of choice'.

Table 1 Content outline for Fluid Intelligence Test (FIT) to evaluate Higher Order Thinking (HOT)

Main HOT areas	Sub-theme or specific areas to evaluate thinking skills
Creative thinking	Originality: Students' ability to produce original, unique or creative ideas.
(Questions 1 to 4, 10 items, 40%)	Flexibility: Students' ability to solve problems flexibly/creatively with many ways of Problem-solving (PBS).
	Fluency with elaboration: Students' ability to give many elaborative/ illustrative examples.
Critical thinking	Identifying variables (things that matter): Students' ability to classify and list variables.
(Questions 1 to 5, 10 items, 30% in total)	Analyzing relationship: Students' ability to state hypothesis, identify relationships of the objects based on classification of objects given or from the problem scenario presented.
	Comparing/contrasting: Students' ability to compare similarities and contrast differences.
Logical thinking and reasoning **(30%) (Q1 to 5)**	Students' ability to decide or choose the best solution with logical thinking demonstrating reasoning skills or reasonable explanation for the choice of response in each item.

(Adapted from Torrance, 1974; Gardner, 1993; Carter, 2005; Eberle, 1991; Roadrangka, Yeany & Padilla, 1982)

Two pilot studies were conducted with $N_1 = 40$ (pilot study 1) and $N_2 = 84$ (pilot study 2) selected from secondary student samples of very high, medium and moderately low achievers. Item analysis was implemented to establish reliability and validity of the instrument with the findings reported by Ng, Fong, and Soon (2010) for pilot study 1, as well as by Ng, Soon, Rozhan, and Fong (2011) for both pilot study 1 and 2. Consequently, all the HOT questions that were piloted during pilot study 2 were accepted based on the

results of item analysis that showed computed good range of $0.2 \leqslant \rho \leqslant 0.8$ and $D \geqslant 0.25$ (where ρ = Index of difficulty and D = Index of discrimination). The internal reliability for the final version of FIT computed through Kuder Richardson using SPSS statistics software also showed good Alpha value $kr_{21} = 0.9043$.

Designing E-Portals Leveraging on OER to Promote Blended Learning

Two web-based programmes were designed for blended learning activities to facilitate PBL supported via e-portals using the template of 'WordPress' free software powered by phpBB, an OER downloadable from the internet. The e-portals were designed by two secondary students who were involved in pilot studies of PBL programme in 2008 and the content of portals were provided by the founders as advisors/administrators of these portals.

*'**MA**gnificent **A**dvancement for **Y**oung **S**cientists' (MAAYS)*(URL: http://maays.net) is an international education programme founded in 2003 by Vision Academy (M) Sdn. Bhd. An action research study was conducted to document, review and reflect on the efforts made by local, national and international organizations. This study indicated that although there were efforts with thematic focus to develop young scientists through strategic activities such as science camps/fairs/congresses/workshops, there is yet a concerted effort to promote young scientists in a networked environment using information, knowledge and values-based society. This study indicated that although there were efforts with thematic focus to develop young scientists through strategic activities such as science camps/fairs/congresses/workshops, there is yet a concerted effort to promote young scientists in a networked environment using information, knowledge and values-based society. Young scientists who are ICT savvy are expected to be trained as a critical mass to propel the growth of science and technology in digital age. Modus operandi was prepared through concerted efforts to use on-/off-line activities with discussion on pertinent 'Problems, Issues and Opportunities' (PIO) to promote 'Young Scientists' Network' program. An e-platform was finally prepared as venue of collaboration in sourcing human and material resources with the objectives to:

- exchange, share knowledge and promote global understanding on scientific investigation.
- provide opportunity for intellectual venture and as effective medium to promote lifelong scientific/mathematical values, interests, skills, attitudes and motivation among the youth.
- serve all stakeholders as e-platform for participating in the Community of Practice (CoP), encourage further communication, foster camaraderie with collaboration and networking activities that were initiated since the 5th 'Search for SEAMEO Young Scientists' (SSYS) 2006 congress (Kim, 2003).

*'**S**cience **P**roject/problem/programme-based **A**ctivities in **C**orporating **E**xperiment **MAN**agement' (SP3ACEMAN)*(URL: http://sp3aceman.net) is a student-centred learning programme founded in 2004 as an off-shoot of the post-graduate research studies aiming at promoting investigative research. It is a sub-portal hyperlinked to '**S**outh **E**ast **A**sia **R**egional **C**apacity **E**nhancement *H*ub' (SEARCH) as illustrated in Figure 1 [URL: http://www.recsam.edu.my/search]. An off-line web-portal was designed initially as platform for sharing of resource materials such as support tools for project-based activities (PBA) (studies between 2003 and 2008) and problem-based learning (PBL) (studies between 2007 to 2011) that were also compiled using CD-ROM being distributed among research samples. This programme was monitored and evaluated using POSITIVE rubric guide (an acronym for '**P**lanning, **O**bjective/organization, **S**kills, **I**nformation procurement, **T**raining/transfer of HOT, **I**nvolvement/Incorporating pedagogical-content knowledge (PCK), **V**alues with enhanced motivation and **E**valuation/exchange/enrichment/everlasting exposure'). Using 'WordPress' OER, an e-portal supported by a closed forum (Figure 2) was also developed to facilitate wider groups of participation towards Education for All (EFA) and fostering creativity with sharing of more OER. This portal is designed for all types of learners with various levels of background knowledge and academic achievement to explore more about investigative research. SP3ACEMAN was introduced with scaffolded instruction (SI) being designed for beginners with support rendered while more challenging activities are also prepared for advanced learners for self-directed/self-paced/self-accessed learning. Some of the research evidences were disseminated by Ng (2009) and Ng (2010) with the resources freely downloadable as OER via URL (e.g. http://forum.sp3aceman.net).

Figure 1 Snapshot of SP³ACEMAN [URL: http://sp3aceman.net]

The index page of SP³ACEMAN [URL: http://sp3aceman.net] as sub-portal to the SEARCH official website [URL: http://www.recsam.edu.my/ search] for on-line learning hub is shown in Figure 1 while Figure 2 shows the closed forum site.

Figure 2 The closed forum site of SP^{3}ACEMAN with 'Teachers' and students' guide' provided for scaffolded activities of PBA/PBL [http://forum. sp3aceman.maays.net/viewforum.php?f=28]

Figure 3 Female students' project presentation in mini science fair was posted onto official website of 'Water Watch Penang'

Implementing and Evaluating Learners' Participation in PBL Integrating ICT using OER

Research students were involved in PBL supported by ICT tools that included the two e-platforms as discussed. Problem-based scenario adapted from secondary science topic on 'Water and Solution' with six contextual cases being solved collaboratively in 2008 was presented to project team members from two case studies (male and female) schools. Apart from motivation surveys and other HOT tests, FIT that is culturally

independent was administered as pre-/post-tests to evaluate students' HOT for 'fluid intelligence' (including creative/critical/logical thinking). Other main activities included participation in school-based mini science fair by all female research samples (Figure 3); participation in the 7th 'Search for SEAMEO Young Scientists' (SSYS) (2010) (http://maays.net/2010/03/13/ssys-winners-list/#) and i2discovery proposal competition (Figure 4) organized by MAAYS by selected male samples, as well as participation in open forum of MAAYS.net and closed forum of SP3ACEMAN (URL: http://forum.sp3aceman.net).

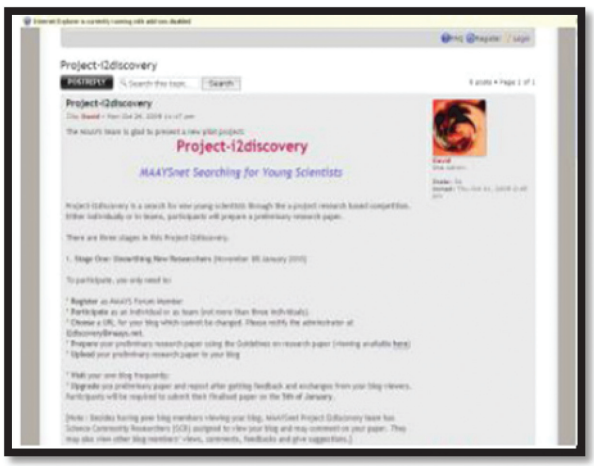

Figure 4 Male students were encouraged to participate in i2discovery proposal competition organized by MAAYS

INTERPRETATION OF FINDINGS WITH ELABORATION ON CASES

Literature revealed that there are five steps to develop 'creativity', i.e. "*Knowledge, Thinking, Incubation, Moment of inspiration and Development*" (Yew, 2001 in Yingprayoon, 2005, p.5). The process of fostering creativity through blended mode of 'PBL via scaffolded instruction' (PBL-SI) was reflected in this 'study on the effects of PBL-SI towards secondary students' HOT and motivation' (Ng, 2012). It was observed that generally the PBL-SI research samples were able to acquire diverse '***knowledge***' utilizing all the five senses through searching the literature from diverse sources of information that were relevant to their project with effective use of OER [i.e. 'Information procurement' (or the first 'I') as required in the POSITIVE rubric]. They were given the 'Training' and encouraged to work in groups to '***think***' deeply and brainstorm ideas using graphic organizers such as concept map and fishbone diagrams that reflect the '**T**ransfer of their HOT'.

There were occasions when students were given opportunities to participate in '**E**nrichment' activities or involve in something unrelated to the problem, i.e.

'***incubation***' period, but the resources they gathered were able to '***inspire***' them to prepare projects for mini science fair (by the end of 2008 in female school), research proposals for MAAYS 'i2discovery' proposal competition (between December 2009 to January 2010 by a few male students). Selected male students (from project team 4 being illustrated as '*exemplary cases*' later) had participated in '***development***' of project ideas into useful and practical applications guided by MKO with '**S**kills'(scientific/ICT) enhancement activities. Subsequently, 'within-case' analysis is made to elaborate on each case separately and 'exemplary case' being illustrated to ensure that the procedures used are well documented and can be repeated (Eisenhardt, 1989; Miles & Huberman, 1994; Yin, 2003).

Enhancing HOT via PBL Supported by ICT Tools and E-Portals (Within-case Analyses)

'Within-case' dynamic matrices were used to summarize PBL-SI of 'more successful' selected male and female project team members working on PBL-SI activities for problem case 4 with their enhanced HOT as evidenced in their learning output (accessible from http://forum.sp3aceman.net/viewtopic.php?f=24&t=44). The aspects of students' HOT (including creative/critical thinking) and metacognitive ability to identify facts/questions, the PBL-SI programme integrating ICT and how these were translated in the problem-solving (PBS) processes were analyzed. Among the strategies used to promote students' thinking skills include their abilities to identify 'cause and effect' with subsequent skills required in the PBL to identify viable hypothesis and three types of variables (i.e. dependent/independent and controlled). It also includes students' ability to analyze situations with review of related studies for further clarification and the conduct of field work with data collection for dissemination of finding via blended mode activities using e-portals and OER effectively.

The resulting change of each problem case was also analyzed in detail with evidences of students' enhanced HOT skills after their participation in PBL-SI. These include the analyses on observation rubric and paper-and-pencil test, e.g. 'Crystalized Intelligence Test' (CIT) that evaluated their creativity as measured from graphic organizers [e.g. concept map and fishbone diagram (*Image 5*)] using rubric scale {i.e. 4 marks for 'Excelling' 75% to 100% of total score), 3 marks as 'Expressing' (50% to 74%), 2 marks as 'Emerging' (25% to 49%), and 1 mark as 'Not yet evident' (0 to 25%)}.

The evaluation rubric (accessible from the 'Project Schools' accounts in URL: http://forum.sp3aceman.net/viewtopic.php?f=24&t=44 and http://forum.sp3aceman.net/viewtopic .php?f =52&t=47) was adapted based on the references of creative traits such as originality, flexibility, fluency, elaboration and the four main features of creativity as reviewed from literature. These include the ability to (1) 'generate many and unusual possibilities'; (2) 'dig deeper into ideas'; (3) be 'open and courageous to explore ideas'; and (4) 'listen to one's inner voice'. These scores in evaluation rubric were given based on the students' genuine work, e.g. [4] marks were given if excellent or most accurate answers were produced by the team members who contributed original/creative

ideas. Only 1 mark was given to answer of poor quality. They were classified as 'more successful' (and some are illustrated as 'exemplary cases') if they had completed 70% and above (i.e. they participated actively with prompt completion) of the tasks assigned in PBL-SI with score 4 in 70% and above of tasks, also showed improved post-test scores in FIT as reported.

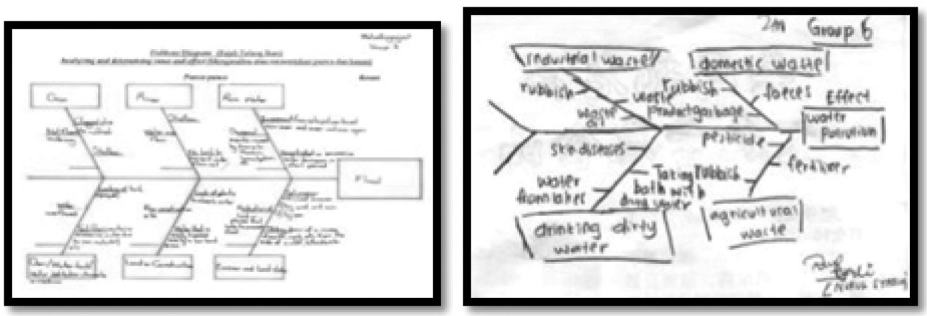

Figure 5 Sample students' graphic organizer learning output 'fishbone diagram'

Students were evaluated on their improved scores in post-FIT as compared with their pre-FIT [that include creative/critical thinking (CCT), logical thinking and reasoning (LTR) skills], metacognitive thinking, conceptual knowledge (HOTTIS) and procedural knowledge/skills [from their scores in 'Science Practical Skills Evaluation' (SPSE) or '*Penilaian Kerja Amali*' (PEKA)]. Other evaluations include their observed motivation level to participate in off-line (all PBL-SI activities or field studies, the mini science fair for female) and on-line activities (e.g. posts on MAAYS e-forum for all; i2discovery proposal competition by MAAYS and research report presented in SSYS for male as can be viewed from e-forums of MAAYS and SP3ACEMAN). Generally all the 'more successful' students as described in 'within-case' analyses for Team 4 members had either shown improvement of FIT scores or with concrete evidences of their participation in all aforementioned activities.

The names of two groups of more/moderately successful PBL-SI students anonymously abbreviated as F(4/1/2)=Female (Team 4/Class 1/Student 2). They are Team 4 female [F(4/1-3/1), RLXY, DV and NCLE] and male [M(4/1/1-4), MSy, MS, MAk, NA]. Within the constraints of limited timeframe, all the PBL-SI female students were able to participate in the presentation of their project proposal or learning output in school-based mini science fair at the end of the school term. One of the female Team 4 students DV will be elaborated as an 'exemplary case'. Due to time constraints, all the PBL-SI male students did not participate in the school-based mini science fair as their end-of-year school examination was held immediately before the school holiday. However, they managed to submit all the required assignments (included project proposal, portfolio, journal, CIT and SPSE) and tests (i.e. FIT, and other HOT and motivation tests) that were also given to PBL-SI female students (who completed their school examination one month before holidays).

Fostering Creativity through Investigative Activities using OER (Exemplary Cases)

After the male and female PBL-SI students sat for lower secondary public examination in the subsequent year (October 2009), they were also invited to participate in MAAYS e-research activities. Only Team 4 members [M(4/1/1-4)] are highlighted as an 'exemplary case' given their outstanding performances in completing all assigned tasks with evidences of enhanced HOT and motivation in PBL. This was reflected in one of the scientific journals of Team 4 members as provided below, in their subsequent investigation;

> …The problem is related to the weather and the type of earth surface. During the rain season, the houses in the lower land will face floods. We have taken the sample of flood's water to find the cleanliness of the water. From the investigation, we found that the water are so harmful. It is because it mix with variety of harmful substances. This show us that floods can give diseases. How do we identify and solve the problem?...
>
> [M(4/1/1-4), reflective journal]

From their review of literature through surfing references from the internet mainly from OER, they found that the parameters used for measuring the quality of water [whether it is drinkable (Class 1), usable for recreation (Class 2), semi-polluted (Class 3), polluted (Class 4) or very polluted (Class 5)] include Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Dissolved Oxygen (DO), pH, Total Suspended Solids (TSS) or Turbidity. Some of their references were referred from the official website of the Department of Environment (DOE) URL: http://www. doe.gov. my/webportal/en/info-umum/piawaian-dan-kriteria-kualiti-air-marin-malaysia/. They have chosen TSS or 'turbidity' as parameter for further investigation. The following discussions are extracted from the analysis of the coded responses using framework analysis on the project report and research proposal or plan (e.g. for mini science fair 2008, MAAYS 2010 and SSYS 2010) by exemplary cases:

Team 4 students acquired '***knowledge***' using metaskills to gain overview of facts and issues related to water to facilitate further investigation. They were able to demonstrate the organization of thinking and monitor their learning process by optimizing useful information or resource. Under literature review section of project report, they were able to systematically classify the vast amount of knowledge acquired into: '(a) Information from newspaper; (b) Recent issues related to project; (c) Study done by people; (d) Contaminants: Types, examples, definitions; (e) The effect of drinking contaminated water; (f) Disinfect contaminated water: Numerous types of methods; (g) Purification and preservation of drinking water: Methods to maintain water quality and quantity.' [Extracted from an exemplary project report by male students, as illustrated in the file uploaded onto SP3ACEMAN portal (http://forum.sp3aceman.net)].

Students working in teams were encouraged to 'think deeply', manifesting their metaskill to monitor/regulate their thinking within the complex PBL processes. They '*brainstorm*' ideas among themselves on causes and effects of 'flood' and 'pollution'.

For example, female Team 4 members explored 'ways to prevent flood' or minimize the damage caused by floods. From literature review on flood prevention, they found that there was a 'connection' between flood and 'river banks, flood wall or flood barriers'. Thus they formulated the hypothesis of 'The shallower the drain, the faster the water got overflowed' or 'The deeper the depth of river, the lesser the risk of flood will happen'. They had also set the dependent variable as 'overflow of water', independent variable as 'the depth of the container' and controlled variable as 'the volume or same amount of water used to test the overflow of water'. These formed the basis for investigative activities presented in mini science fair by the female students later.

'Inspiration' for investigation was acquired by reviewing literature on numerous water related issues. For example, from the review of the common water quality parameters by male Team 4 members, the 'improvisation' of project ideas resulted from collaborative decisions to solve problems in three problem cases focusing on 'turbidity'. A science project entitled 'Swift turbidity marker' was prepared by one Team 4 student guided by 'More Knowledgeable Others' (MKO) in a local university. The project is a new turbidity meter with a simplified functionality for rapid investigation of 10 different levels of turbidities from the range of Total Suspended Solids (TSS) between 0 to 500 mg/L. The research proposal 'An investigation on the turbidity levels of flood water that is harmful to human's health using Swift Turbidity Marker' was further adapted by three Team 4 members for MAAYS scientific blogging activities (focusing on topics, e.g. 'Values-based water education') as well as i2discovery proposal competition.

The students' project ideas were also selected for further 'development' into useful and practical applications for sustainable solutions of water related problems in local community. From lab activities, Team 4 male students found that turbidity could be measured by a turbidity tube via light passing through a glass/plastic tube or column of water and a 'cross' sign or a coin being put at the bottom. They used a pen to write a 'cross' sign on filter paper or a coin, put 500 ml of sample polluted river water (they have collected after the flood that happened in their school recently) in the beaker. Then they placed the filter paper at the bottom and paid attention to 'cross' sign until it could no longer be seen when water was filled. From literature, they also knew that high turbidity is normally resulted by high TSS. To ease the measuring process of turbidity, they had explored ways to design a user-friendly instrument guided by MKO. For example, the project entitled 'Swift turbidity marker (STM)' is a technological tool using Physics concepts related to 'Electronic and Optics'. This instrument entitled STM was designed to measure the turbid water samples with suspended particles (clay and silt) of grain size less than 63 μm. TSS from a combination of clay and silt were used in preparation of samples for experiments conducted as the source of turbidity.

Student researchers ensured that the TSS used was fine enough and that the particles were able to form a homogeneous solution or mixture with water (the precautionary measure they had made for their study). Optical components, i.e. detector (photodiode) and light source ['Light Emitting Diode' (LED)] used in this design was ensured to have an effective optical parameter at wavelength of 880 nm. This wavelength was the most efficient value stated by ISO7027 being used for turbidity measurement.

On the contrary, they found bigger grain size would cause a higher terminal settling velocity thus affecting the reading of actual TSS concentration. Whereas darker particle colour would cause more light to be absorbed rather than scattered, which may also affect the reading of turbidity. The Team 4 project team designed the STM with a simplified functionality for rapid investigation of 10 different levels of turbidities from the range of TSS between 0 to 500 mg/L, suitable for use to measure water of different qualities ranged from Class 1 to Class 5. The turbidity indicator was illustrated by a 10-bar LED display with every bar carrying turbidity resolution of 50mg/L. A 'straight forward design approach' was introduced in the design of STM that eliminates the needs of complex amplification and algorithmic processing circuitry. Thus it produces a simpler version of turbidity meter that was cost effective or affordable for different levels of community with a variety of applications that require rapid turbidity reading (Mohd. Akram & Muhd. Ruzairie, 2010). This project was also used later to help measuring the turbidity level of 'drinkable and semi-polluted water', the focus areas of project proposal submitted to MAAYS '*i2discovery'* proposal competition by other teams.

Apart from the aforementioned five steps of creativity, one important stage to exemplify the output of creative product is the sharing and dissemination of findings through blended mode using OER effectively. The scientific research project was presented with unexpected winning of 'Best Research Report' awards in the 7th SSYS regional congress (March 2010). Subsequently the project team also won 'Champion' in Penang State Science Fair (August 2010) [as illustrated in *Figure 6*, URL: http://maays.net/2010/03/13/ssys-winners-list/] with '**E**valuation/exchange/exposure' being facilitated and disseminated through e-portals and forum sites (http://forum.sp3aceman.net). Team 4 student was invited to present in 'Project-based learning for science fair' workshop at Universiti Sains Malaysia (USM) Annual Science Carnival conducted by University's Museum and Gallery (Figure 7). Another presenter is the webmaster of MAAYS and SP3ACEMAN (*i.e.* the pilot sample of this PBL study in 2008) who was the first prize winner in the Penang State Science and Technology Carnival in 2009.

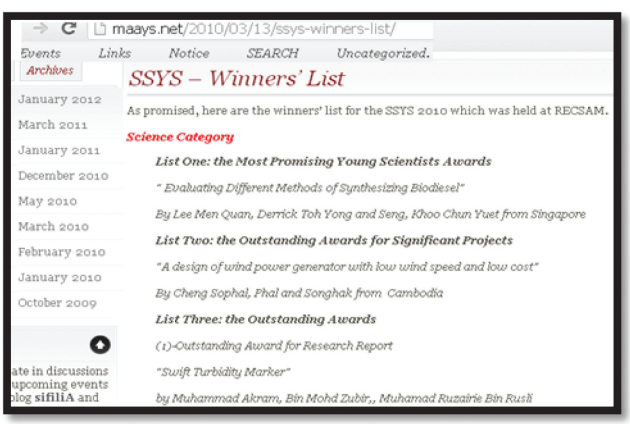

Figure 6 SSYS 2010 winners' list posted onto http://maays.net/2010/03/13/ssys-winners-list/

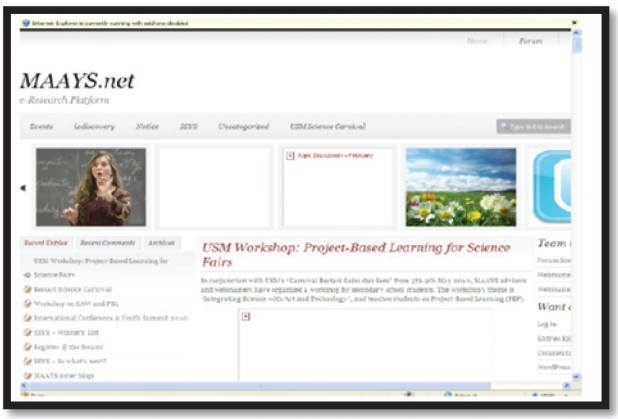

Figure 7 Exemplary students were invited to present in USM project-based learning workshop

The latter student had demonstrated high level of creativity and shared his learning experience using WordPress software as an example of OER to design web portals;

> Web designing is not like writing a book. A good website is no longer about putting up info. on the Internet, it is about being interactive and easily accessible to the user with ultimate goal that could help fostering creative discussions among on-line users. When a user lands on a website, it must be designed in such a way that the user intuitively knows his way around the website without lengthy tutorials/instructions....While creating OER we learnt how to think from the perspective of end users and create a dynamic process flow within the website to enhance the user experience.…We identified early on that OER had 2 major goals: first, to disseminate factual info. lucidly; second to facilitate discussions within and between the student and educators. With these goals in mind we designed an environment with cogent software, WordPress, as the back-ground, also incorporated interactive elements e.g. phpBB forum software, chatboxes, and instant messaging between users. To cope with ever increasing traffic and info…volume, the environment we employed was also designed to be easily scalable through the use of recyclable elements and creative css coding…
>
> (David Yong, webmaster 1, interviewed in April, 2011).

Another student who had also assisted in designing the two web-portals, had similar feelings and thought it is important to be empowered with the opportunity to explore various new technological tools in the digital era to foster creative potentials of young learners,

> I am glad to be given the opportunity to explore the WordPress platform, which was provided when I first started blogging on WordPress instead of the conventional Blogger by Google. The forum board powered by phpBB also gives me valuable experience as one OER for web-designing. This is an extension of my previous learning in the use of ICT tools to develop webportals using innovative ways. I was able to relate my

> existing knowledge and see the patterns of designing web using the existing software. ...The most challenging task is the design revamp and modification of the WordPress site theme which requires a certain knowledge in coding, and I had explored long hours to get the solution of the design, similarly with other web-designing features that require new skills. Thus I had trained to become a more flexible and fluent thinker, able to solve problems heuristically using innovative ideas when I was faced with new tasks…
>
> (Chee Yi, webmaster 2, interviewed in April, 2011).

In brief, both web-designers had undergone the 'knowledge, thinking, incubation, inspiration and development' processes of creativity, became flexible and fluent thinkers with the essential creative traits being fostered during the process of their exploratory activities to design web-pages using OER effectively. Before the assigned tasks, they had some basic 'knowledge' in web-designing and coding. They were also able to see the patterns and 'think' deeply while they faced the moment of revamping or modifying the site theme. There was an 'incubation' stage when they had to explore long hours, did some literature search and discussed with advisors or other experts to get the solution of the design. With their prior knowledge and experience, they gained 'inspiration' and finally became successful in the 'development' of the portals.

CONCLUSION

This article illustrates 'within-case' analyses of Team 4 secondary students' participation in a specially designed PBL programme integrating ICT with elaboration on five exemplary cases including effective use of OER for e-research/e-learning and exchange activities facilitated through SP3ACEMAN and MAAYS portals. Although the study had been successfully completed within the years of 2008 to 2011, upon reflection there were still some pedagogical issues to be deliberated. For example, there are possible R&D activities concerning this programme which are worth pondering in order to explore better ways to leverage on the potential of OER and promote thinking skills using PBL through blended learning activities.

Discussion on Pedagogical Issues due to Limitations and Significance of Study

As this research involved 'purposive random' sampling technique (Creswell, 2009), the cases as elaborated here were only limited to reporting findings within the periods of 2007 to 2011, with the data extracted from the studies conducted in secondary school within the local context. Since the PBL programme incorporated ICT tools using OER effectively, the constraints faced in terms of time and accessibility to internet or availability of ICT facilities are obviously the limitations for smooth conduct of studies. Time constraints faced was due to the fact that the study was conducted at the second half of year 2008 when many important public and school examinations were held. There

were also pedagogical issues for technology enhanced learning. For example, the ideal aspiration of self-directed/self-paced/self-accessed learning to participate in e-learning programme could not be facilitated without stable internet connection with technical support. Hence during the pilot and actual studies, the researcher had anticipated some problems that may be faced. Apart from downloading the OER digital materials as off-line resources, the researcher also shared the PBL-SI support tools that were compiled with other resources into CD-ROMs. Before the school-based mini science fair, some students who were good in ICT were also selected to explore digital resources and prepare posters using computers in teacher's room. Of course, there were also students who had access to computer and internet facilities at home. Apart from encouraging these students to carry out self-directed/self-paced/self-accessed learning at home to cultivate their creative potentials, the researcher had also invited them to do real time chats through MSN (another useful OER) so that follow-up activities to advise them on PBA/PBL could be facilitated on-line more effectively. In fact two of the selected pilot study students (who had responded to interviews as reported) were involved in the development of MAAYS and SP3ACEMAN portals after their public exams in 2008 and 2010 with advice and guidance on the content materials given by the researchers and founders of both portals through chatting with them. As such, the use of OER on-line chatting tool such as MSN was also proven to be effective to foster creativity.

Implications and Recommendations for Future Research

This PBL-SI study revealed that generally students' HOT skills especially creativity was enhanced after their participation with some 'more/moderately successful' students (e.g. 'exemplary case' as elaborated) also showed enhanced motivation and prolonged interest after the study. These students participated and won in international competitions related to PBA or PBL. Hence, this study revealed the feasibility of e-learning programmes facilitated through SP3ACEMAN and MAAYS to enhance science investigation, scientific/thinking skills and ability to participate in the communication or e-forum activities through highly interactive digital learning environments that leveraged on effective use of OER.

The following observations made (throughout piloting of FIT and PBL-SI study using FIT to evaluate creativity) need further attention with reflections on implications. Pilot study students showed high interest and enjoyed doing FIT (or what they defined as IQ test) which might be as different types of questions they have not normally taken in the school examinations. This showed that students were also motivated to do activities they were interested in, for example involved actively in e-portals that promote PBL as evidenced in this study. Thus teachers should consider constantly challenging the thinking skills of such types of students, perhaps leveraging on the available OER through the blended learning platforms. Teachers should not merely introduce students with static curriculum focusing on school text book which may be perceived by such types of students as monotonous tasks as they may not be attracted to explore further.

Since the students involved in the FIT pilot studies showed great interest in doing FIT, more adaptation of validated items to evaluate fluid intelligence or creativity should be made to raise students' interest in studies and to train their thinking skills. It is also recommended that more research should be conducted to include the evaluation of students' fluid intelligence before implementation of any curriculum to teach thinking skills and conceptual/procedural knowledge, possibly facilitated through ICT tools or e-learning mode with effective use of OER.

In fact, increasing emphasis on student-centred PBA and PBL using blended learning platforms to promote thinking skills was seen in numerous developing and developed countries as reported by Tey *et al*. (2010) from Singapore that is among the highest performing country for international comparative studies such as the Trends in International Mathematics and Science Study (TIMSS) and The Programme for International Student Assessment (PISA). The cross-sectional study on TIMSS 2007 by Corrienna, Hazura and Pagunsan (2012) also showed that computer use was positively associated with high student achievement. Their findings revealed that students who indicated that they use computers both at home and in the school were those with highest science achievement. In another study by Conner *et al*. (2013) to evaluate students' performance for scientific literacy, reading and thinking skills in PISA 2009, it was found that in high performing country such as New Zealand, there is a much greater emphasis on early years' education as well as students gaining ICT and other competencies. This is reflected in the national assessment system (including informal assessment) and the use of e-portfolios for showcasing learning in science and mathematics. The research conducted at Finland as one of the highest performing countries in PISA also revealed that inquiry-based learning approaches in science/mathematics curriculum were very much emphasized at early education (Sanders, 2009). Hence, it is timely that this study of a specially designed PBL-SI programme integrating ICT with evidences to foster thinking skills among secondary school students will contribute to one way or another, the aspiration to inspire further research to produce innovative young generation as driving force for the development of nation.

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Integrating QR Codes and Mobile Technology in Developing Listening and Speaking Skills in the Teaching of English Language

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ABSTRACT

This action research employed QR codes (quick response codes) and mobile phones as technology tools in developing listening and speaking skills in the teaching of English Language to non-English Language option in-service teacher trainees and secondary school teachers. Conventional listening and speaking activities implemented in a whole classroom may not involve the learners in an optimal way. Thus, learners may find their lesson boring and unchallenging. The objective of this action research was to overcome the above problems. Learners were introduced to the novel idea of creating listening and speaking materials using the recording function in their mobile phones. The taped conversations were then used as listening comprehension exercises. The activity had been successful in the following ways: it generated active learning, increased learners' interest and motivation thus encouraging more active participation within the class. The learners were in control of the technology and therefore had greater control of the learning outcomes. The listening resources were generated by the learners. They had the opportunity to edit and correct their own work in their own way. They could also re-use their work at a time convenient to them.

Keywords: English language teaching, listening and speaking, technology, mobile phones, QR codes, podcast, action research

INTRODUCTION

In the teaching of English language in the Malaysian classroom, the teaching of listening and speaking employs the communicative language teaching approach which is built around notions, functions, skills, tasks, and other non-grammatical units of organization. Fluency of the language is developed through the use of information-gap and other tasks that required learners to attempt real communication, despite limited proficiency in English (Richards, 2008). Such conventional listening and speaking activities implemented in a

whole classroom may not allow the involvement of the learners in an optimal way. In addition, conventional listening activities may make use of commercial productions not of interest to the learners, or not contextually appropriate.

STATEMENT OF THE PROBLEM

It has been observed that learners find the conventional strategies for teaching listening and speaking boring and unchallenging. A feedback from a learner, R5096 (a pseudonym) indicated that "some teacher just open power point and talk. We doesn't do anything just hear." [1] In addition, learners may have little opportunity to evaluate their own speaking activities, leading to an unawareness of their own pronunciation errors. The idea of an effective listening and speaking lesson would be to carry out activities that directly involve the learners and at the same time provide exposure to native speakers' speech. In addition, in the production of speaking activities, creating the sense of ownership and pride in their own work would serve to motivate the learners to improve on their listening and speaking skills. It was with these challenges in mind that the idea of integrating mobile technology in listening and speaking activities was initiated.

RESEARCH OBJECTIVES

In this action research, the researchers integrated the use of quick response (QR) codes and mobile technology (specifically, mobile phones) aimed at achieving the following objectives:

i. to motivate learners to learn English
ii. to develop the listening and speaking skills of learners
iii. to encourage learners to use technology in their learning
iv. to allow learners to collaborate and produce language resources for classroom use

RELATED LITERATURE

Related Theories

This research employed materials simulating real world context in social group settings. The strategy employed relates to the acculturation model (Schumann, 1978) which argues that learners will be successful in second language acquisition (SLA) if there are fewer social and psychological distances between them and the speakers of the second language. In addition, the sociocultural theory (SCT) claims that language learning is a socially mediated process. Language learning arises from processes of meaning-making in collaborative activity with other members (Mitchell and Myles, 2004).

A strong affective filter (for example, high anxiety) will prevent input from reaching those parts of the brain that promote language acquisition. Krashen's (1985) Affective Filter Hypothesis discusses the mental block to learning, caused by affective factors that prevent input from reaching the 'language acquisition device' (Krashen, 1985: 100). Learners learning English in a foreign language context are apprehensive to produce oral speech and are anxious about using the target language. Learners know that producing oral speech is a necessary part of language learning, but it is obviously a challenging feat. Obviously stressed-out, high-anxiety learners may not learn effectively. This often prevents them from speaking or taking in the language at all. The aim of this research was to provide a non-threatening environment and encourage them to use the language in a communicative manner.

Swain's Output Hypotheses (1985, 1995) claim that practising the language helps learners to observe their own production which is essential to SLA. It allows them to develop the art of talk as interaction. Such practice will reduce their feelings of awkwardness and loss for words in real situations. It may also build their confidence using the second language in social interactions. Practice is a strategy in which learners master their skills progressively from guidance to autonomy and from easy to challenging. Vygotsky's 'scaffolding' refers to the assistance one learner gets from another person (e.g. teachers, relatives, classmates) and which enables him or her to perform a learning task (Chaiklin, 2003). In this research, learners were introduced to listening and speaking materials as input and practice before proceeding with their own tasks. Learners learn best when in their Zone of Proximal Development (ZPD) – by providing materials that are not too easy, and just challenging enough that, with a little help from a more learned individual, they can master the material and shift their zone upward.

Integrating Technology in Teaching and Learning

Technology integration specifically mobile learning was the focal element of this research. The use of technology in a language learning environment enhances and not merely aids or assists the learning process. In other words, language learning could and does occur anyway, regardless of the presence of computers, but the incorporation of computers is intended to improve, expand, or enhance language learning. The emphasis is placed on learner and learning-centeredness with the major role for computers as a resource and tool in the process of learning. For example, technology enhances the learners' listening and viewing comprehension and is elucidated through current understandings of second language learning, human-computer interaction and interface design, sociocultural perspectives on language learning, listening comprehension theory, learning styles, and learning strategies.

Mobile learning (m-learning) refers to the use of mobile, handheld or wireless devices in teaching and learning. The devices encompass but are not limited to the following: mobile phones, personal digital assistant (PDA) and laptops with wireless capabilities. Generally, students are not allowed to bring mobile phones to school.

However, it should be pointed out that schools cannot hold back the tide of technology for much longer. "Kids bring these technologies to schools whether it is banned or not" (Hill, 2011). According to an internet research study, 65% of mobile phone-owning kids at schools that ban those same phones still bring them every day to class and 58% of those learners still use them (Lenhart, 2010). This could be time to think differently about these devices. We should instead leverage these tools for learning, instead of outright banning them.

Our current education guidelines recommend the integration of technology in teaching and learning strategies and activities. The fast-paced developments in mobile and hand-held device technology have seen computer and multimedia capabilities integrated into the latest mobile phones and tablets. These portable handheld devices can be a fantastic learning tool. Whilst the benefits of their use in the classroom are clear, there are challenges utilizing these tools during learning. One of the challenges is keeping learners focus on the task while connected to the internet. The solution is to work with technology rather than to ban it (Blane, 2011). By combining handhelds with a technology called Quick Response (QR) codes, the researchers came up with the idea of using mobile phones and QR codes in facilitating listening and speaking skills. Such activity can be adapted to a range of learning situations.

Byrne (2011) observed that QR codes have arrived in school. QR codes are like barcodes that encode information such as messages, instructions, images or links to a webpage. These are first translated into a pattern of black and white squares, which are posted wherever the teacher wants them – to be decoded later by learners with mobile phones. The technology came from Japan and was used first for commercial purposes, for example, scanning the QR code at the bottom of an advertising poster for a concert with the mobile phone and get taken to a website to buy tickets.

This innovation exploited the novelty of QR codes, mobile phones and integrated learner-centred techniques to better develop the learners' listening and speaking skills. These techniques followed good teaching practices where:

i. the learners are in control of the technology and therefore have greater control of the learning outcomes
ii. the listening resources are generated by the learners
iii. the learners have the opportunity to edit and correct their own work in their own way
iv. the learners have the opportunity to re-use their work at a time convenient to them

METHODOLOGY

The practice and culture of research has been recognized as a means of professional development and continuous improvement for teacher practitioners, and action research is a very practical and relevant form of classroom research. The researchers adapted the commonly known and influential model of Kemmis and McTaggart (1988) – plan, act, observe, reflect; then, in the light of this, plan for the next cycle.

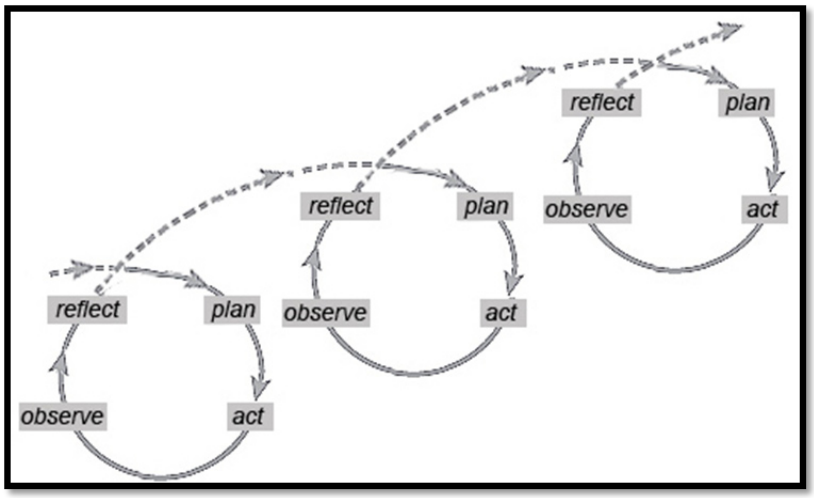

Figure 1 Kemmis and McTaggart's (1988) Action Research Model

Wadsworth (1991) described this process as being one where action is intentionally researched and modified, leading to the next stage of action which is then again intentionally examined for further change, and so on. The steps in action research allow the project to be documented systematically thus acting as an approach to professionally develop the learners.

The action was implemented on three groups of learners. The first two groups comprised of in-service teacher trainees. These were temporary school teachers who participated in the holiday teacher training towards an award of a formal teaching qualification. Their training options were subjects like Chinese Studies and Islamic Studies except English Studies. Consequently, their mastery of the English Language was not strong. The third group involved secondary school teachers. The majority of them were not proficient in the English Language

Techniques of data collection included reflection notes and observation. The learners reflected and wrote about their experience. The researchers also kept reflection journals and made observation notes during the course of the lesson implementation. These qualitative data provided a rich and in-depth view into the experiences and effects of the action on the learners. Relevant learners' reflections were quoted verbatim and cited as "R (numbers)".

Implementation of the Action

Mobile phones and laptops were used as tools in generating listening and speaking activities. According to Prensky (as cited in Attewell, 2005), it is estimated that there are 1.5 billion mobile phones in the world today. In Malaysia, the mobile phone technology has expanded tremendously. Most people have mobile phone functions that go well beyond

the short messaging system (SMS). The mobile phones used include functions like audio facilities. The more recent advancement in mobile technology is Bluetooth which is a wireless short-range communication technology that can pick up communication from a distance. These are the functions of the mobile phones that were utilized in the teaching and learning of listening and speaking.

This action research was initiated in a series of three cycles in December 2011 with a group of 25 in-service training learners. Also, the research was applied on another group of 27 in-service training learners in March 2012, and again in June 2012 with a group of 26 secondary school teachers in a secondary school, with some modifications for continuous improvement. For example, the activity became more collaborative with the use of station group activities, where Group A would manage another group's (for example, Group B) listening comprehension activities with taped conversation from the former group (Group A).

Description of the Action

In this research, the researchers used technology as a carrot – and as a great learning tool. The topics for listening and speaking activity were introduced to the learners. A sample of the lesson implementation is attached (Appendix 1). For practice, they listened to native speakers and modelled the native speakers with the aim of helping them improve their pronunciation and speaking style. They used what they had learned in the next stage where they were given an extended conversation script. The activity focused on talk as interaction (Richards, 2008) in which the conversation described interaction that served a primarily social function. This allowed the learners to learn and employ certain communicative skills, while rehearsing in a group, like exchange of greetings, engaging in small talk, recount recent experiences, and so on.

The guided nature of the conversation provided secure scaffolding and allowed the learners to be highly interactive in a collaborative conversational style (Richards, 2008). The content of the conversation script took into consideration the aim of developing some of the skills involved in using talk as interaction such as opening and closing conversations, making small talk, turn taking, reacting to others and using the style of speaking that is appropriate to context. The lecturer was available to assist learners with pronunciation of unknown or difficult words in the conversation script.

When ready, the learners used their mobile phones to tape their conversation. The conversations were taped and re-taped until they were satisfied with the quality of their speaking production.

The final product of each group's taped conversation was transferred via Bluetooth to the lecturer's laptop. Each taped conversation would be available for listening comprehension. A set of listening comprehension questions based on the learners' conversation scripts were distributed to the class. Learners listened to the taped conversation of their friends and attempted to answer the comprehension questions. They checked their answers.

Learners reflected on the effectiveness of the activity. Their reflection notes were compiled and analyzed. Findings and conclusions were derived from the analysis. Their remarks were quoted in this research to reflect their views.

Main Focus Areas of the Strategy

This research focused on integrating the use of technology as a tool in developing listening and speaking skills. QR codes bridge the gap between paper and web (Robertson & Green, 2012). Instead of displaying the work on a paper-based, physical bulletin board, with QR codes, the teacher could post a paper version of the learner's work on the bulletin board, and affixed a QR code next to it for others to see the web version. In addition, QR codes made it easier to create personalized lessons and differentiated instruction especially for learners who need supplemental material, or English language support. Learners also had the opportunity to use their mobile phones to snap a picture of the QR code, get the materials they needed and worked at their own pace, either individually or in groups.

FINDINGS AND DISCUSSIONS

In this research, analysis of the data revealed a number of positive results (Table 1). Data was collated from the learners' written responses. Their feedback was coded, categorized and manually quantified.

Table 1 Effects of the use of QR codes and mobile phones in teaching listening and speaking

No.	Effects of the use of QR codes and mobile phones in teaching listening and speaking	Frequency N = 78	% Response
1.	Develop the listening and speaking skills of learners	74	94.87
2.	Motivate learners to learn English	68	87.18
3.	Encourage learners to use technology in their learning	72	92.31
4.	Allow learners to collaborate and produce language resources for classroom use	62	79.49

The learners almost unanimously (94.87%) agreed that they developed listening, speaking and pronunciation skills through the use of QR codes and mobile phones. They felt motivated to learn English. They were pleased with the idea of using technology (92.31%) and collaborating in groups to produce their own work. Such results corresponded with Thomson's (2009) report that mobile technologies such as mobile phones and personal digital assistants (PDAs) helped to raise learner achievement and retention rates, as well as making learning more flexible and interesting. Analysis of

the learners' reflection feedback indicated that the successes in this research could be attributed to a number of reasons.

Innovative and Fun

This was an innovative way of integrating readily available tools – mobile phones and computers – in developing listening and speaking skills. The fun factor motivated quality and generated interest and active learning. R1699 said,

> "The use of the handphone as a tool in teaching is interesting. Nowadays handphone is a MUST for the youth or teenager. So when we use it as a tool, students very expert and this is the thing they like to do"

Due to its fun quality, the activity was carried out in a non-threatening environment, where learners could try as many times as they wish, till they were satisfied with the quality of their own products. Consequently the activity made the acquisition of English language skills an enjoyable effort.

This novel way of encouraging listening and speaking also took into consideration the contemporary skills of learners. It made use of technology – especially mobile phone – which is popular and ubiquitously owned by many learners. The innovative potential of QR codes was also being creatively exploited in this activity.

Control of the Learning Process

The researchers endeavoured to create a structured and guided learning environment for working but also left enough freedom of the learning process to the learners. The listening and speaking activities allowed learners to take control of the learning process therefore they could develop their skills at their own pace. The learners imitated the native speakers which could potentially improve their listening and speaking skills. In her feedback, R0799 reflected that she "could rewind the taped conversation and make improvements to the pronunciation". Learners' autonomy during the lesson was a contributing factor towards the improvement of learners' English proficiency. According to Hooper, Temiyakarn and Williams (1993), learner control could enhance independence and develop better study habits. Being empowered to decide how, how much, and how long their production should be and the right to decide on their work environment created in them the sense of ownership of their own learning process. It motivated the learners to learn and work as a team to produce something they could be proud of.

Use of Authentic Materials and Strategies

Richards (2008) suggested that in designing speaking activities or instructional materials for second language or foreign-language teaching, it is also necessary to recognize the very different functions speaking performs in daily communication and the different purposes for which our learners need speaking skills. In this research for example, there was effort to provide native speaker input as scaffolding to develop the learners' speech. "Our listening activity help us to learn how to speak and pronouns correctly" (R5097). Chizzo (2002: 1) stated that,

> "social and psychological distance between the second language learner and the target language community is a major factor in determining the degree to which the language learner will acquire the target language without the development of pidginization"

In other words, the more the second language learner experience the target language setting, the more chances he will have at acquiring the target language.

Learning from Easy to Challenging

In any learning situation, learners learn best when new material is introduced at increasing levels of difficulty. It was proven the case in this research.

> The lessons started from easy to difficult, it is very suitable lesson plan such as we do in school. We learn the vocabulary first, the meaning of each words, then to the conversation scrip. It take time but I can fully understand about the lesson.
>
> (R1699)

The initial guidance and materials provided the scaffolding to allow the learners to progress from easy to more challenging. According to Vygotsky, learners required help and guidance from people who know more, until they know enough and no longer require assistance to grasp that skill (Chaiklin, 2003). Such scaffolding support was removed when the learners were capable of embarking on their own taped products.

Product Ownership

It was found that the sense of ownership and pride in their product was an important factor in motivating the learners. The learners' taped conversation was used as genuine product in a listening comprehension exercise to an authentic audience. R5095 wrote,

> "My coursemates and I are having fun in speaking English in a role play form. It is funny and exciting to listen our voices been recorded. It helps us to understand the importance of pronunciation and intonation when role playing. We try many times until we think it is good. Because others are listening to our recording."

When learners felt ownership towards their actions, they worked harder and they wanted to impress their peers. Mobile phones and QR codes as a learning and production tool afforded positive learning experiences. Harrison (2010: 1) reported that research has shown the benefits of mobilising technology for learning included "increased creativity and innovation, greater ownership of learning by learners, real world problem – solving and the development of complex ideas and knowledge transfer."

CONCLUSION AND RECOMMENDATION

This research on the use of QR codes and mobile phones was intrinsically motivational and proactively initiated by the researchers to examine its potential. It was carried out for three cycles with positive feedback gathered from the learners. The evaluation results of the learning outcomes and learning motivation based on learners' reflections demonstrated that incorporating QR codes and mobile phones into the English learning process achieved its objectives of aiding the development listening and speaking skills and motivating learners to collaborate and learn with the technology tools. This was due in part to the fact that content delivery was infused with the element of fun in a non-threatening environment. As Krashen (1981: 202) mentions,

> The best methods are therefore those that supply 'comprehensible input' in low anxiety situations, containing messages that students really want to hear. These methods do not force early production in the second language, but allow students to produce when they are 'ready', recognizing that improvement comes from supplying communicative and comprehensible input, and not from forcing and correcting production.

In addition, the use of technology – especially ubiquitous mobile technology – amplified the spirit of novelty and learner involvement. Other factors also contributed to the success of the learning process. Learners were generally receptive to lessons built around learner-centred activities and the use of authentic materials that approached real life context. Learner autonomy and team-work were crucial factors motivating learner's listening and speaking skills development. These activities could be replicated in any class where listening and speaking skills are taught. They were suitable for all levels of listening and speaking proficiency.

In essence, mobile phones and QR codes are tools which can be used in any situation for any subject or skills using similar techniques. The activities using mobile phones involves zero cost, as every learner possess at least one of these mobile devices.

In fact, it does not require every learner to have a mobile phone; one mobile phone per group would work just as effectively. This teaching strategy can employ audio recorder or MP3 player. Therefore, the strategies used in this research evidently exhibited promising implementation potential. As improvement, it is recommended that future activities may even employ video productions for its audio-visual impact. In addition, excellent local English speakers may be used as scaffolding in the absence of native speakers.

This research has been a rewarding exercise in striving towards the researchers' continuous professional development. The motivation and encouragement were derived from the delight and appreciation of the learners as they were fully engaged in giving their best production.

NOTE

Quotations are presented as it was written. No corrections of error in language use have been attempted.

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APPENDIX 1

Suggested Lesson Implementation

<table>
<tr><th colspan="4">INTEGRATING MOBILE TECHNOLOGY IN DEVELOPING LISTENING AND SPEAKING SKILLS</th></tr>
<tr><td>Teacher's Name:</td><td></td><td>Topic:</td><td>Social Conversation</td></tr>
<tr><td>Class:</td><td></td><td>Subject :</td><td>English Language</td></tr>
<tr><td>School:</td><td></td><td>Time Frame:</td><td>2 hours</td></tr>
<tr><td colspan="4"><u>Summary</u>
This activity focuses on integrating QR codes and mobile phones as technology tools in developing listening and speaking skills. Learners access their conversation scripts and speaking materials using QR codes and mobile phones. With their script they practice their listening and speaking. This is followed by the production of conversation in groups. The conversation will then be recorded using the mobile phone. The learners may record as many times till they are satisfied with the quality of their product. They then send it by Bluetooth to the laptop for replay. The taped conversation is used in a listening comprehension exercise.</td></tr>
<tr><td colspan="2"><u>Technology requirements: Hardware</u>
i. Mobile phones
ii. Computer/lap tops</td><td colspan="2"><u>Technology requirements: Software</u>
i. Bluetooth
ii. QR Code reader
iii. Audio software, eg. Media player, Realplayer</td></tr>
<tr><td colspan="3"><u>Previous knowledge</u>
i. Learners have differing levels of speaking and listening ability
ii. Learners are familiar with the functions of their mobile phones and computer
iii. Learners know how to establish connectivity via Bluetooth.</td><td><u>Printed Materials and Supplies</u>
i. Speaking Practice cards
ii. Listening skill cards Conversation script cards
iii. Listening comprehension questions cards</td></tr>
<tr><td colspan="4"><u>Objectives</u>
At the end of this lesson, learners will be able to:
i. Carry out a full conversation using conversation cards
ii. Produce a good quality audio taping of a conversation
iii. Answer all the listening comprehension questions correctly</td></tr>
</table>

Lesson Steps

The listening and speaking activity was implemented as follows:

i. The lecturer introduced the topics for listening and speaking.
ii. For practice, the learners listened to native speakers.
iii. They modelled after the native speakers. The aim is to help them pronounce and speak correctly. They will use what they have learned in the next stage.
iv. The learners were given an extended conversation script.
v. In groups, they rehearsed the conversation.
vi. The lecturer is available to facilitate their pronunciation of unknown or difficult words in the conversation script.
vii. When they were ready, they used their mobile phones to tape their conversation.
viii. The conversation were taped and re-taped as many times until the learners were satisfied with the quality of their speaking production.
ix. The final product of their taped conversation was transferred via Bluetooth to the lecturer's laptop. Their taped conversation will be used for listening comprehension.
x. A set of listening comprehension questions based on the learners' conversation scripts were distributed to the learners.
xi. Learners listened to the taped conversation of their friends and attempted to answer the comprehension questions.
xii. Learners check their answers.
xiii. Learners reflect on the effectiveness of the activity.

The Usefulness of Facebook in Improving Social Skills among Degree Students at the Faculty of Education UiTM

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ABSTRACT

When the popularity of the internet has increased worldwide, there have been various websites that have been established and used all over the world including Facebook. Having almost one billion users, Facebook has been very popular amongst youth and the usage of this social network site is increasing daily. Social networking websites like Facebook as virtual communities which allow people to connect and interact with each other on a particular subject. It also provides users a profile and enables them to upload and share photos, music and various types of messages they would like to share with other people. Additionally, these sites provide social and emotional support, information resources and ties to other people. Therefore, this study is aimed to investigate the importance of Facebook among students and also to see in what ways Facebook helps to improve students' social skills. The data are collected by distributing questionnaires to the sample and the data are analyzed using Statistical Package for the Social Sciences (SPSS) version 17.0. The samples of this study consists of 85 undergraduates students of the Faculty of Education, Universiti Teknologi MARA which 64 are majoring in TESL and 21 are majoring in Mathematics. It is found that students feel Facebook is important for them to communicate with their friends via wall posts, to gather under a group of similar interests, and to meet new friends. Nevertheless, the findings have shown that the students did not think that Facebook has any influences at improving their social skills.

Keywords: Facebook, social networking, social skills, information resources

INTRODUCTION

Social networking site is getting popular nowadays with numerous types of social networking sites available such as Facebook, Myspace and Tagged and so on. Gangadharbatla H. (2008) states that the use of social networking sites (SNS) has been undeniably overwhelming, especially among teens and young adults. Every social networking site has its own uniqueness that make users addicted to it. Facebook has become the most popular social networking site due to the massive daily increase of active members. Although sites like MySpace and Friendster are similar, but Facebook

is generally considered the champion among social networking sites especially among college students (Angela, 2006).

Furthermore, social networking sites actually benefit users if they use it wisely. According to Lloyd J.M. (2007) although some research have shown the impact computer and electronic mail use has on student learning, few researches have been conducted on the impact of various types of technology use, including instant messaging services, blogs, iPod and Facebook. For these reasons, the present research is conducted to investigate the impact of Facebook on students' development.

In terms of education, social networking sites help lecturers with Facebook accounts to get closer to their students. Most of the students who have a Facebook account can access their respective lecturers' online tasks or assignment via Facebook. Instead of that, Facebook also helps teachers to know their students better and vice versa. In addition, the student-teacher and student-student relationship became better after using Facebook.

Facebook also enables members from all over places to always keep in touch and know the development of the group without the need of face to face meetings. According to Faudree M. R. (2009) "Facebook Groups," allows users to create and join groups based on common interests and activities. She also states that the "Facebook Groups" application frequently displays list of group members as well as new friends who have joined recently. Thus, using Facebook will result in civic and political impacts within the groups developed by users and organizations.

Moreover, using Facebook provide many kinds of relationship such as the student-faculty relationship that make them feel likely to be accepted. According to Angela (2006), we have the unprecedented ability to find other users via Facebook based on any specific criteria. Facebook also plays the important role to help educational colleges to create and refines one's self-identity. Students of a college or school can discover who they are and how they relate to others and also their contributions towards the society. In addition, Facebook is important in developing one's mind via games that come with Facebook. Students who play Facebook's games are more creative since the game will need them to use their brain. It is not wrong for the students to play game since they have to rest their mind before the start of another session of study.

According to Swager T. (2010) Facebook's games such as Mafia Wars and Fish World are very popular but the most recent Facebook fad is FarmVille with 74,355,776 active users. The games are good but students are supposed to be disciplined with their time so that the games will not waste their time from doing other important activities. Another impact of Facebook is it teaches students how to use technology creatively. Facebook allows students to express themselves and highlight their talent and experiences via games and activities. It is supported by Angela (2006) who states that Facebook presents students with choices on how to use technology creatively to avoid pitfalls.

There are many benefits of Facebook. However, it is important for students to use and adapt to the use of Facebook wisely. Facebook helps to develop critical social skills that are developed via making friends from all over the world. Experience is the best teacher. This is supported by Boyd D. (2007) that manage impressions is a critical social

skill that is honed through experience. The author also stresses on the fact that diverse social environments help people develop these skills because they force individuals to reevaluate the signals they take for granted. We learn over time on how to make up a situation, handle friend's reactions and so on.

Facebook impacts on social capital in many ways. According to Sebastian V. (2008), common interest groups can help users to coordinate for collective action. At the same time, he states that trust and norms of reciprocity that resulted from regular exchanges between users are key antecedents of community life. Similarly, news feeds and notes allow users to regularly keep in touch with what is going on and tagging them will automatically engage them in the social postings on Facebook. Hence, social capital can be developed when students use Facebook as their medium of connection. On top of that, it can enhance the development of soft skills via multiple channel communications among Facebook users.

RESEARCH OBJECTIVES

The purpose of the study is to determine the importance of Facebook among Degree students at the Faculty of Education, UiTM Shah Alam.

METHODOLOGY

The researcher used descriptive research methodology to investigate the use of Facebook in improving of social skills. In this study, researcher used quantitative approach to collect the data by using questionnaires. The questionnaires consist of three sections which are Parts A, B and C. Parts A covers the respondents' demographic background. Parts B and C focus on the basic knowledge and the importance of Facebook. The samples of this study consists of 85 undergraduates students of the Faculty of Education, Universiti Teknologi MARA which 64 are majoring in TESL and 21 are majoring in Mathematics.

RESULTS AND DISCUSSION

Discussion will be divided into three parts. Part A contains demographic information pertaining to each respondent selected for this study. Meanwhile, Parts B and C respectively report the responses they gave in the questionnaires pertaining to the importance of Facebook usage among students and how Facebook can improve their social skills.

Demographic Background

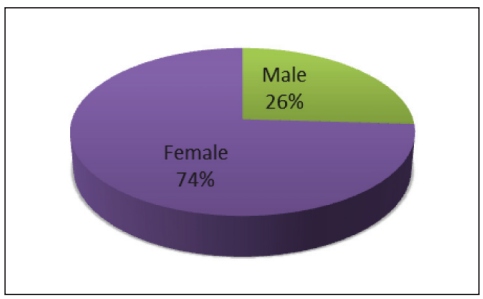

Figure 1 Respondents' gender

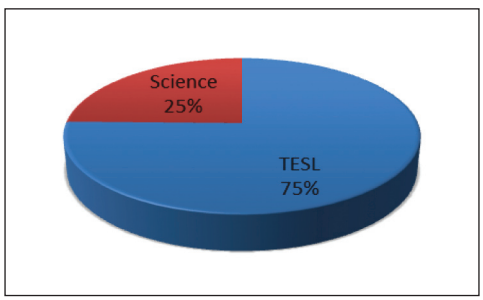

Figure 2 Respondents' academic courses

A total of 85 respondents were involved in the study. Based on the pie chart in Figure 1, it was found that 74% (63 students) of them were female and only 26% (922 students) were male. Meanwhile, Figure 2 reveals that 75% (64 students) of the total respondents were TESL students and the balance 25% (21 students) are Science students.

Figure 3 reveals the frequency of accessing the internet by the respondents. The graph shows that 83.5% of the respondents stated that they access the internet everyday, 15.3% access the internet at least once a week and merely 1.2% respondents use the internet less than once a week. In short, it can be said that majority of the respondents were frequent internet users. In addition, the responses from the questionnaires also revealed that all 85 respondents are also familiar with Facebook. A total majority of 98.8% respondents admitted that they have Facebook accounts or are Facebook members.

Figure 4 shows six different websites visited by the respondents. A majority of 89.4% respondents stated and agreed that social network is their most frequently visited website, followed by blog (67.1%), entertainment website (60%), informational website (40%), online games (15.3%) and finally business and marketing website (9.4%). These results are not surprising as majority of them had earlier on expressed great familiarity to Facebook.

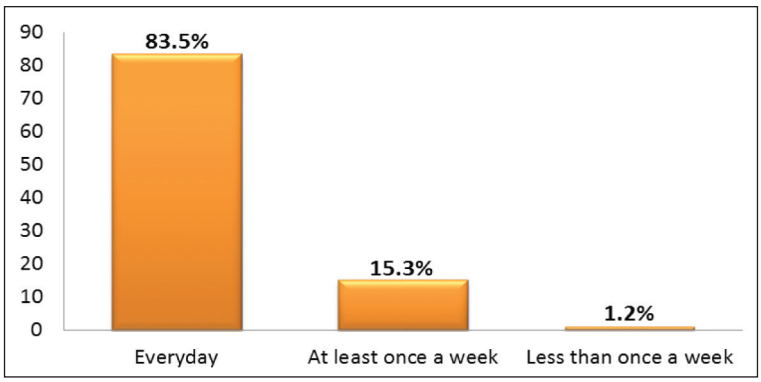

Figure 3 Accessing the internet

The Importance of Facebook Usage among Students

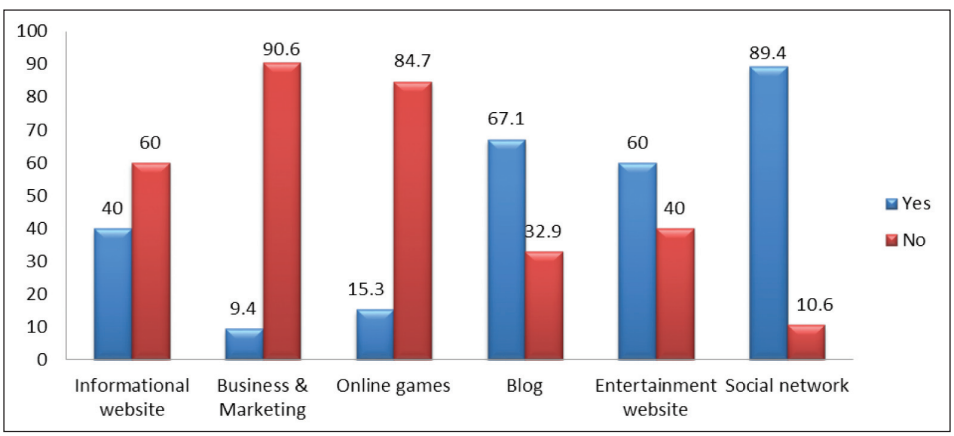

Figure 4 Website preference

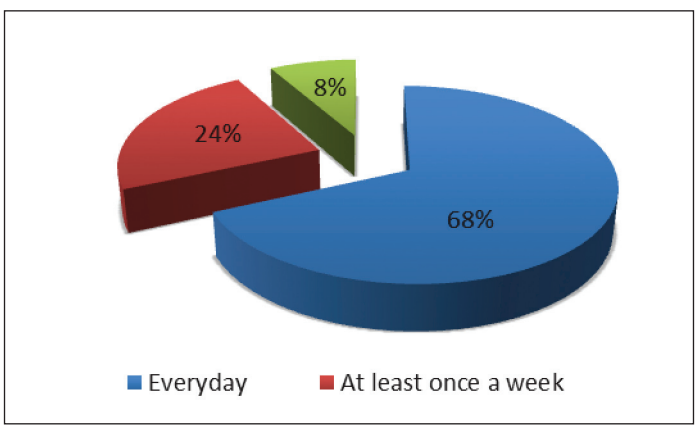

Figure 5 Facebook login in a week

The pie chart in Figure 5 indicates the frequency of Facebook login by the respondents in a week-period. The results revealed that 68% of the respondents login onto Facebook every day, 24% login at least once a week and a minimum of 8% stated that they login onto Facebook less than once a week. These results indicate that many respondents are regular visitors and users of Facebook.

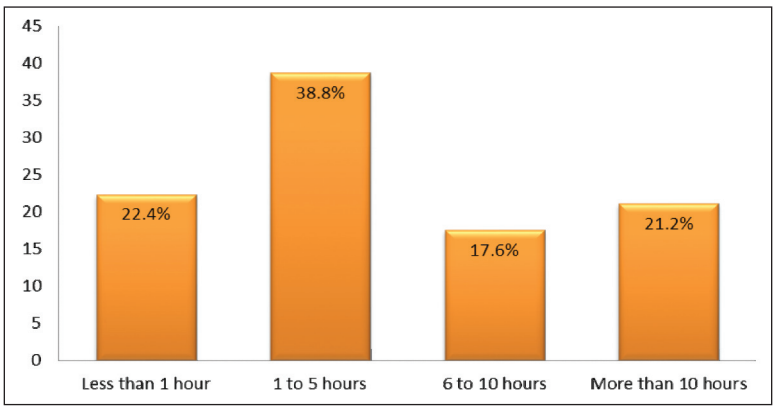

Figure 6 Weekly time spend to Facebooking

The bar graph in Figure 6 shows the time spent by the respondents to Facebooking on weekly basis. The results revealed that only 22.4% respondents spent less than 1 hour to Facebook weekly. A total of 38.8% spent 1 to 5 hours and a sum of 38.8% respondents spent more than 6 hours on Facebook every week. The results show that the respondents spent a lot of time to Facebooking every week.

In sum, all the results presented on the above indicate that Facebook usage is important to majority of the respondents. This is evident as they preferred to visit social network website when accessing the internet, besides the high frequency and the large number of hours they expressed to have spent to use or login onto Facebook on weekly basis.

How Facebook Improves Students' Social Skills?

In the context of reason for using Facebook, the results showed that the highest number of respondents use Facebook for socializing. A total number of 77 respondents out of 82 agreed that they use Facebook for socializing. On the other hand, the findings also showed that only 6 out of 82 respondents had chosen to use Facebook for dating. The reason why the least number of students chose dating might be because of the security and safety reason. Besides, as many as 51 respondents indicated that they used Facebook for school work purposes. Moreover, 43 respondents said that meeting new friends is

one of the reason they used Facebook. To summarise, the researchers found that most respondents have displayed that the main reason they used Facebook is for socializing.

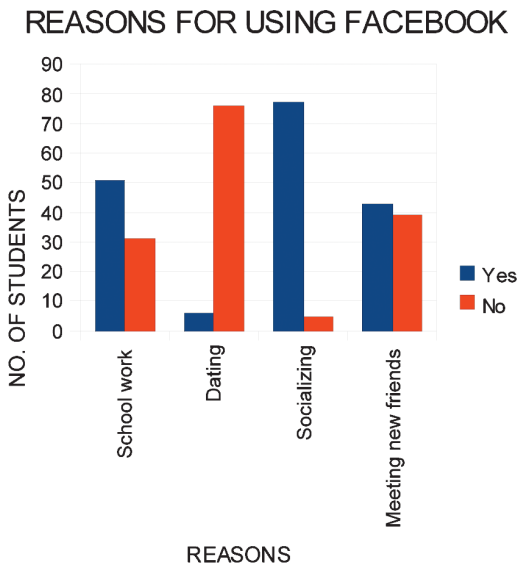

Figure 7 Reasons for Facebooking

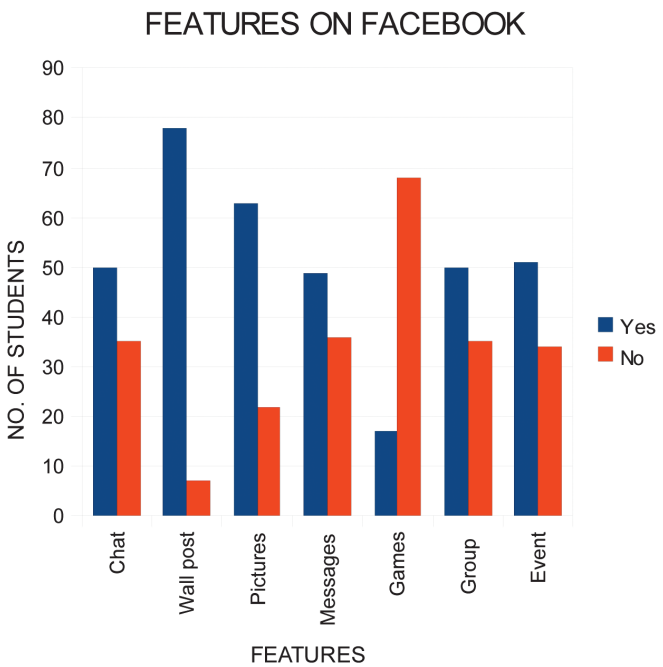

Figure 8 Facebook features used

In the context of students' preference of the features on Facebook, the results of the findings showed that 78 respondents agreed that they like the 'Wall post' feature on Facebook. Meanwhile, 63 respondents admitted that they prefer to look at the pictures in Facebook. Moreover, a total number of 50 respondents prefer both the 'chat' and 'group' feature on Facebook. On the contrary, only 17 respondents agreed that they like the 'games' feature in Facebook. In brief, it can be concluded that the data from the study demonstrates that the respondents preferred the features that enable them to socialize on Facebook.

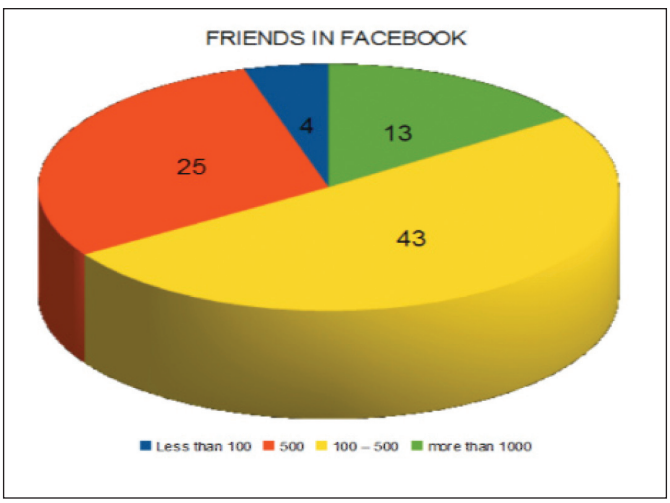

Figure 9 Number of friends in Facebook

With regards to the number of friends that the respondents have in their Facebook, this study found that 43 respondents have about 100 to 500 friends in Facebook. Moreover, 25 respondents showed that they have 500 friends in their Facebook. Further, the result of the findings also confirmed that 13 respondents have more than 1000 friends in their Facebook. On the other hand, only 4 respondents have less than 100 friends in their Facebook. In short, findings from the study revealed that most of the respondents have more than 100 friends in their Facebook account and this supports that students use Facebook as a mean for them to socialize with their friends.

CONCLUSION

From the data which had been gathered and analysed, it can be concluded that the students put Facebook in high regard because it apparently helps them to socialize easier. This is achieved via several activities available on the Facebook applications such as posting wall posts, joining groups of similar interests and meeting new friends without borders.

All these activities are practically impossible to be materialized in real life world in contrast with the cyber environment that Facebook offers. Meanwhile, as for Facebook being useful to the extent of improving the students' social skills, majority of them chose to remain neutral and believed that their social skills are unchanged even with the presence of Facebook memberships and frequent activities indulged in the most famous SNS. Overall, the findings of this study showed that this SNS evidently helps making the students' social life easier. This is because with Facebook, the students can interact with their friends via wall posts, group application and knowing new faces with just a simple click. However, the findings rejected the possibility of Facebook to have helped the students to boost their social skills. In contrary, even with these virtual accounts, the students' personalities and their social circle of lives are not altered absolutely. Hence, this dismissed the labelling of how Facebook is making them a better member to the community while mixing around with the crowd. It is hoped that further researches can investigate other potential significant benefits of Facebook to other aspects of the students' lives.

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Luring the Lurkers: Increasing Participations in the Online Discussions of a Blended Learning Course

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ABSTRACT

Despite the popularity of online discussion threads, there is a growing concern on the lack of participations among the learners. The number of responses in discussion threads is dropping and has discouraged healthy exchanges of ideas among the learners. Most learners tend to be online lurkers who rarely provide feedback although they are rather active in reading others' posts. In this study, a few techniques were employed in the online discussion threads of a blended learning course on academic reading and writing in order to promote lurkers' participations. Discussion topics were posted throughout the 14-week course offered at Universiti Malaysia Sarawak (UNIMAS) using different techniques in order to supplement the activities conducted in face-to-face classes. Based on the discourse analysis of responses posted by 122 participants, three techniques were noted to be successful in luring the lurkers to be more active in the discussion, which include the use of a comic strip as a topic starter, incorporation of social talks and instructor's frequent intervention. At the end of the course, semi-structured interviews were conducted to find out the lurkers' overall perceptions on their behaviour in online discussion. The analysis revealed that the number of responses is not directly incremental to the mastery of the subject matter. However, it is the learner's sense of belonging to the online community that persuaded them to be more active in sharing their ideas. Thus, cohesion and deeper scrutiny of the discussion topic are largely facilitated by the cultivation of social elements in each discussion.

Keywords: online discussions, online engagement, lurkers, blended learning

INTRODUCTION

The prevalence of internet and web-based learning tools has prompted many universities to complement their courses with various technology-supported media apart from the traditional lecture format and classroom discussion. Computer-mediated communications (CMC) are one of those media that has been widely employed as a supplement to daily face-to-face lectures. CMC is defined as communication between two or more people via networked computers and can be categorised into asynchronous and synchronous (Henry

& Li, 2005). Asynchronous CMC refers to communications that are time-independent or delayed in response such as email and discussion boards. Synchronous CMC, on the other hand, occurs real-time and resembles features of face-to-face interaction. This includes text and voice chats and video conferencing (Warschauer, 1996). Of the two types, asynchronous CMC primarily online discussions are more widely used as teaching tools and the discussions boards provides valuable opportunities for educational researchers to analyse discussion threads in order to investigate whether deep learning is facilitated in such medium of learning (Hew & Cheung, 2003; Meyer, 2004). Thus far, although the benefits of online discussion are widely acknowledged (Biesenbach-Lucas, 2003), there is a growing concern on the decreasing level of interactivity and participation in various discussion platforms.

LITERATURE REVIEW

Online Discussions

Asynchronous online discussions or commonly known as threaded discussions, can refer to a variety of medium that allow users to communicate with one another without being online at the same time. As mentioned by Swan (2001), asynchronous online discussions are largely text-based and not confined to time and space since users can reply a message at their own convenience unlike in synchronous discussion. The use of asynchronous online discussions has been evaluated positively in many studies and most findings revealed that online discussions encourage cognitive engagement, critical thinking and social collaboration (Pawan *et al.*, 2003; Son, 2002). Moreover, Biesenbach-Lucas (2003) stipulates that asynchronous discussions allow students, in groups to cooperate with each other in terms of sharing of ideas as well as understanding of course content. Thus, the asynchronous nature of the discussion affords participants the opportunities to not only collaborate but also to reflect on their peers' contributions and their own writing before posting them. This tends to create a certain mindfulness or critical thinking among learners and a culture of reflection in an online learning environment (Garrison *et al.*, 2001; Pawan *et al.*, 2003). Many learners in English for Specific Purposes (ESP) courses are benefiting from the use of online discussions in order to improve their proficiency as well as the mastery of content knowledge (Greenfield, 2003; Warschauer & Meskill, 2000). Thang and Bidmeshkia (2010), for example, reported in their study on English for science and technology course that learners perceived the blended mode of having online discussions contributed highly on the improvements of their reading skills and strategies. In addition, Yamada (2009) found out that text-mediated system in online discussions increases learners' confidence in terms of grammatical accuracy.

The pervasiveness of asynchronous online discussion as a potential tool for social and cognitive development has led many researchers to relate the success of asynchronous discussion to how the technology is integrated into the curriculum, the coursework and the roles of the instructors in assisting the discussion to take place (Wu & Hiltz, 2004).

However, these studies have paid great attention on students or users who are actively involved in the online discussion since their activities are easily observable. In recent years, there is a growing interest in investigating the passive users who are known as lurkers (Nonnecke *et al.*, 2004) as they are increasingly prominent in various discussion threads. They are often labelled as "passengers" and perceived as those who lack the efforts to be part of an online community. Furthermore, the social network phenomenon has shifted learners' attention from engaging in threaded discussion to more appealing platforms like Facebook and Twitter (Chuah, 2013; Kenney *et al.*, 2013). These social networks, however, provide lesser control for the instructors to keep track of the learning artefacts that could be used to improve teaching and learning process. It is therefore timely to find out ways to encourage higher participations among the learners especially the lurkers so that the benefits of online discussion can be maximized.

The Lurkers in Online Discussions

The term "lurkers" is often used to label the inactive users within a virtual community especially in online discussion threads. They are believed to be the "passive readers" of what others have posted but never or very rarely respond. Several researchers have come up with different definition of the term. Rafaeli *et al.* (2004) regarded lurkers as "a persistent but silent audience" (p. 2) while Nonnecke *et al.* (2004) claim the lurkers are members who had never posted in a community at any time. However, Salmon (2003) provides a slightly more positive viewpoint by stating that a lurker is "someone initially reluctant to commit themselves to public participation in conference" (p. 36).

A review of literature also provides three main perspectives on the lurkers. The first perspective is known as "free riding" (Nonnecke *et al.*, 2004) in which those who refuse to post due to their perception that knowledge should not be shared in order to maintain one's value. The second perspective is legitimate peripheral participation (Soroka & Rafaeli, 2006) that describes lurkers with "wait-and-see" attitudes but willing to participate whenever possible. The third perspective is knowledge sharing barriers (Ardichvilli, 2008) that cover three barriers that lead the lurkers to be passive. These barriers include interpersonal, procedural and technological barriers. Based on these perspectives, Neelen and Fetter (2010) investigated lurkers' and active participants' behaviour and found out that lurkers considered their behaviour of "observing from far" as a learning strategy and they do learned from the process.

Clearly, the lurkers are the silent majority in most online learning environments and it is crucial for them to participate more actively especially in ESP courses since the contact hours in face-to-face instructions are rather limited. In this study, several techniques were trialled and tested in figuring out the means to motivate the lurkers to be more active in online discussion threads of an academic English course.

PURPOSE OF THE STUDY

Due to the exploratory nature of this study, it aims to uncover the appropriate techniques that can be incorporated in the online discussion threads so that the lurkers would be more active. Specifically, this study aims to answer the following research questions:

i. How to encourage the lurkers to participate more often in online discussion?
ii. Why did most students choose to be lurkers in online discussion?

METHODOLOGY

For the purpose of this study, a case study research design was employed. The research design is selected due to the nature of the research questions, which deals rather extensively on subjective data. By using this research design, it allows the researcher to scrutinise a general statement and understand the specific concept holistically (Wiersma, 1991) in order to answer the research questions. It is also appropriate since the research problem focuses only on a specific case that involves a small group of participants.

In this study, the online discussion forum of an ESP course (Academic Reading and Writing) at Universiti Malaysia Sarawak, was selected to be studied. The students' posting habits on the forum were observed for ten weeks. The participants' consent was obtained formally prior to the use of their postings in this study. The study was carried out from week 4 to week 13 of the course. The first three weeks of the course were marked as "buffer period" in which students might not be aware of the forum since the course is offered to students from different fields of study. They need some time to familiarise themselves with the structure of the course as well as with the blended learning environment. Besides, during the first three weeks, students are allowed to drop the course. Hence, the finalised number of students can only be obtained in the fourth week.

Participants

A total of 122 students participated in the study but only 65 of them were identified as lurkers. The students are marked as lurkers if they did not post for the first three weeks of the study (i.e. Week 4 to Week 6 of the course) although they logged into the discussion forum actively during that period. Among the 65 lurkers, 20 of them were male while 45 of them were female. To measure their English language proficiency, their Malaysian University English Test (MUET) bands were used. As shown in Table 1, out of the 65 lurkers, 43% of them obtained Band 3, 38% obtained Band 2, 13% obtained Band 1 and only 6% of them obtained Band 4. Students with MUET Band 5 and Band 6 were not among the lurkers.

Table 1 Distribution of lurkers' MUET Band

MUET Band	Percentage (n = 65)
4	43%
3	38%
2	13%
1	6%

It is interesting to note that the majority of the lurkers actually have higher English language proficiency than initially expected. Among the sample (n = 122) almost 30% of them (n = 36) reported to obtain Band 1 in MUET but only four of them were observed as lurkers. The rest of them were rather active in the online discussion threads.

Data Collection and Analysis Procedures

Topics related to the course (academic English) were posted weekly focusing on several techniques. Each technique was used for two threads. These include:

i. statement only topic starter – a discussion that is started by using only statements. This can be a quotation or a topic.
ii. comic-strip as topic starter – a discussion that is started by using comic-strips related to the topic.
iii. video as topic starter – a discussion that is started by using short video clips related to the topic.
iv. more social talk – allowing more leisure or social conversation which may not be directly related to the topic.
v. frequent instructors' intervention – instructors' involvement or intervention is higher in this thread.

These techniques were selected based on the researchers' initial observations from several other discussion threads. Although they are not directly supported by previous studies, these techniques are believed to be useful in encouraging participations in online discussions.

Each discussion thread was used as a continuation of the topics discussed in class but from different perspectives. Some of the topics covered are the technicality of writing a specific academic genre, techniques in paraphrasing, the use of citations and referencing, and also the culture of "copy and paste" among university students. An example of how a thread looks like is shown in Figure 1, which uses a comic strip as the starter of the discussion. It has to be clarified that students were not made compulsory to post as this would defeat the purpose of the study, since their willingness to participate was being observed.

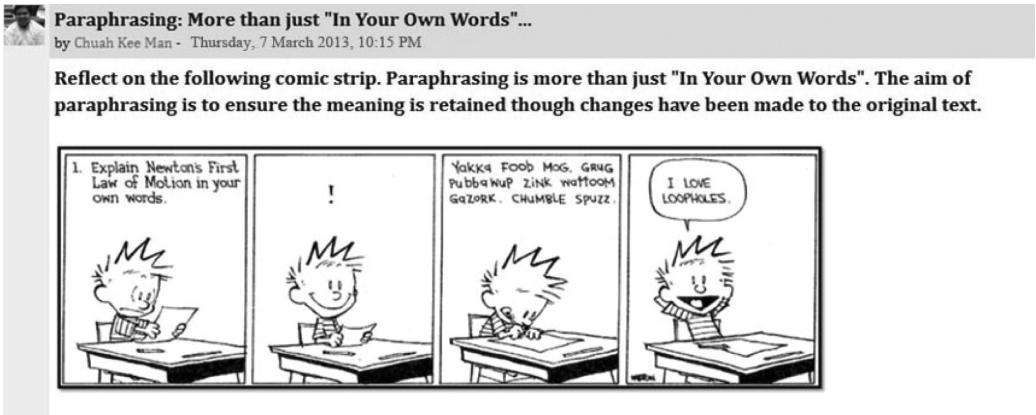

Figure 1 A thread using comic-strip as topic starter

The responses from the online discussion threads given by the lurkers were compiled and coded accordingly as shown in Figure 2. LS stands for "Lurking Student", "005" was used as student identity code, and 02 was used to mark the number of post made by the student. The number of posts by the lurkers was counted and their "online behaviours" were observed.

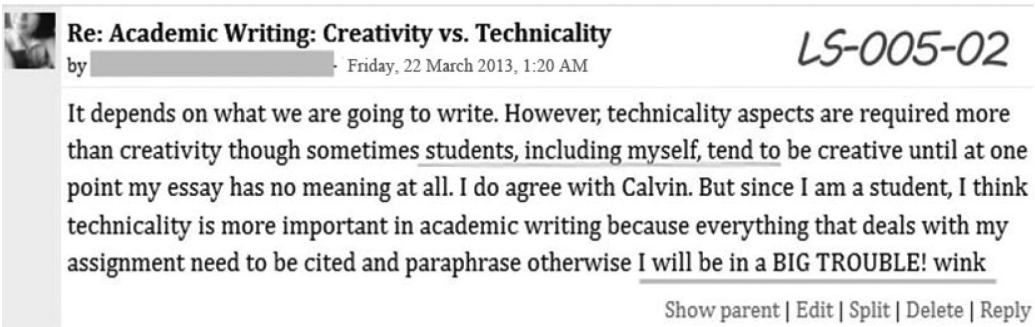

Figure 2 Coded response from the participant

At the end of the course, interviews were carried out on 30 of the 65 lurkers. The interviews' responses were qualitatively analysed to obtain useful insights on their lurking behaviour. It mainly focused on the question "Why did they choose to lurk?". The responses were thematically grouped according to interpersonal, procedural and technological barriers as categorised by Ardichvilli (2008). The coded responses were then counted and tabulated.

FINDINGS AND DISCUSSIONS

Table 2 Lurkers' posts according to threads

Week	Techniques used in thread	Total posts	Mean
1	statement only as topic starter (a1)	45	0.692
2	comic-strip as topic starter (b1)	75	1.153
3	video as topic starter (c1)	60	0.923
4	more social talk (d1)	70	1.077
5	frequent instructors' intervention (e1)	72	1.107
6	comic-strip as topic starter (b2)	78	1.200
7	statement only as topic starter (a2)	40	0.615
8	frequent instructors' intervention (e2)	65	1.000
9	more social talk (d2)	72	1.108
10	video as topic starter (c2)	55	0.846

Table 2 shows the number of posts made by the lurkers within each thread that emphasised on different techniques. The techniques were used twice at a specific interval so that its impact can be observed. For example, the threads with comic-strip as topic starter were posted on week 2 and week 6. The total posts for both weeks were then calculated. It can be noted that three types of techniques were successful in motivating the lurkers to post more, which were indicated with a slightly higher number of mean scores as well. The three techniques were comic-strip as topic starter (153 posts), more social talk (142 posts) and frequent instructors' intervention (137 posts). Apart from that, threads with video as topic starter produced a reasonable number of responses from the lurkers (115 posts) while threads that used statement as topic starter generated the least (85 posts).

Comic-strip seems to be a good stimulus in encouraging the lurkers to participate. It generated the most posts among the lurkers in the two instances. Perhaps, the nature of comic strips which can be interpreted from different perspectives has allowed the students to be more participative as opposed to the type of statement or question that may trigger a similar response from all students. Furthermore, by allowing a slight diversion to social topics (more social talk) which are not related to the subject matter, lurkers tend to be more active. For example, in discussing the technicality of discussion essay, the lurkers were more interested to respond when the instructor diverted the topic to their favourite movies. Indirectly, the students were actually learning the structure of a discussion essay as they were arguing on which movie should be considered as the best of the year though the initial topic was on the pros and cons of the Internet. Moreover, the intervention or moderating role of the instructor is also very important. Whenever

the instructor responded to a specific post, the lurkers were more willing to reply. Posts which were left unattended by the instructors were largely abandoned by most lurkers. This shows the need for the instructor to acknowledge the presence of the students so that they would feel appreciated in sharing their views. It is also interesting to note that the use of videos as the start of a discussion topic did not seem to encourage the lurkers to participate as often as initially expected by the researcher. It could be the result of Internet bandwidth problem as the loading of video requires more time and most lurkers might have no intention to wait for the whole video to be loaded.

Table 3 Lurkers' posting habits

Posting periods	Percentage of posts
Beginning (the first 20 posts)	7%
Middle (between the 21st – 50th posts)	64%
End (after 50th post)	29%

Table 3 illustrates the posting habits of the lurkers. Based on the total number of posts made by the lurkers within each discussion thread, 64% of them were posted slightly towards the middle of the discussion (between 21 st and 50 th post). Only 7% of the posts were posted earlier (in the first 20 posts) and the remaining 25% posted almost at the end of the discussion. In the analysis, it is rather clear that most of lurkers waited for others to respond first before they started to respond. The analysis of the transcript also revealed that lurkers tend to respond after reading the posts made by those that they perceived as the "good" or "intelligent" ones. These included those with higher MUET Bands, active in classroom interactions and higher marks in course assessments. The students with MUET Bands 5 and 6 usually were among the first to respond to any discussion topics since they were more proactive. This observation is also apparent in the interview data whereby the lurkers acknowledged the role of these students in helping them to respond better due to their initial lack of confidence.

The data from the post-course interview showed that 30% of them stated that they did not really like to share their views in online discussion mainly due to the existence of an online audience, which they think can affect their reputation since their feedback would be in written form and cannot be deleted. A total of 23% felt they were not part of the group or class. This could be due to the fact that the course involves students from various faculties and they might not be familiar with each other. Surprisingly, language was not perceived as a barrier with only 10% stated it as the primary reason. Most of them seemed comfortable to respond online though some are rather weak in terms of English proficiency. In addition, none of the lurkers actually stated lack of course content knowledge as the reason for being less active online. In fact, most of them agreed that

they have benefitted from reading others' posts even though they did not participate frequently. They have chosen to adopt what Soroka and Rafaeli, (2006) termed as "wait-and-see" attitude and only respond whenever they think it is necessary. In addition, although they are not active, the findings from this study showed that the lurkers are not "free riders" as all of them stated they gain benefits from the course, which is similar to the findings by Neelen and Fetter (2010) who discover lurkers employ lurking as a learning strategy that correspond to their microlearning hypothesis.

Thus, the findings revealed that subject matter knowledge or even English language proficiency is not the main factor in influencing online participation among the learners. A sense of belonging to the online community is noted to be an important element in encouraging and sustaining healthy discussion. The existence of social elements within each discussion thread, as shown in this study promoted deeper inquiry of the discussion topics.

CONCLUSION

This study has suggested and tested several techniques to encourage lurkers' participations in asynchronous online discussions. The findings have shown how the lurkers can be lured to be more active in online discussions although they may seem reluctant during the earlier stage. Nevertheless, pedagogical considerations are pivotal as course instructors need to spend time to design the topic well so that more students would feel motivated to respond. In addition, the role of lurkers is still very important to virtual communities and their silence should not be ignored. As mentioned by Salmon (2003), the lurkers may seem to be inactive but they are actively reading the posts, giving the much needed audience to the participants of online discussions. Their silence will be broken once they are properly directed or motivated. Hence, the lurkers should be facilitated in the process of being more active by injecting more social elements in the discussion thread. It would be good to allow some rooms of informality in discussing a subject matter as it reduces the barriers in communicating via the online discussion platforms. Besides, there is an apparent need for instructors to understand lurking behaviour not only to make students more active but to maximise the potentials of online discussion in developing their critical thinking. In the context of ESP and blended learning environment, online discussions should be utilised frequently and appropriately so that learners can continue to practise specific language features beyond the usual weekly contact hours.

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Assessing Perceptions of Academic Staff in Using SmartUMS for Teaching and Learning

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ABSTRACT

The use of educational technologies for teaching and learning has been implemented in many institutions of higher learning. Universiti Malaysia Sabah (UMS) uses Moodle on SmartUMS e-learning platform to deliver academic courses. Every lecturer needs to register their respective courses on SmartUMS to complement face-to-face teaching and learning routine. The purpose of the study was to investigate academic staff's acceptance and perceptions towards SmartUMS usage in UMS. The findings will contribute to the development of the UMS's e-learning strategy, providing information on active participations from the lecturers which will enable the most effective use of education technology. Data was collected from all participants of SmartUMS training sessions. A questionnaire was distributed to 86 respondents and statistically analyzed using SPSS statistical package. The findings revealed that lecturers developed positive acceptance and perception towards using SmartUMS. It also concludes that SmartUMS provide value tools for effective interaction between lecturers and students in their teaching and learning activities.

Keywords: e-learning, SmartUMS, lecturer, perceptions

INTRODUCTION

The widespread use of the internet and the advancement of technology provide benefits to the educational sectors. E-learning application such as Learning Management System (LMS) is able to manage the teaching and learning process more effectively. Users can access the system from anywhere at any time. Students can now access their lecture materials, read and prepare themselves before the start of the class without the limitation of time. They can use the facilities available in the LMS to communicate with their lecturer and peer either through synchronous or asynchronous communication. Besides that, they can also participate in an online discussion forum or using Wiki to collaborate. Learning via the LMS encourages a two-way communication between students and their lecturers. Meanwhile, the lecturer could upload lecture materials and make use of the

tools available for assessment i.e. quiz, test, etc. online. The online learning has resulted in a new teaching strategy, transform the way teaching and learning is done whether or not teachers or students would like to adopt the change. Technology is reshaping the educational sectors by offering students a new approach to learning and offering educators new way of teaching (McKenzie, 1998). By introducing the LMS for teaching and learning, it does not mean that the learning process is to take place totally via the internet but rather to complement the traditional teaching.

OBJECTIVE OF THE STUDY

The objectives of this study are as follow:

1. To determine the extent of acceptance of SmartUMS among academic staff
2. To identify the usage of SmartUMS in communicating and interacting the lecturers with their students
3. To assess the perceptions of lectures in using the SmartUMS as a teaching tool

LITERATURE REVIEW

E-learning Adoption

E-learning system is one of many methods of the education (the teaching and learning procedure) that allows flexible learner-centred education. It is an information system based on the World Wide Web. During the past few years, the use of e-learning has expanded enormously (Westera *et al*., 2005; Mangalwede & Rao, 2009). E-learning can be defined as an electronic learning, which is basically meant as collections of teaching and information packages in further education. They are also available at any time and any place, and are delivered to learners electronically (Dichantz, 2001). According to Jowati (2004), many institutions of higher learning education in Malaysia use e-learning system in a mixed-mode environment known as blended e-learning whereby a combination of e-learning and face to face learning are used together.

Higher learning institutions play an important role in ensuring the successful use of e-learning. As part of an institutional strategy for the effective deployment and management of a LMS, the issue of educating staff in the use of technology is one amongst a host of issues (Ellsworth, 1997; Harrsch, 2000; Meehan *et al*., 2002; Minshul, 2004; Roberts *et al*., 2002). However, appropriate training remains vitally important to the successful adoption of technology (Meehan *et al*., 2002).

Educators need to be aware of the labour intensive nature of online learning and the resources available to assist with the development of effective online instruction. The university's reward and promotional system should acknowledge lecturers' activities by developing successful online learning and mentoring other staff members in their

online delivery of units (Siragusa & Dixon, 2007). In Universiti Pendidikan Sultan Idris Malaysia (UPSI), Muhammad Rais Abdul Karim and Yusup Hashim (2004) stated that UPSI implemented progressive introduction of technology to receive the lecturer's acceptance and attention. The lecturers found it relevant in their teaching approach and built up their confidence in using it. More importantly, they realise the advantages of using the technology in their instruction. In another study, Agboola (2004) revealed that e-learning training and e-learning confidence were statistically significant predictors of both e-learning adoption and e-learning readiness. E-learning training remained as the best predictor. This study investigated the preparedness of the academic lecturers for the introduction of e-learning at the International Islamic University Malaysia.

According to Siragusa and Dixon (2007), lecturers' knowledge and abilities of online learning technologies may influence how they utilise the website to enhance their students' learning. A lecturer with a low understanding of online learning technologies may simply use the website as a repository of content for students to access, print out and read elsewhere without active online engagement with the learning materials. However, a lecturer with sound knowledge of online learning technologies may use these technologies for creating effective learning strategies such as interactive online learning activities including online quizzes, forum, synchronous communication through chatting and others.

The Importance of Lecturer's Perception

Lecturers play an essential role on how to ensure the successful e-learning implementation as an alternative teaching tool to replace the traditional face to face method in higher education. The study on perceptions of academic staff in using e-learning has been discussed by many researchers. An investigation by Siragusa *et al*. (2007) pointed out that how lecturers perceive the importance of online learning will influence how online learning is utilised and integrated into their teaching practices. The findings also reported that lecturers with a low perception of the importance of online learning may not fully consider how to apply online strategies to enhance their students' learning.

In another study conducted by Agboola (2004) on users' perceptions of e-learning implementation in IIUM showed that there was a strong indication from the analyses that the respondents, who were academic staff, would implement e-learning for instructional delivery in their teaching activities providing they were equipped with necessary skills through professional training and other support. As far as the e-learning scenario in Malaysia is concerned, a survey conducted by the Multimedia University (MMU, 2003) revealed that e-learning will become an important field with more than 50% of top academic management, staff/academics and students/clients accepting the concept. The survey reported that 65% of institutions provide some form of training or instruction utilizing aspects of the online or e-learning format. To support this study Zhang (2007) reported that the availability of strong institutional support is crucial for e-learning deployment and success.

In Vrana *et al*. (2005) study, 76 faculty members in Technological Education Institute of Serres were selected with regard to their perceptions of their attitudes towards educational technology including e-learning. The results revealed that faculty members have a good opinion of e-learning. They were well-informed, well-prepared and well-disposed towards the use of ICT and e-learning. According to Vrana *et al*. (2005), motivated members are the principal driving force for any organizational change.

SmartUMS

E-learning initiative in UMS began around 2002 using Blackboard as the main e-learning platform. The e-learning implementation was meant to complement the traditional chalk and talk teaching method. Based on blended learning method, UMS integrates the versatility and flexibility of self-managed learning with most of the learning material uploaded to the e-learning portal and actual face-to-face interaction. It was July 2006 when the management decided to move to an open source technology, Moodle, as the e-learning platform. Initially the e-learning portal was known as the UMS Learning Management System. However in August 2009, it was rebranded as SmartUMS with "One Stop Borderless Experience" as the tagline to promote and motivate the users to use e-learning.

Currently, the SmartUMS is running under Moodle 1.9. Moodle has enhanced the learning process by making it more flexible and giving more opportunity for lecturers to deliver the content in variety format (doc, flash, jpeg) which also follow the SCORM standard. It is user-friendly yet customizable. Moodle provides rich collaborative facilities for the learning activity such as forums, wikis and chat. It also offers various ways to deliver content to students and asses learning using assignments and quizzes. Moodle introduces the philosophy that through the interesting collaborative learning, students will be more motivated to engage themselves in the learning process (Moodle, 2010).

Throughout the implementation of SmartUMS, a series of training has been conducted to encourage the lecturers to develop their online materials and explore the collaborative modules offered by Moodle. In order to achieve the target of 30% of the courses offered in UMS to be accessible online, continuous promotion and training of SmartUMS usage among the lecturers and students are needed.

METHODOLOGY

Participants

The study was conducted on 86 lecturers after the "Training the Trainers" workshop in 2009. The participants were UMS lecturers selected randomly.

Research Design

This research was a non-experimental, small scale quantitative study. It involved mainly the use of questionnaire on the lecturers' perceptions of SmartUMS usage as an e-learning tool in Universiti Malaysia Sabah.

Data Collection

The study used probability sampling method. The questionnaires were distributed after the training and altogether, 86 self-administrated questionnaires were collected. The researchers deliver by hand the questionnaire randomly to the lecturers after explaining to them the purpose of the study.

The analysis was done using SPSS (Version 9) statistical package in order to identify the means, percentage and standard deviation of the items. A five-point Likert scale was used in this instrument (1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Neutral (N), 4 = Agree (A), 5 = Strongly Agree (SA)). The questionnaire used for this study comprised of three sections:

Section A: 3 items designed to find the acceptance of the lecturers towards SmartUMS (LMS Moodle).
Section B: 4 items designed to find the usage of SmartUMS.
Section C: 3 items designed to find to what extend the lecturer's perception of using SmartUMS.

RESULTS

Findings

The quantitative data has been collected and analyzed descriptively on lecturers' perceptions towards LMS Moodle. The total percentage, mean and standard deviation have been computed for each item in the questionnaire. Tables 1 to 3 show the results of the descriptive analysis of the data.

Table 1 shows that most of the lecturers understand the purpose of SmartUMS as a learning management system platform in UMS (mean = 3.69, Standard Deviation = 0.985) and that they were able to learn on how to use LMS without any serious problems (mean = 3.72, Standard Deviation = 0.941). The lecturers also showed positive acceptance on LMS as an alternative strategy in teaching, with mean of 3.85 and Standard Deviation = 0.847.

Table 2 indicates that the lecturers used SmartUMS to upload course materials mostly, which is reflected in the mean = 4.06 and Standard Deviation = 0.938 in comparison to other activities such as the use of forum, wiki, quiz and blog for information sharing and collaboration among students.

Table 1 Acceptance towards LMS Moodle

	SD %	D %	N %	A %	SA %	Mean	Standard deviation
I know what LMS Moodle is.	3.5	7.0	26.7	43.0	19.8	3.69	0.985
I have no serious problems when learning LMS Moodle.	1.2	9.3	26.7	41.9	20.9	3.72	0.941
I like to use LMS Moodle as a teaching tool.	1.2	2.3	30.2	43.0	23.3	3.85	0.847

Table 2 The usage of LMS Moodle tools

Items	SD %	D %	N %	A %	SA %	Mean	Standard deviation
LMS Moodle helps me greatly in my course via the use of forum, quiz, wiki, blog, etc.	0	8.1	38.4	34.9	18.6	3.64	0.880
A lot of activities (forum, wiki, etc.) which involves collaborations and information sharing among students can be created in LMS Moodle.	1.2	4.7	19.8	46.5	27.9	3.95	0.880
LMS Moodle enables more students to interact with me on my teaching.	2.3	4.7	30.2	37.2	25.6	3.79	0.959
I have the ability to upload course synopsis and notes to the LMS Moodle.	3.5	2.3	12.8	47.7	33.7	4.06	0.938

Table 3 Perception of using LMS Moodle

	SD %	D %	N %	A %	SA %	Mean	Standard deviation
I like to use LMS Moodle as a teaching tool.	1.2	2.3	30.2	43.0	23.3	3.85	0.847
I feel comfortable using e-learning (LMS Moodle) in my course.	0	8.1	27.9	44.2	19.8	3.76	0.867
LMS Moodle and other LMS are used by a large number of universities in other countries.	2.3	4.7	29.1	41.9	22.1	3.77	0.929

Table 3 reveals that the lecturers showed positive perceptions of the LMS and its usage (mean = 3.85) and they seemed to be aware of the LMS adoption by other universities as an alternative teaching strategy (mean = 3.77, Standard deviation = 0.929).

Discussions

First, we wanted to know the acceptance of lecturers towards Moodle LMS in particular. The questions asked were whether they know what Moodle is, whether they have serious problems when learning using LMS Moodle and whether they like to use the LMS as a teaching tool. Result of the acceptance of the lecturers towards using the LMS is shown in Table 1. Generally, it shows that the lecturers have positive acceptance towards using the LMS. This is in contrast with Latchem (2004) that staff can experience many problems when institutions move into open and flexible learning and import new ideas and practices that are neither fully understood by staffs' traditional values and practices. However, this finding is supported by Vrana *et al*. (2005) that e-learning offers individual empowerment with greater control over learning. Lecturers who are comfortable with technology and have a positive attitude towards it are more likely to succeed within an e-learning environment.

From the result shown in Table 2, whether the LMS helps them greatly in their course via the use of forum, quiz, wiki, blog, etc., whether the activities (forum, wiki, etc.) can be created to collaborate and share information among students, whether the LMS enables more student to interact with them in their teaching and whether they have the ability to upload course synopsis to the LMS, most respondents think that the LMS has helped them in communicating and interacting with their students. It shows that the lecturer do not have negative attitude towards using the tools available in the LMS. It appears that the lecturers have used the tools in their teaching and have found it beneficial. Ong and Lai (2006), and Tung and Chang (2008) found that the perceived usefulness and the perceived ease of use of e-learning system have a significant effect on the behavioral intention to use that system. According to Jebeile (2003), strategies for facilitating the adoption and effective utilization of e-learning are an issue of importance to educational administrators around the world. E-learning requires active participations from the lecturers to attract students' attentions towards e-learning. As mentioned by Bates (1999), e-learning can provide a cost-effective measure for preparing students more adequately.

The finding also represents that the lecturers have positive perception of the usage of the LMS in their teaching strategy. They are aware of the available tools or facilities that could be applied in their teaching such as the forum, discussion, wiki, blog, etc. The most important question is how to ensure participation from lecturers in using the e-learning system (in this case MOODLE) that the university already has. Based on the authors' experience, the most important things in the implementation and adoption of e-learning are (i) lecturers must be interested to use the system, (ii) support given

to them in using the system, and (iii) benefits of the system in a longer term (unique and innovative). This is supported by Tung and Chang (2008) in their investigation on behavioural intentions to use the online-learning course websites, which concludes that the perceived usefulness from educators point of view (i.e. greater control over work, improve job performance, save time, accomplish tasks more quickly, enhance effectiveness) may influence their behavioural intention to adopt e-learning system.

In addition, it is reported in Mason (2001) that, technical infrastructure must be in place to support technical aspects necessary for the production of course materials, delivery of the courses, as well as lecturer and student support. This is also supported by Jamlan, (2002) that in order to successfully implement e-learning, a supportive technological infrastructure must be in place and the availability of expert to design curriculum, offer student support etc.

CONCLUSION

E-learning is the delivery of teaching and learning opportunities via web-based technologies to help lecturers and students' performance and development. In this paper, we have reported findings from the questionnaires involving the usage of e-learning among the lecturers in Universiti Malaysia Sabah. From the quantitative data collected, we found that most respondents have a positive perception of using SmartUMS as a platform of e-learning in university. The findings from this study can be used by the university to continue its efforts in enhancing the use of e-learning among lecturers. It is a big challenge to realise, attract, motivate, and create trust and confidence of the lecturers involved in e-learning. However, in order to achieve the university's target that all courses offered in UMS apply SmartUMS, we need continuous promotion and training of the usage of e-learning among the lecturers and students. Besides that, lecturers and students must have technical and cognitive skills in ICT so that they can become effective users of the technology.

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The Changing Landscape of Language Teachers' Usage of ICT in Classrooms in SMK Bandaraya Kota Kinabalu, Sabah, Malaysia

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ABSTRACT

The Malaysian Smart School is a learning institution that has been systemically reinvented in terms of teaching and learning practices in schools and school management processes in order to prepare students cope with the information age. It aims to produce proactive, efficient and competent students in information literacy so that they will be self-regulated learners who practise self-accessed and self-directed learning, at their own learning pace. In addition the Ministry of Education, Malaysia has also stated clearly in the National Education Blueprint (2013 – 2025) under Shift 7: Leverage ICT to scale up quality learning across Malaysia. Using models from Fullan's Change Theory and Rogers' Diffusion of Innovation Theory, a study was carried out on language teachers' changing mindset in integrating ICT in their classroom teaching in the school, SMK Bandaraya Kota Kinabalu. The study was carried out using observation techniques supported by the results obtained from the SSQS survey questions and a language teacher's feedback form to determine language teachers' progressive usage of ICT in their teaching process. Special focus is given to the changing attitudes of the language teachers in using ICT in their classrooms. Some issues that arise in the school's context and smart solutions taken to overcome these issues are also discussed. In conclusion, the writer proposes ways to further enhance and to upgrade the school's achievement in using ICT in the teaching and learning process.

Keywords: Information and Communication Technologies (ICT), ICT integration, enhancing learning, change, diffusion of innovation, Technological Pedagogical Content Knowledge

INTRODUCTION

Much have been said and documented about the Malaysian Smart School Project which began its implementation in 1997. This project is one of the Flagship Applications of the Multimedia Super Corridor (MSC) in Malaysia. The Malaysian Smart School is a learning institution that has been systemically reinvented in terms of teaching and

learning and school management processes in order to prepare students cope with the Information Age. Students are expected to be taught and be competent in information literacy. The intended outcomes of the Smart School are students will have the ability to use digital technology, communication tools, and/or networks to define, access, manage, integrate, evaluate, create, and communicate information ethically and legally in order to function in a knowledge society. Students will be able to practise self-accessed and self-directed learning, at their own learning pace, have the ability to distinguish when information is needed and then, the ability to locate, evaluate, and use the required information effectively. On 6th September 2013, the Ministry of Education, Malaysia launched the National Education Blueprint (2013 – 2025) which identified 11 shifts that need to be implemented to spur the education system in Malaysia to greater heights. One of the main concerns is Shift 7 which aims to "Leverage ICT to scale up quality learning across Malaysia" (Ministry of Education, Malaysia, 2012).

At the grass-root level, the writer's school, SMK Bandaraya Kota Kinabalu (SMBKK) began its smart school programmes in 2003 when the two computer laboratories were equipped with computers. It was classified as smart school with level B technology by the Ministry of Education, Malaysia (MOE) based on the level of IT-integration in schools. When the writer assumed her post as the Principal here in 2009, she was keen to find out why after six years of IT-integration in this school, the Smart School Qualification Standards (SSQS) star ranking was only at the median or 3-stars level. By 2010 and 2011 the school successfully achieved the Advanced Plus or 5-stars level, the highest approval ranking awarded by the MOE.

In this paper, the writer will discuss the changing attitudes of the language teachers in SMK Bandaraya Kota Kinabalu in using ICT in their classrooms. This study aims to answer the questions below:

i. What is the level of ICT integration of the language teachers?
ii. What are the teachers' perceptions towards students' learning when integrating ICT in their language classes?
iii. What are the problems faced by the teachers when integrating ICT in their teaching?
iv. Why do the teachers adopt the technological pedagogical content knowledge change?

The results of the annual Smart School Qualification Standards (SSQS) survey will be used as supporting data of language teachers' progressive usage of ICT in their teaching and learning process. Some issues that arise in the school's context and the smart solutions taken to overcome these issues are also discussed. In conclusion, the writer proposes ways to enhance and to upgrade her school's achievement in using ICT in the teaching and learning process.

LITERATURE REVIEW

Background on the Developments of Malaysian Smart School

Back in the 1990's the Malaysian Government was aware that investment on information technology in education will spur up social developments and promote economic growth (Hamzah, Ismail & Embi, 2009). Hence, the Malaysian Government's embarked on the Multimedia Super Corridor (MSC) project in 1995, which aimed to create a knowledge-based economy through technological leapfrogging. This was one of the strategies to fulfil Malaysia's vision to achieve a developed nation status by 2020. In line with the task to fulfil Vision 2020, a transformation in the Malaysian education system is needed. The Malaysian Smart School was launched in July 1997 by Tun Dr. Mahathir Mohammad, the Prime Minister at that time, as one of the Multimedia Super Corridor's Flagship Applications. Chan (2002) in her paper explained the developments and strategies taken by Educational Technology Division, Ministry of Education, Malaysia to enhance ICT in education. Three main policies for ICT in education were formulated. The policies are drawn up for students, teachers and administrators in their office work. In the quest to accelerate ICT in education, the Ministry of Education created a group of about ninety pilot schools in 1999 that were expected to 'jumpstart deployment of enabling technology' (Chan, 2002) in their respective schools. The Pilot Project was trial-testing the Smart School Integrated Solution, which involved the following main components (Chan, 2002):

- Browser-based Teaching-Learning Materials (and related print materials) for Bahasa Melayu, English Language, Science and Mathematics
- A computerised Smart School Management System
- A Smart School Technology Infrastructure involving the use of IT and non-IT equipment, Local Area Networks for the pilot schools, and a
- virtual private network that connects the pilot schools, the Ministry's Data Centre and the Ministry's Help Desk
- Support services in the form of a centralised Help Desk, and service centres throughout the country to provide maintenance and support
- Specialised services such as systems integration, project management, business process reengineering, and change management.

Following this initiative, ICT training for teachers in the form of a cascade model where trainers train trainers and colleagues at different levels: at school, district or state-level. Then, the Ministry embarked on a three-stage computerization programme in schools. The computerization programme aims to narrow the digital divide among students in the urban and the rural areas. Hence, computer laboratories were built beginning in year 2000 and by year 2002 all the 2400 schools selected would have computer laboratories, well- equipped with the required infrastructures.

ICT Integration in Malaysia Smart Schools

The Smart School Qualification Standards (SSQS) was introduced in schools in 2007 to gauge the status of the enculturisation and integration of ICT in education in schools. The objectives of SSQS are:

i. To increase utilisation of ICT in schools
ii. To develop a system (set of indicators) to measure ICT integration in administration and teaching and learning
iii. To provide a basis for policy planning and programme improvements
iv. To raise standards in education
v. To serve as a catalyst for educational change
vi. To empower teachers and learners

(Smart School Qualification Standards, 2009:12)

The status of every school's initiatives in integrating ICT in education is evaluated by using the SSQS which outlines the ICT Focus Areas. Each area carries its own weightage reflecting its significance in the SSQS. The areas are:

i. Utilisation 40%
ii. Human Capital 40%
iii. Applications 10%
iv. Technology Infrastructure 10%

(Smart School Qualification Standards, 2009:15)

A study was carried out on 4000 schools to measure the level of ICT integration in schools using the SSQS. Based on the data collected, a national report was produced by Hassan in 2007. The report stated that out of the 4000 schools that were rated according to the SSQS, 89% of the schools achieved VARIOUS LEVELS OF ICT INTEGRATION IN TEACHING AND LEARNING.

Levels of Approaches in Integrating ICT in the Curriculum

Wan Ali, Mohd Nor, Hamzah and Alwi (2009) in their study developed indicators that describe the level of ICT integration approaches in the curriculum as shown in Table 1.

The indicators stated in Table 1 may be used to gauge teachers' level of ICT integration approaches in their teaching and learning in the classroom. However, the drawback of the indicators is the duration use or frequency use of ICT which is not taken into account to determine the level attained. Therefore, in order to obtain a better evaluation of the teachers' level of ICT integration approaches in teaching and learning, a marriage between Table 1 and the indicators in the SSQS is required.

Table 1 Level of ICT integration approaches in the curriculum (Wan Ali *et al*., 2009)

Level	Approaches	Situation
Level 1	ICT as verbal resources	Teacher teaches with the aid of ICT as verbal resource. Teacher gives the website addresses or name of courseware that would help students to enhance their understanding of the topics.
Level 2	ICT as printed resources	Teacher teaches with the aid of ICT as printed resources. Teacher distributes printed downloaded information as teaching aids.
Level 3	ICT as hands-on experience	Teacher teaches with the aid of computer, courseware, software or internet only.
Level 4	A combination of all the levels: ICT as hands-on, printed resources and verbal resources	Teacher teaches with the aid of computer, courseware, software or internet in delivering the lessons. She or he also gives out handouts with information printed from the internet or courseware.

Reasons for Integrating ICT in Education

Although the SSQS evaluates the status of schools integrating ICT in education using four major constructs, it is important for teachers and school administrators to be able to translate the constructs into pragmatic initiatives in their respective school context. Hence, the school administrators and teachers should know the reasons for integrating ICT in education in order to bring our curriculum relevant to the demands of the 21st century society.

Integrating ICT in the teaching and learning process does not just mean that teachers convert their lesson content in the form of power point presentation and students read from the computer screen instead of their text book. Ranasinghe and Leisher (2009) pointed out that in many cases, educators 'failed to find the right blend of technologies': hence, some educators merely replicated their existing educational practices by transferring their traditional teaching approaches into the computer screen. Ranasinghe and Leisher (2009) emphasised that teachers play a crucial role to teach students how to use technology in their learning process. Therefore, the conventional teaching of specific subject content matter ought to be re-designed to focus on solving problems and issues which would require students to search for relevant information in the network and develop smart solutions using facts, principles and procedures. Furthermore, once teachers and students begin using technology for their teaching and learning purposes, they will eventually realise that not only their computer literacy but other areas of learning are being enhanced. In addition, this will also add value to students' learning; engage students in the four-step experiential learning process by Kolb (1984) as follows:

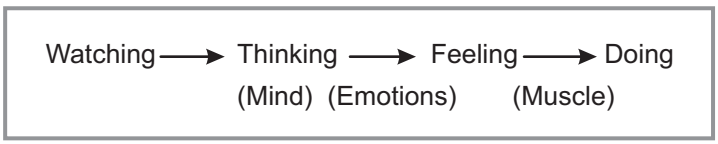

Figure 1 Kolb's (1984) four-step experiential learning

Other reasons highlighted by advocates of integrating technology in education are: students participate actively in their learning process as they are required to gather information from the internet and decide whether the information is relevant or not. The rich media that are readily available on the Internet can also stimulate students' sensory stimuli and thus, help the student grasp more complex concepts quicker and easier than using the written words alone. The use of technology in classrooms for this generation of students who are born in the digital era makes the delivery and learning environment very comfortable for them. With proper guidance from the teacher, students can easily acquire in-depth knowledge on any subject using different types of technology.

Factors Influencing the Integration of ICT in Education in Schools

Pang (2005) conducted an evaluation research project of an implementation of the Malaysian Smart School Curriculum in a secondary school in Sabah concluded in his findings that there were still many problems to solve and needs to fulfil even though the school has implemented the Smart School Curriculum for two years at that time. Among the areas identified that need to be improved were the basic resources such as time and financial support; the quantity and the quality of the hardware and software and teachers' training, exposure and motivation.

Similar findings were reported in the national report which was produced by Hassan in 2007. The report addressed some pressing issues such as teachers' training to integrate ICT in their teaching and learning process; changing educators' mindset and willingness to use ICT in classrooms; coping up with the rapid change of technology; increasing operation cost; maintenance of hardware and software; producing courseware compatible with the rapid changing needs of the schools and capacity building of qualified personnel in ICT is urgently required to speed up educators' ICT competency level (Shamsuddin, 2007).

In 2009, Wan Zah *et al*. identified the conditions that facilitated as well as the factors working against the implementation of ICT integration in the Malaysian Smart School. The study which was conducted in three Malaysian secondary schools, revealed two sets of conditions namely, the essential and the supporting conditions. According to Wan Ali *et al.* (2009), the essential conditions identified were the availability of ICT resources and the teachers' acquisition of ICT knowledge. Hence, for successful integration of ICT in schools, teachers must be knowledgeable and should have easy

access to ICT resources. Besides that, the supporting conditions that would encourage and enhance teachers' integration of ICT in their teaching process included accessibility to ICT resources; support by their school principals; teachers' own desire to change; students' advanced ICT skills; and teachers' commitment towards the innovation. Furthermore, among the problems faced by the teachers in this study during the process of integrating ICT in schools were time; training course content which was not relevant to the school context; and frequent technical problems with computers, server, router, and the LCD projector.

Another study conducted in the same year by Hamzah *et al.* (2009), also showed similar factors impedes the implementation of technology use in Smart Schools in teaching Islamic Education. Among the reasons why teachers were reluctant to integrate technology in their teaching were the limited number of computers and LCD projectors as well as supporting infrastructure. The computers available were mostly outdated. Other problems included slow internet connection and frequent interruptions due to weather conditions. There was also a lack of appropriate Smart Schools' software for Islamic Education. As with the other studies, time constraint remained as the major factor hindering the use of technology in classrooms. Teachers also reported that there was insufficient training to equip them to use ICT in teaching Islamic Education.

Theories of Change versus Diffusion and Innovation Adoption Cycle

The difference between theories of change and the diffusion of innovations lies in the people involved in the change and the innovation itself. Fullan (2005, 2006, 2007 and 2008); Hargreaves (2001) and Goodson (2003) discuss educational change occurring in schools by investigating factors that facilitate and conditions that hinders change. Based on the findings, the suggestions proposed are related to how the school community (principals, teachers and students) involved should adjust, adopt and internalise the change.

In the diffusion of innovations theory, the concern is about why some innovations spread more quickly than others and why others fail. Rogers (2003) as cited by Sahin (2006) stated that diffusion of innovations as a process by which an innovation is spread across members of a social system (which can be an individual or an organisation) over time; thus, the rate of adoption will depend on conditions like knowledge of the innovation, persuasion to use the innovation, decision to adopt or reject the innovation, then it is followed by the implementation stage whereby the task to integrate the innovation into regular use requires re-learning or re-invention of the innovation, in this context the integration of ICT in education. Once implemented, the individual or organisation will look for support for the decision made earlier. At the confirmation stage, there is still a tendency of discontinuance of the innovation. This means that the innovation may be adopted, rejected or abandoned depending the innovation decision process.

Rogers (2003), cited by Sahin (2006), proposed attributes of innovations that included five characteristics of the innovation which will influence the adopter's decision. The attributes are: relative advantage over other options, compatibility with the user's life

and practises with minimal interruption to the user's workflow, complexity or simplicity of use, trialability which allows user to test run the innovation and observability which refers to the extent the user gets to see, hear about and talk about the advantages of the innovation. According to Rogers' study, the adoption of the innovation process began with a small number of people, was slow in the beginning as awareness of the technology was limited. The early adopters were people who held leadership roles and were role models using the technology because they were the trend setters and their proclamation about the innovation determined the success of the adoption. Gradually, more and more people used the technology because this category of early majority becomes more aware of the technology and are convinced that the technology brought more advantages and minimal disruption to their workflow. Then the late majority who were conservative pragmatists who hate risk and were uncomfortable with the new idea will take on the innovation when they heard that plenty of other conservative folks like themselves thought it was normal or indispensable. Thus the rate of adoption increased until the technology became common use and saturated the market. At this point, the numbers of adoptions dropped off as there were fewer and fewer new consumers available. Figure 2 shows the adoption categories over time.

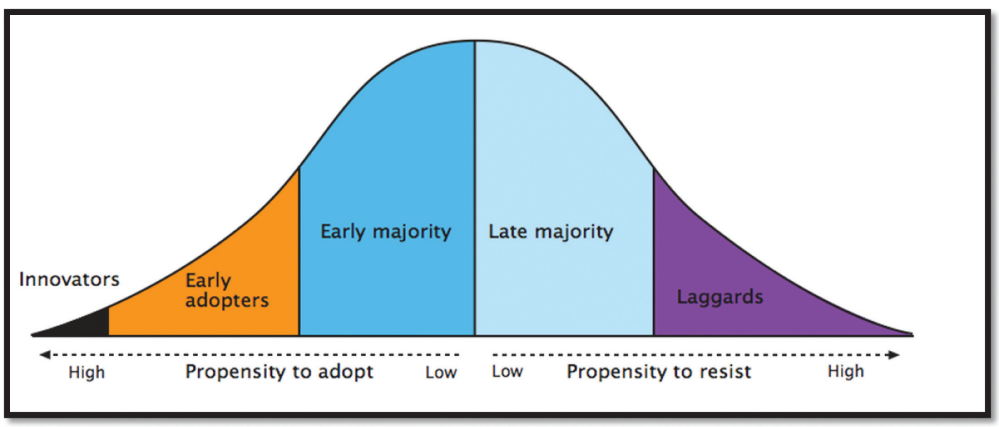

Figure 2 Adopters categories (Rogers, 2003, cited by Sahin, 2006)

METHODOLOGY

Respondents

A qualitative methodology was used to investigate the status of teachers' integration of ICT in their daily work in a school setting. The data was obtained through the writer's own observation as the school principal, classroom observations, a simple questionnaire, informal interviews and document reviews such as the teachers' record book and the SSQS survey forms. The participants in this study were all the language teachers of this

school which included the Malay language, English language and the Kadazandusun language teachers.

Background of School

SMK Bandaraya Kota Kinabalu (SMKBKK) is situated on the peripheral the city of Kota Kinabalu in Sabah, Malaysia. Before the physical development behind the school, the location of SMKBKK was deep inside a village and was only accessible through a single-lane un-tarred road. The school receives students from the surrounding villages and students who come from the nearby coastal areas and islands. The school has a population of 2620 students and a majority of them depend on public transportation to come to the school. At the moment the school can accommodate only 10% or 260 students in the school hostel. Generally, the students' parents are small-scale subsistence farmers, fishermen, odd-job workers, and some government officers. The main challenges the school faces are students' poor attendance and students' low motivation to attend school. Nevertheless, these pressing social issues do not hamper the spirit of the school's teachers and the determination to excel in various educational areas. For instance, one of the achievements is the 5-star ranking in the SSQS evaluation.

SMKBKK has the privilege to enjoy the facilities and support provided by the Malaysian Government. In year 2008, the school achieved 3-star rating, and then a 4-star rating in 2009. Various efforts were taken to ensure that the school would achieve the 5-star rating. In both 2010 and 2011, SMKBKK achieved the said target and is still moving on to sustain the status as well as to increase its score in line with the making of the school smart initiatives. Collaborative efforts from all parties and stakeholders are crucial in ensuring all ICT initiatives in schools are optimized for the benefit of teaching and learning.

Data Gathering Methods

Observing and monitoring teachers' teaching and learning process is one of the main job requirements of a school principal as an instructional leader in the school. In Malaysia, apart from observing teachers teaching in classroom, the school principal also checks teachers' record book every week. Data gathered through the classroom observations and teachers' teaching notes were used to study the changing attitudes of the teachers towards using technology in their classroom teaching. Informal interviews as well as responses from teachers during meeting in relation to the use of ICT by the teachers were noted as field notes. A simple questionnaire was administered to find out:

i. the language teachers' perception and self-evaluation of their ICT competency skill
ii. the frequency of ICT integration in teaching

iii. teachers' opinion about students' learning with ICT
iv. teachers' needs for ICT training
v. issues faced by teachers in integrating ICT in their teaching
vi. suggestions to fulfil the integration of ICT in their teaching

The SSQS survey form for teachers is provided by the Ministry of Education, Malaysia. The survey aims to find out two major focus areas:

1. Utilization of ICT in terms of ICT integration in teaching and learning
2. Human Capital development

Utilization of ICT includes the time used for integration of ICT-based teaching materials by teachers in teaching and learning; usage of Learning Content Management System; usage of electronic tools (email, SMS, online forum, chat, etc.) for teaching and learning; usage of educational TV content; usage of education technology equipment (other than computer and TV) such as overhead projector (OHP), slide projector, interactive whiteboard, radio or visualise; usage of internet by teachers for seeking information in teaching and learning.

Human Capital development focus area includes ICT competency level of teachers; number of ICT-related courses or workshops attended by teachers in the last three years; number of in-house training courses conducted by teachers; and frequency of dissemination of information regarding ICT by teachers.

Data Analysis

Qualitative data were gathered through the methods mentioned above. The data analysis was carried out guided by qualitative research literature (Merriam, 1998; Creswell, 2005; Strauss and Corbin, 1998; Miles and Huberman, 1994). Seidel (1998) explained that the complex and rigorous practice of qualitative analysis data (QDA) has a simple foundation which comprises three parts: Noticing, Collecting, and Thinking about interesting things. Hence, this paper was written based on the writer's three and a half years (2009, 2010, 2011 and 2012) of observations, reviewing documents (teachers' record books and SSQS survey forms), and talking to the teacher using the foundation summarised by Seidel (1998). The following discussion is based on the analysis of the SSQS survey form provided by the Ministry of Education, Malaysia. The indicators in the form are included as Appendix 1.

FINDINGS AND DISCUSSIONS

Question (i): What is the level of ICT integration of the language teachers?

The findings revealed that there was a growing trend where teachers in SMKBKK were gradually moving forward to integrate ICT in their teaching and learning process. This included the language teachers. However, based on Wan Ali *et al.*'s (2009: 27) 'Level of ICT Integration Approaches in the Curriculum' all the language teachers have attained at least Level 3 but not all the time. In terms of frequency use of ICT in their teaching, 61.5% of the respondents in the questionnaire said that they used ICT once a week; 19.2 % of the language teachers used ICT twice a week and only 11.5% of the language teachers used ICT everyday in their teaching and there were also three (11.5%) language teachers who admitted not using ICT at all in their teaching.

Question (ii): What are the teachers' perceptions towards students' learning when integrating ICT in their language classes?

All the respondents except one agreed that integrating ICT in their classroom teaching enabled students learn better. Among the comments and reasons given as to why they felt students learn better when ICT was used during classroom teaching and learning were:

i. Something different from the normal pedagogical approach
ii. Attractive visuals, sound and illustrations
iii. Students were more focused
iv. Students developed self-directed learning

Question (iii): What are the problems faced by the teachers when integrating ICT in their teaching?

The challenges faced by teachers in integrating ICT in their teaching and learning process were similar to most of the findings in other parts of Malaysia as well as abroad. In SMKBKK, the language teachers highlighted time as the major setback for them to integrate ICT in their teaching. The issue of time constraints was related to the significantly large amount time used to search for and prepare teaching materials, to set up the computer and LCD projector, visualizer, television and troubleshooting whenever there was a technical problem. This was followed by basic facilities such as malfunction sockets, lack of computers and LCD projectors, lack of special rooms for effective teaching using ICT and frequent power interruption. Besides, another main obstacle was the slow internet connection which was also cut-off frequently.

Question (iv): Why do the teachers adopt the technological pedagogical content knowledge change?

Hence, although faced with numerous challenges and hindrances integrating ICT in their teaching, the teachers' beliefs and acknowledgement that integration of ICT in their teaching had positive outcomes had attributed to their changing mindsets and their desire to change their teaching approach. These supporting conditions were further encouraged by teachers' acquisition of ICT knowledge through in-house trainings and workshops on the use of ICT equipments and management of software. The support from the school administration, ICT coordinator, technician and colleagues enabled the language teachers to upgrade their computer skills as well as increase their frequency of ICT use and most importantly, the teachers applied new technological pedagogical content knowledge in their teaching. As Fullan (1991: 131) advocated that the degree of a successful change in schools is 'strongly related to the extent to which teachers interact with each other and others providing technical help'.

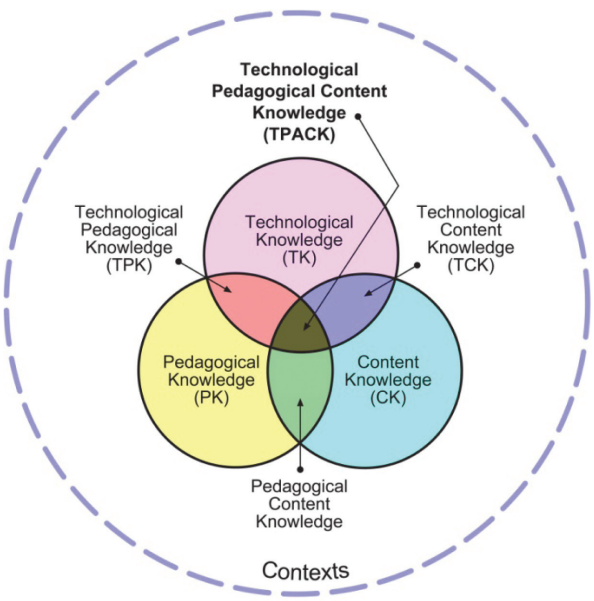

Figure 3 Technological Pedagogical Content Knowledge (TPACK) framework by *Matthew Koehler (2011) (Source: http://tpack.org)*

The desire to change and the teachers' commitment towards the innovation began to intensify in 2010. The writer showed leadership roles by integrating and utilising ICT and electronic tools in school management, staff meetings and disseminating information through school website, email, SMS, info-blast SMS, conducting ICT training courses

together with the ICT coordinator. In addition to the supporting conditions provided by the school administrators, the teachers were also convinced that the technology brings more advantages and minimal disruption to their workflow, as stated in the Diffusion of Innovation Theory (Rogers', 2003 cited by Sahin, 2006).

The aggressive integration of ICT in the teachers' teaching have helped the school earned high scores in the SSQS survey and sustain the five-star rankings namely, the Advanced Plus, the highest approval ranking. In 2012, English language teachers and students developed software for learning grammar and basic sentence structure which is named 'Grasenture'. The software can be used by students to learn English at their own pace. The Kadazandusun language teacher also used Kadazandusun songs downloaded from the internet to teach listening skills. The Malay language teachers developed teaching materials with interesting and interactive visuals and sounds to teach multiple types of language components, too.

CONCLUSION: MOVING FORWARD TO THE FUTURE WITH ICT

"Change is no longer an option it is now an imperative" (RSOG, 2010)

With the advancement of Information and Communication Technology (ICT) teachers who play the role as change agent must ensure that they are never lagging behind and must always stay relevant with the changing times. Teachers' ICT knowledge and the willingness to apply the knowledge in their teaching and learning process will ensure the success of this technology innovation. Nevertheless, the support and commitment of the school principal and administrators serve as the driving force to facilitate the teachers' implementation of ICT integration in their classrooms.

Although SMKBKK faces issues such as limited number of computers, LCD projectors, malfunction electrical appliances, slow or frequent interruptions of internet connections; these issue have not hindered the school's effort to fulfil the government's aspiration that all schools will be Smart School and technology will become an integral part of the nation's learning process. Efforts were taken to acquire more computers from the local community leaders and the school's Parents and Teachers' Association. The distribution of 1Malaysia netbook for approximately 800 students in SMKBKK had also enhanced the teachers' initiatives to incorporate ICT in their teaching. Apart from that, the school had allowed a network service provider to set-up two routers in the school so that the students could access the internet through the broadband service provided in school at a very low and affordable rate.

In conclusion, now having attained a five-star ranking based on the SSQS survey, it is imperative for the school to sustain this innovative change. In order to do so, the writer has to use smart strategies to ensure the sustainability of the successes. The vision and aspiration of the writer in this school to create a learning organisation is conveyed through

the school's corporate slogan: *We continue to learn and grow together for excellence.* The aspiration is translated into actions through various initiatives. Among them are creating efficient working teams of teachers in the school; giving due recognition to teachers for their positive effort; making teachers gain ownership of their innovative approaches in teaching by creating a platform for them to share their best teaching practices and providing them opportunities for further professional developments. Finally, the staffs in SMKBKK have always held on to a very simple principle: *Don't give reasons why you can't but give reasons why you can.*

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APPENDIX 1

KETERANGAN BAGI SETIAP INDIKATOR SMK BANDARAYA KOTA KINABALU (2010 – 2012)

SMART SCHOOL INDICATORS

Nama Indikator	DOMAIN	Keterangan Indikator *Indicators*	2010	2011	2012
P1	**Penggunaan ICT (40%) / UTILIZATION**	Penggunaan aplikasi berasaskan ICT dalam pentadbiran dan pengurusan sekolah *Usage of ICT-based applications by administrators in school management*	5	5	5
P2		Kekerapan penggunaan modul WSMS dalam pentadbiran dan pengurusan sekolah *Frequency of usage of Web-based School Management System by administrators in school management*	2	2	3
P3		Kekerapan penggunaan peralatan ICT selain komputer oleh pentadbir *Frequency of usage of ICT equipment other than computer by administrators in school management*	5	5	5
P4		Kekerapan pentadbir menyebarkan maklumat menggunakan peralatan ICT *Frequency of usage of electronic tools (email,SMS,etc.) for dissemination of information by administrators*	5	5	5

P5	**Penggunaan ICT (40%) / UTILIZATION**	Jangkamasa menintegrasi perisian kursus (TLM) dalam P&P *Integration of courseware or ICT-based teaching materials by teachers in T&L*	5	5	5
P6		Kekerapan penggunaan LCMS dalam P&P *Usage of Learning Content Management System (LCMS) by teachers in T&L*	5	5	5
P7		Kekerapan penggunaan bahan TV pendidikan dalam P&P *Usage of Educational TV content by teachers in T&L*	5	5	5
P8		Kekerapan penggunaan peralatan ICT selain komputer oleh guru *Usage of ICT equipment (other than computer& TV) by teachers in T&L*	3	3	3
P9		Kekerapan pengguna internet oleh guru dalam P&P *Usage of internet by teachers for seeking information in T&L*	4	4	5
P10		Kekerapan penggunaan bahan berasaskan ICT oleh guru *Usage of ICT-based content by teachers to develop new teaching materials*	4	5	5
P11		Kekerapan penggunaan komputer oleh murid semasa waktu persekolahan *Student-PC contact hours during school hours for any subjects*	4	4	5
P12		Kekerapan penggunaan komputer oleh murid selepas waktu persekolahan *Student-PC contact hours after school hours for learning purposes*	4	4	5
P13		Kekerapan penggunaan Pusat Sumber / Pusat Akses untuk tugasan berasaskan ICT *Usage of Resource Centre / Access Centre for ICT-related work*	3	4	4
P14		Kekerapan anda mengemaskini aktiviti dan data oleh guru ICT dalam modul-modul dalam WSMS *Update of activities and data on the relevant modules by the IT Coordinator in Web-based School Management System*	3	3	3
P15		Kekerapan mengemas kini aktiviti dan data dalam laman web sekolah *Update of school portal by the IT-Coordinator*	5	5	5
M1		Tahap Kemahiran ICT Pentadbir sekolah *ICT competency level of Administrator*	5	5	5
M2		Pensijilan ICT(anjuran kerajaan / Swasta) Pentadbir Sekolah Number of ICT-related courses attended by Administrator in the last 3 years	0	5	5

M3	**Modal Insan (40%) / HUMAN CAPITAL**	Aktiviti perkongsian ICT dengan komuniti setempat *Frequency of ICT Smart-partnership programme with community*	5	5	5
M4		Kursus dalaman berkaitan dengan ICT yang dijalankan di sekolah *Number of in-house ICT training courses conducted*	2	2	2
M5		Kekerapan Pentadbir Sekolah menyebarkan maklumat berkaitan ICT *Frequency of dissemination of information regarding ICT by Administrator*	5	5	5
M6		Kekerapan program Pengurusan Perubahan bagi tujuan membudayakan penggunaan ICT di sekolah *Frequency of change management conducted by Administrator*	5	5	5
M7		Bantuan kewangan, latihan, perkakasan ICT dari pihak luar *Funding, assistance, training and ICT equipment from the community*	3	4	5
M8		Bilangan program-program inovatif yang dilaksanakan di sekolah untuk meningkatkan pembudayaan ICT *Number of innovative programmes conducted in schools in promoting ICT culture*	5	5	5
M9		Tahap kemahiran ICT guru *ICT competency level of teachers*	4	4	5
M10		Tahap kemahiran tambahan guru *Additional ICT competency level of teachers*	3	4	4
M11		Kursus berkaitan ICT (anjuran kerajaan atau swasta) yang dihadiri guru dalam 3 tahun *Number of ICT-related courses attended by teachers in the last three years*	1	4	5
M12		Bilangan kursus dalaman berkaitan ICT yang dijalankan oleh guru di sekolah dalam tahun semasa *Number of in-house ICT training courses conductedin the current year*	2	4	5
M13		Kekerapan guru menyebarkan maklumat berkaitan ICT *Frequency of dissemination of information regarding ICT*	5	5	5
M14		Tahap kemahiran ICT Guru penyelaras ICT *ICT competency level of IT Coordinator*	5	5	5
M15		Jenis pensijilan ICT (anjuran kerajaan atau swasta) yang diperolehi guru ICT dalam 3 tahun *Number of ICT-related courses attended by IT Coordinator in the last three years*	5	5	5

M16	**Modal Insan (40%) / HUMAN CAPITAL**	Bilangan kursus dalaman berkaitan ICT dijalankan oleh guru ICT *Number of in-house ICT training courses conducted by IT Coordinator*	3	3	3
M17		Kekerapan guru ICT menyebarkan maklumat berkaitan ICT *Frequency of dissemination of information regarding ICT by IT Coordinator*	5	5	5
M18		Kemahiran ICT murid *ICT competency level of students*	5	5	5
M19		Kemahiran tambahan ICT murid *Additional ICT competency level of students*	5	5	5
M20		Bilangan sumber murid mendapatkan kemahiran ICT *Number of sources students refers to for ICT-related knowledge*	4	4	5
A1	**Aplikasi (10%) / APPLICATION**	Sekolah mempunyai modul/aplikasi pengurusan yang digunakan di sekolah *School must have modules for school management*	5	5	5
A2		Sekolah mempunyai system pengurusan isi kandungan pembelajaran *Must have application for the school*	5	5	5
A3		Sekolah mempunyai perisian untuk pembangunan bahan pengajaran dan pembelajaran *Must have a system to manage learning content for teaching and learning*	5	5	5
A4		Bilangan perisian kursus/bahan P&P berasaskan ICT *Must have software for the development of teaching and learning materials*	5	5	5
A5		Kekerapan mengemaskini laman web sekolah *Frequency in updating school website*	5	5	5
A6		Kemudahan emel di sekolah *Must have an email application for the school*	3	5	5
I1	**Infrastruktur (10%) / INFRASTRUCTURE**	Bilangan komputer yang berfungsi *Number of functioning computers in the school*	1	1	1
I2		Nisbah computer dengan murid *Computer:Pupil ratio*	5	5	5
I3		Nisbah computer dengan guru *Computer / Notebook: Teacher Ratio*	5	5	5
I4		Nisbah bilik darjah dengan LCD Projektor *LCD projector: Class ratio*	5	5	5
I5		Bilangan lokasi yang boleh akses computer *Accessible computer locations*	5	5	5
I6		Peratus Komputer tidak berfungsi *Percentage of computers not working*	5	4	5

I7	**Infrastruktur (10%) / INFRASTRUCTURE**	Capaian rangkaian setempat (LAN) dan internet di sekolah *Local Area Network connectivity*	1	3	2
I8		Gangguan semasa mencapai SchoolNet *Interruption in SchoolNet connectivity*	5	0	0
I9		Capaian internet di sekolah *Internet accessibility*	5	5	5
I10		Kekerapan penyelenggaraan komputer/notebook di sekolah *Maintenance activity*	4	3	3
		MARKAH SSQS (%) / *SSQS Marks* (%)	**81**	**86**	**90.8**

Nota: Tiada data detail tentang keterangan setiap indicator dari tahun 2008 (3 bintang) & 2009 (4 bintang).
Note: There is no detail data for each indicator for years 2008 (3 star-rating) and 2009 (4 star-rating).

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The Development of the Writing Portal (TWP) to Support ESL Pre-Service Teachers' Writing Needs

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ABSTRACT

This study reports on the 'developmental' phase of an initiative to develop and evaluate a prototype E-learning portal, known as The Writing Portal (TWP) to support the writing needs of English as a Second Language (ESL) pre-service teachers in an institute of teacher education in Malaysia. The portal aspires to complement the five stages of the writing process that students have to embark on in accomplishing their written coursework. The web portal contains categorized links to evaluated ESL resources useful for ESL writing process, and integrates web 2.0 tools such as blogs (as writing database for learners), discussion board, live chat, bulletin boards and vote polls. The design is based on results from the analysis phase conducted earlier on learners' attitudes and preferences, and analysis of content and context. It is also inspired to optimize the benefits that each technological tool could offer. To develop the web portal, an open source web development tool Joomla! 2.5 is used on Windows platform, and all features of the web portal are developed by installing non-commercial plug-in modules available on Joomla! website. All participants are given passwords to gain access to the portal where they are provided with writing tasks to experience and test the usability and functionality of the portal in relation to their writing task.

Keywords: E-learning, pre-service teachers, academic writing skills, Web 2.0 tools, personal learning environment

INTRODUCTION

The Writing Portal (TWP) is a prototype e-learning portal developed with the purpose to provide student teachers in a Teacher Education Institute a way of accomplishing writing tasks via a single web portal. Architectured on the ideas of a Personal Learning Environment (PLE) which recognizes that learning is personal and self-directed, social, open, emergent, and is driven by knowledge-pull (Chatti, Jarke, & Specht., 2010), TWP is designed as a 'one-stop centre' for the pre-service teachers with appropriate tools for academic writing within a flexible and supportive environment. TWP offers various

benefits including access to various reliable ESL resources, a platform for sharing and collaboration, and exposure to web 2.0 technologies which are now highly regarded as a must in education. The portal features eight main sections: (1) links to evaluated free ESL resources grouped into several categories, (2) individual portfolio and public blogs for users as writing database, (3) chat room, (4) forum or threaded discussion, (5) polling, (6) news and announcements to share latest updates, (7) latest activity as a way of looking at users' activities and alerts to the users, and (8) user management system. The 3P model (Chatti *et al.*, 2010) shapes the design of TWP to complement all stages in writing process: planning/pre-writing, drafting, revising, editing and publishing.

BACKGROUND OF THE STUDY

Teacher education is an integral part of the education system in Malaysia. Tawau Teacher Education Institute is one of many campuses of Teacher Education Institutes under the Ministry of Education which offers training and academic programmes to pre-service teachers, in selected areas such as science education, arts education, special education, remedial education, and physical education since 2007. The programmes range from certificates, diplomas and bachelor degrees. In mid-2010, the institute welcomed its first group of students majoring in ESL education, and two more groups in mid-2011 to complete five years and a half of programme duration.

The unfortunate reality, however, is that the Language Department is faced with several challenges in providing academic support to its ESL students due to lack of resources predominantly insufficient number of lecturers to teach and accommodate students' personal needs, and lack of information resources for students to use to fulfill their academic needs. Earlier studies conducted (Noraini, Caroline & Zilla, 2010; Noraini, Lee & Tan, 2011) based on document analysis of students' written assignments over three semesters and interviews with the Teaching English as a Second Language (TESL) students and instructors at Tawau Teacher Education Institute revealed that most of the student teachers lacked the awareness of free scholarly information available on the internet, published by reputable organizations, universities or publishers. Further probing also revealed that the student teachers:

- relied heavily on the internet for information resources
- used unreliable sources to support their academic writing
- had difficulties in initiating their writing as they did not know where and how to craft their essays
- lacked peer collaboration in performing their writing assignments
-

The students also reported many challenges when writing, such as being overwhelmed by large volume of information, poor ability to evaluate information and to cite sources, proofreading and editing in writing and many more. When quizzed what might be of help, most students wished to have a one-stop centre or a resource point that

can guide them through their writing process. The language instructors on the other hand suggested that a platform for sharing and collaboration be provided so that students and lecturers can communicate more frequently and effectively.

In response to these challenges, the researchers took the initiative to design and develop an e-portal. The plan was to explore with the use of open-source software, Joomla! and web 2.0 tools to develop a web portal as an integral supplementary platform to engender the development of academic writing skills. In addition to providing useful related external links to free ESL resources and a writing database, the e-portal would enable students to interact with one another via a built-in live chat and forum/ discussion board, where individuals could discuss, share ideas, send text messages and e-mail messages. Individual and public blogs would also be created for each student to store, retrieve, create, edit, share and discuss about their writing. This would allow easy storage and access to their writing electronically. To ensure privacy, only students who are registered in the portal could have access to the information and communicate with other classmates. As administrators, we also wanted the portal to be equipped with feeds tools which serve as log files to track user activities. Taking on board all these ideas, The Writing Portal (TWP) was developed based on the instructional design model of ADDIE. The ADDIE model consists of five phases of analysis, design, development, implementation and evaluation. TWP will later be evaluated on its usability, and how it supports collaboration and scaffolding among students in all stages of writing process.

OBJECTIVES OF THE WRITING PORTAL (TWP)

Portal is a gateway that is a major starting point for users when they get connected to the internet or the one that users have a tendency to visit as an 'anchor site' that hosts content from multiple web sites (Singh & Mahajan, 2010). In other words, a portal is a framework for a website that brings together information from a variety of sources, and to offer everything under one roof. A web portal can also be defined as a website that aggregates an array of content and provides a variety of services including search engines, directories, news, email and chat rooms. Portals have evolved to provide a customized gateway to web information, where personalization and customization are also possible.

TWP will be a dynamic portal where the content and layout may be subjected to change at any time according to users' needs, such as the lecturers and students' needs. The main aim of TWP is to fulfill the writing needs of the ESL students and instructors at Tawau Teacher Education Institute. As such, its objectives are to:

i. collect, aggregate, and promote the use of reliable ESL resources
ii. provide support for writing by creating a platform for collaboration and sharing of ideas
iii. provide easy, reliable access to a variety of disparate information services, and
iv. satisfy students' writing needs in a simple, convenient and personalized way

LITERATURE REVIEW

Research in ESL context is indeed very broad, especially related to technology. Computer-assisted language learning, also known as CALL, is not the only area/discipline that represents the role of technology in language learning, but other areas or concepts such as computer supported collaborative learning (CSCL) (Dillenbourg, Sanna & Fischer, 2009), computer-mediated communication (Handley, 2011), e-learning (Murugaiah & Thang, 2010), web-based learning (Nakamaru; 2011), synchronous learning (Chamberlain, 2010) and asynchronous learning (Peng, 2010) have also contributed to ESL research. The roles of web 2.0 technologies were often featured in most of the mentioned studies, and support for constructivism is apparent where the environments feature constructivist elements such as engaging learners in activities to the discipline in which they are learning; providing for collaboration and the opportunity to engage multiple perspectives on what is being learned; supporting learners in setting their own goals and regulating their own learning; and encouraging learners to reflect on what and how they are learning. However, research on designing and developing web portal to support constructivism is very rare in ESL context, as opposed to other areas such as science education (Othman Talib, Matthews & Secombe, 2005) and educational technology (Wah, 2007).

Research on the use of web 2.0 tools in writing has also been explored. In fact, several doctoral dissertations were found to describe the potential benefits of Web 2.0 in writing. Zhao (2010) explored extensively how YouTube, Google Docs, and blogs can be used in process writing. Another study by Sarieva (2007) using mixed-design examined the use of live chats, e-mail, and electronic bulletin boards in writing process. Journal articles in recent years also show the trend of using web 2.0 in facilitating writing: Steven *et al*. (2008) on tags, blogs and social networking, Arslan and Sahin-kizil (2010) on blogs, Elola and Oskoz (2010), Lin (2011), Pifarre and Fisher (2011) and Woo (2011), on wiki, Brodahl, Hadjerrouit and Hansen (2011) on Google Docs and EtherPad, and Kessler, Bikowski and Boggs (2012) on Google Docs. Other researchers such as Goodwin-Jones (2008) and Bromley (2010) also attempted to describe which web 2.0 tools would be beneficial for writing.

However, most of the studies are either using a single tool, or using multiple tools separately. There is no attempt taken so far to see what would happen if multiple tools are integrated into a single portal to facilitate students to use them to write. This means that students will have a starting point to embark on their writing journey. Nevertheless, recent studies in the last five years, though not in writing specifically, have seen an increasing interest in Personal Learning Environment (PLE). Ebner and Taraghi (2010) described PLE as *'an environment where the distributed resources, tools and applications are all integrated in one platform and customized by the individual learners according to their actual needs'*. PLE itself is not an application, but may be regarded as a concept, or a vision of learning (Chatti *et al.*, 2010). Also characterized with PLE is the use of MashUp concept or the use of several or many tools, existing ones or self-developed, in a single learning environment (Ebner *et al.*, 2011; Ivanova & Alam, 2010; Taraghi, Ebner & Schaffert, 2009).

Many PLE projects especially in higher education have been implemented. For instance, Cann *et al.* (n.d.) reported that in a project undertaken in University of Leicester, a PLE was developed by incorporating Google reader (RSS), delicious (social bookmarking), Google documents (word processing), Flickr and Wordpress/Wikispaces (blogs). In the University of Graz, a PLE was developed by integrating various widgets such as Learning Management System (LMS) widgets, Learning Objects (LO) widgets, Blog widget, Twitter widget, RSS Feed Reader widget, Google Maps widget and USTREAM Widget (Ebner & Traghi, 2010). ELGG, on the other hand, is a PLE software developed by David Tosh. It is a web publishing application that combines weblogging, e-portfolios, and social networking 'designed to promote learning through sharing of knowledge, conversation, and reflection in a social/academic setting' (Campbell, Amman & Dieu, 2005).

Sarieva (2007), in her dissertation, contended that most of the research have been focused on revising and editing which are the later stages of the writing process, and there is a limited body of research on the first two stages of the writing process: pre-writing/ planning and drafting. Thus, this TWP will attempt to address all stages of writing process by integrating multiple Web 2.0 tools into a single portal. Tool or product development is another area that receives much attention. This is because innovation is really valuable in optimizing learners' potential and achieving learning goals. In education, ADDIE is probably the most utilized instructional model in the design and evaluation of teaching and learning tools. This model or guideline is based on five stages: Analysis, Design, Development, Implementation and Evaluation. Parsons (2008) found that ADDIE is a standard model used in the development of online learning in higher education in Malaysia. Her study utilized Delphi techniques in getting instructional design experts in higher education regarding the best practices in instructional design. Wang (2011) developed an online instructional sequence for a culinary art programme using ADDIE. The researcher employed a quasi-experimental design for the study. Another researcher, Singh (2009) also used ADDIE to develop a web-based course for the teaching and learning of metacognitive strategies. Therefore, TWP will also be developed based on the same guidelines.

THEORETICAL FRAMEWORK

Web 2.0 applications have the great potential to engage and involve learners with technology in learner-centred and collaborative learning environments and encourage the active participation of learners (Chiou, 2011). Therefore, social constructivism best fits as the theoretical framework of this study as it draws on social context such as interactions, collaborations and role of communities for learning to occur. The founder of the learning theory, Vygostky believed social interaction was an integral part of learning, along with cognitive, dialogue, culture, inner speech, and the zone of proximal development (Mathis, 2011). Using the concept of zone of proximal development (ZPD), Vygotsky highlighted the role of 'more capable others' (MKO) in facilitating

learning process. The idea of the leap forward in learning with the help of a "more knowledgeable other" (MKO) is a useful one to explain a difficult process, and allowed the idea of a scaffold for learning. Peña-López (2012) brings Vygotsky's ideas right up to date, arguing in his blog themed "Personal Learning Environments and the revolution of Vygotsky's Zone of Proximal Development" that a PLE can take the place of the MKO, extending the ZPD significantly.

In the development of TWP, scaffolding is given due thoughts during the planning and design stage of the portal. According to Kebaetse (2010), scaffolding is an instructional strategy in which the external support is provided to the learner in person or through artifacts to enable achievement of learning goals and tasks within the zone of proximal development until the learner can independently perform the task. In TWP, the use of scaffolding will be seen in the use of external links to evaluated ESL resources to provide a starting point to students. Besides, students will also be provided a platform for collaboration with peers and lecturers to help with their writing until they can finally write independently. The role of peer feedback/review, and collaborative writing, be they individual, pair work or group work (Brodahl *et al*, 2011) will be main elements of TWP. Students' writing journey will be guided by the single portal, TWP throughout the five stages of writing process. In short, social constructivism, through its basic premise of learners' development through social interactions, is pivotal as collaboration is introduced in the study and serves as framework for the design of TWP, which is hoped to induce students' participation and learning in writing.

The three main principles in a learning model that a Personal Learning Environment (PLE) should ideally be based on forms the overarching framework of the TWP, i.e., personalization, participation, and knowledge pull (Chatti *et al.*, 2010). According to Chatti *et al.* (2010), personalization should occur for the learning experiences, by taking into account learner differences. Participation, on the other hand, puts the learner at the centre of PLE, not just by being part of the group or community, but establishing personal knowledge network (PKN). Finally, knowledge pull approach is by giving learners the opportunities to access to various types of knowledge resources. The figure below shows the framework of this study.

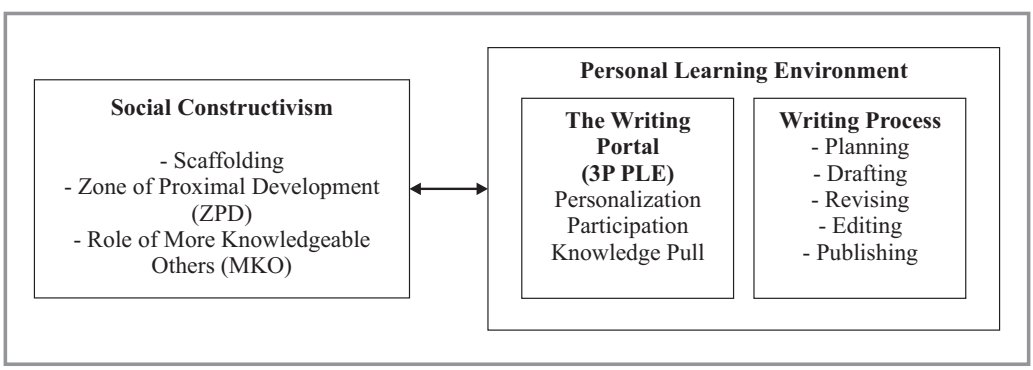

Figure 1 Research framework

TWP ARCHITECTURE

The portal is developed using Joomla! (a free Content Management System), and installed on a local host. It is an open-source software and has great community support that is beneficial especially for developers with minimal technical knowledge. The portal is not hosted yet as it is still under the development stage. Development is possible as it is offline-enabled, and there are non-commercial modules or plug-ins that support the functions of Web 2.0 tools made available in Joomla! community. Below is the screenshot of TWP that is still under development, but already plugged-in with most planned features such as feeds, chat and polling. A snapshot of the TWP is shown in Figure 2.

Figure 2 A full-view snapshot of TWP

TWP DESIGN AND CONTENTS

TWP comprises of three-column layout, using a free Joomla! CSS template, to avoid clutter and enable simple design. The Writing Portal is divided into seven main sections as the following:

i. External links to evaluated ESL resources: links to information about online journals, books, theses and dissertations, which are freely available on the web and grouped into eight categories. All of these resources were evaluated based on set criteria adapted from (Calkins & Kelley, 2007) such as credibility, accuracy, relevance, support and free. In addition, the list is also approved by the Subject Matter Experts (SMEs) at the study setting. Figure 3 shows the snapshot of how the links are presented in the portal:

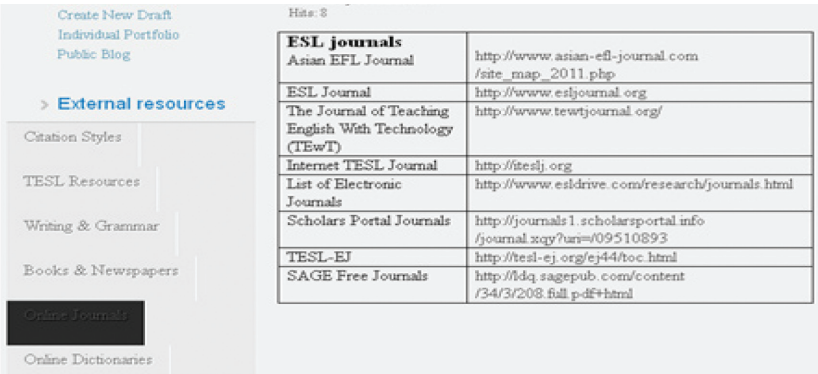

Figure 3 A snapshot of links in the online journals category

The number of links and the number of categories may increase or reduce depending on users' request and suggestions. Some of them are discussed below:

a. Online database: Under this category, a total of ESL databases are included. Some of the important databases are:
   - ERIC (www.eric.ed.gov) – a database where articles, research papers, and other documents pertaining to education are stored and retrieved.
   - ProQuest Open Database (http://pqdtopen.proquest.com): a database that offer access to free journals in ProQuest

b. Online Journals: Under this category, links to journals in ESL available in the public domain are given.
   - Asian EFL Journal (www.asian-efl-journal.com)
   - ESL journal (www.esljournal.org)
   - Internet TESL Journal (http://iteslj.org/)
   - Directory of Open Access Journals (www.doaj.org). This link covers free, full-text and scholarly journals in all subjects and languages. There are thousands of journals in the directory.
   - SAGE free journal (http://ldq.sagepub.com/content/34/3/208.full.pdf+html)

c. Online Theses and Dissertations: Students may want to look at samples of academic writing which is essential in their studies.
   - University Malaya Repository of Theses (http://dspace.fsktm.um.edu.my)
   - South Florida University (http://scholarcommons.usf.edu/etd/)

d. E-books, Magazines and Newspapers: facilitates access to thousands of books that are freely readable over the internet.
   - E-books by Bartleby (http://www.bartleby.com/)

- Online newspaper (http://www.onlinenewspapers.com/)
- Internet Public Library (http://www.ipl.org)

e. Online dictionaries: links to great online dictionaries for students to use.
- ESL dictionary (http://esldictionary.org/)
- The Free Dictionary (http://www.thefreedictionary.com)
- Merriam-Webster Online Dictionary (http://www.merriam-webster.com/dictionary)

f. Grammar and Writing Resources: links to support for writing mechanics, style, grammar, and proofreading.
- Types of Writing (http://www.kidskonnect.com/subject-index/20-language-arts/350-writing-styles.html)
- Essay Writing (http://esl-voices.com/writing-lab/essay-writing/)
- Purdue Online Writing Lab (http://owl.english.purdue.edu/owl/)
- Writing Lab (http://annex.ncwc.edu/writing_lab/ncwc/esl.htm)
- Grammar Editor (http://ed.grammarly.com/editor/view?f=1)
- Grammar Editor (http://bonpatron.com/en/)

g. Citation Styles: resources to guide students in citing resources accurately and appropriately.
- Basics of APA style (http://flash1r.apa.org/apastyle/basics/index.htm)
- MLA style (http://www.docstyles.com/library/mlalite.pdf)
- Citation Generator (www.citefast.com)
- Citation Generator (www.citeforme.com)
- Web Evaluation: Guides to help students evaluate internet resources.
- Evaluating Internet Resources (http://eduscapes.com/tap/topic32.htm)
- Web evaluation (http://www.multcolib.org/homework/webeval.html)
- Writing Database: Every registered user gets his or her individual and personal Weblog. The users will also be able to view, edit, comment, store and retrieve the writing that they have done. Two features are provided such as individual portfolio and public blog. For individual portfolio, users have the options whether or not to share their writing, while public blogs allow everyone to access them. Both features are comments-enabled, which means users get to post their insights and thoughts about the piece of writing. Figure 4 shows how writing database is featured in TWP.

ii. Forum/ Threaded Discussion: This asynchronous technology will offer flexibility and opportunities for registered users to post questions or raise issues pertaining to different issues sort into categories. They also get to suggest other links/suggestions for the improvement of TWP. Snapshots of the forum are shown in Figure 5.

iii. Chat: This synchronous feature will allow users to engage in conversation in real time regardless of topics. This feature is very simple and is hoped to attract users with the use of emoticons as shown in Figure 6.

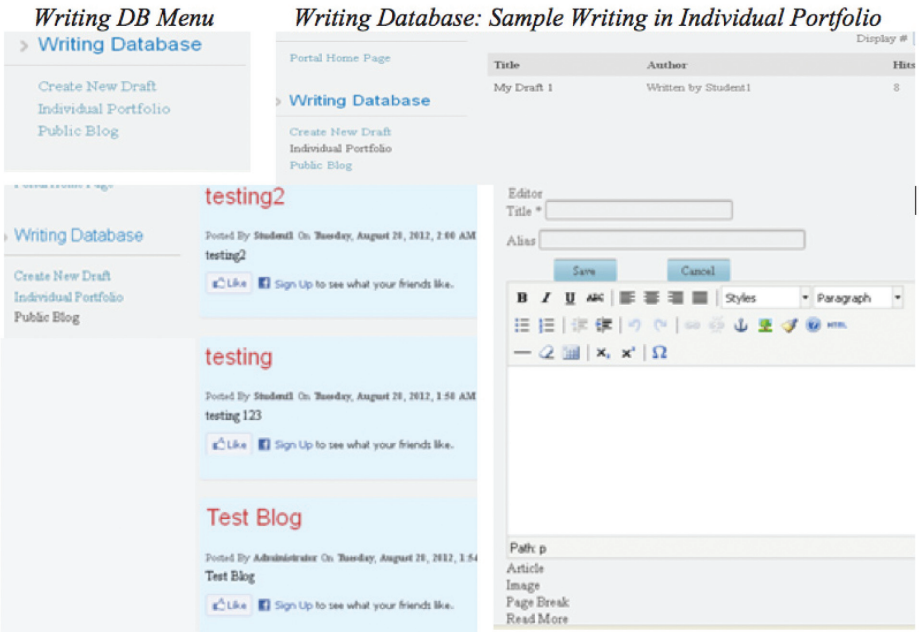

Figure 4 Snapshot of writing database and its features

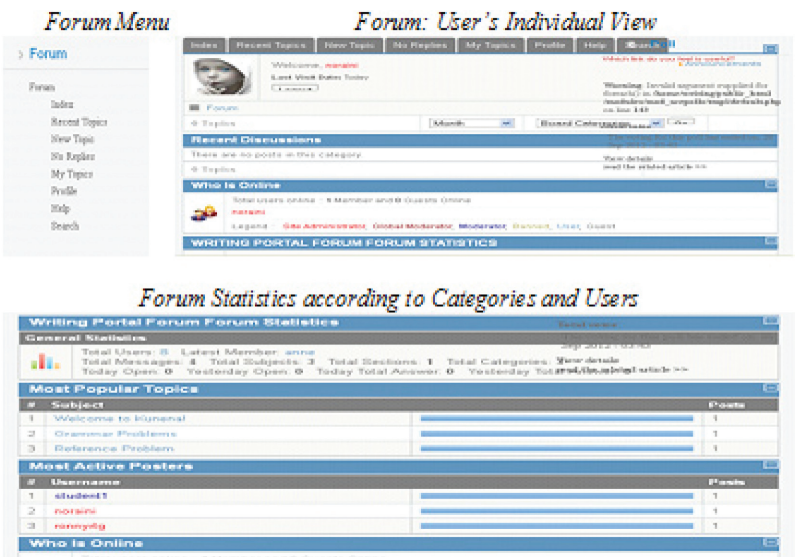

Figure 5 Snapshot of forum/ discussion board

Figure 6 Snapshot of chat

iv. Latest Activity: This tool enables users to see recent activities in the portal such as edited articles. It will also serve as the log files of users' activity which will serve as data for this study. The log files will also be generated in the administrator panel as shown in Figure 7.

Figure 7 Latest activity and log file

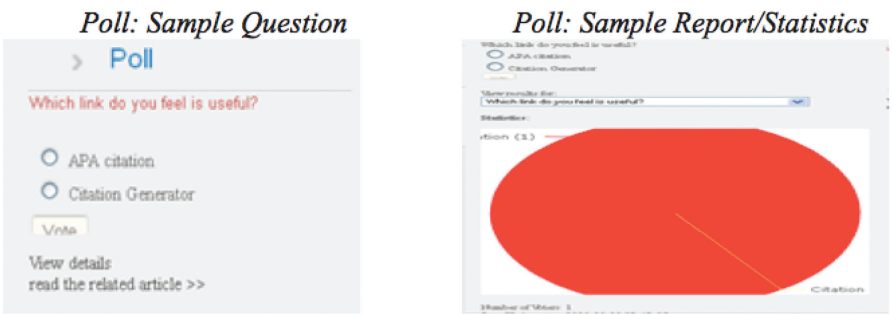

Figure 8 Snapshot of poll in TWP

v. Polling: This feature will be used to get users' opinions on improvement / suggestions related to TWP (Figure 8).

vi. Important Toolbar: Figure 9 shows the snapshot of toolbar that contains icons and links to sites and services that students are attracted to such as Facebook, Twitter, RSS feeds, MySpace, Google Bookmarks, Google Plus One and LinkedIn.

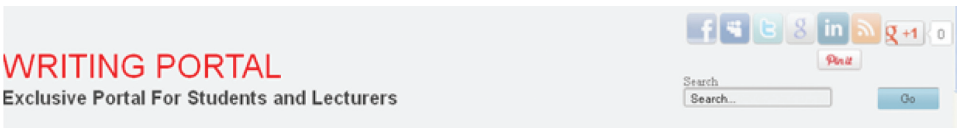

Figure 9 Important toolbar

vii. Login Form: A login form is also created so that some features are only accessible to registered and approved users as the portal is still under development, and also to give some kind of privacy to students are still new to the portal. The administrator can create user accounts manually or users can create their own by clicking on the button as in the following snapshot (Figure 10).

Figure 10 Snapshot of the login form/ create account for users

TWP AND WRITING PROCESS

TWP is targeted to complement all stages of the writing process. Table 1 shows how each feature in TWP can be used in respect to each writing stage. (The table does not imply the nature of writing process as linear, as it should be recursive. Table 1 will only illustrate how TWP can complement each stage in the writing process)

One feature that is not included in Table 1 is news/announcement as it will be used and updated by the lecturer/administrator of TWP to inform the users of any special news. The latest activity function is notable in each stage as it will alert all users of the other users' activity without having them to check each user's profile individually.

Table 1 The use of TWP in the writing process

Writing Stage	Activity	TWP Features	Description
Planning/ Pre-writing	Generating ideas Locating and evaluating information	i. External Links to Evaluated Resources ii. Forum / Threaded Discussion iii. Chat iv. Polling	Users may want to search for information to generate ideas from various sources. They may also discuss their ideas using forum and chat, and give opinions on the links that they have visited
Drafting	Writing and organizing ideas	i. Individual Blog/Public Blog ii. External links to Evaluated Resources iii. Latest Activity	Users can start drafting and upload it to their blog. They may also want to check how citation can be done properly. Proper use of vocabulary can also be assured if they use online dictionaries.
Revising	Revising the drafts in terms of idea development, organization, and writing style. Collaborating with peers or instructors	i. Individual Blog/ Public Blog ii. Forum/ Threaded Discussion iii. Chat iv. External Links to Evaluated Resources v. Latest Activity	Users may invite others to comment on their writing, or ask questions on how to improve their writing in terms of ideas, structure and organization.
Editing	Editing content to meet the conventions/standard	i. External Links to Evaluated resources: ii. forum/ Threaded Discussion iii. Chat iv. Individual Blog/ Public Blog v. Latest activity	Users may want to proofread their writing using grammar editor, or having their mistakes pointed out by their peers.
Publishing	Publishing	Individual Blog/ Public Blog Latest Activity	Users can upload their final draft on their blog, and decide whether it is for private or public access

CONCLUSION

At present, TWP is still in the development phase. It will soon be implemented with the students to try out the functionality of all tools and links in the portal. Following that, an evaluation phase will be carried out. The evaluation phase includes analyzing qualitative and quantitative data elicited via formative and summative evaluation from all participants. Qualitative data include textual analysis of online discourses, interviews, log files of participants and reports generated by the portal on user activity. The data will be useful in providing evidence of whether the use of the portal really meets the ideals

of Social Constructivism, which essentially inspires the design of the portal. Log files/ user activity report will be used to track students' activities with the intention to see whether they are making full use of the links provided. Online discourses on the hand will yield rich data on the types of support that students/users give or need, and evidence of collaboration in the accomplishment of writing process. Quantitative data include findings from a number of questionnaires adopted from literature which are given to learners in analysis and evaluation phase, and also other participants involved in this study. TWP is hoped to address all stages of writing process and contribute to the gap in writing research. In addition, with the integration of web 2.0 tools in TWP and alignment with important theoretical background, TWP will be beneficial to students especially in providing them with support in accomplishing written tasks.

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CONCLUSION

ACKNOWLEDGEMENTS (if any)

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APPENDIX (if any)

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