



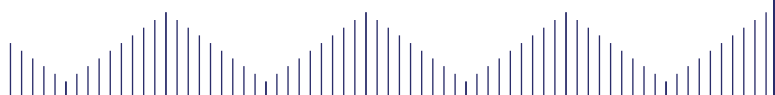
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Effects of Weblogging in English on ESL Students' Writing Apprehension at Universiti Teknologi MARA, Sabah

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ABSTRACT

The affordances of technological advances such as the Internet have changed the way writing is taught and learnt. It undeniably impacts the cognitive and affective states in writing which include one's writing apprehension. Students, who are still in the process of acquiring English as a second language (ESL), commonly experience writing apprehension when writing in English. Thus, this study aims to describe the effects of using the weblog as a medium for essay writing in relation to writing apprehension among ESL students undergoing an Intermediate English course at Universiti Teknologi MARA, Sabah. The quantitative research approach employing the Quasi-experimental design was used in this study. One hundred fifty-five diploma students participated in the experiment with 79 and 76 participants in each of the respective Experimental group and Control group. Writing through blogging was used with the Experimental group, while writing through non-blogging pen-paper method was used with the Control group. Both groups were pre-tested and post-tested with an adapted Second Language Writing Anxiety Inventory (SLWAI) questionnaire. The writing apprehension levels among the ESL students were found to be average. Writing through blogging was found to have insignificant effects on the ESL students' writing apprehension when compared to the writing through non-blogging pen-paper method. This implies that writing through blogging does not necessarily promote reduced writing apprehension and it may be as anxiety-inducing as the pen-paper writing method for the ESL students in the present study.

Keywords: ESL learners, weblogging, writing apprehension

INTRODUCTION

Writing is commonly regarded as a demanding task for most foreign language (FL) or second language (L2) students who often struggle in acquiring the writing skills, and many a time find it to be a very challenging endeavour. Yet, writing is a skill that has to be mastered in order to perform well in courses especially at the tertiary level of education where disciplinary knowledge and understanding are largely exhibited and valued through the medium of writing (Graham & Perin, 2007).

The lack of writing skills among students has often been associated with poor teaching, inadequate curricular requirements, a lack of stringent grading and evaluation, or simply failure on the part of schools and instructors to teach the basic writing skills more effectively (Hanna, 2009). While those are undeniably important factors that contribute to the students' performance and sense of inadequacy in writing, a far greater cause of student inability to write effectively may be due to students' writing apprehension (Daly & Miller, 1975; in Hanna, 2009).

In the Malaysian educational context, the issue of writing apprehension among English as Second Language (ESL) students continues to be an area of interest for research. This study stems from the scenario of ESL students' resistance to writing in an Intermediate English writing course at Universiti Teknologi MARA, Sabah. Observation by the researcher of students' behaviour throughout six years of teaching different ESL groups has raised the awareness over students' common reluctance to writing which includes insufficient text length, poor quality, as well as low and late submission rate of written assignments (Atkinson, 2011; Hanna, 2009).

Writing apprehension is viewed as a problem in writing classes as it has consequences on students' learning experience, and for the decisions they make about engaging in writing activities, and teachers should be able to help learners overcome the debilitating effects of apprehension in view of its influence on students' success in writing (Matsuda & Gobel, 2004). Furthermore, students' apprehension in writing tends to worsen at the university level due to higher expectations of the students' level of writing performance (Nor Aslah Adzmi, 2009). Hence, it is the intention of this study to explore the means in helping apprehensive student-writers

overcome their writing apprehension. One practical means of intervention that is viewed to offer some potential in overcoming the problem of students' writing apprehension is today's Internet-based computer-assisted language learning (CALL) tool represented by the weblog. As such, this research studied the effects of writing through blogging on writing apprehension among university students enrolled in an Intermediate English course at Universiti Teknologi MARA, Sabah campus. The main objectives guiding this study were:

1. To determine the level of writing apprehension among ESL diploma students,
2. To investigate whether ESL writing tasks through blogging has a significant effect in reducing the ESL students' writing apprehension.

In meeting the objectives of this study, the following research questions were formulated and examined:

1. What is the level of writing apprehension among ESL diploma students?
2. What is the effect of ESL writing task through blogging on the scores of writing apprehension before and after intervention for the Experimental group compared to the Control group?
3. Is there any significant difference in the post test scores of writing apprehension after intervention/instruction between the Experimental group and Control group?

In addressing research questions (ii) and (iii), the following null hypotheses were tested in this study:

- H₀₁ There is no significant difference in the score of the writing apprehension test before and after intervention (writing through blogging) for the Experimental group.
- H₀₂ There is no significant difference in the score of the writing apprehension test before and after instruction (writing through non-blogging) for the Control group.

H₀₃ There is no significant difference in the posttest scores between the Experimental group and the Control group in writing apprehension test after intervention/instruction.

LITERATURE REVIEW

The emergence of the “globalisation” phenomena and the Internet revolution in the 21st century makes teaching and learning of writing even more challenging. It is practically impossible to deny the influence of the Internet revolution on the way English is used throughout the world including in the teaching and learning of English Language writing to L2 learners (Kroll, 2003).

Weblogs and Blogging

The weblogs have emerged as a technological tool useful for writing via the Internet and remains the most appropriate and practical platform for encouraging writing despite the various Internet communication medium today (Arena & Jefferson, 2008; Farwell & Kruger-Ross, 2013). A blog consists primarily of text-based entries, or posts, pictures, audio or video, that are published at a specific web address (Norizan & Faridah, 2006) and may be updated as frequent as desired, and are typically intended for the general public consumption as blogs are “personal media with public attention” (Liu, 2008:11). Blog posts are time-stamped and the contents are presented in reverse chronological order (Stauffer, 2002) which makes blogging a unique writing activity in which the frequency and amount of writings can be easily monitored and thus, providing a direct indication of the student’s level of activity in writing.

Writing Apprehension and Resistance to Writing

Based on extensive research in interpersonal communication, writing apprehension has emerged as a distinct form of language anxiety (Cheng, Horwitz & Schallert, 1999). Daly (1978; Liu, 2008) regarded writing apprehension as an individual’s general avoidance of writing and of situations that potentially require some amount of writing, particularly when it involves potential evaluation of that writing. Daly and Hailey (1984; Liu, 2008) identified five situational characteristics that affect the situational

state of writing apprehension which include evaluation, novelty, ambiguity, conspicuousness and previous experience.

The point, 'evaluation', is reflected in Aydin's (2008) and Atkinson's (2011) ideas on fear of negative evaluation which stated that L2 or FL learners often fear any situation that involves evaluation, particularly when they will be evaluated according to standards they are not competent at. This also relates to the idea of 'conspicuousness' when one's ideas, thoughts or actions are subject to public viewing, evaluations and judgements. Meanwhile, a situation that is novel and ambiguous is normally viewed as threatening and induces apprehension (Vasey & Daleiden, 1996; Pappamihiel, 2002). Previous experiences also affect one's perceptions of whether future experience is threatening or non-threatening, and leads to apprehension and determination about future attempts in the same situation (Trang, Moni & Baldauf, 2013).

Hence, writing apprehension is categorised as a dispositional aspect of the writer's affect which is characterized by the writer's general tendency to avoid writing situations, to fear having one's writing viewed and evaluated, and to find writing novel, confusing and unrewarding based on past experiences (Daly & Shamo, 1978:120; Liu, 2008; Reif & Stacks, 1988; Atkinson, 2011).

Overview of Past Researches

While evidence has shown that educational blogging is not a new phenomenon, and many studies have investigated how students have improved their writing via blogs in various countries including Malaysia (Nafiseh & Supyan, 2014), literature on the impact of weblogging on writing apprehension among ESL learners in the Malaysian context in particular, however, appears to be quite scarce to the best knowledge of the researcher. Nevertheless, previous related researches on the use of weblogs and computer-assisted writing tools in relation to writing apprehension suggested mixed results.

A study by Sahin-Kizil and Arslan (2012) on university students' perception of writing via blogging reported students' increased level of motivation and a greater preference for blogging over the traditional in-

class writing instruction. A similar positive result was reiterated in a more recent study by Yang (2013) who found that Chinese EFL non-English major college students gained more confidence in writing and engaged in thinking through blogging. Likewise, Lin, Li, Hung and Huang (2014) in their study on the effects of blogging and pen-paper writing method found that EFL students experienced less writing anxiety when blogging compared to writing using the traditional pen-paper method. A similar positive outcome was reported by Nadzrah, Hafizah and Azizah (2010; Nafiseh & Supyan, 2014) who found that students experienced reduced anxiety and increased self-confidence when the weblog was used as a pedagogical tool in ESL classroom. Likewise, Muhamad (2010; Nafiseh & Supyan, 2014), who studied writing apprehension among students who used the class blog in a language teacher training program, found that the majority of the respondents reported decreased writing apprehension after engaging in discussions via the class blog. Similarly, a study on the use of computer-assisted writing (CAW) medium and its impact on writing anxiety among foreign language learners by Fang (2010) revealed positive outcomes in which learners showed favourable attitudes in writing, became more confident when writing using the computer and experienced less fear of evaluation than in the traditional writing class. These positive results were attributed to the authentic writing environment using the computer which offered much autonomy, reduced peer pressure, time pressure, and minimised teacher control (Bahce & Taslaci, 2009; Jones, 2006).

On the other hand, a research outcome by Chuo (2007) found that the use of WebQuest Writing Instruction (WQWI) program among EFL college students did not affect the students' writing apprehension significantly compared to those who underwent traditional writing classes. Similarly, a study by Kelley (2008) on the impact of blogging on the affective conditions of undergraduates also found that the blogging group did not display a greater decrease in writing apprehension compared to the non-blogging group. Likewise, Lan, Hung and Hsu (2011) who studied the effects of using web-based guided writing instruction also found no significant difference in the younger students' level of writing anxiety when compared to those exposed to the pen-paper writing instruction. Meanwhile, Mohammed (2011) who assessed the effects of web-based pre-writing activities on college EFL students' writing apprehension found that the students' level of writing apprehension increased after the pre-writing treatment, and attributed

this to the pressure in using the multimedia concept mapping in the writing activities. A more recent study by Lin, Groom and Lin (2013) on the use of blog-assisted language learning (BALL) methodology among Taiwanese ESL student writers found that students' blogging activities were inhibited by feelings of anxiety and embarrassment about possible reactions to their work, and that students were not motivated to engage voluntarily in second language blogging activities.

Pennington (2003:289) stated that writing using the computer as the medium led an individual writer to write in a less self-conscious way and with greater engagement, and thus writing with freer mind and less "rewriting anxiety". This idea is coherent with Mortensen and Walker's (2002) claim that blogging encourages spontaneous writing which releases one of the expectations to write a perfect and polished piece of writing. Farwell and Kruger-Ross (2013) further highlighted that blogging fosters a sense of community that allows learners to be more open to constructive feedback and knowledge-sharing. Meanwhile, Kavalienskiene (2010) posited that weblog helps learners to overcome the fear of making errors in writing which causes writing anxiety as "blogs encourage a feeling of time which is different to that felt in traditional academic writing" (Mortensen & Walker, 2002:268) and hence, indirectly reduces the pressure and apprehension often associated with writing.

While a number of studies acknowledged the positive impact of blogging in developing spontaneous, timely and concise expression of thoughts, writing in the weblog also forces one to "confront one's own writing and opinions, and to see them reflected in the words of others" (Mortensen & Walker, 2002:269) evokes the anxiety in write-blogging. The fear of having one's samples writing viewed and ridiculed in the public forum of an Internet blog may inhibit a student writer from writing, and hence, the use of a blogging format in learning to write does not seem to have made writing any easier than learning to write in the traditional ESL writing classroom context (Lin, Groom & Lin, 2013). Besides, Strampel and Oliver (2008) and Instone (2005) suggested that blogging for a broad audience which included the public evoked uneasiness in writing that accentuated the feeling of inability to write among student writers which resulted in eventual avoidance of write-blogging. Song and Yuen (2008) reiterated this idea in which the willingness to write was inhibited by the feelings of boredom

and fear of writing for public viewing among undergraduates who used the weblogs as a reflective learning tool in a Malaysian university.

Pennington (2003) in her review of computer usage in writing summarised that students develop either positive or negative attitudes towards the computer writing medium and the context of writing, which may influence their cognitive and affective response towards English language learning.

METHODOLOGY

This study employed the quantitative approach and adopted the quasi-experimental research method mostly due to subjects that cannot be randomly assigned to groups. As such, two groups were formed without randomisation. It involved random assignment of intact group to treatment, rather than random assignment of individuals to groups in order to keep the existing classroom intact.

Subjects

The subjects of this study were 155 diploma-level students following an Intermediate English course at the university. The students represented five intact classes of an Intermediate English course. Seventy-nine (79) students formed the experimental group that received treatment or intervention in the form of writing through blogging, while 76 students from two intact classes were randomly assigned as the control group that only performed writing through the regular, traditional pen-paper method in this study. All these students had completed a prior Consolidating English course – which covered descriptive and expository essay writing skills, and followed the same Intermediate English course syllabus with the same number of six-contact hour per week. The subjects mainly used their mother tongue as their first language at home and in the campus. English Language was mainly learnt as a subject at the university as stipulated in the course curriculum, and it was rarely used as a medium for writing in their daily life.

Measurements

In answering the research questions, an adapted Second Language Writing Anxiety Inventory (SLWAI) questionnaire by Cheng (2004) was used as a pre- and post-test. It measures the degree to which an individual feels anxious when writing in an L2 based on three components or subscales – cognitive anxiety, somatic anxiety and avoidance behaviour. It contains a total of 22-items all of which are to be answered on a 5-point Likert scale: (1) *strongly disagree*, (2) *disagree*, (3) *no strong feelings either way*, (4) *agree*, and (5) *strongly agree*. This scale was adapted from Cheng's original scale which indicates point-3 as 'Uncertain'. The term '*Uncertain*' was substituted with '*No strong feelings either way*' in this study in the effort to indicate the absence of strong feelings, as previously used in a study by Atay and Kurt (2006), instead of indicating uncertainty or indecisiveness (see Appendix A). The adapted SLWAI was found to be reliable in this study with a Cronbach alpha of .84.

Data Collection Procedures

Prior to carrying out the writing through blogging activity, students in the experimental groups were given a two-hour training session in the computer lab, where they were introduced to the weblog using the Blogger free weblogging software. These students were taught how to access, create, read and post required texts and comments to the weblog, while students in the control group were introduced to the requirement of writing tasks using the traditional regular writing through non-blogging pen-paper mode in the writing classroom.

The subjects in the Experimental and Control groups were pre-tested using the SLWAI questionnaire a week after they had enrolled for the course in order to eliminate other factors which may affect their anxiety level such as the anxiety of following a new course, anxiety over uncertainty about the new course and anxiety in meeting new course mates.

Both the experimental and control groups received similar intermediate-level writing tasks for essay writing which focused on the same type of essays (expository and argumentative), same themes and grammatical points as outlined in the Intermediate English course syllabus.

No attempt was made to differentiate the writing tasks between the two groups in terms of the essay questions and difficulty level.

Throughout the writing activities, both groups underwent similar process in writing (pre-writing, writing, and post-writing), produced multiple drafts and had peers and instructors responded to their drafts of essays. However, the means used in carrying-out the writing process differed between the control and experimental groups. The control group underwent in-class pre-writing activities to brainstorm ideas for given topics, and performed the writing activities as out-of-class tasks using the pen-paper method, and drafts were either submitted to the instructor or shared with classroom peers for feedback before they were revised, edited and resubmitted to be graded. Meanwhile, students in the experimental group underwent in-class pre-writing activities as well, and followed by the process of drafting their essays on their personal weblogs as out-of-class write-blogging activities. These drafts were then published as blog entries for their peers, instructor and the public at large to comment and provide feedback, and after which these drafts were revised, edited and republished. As blog entries are time-stamped, students' writing activities could easily be monitored to ensure the essays had been revised, edited and republished at least once.

Both the control group and experimental group produced a total of four essays whereby each essay was revised, edited and rewritten or republished at least once. These writing activities lasted for eight weeks after which another post-test involving both groups using the same SLWAI questionnaire was administered during the tenth week.

Data Analysis

Data analysis in this study involved the analysis of quantitative data obtained from the SLWAI self-report questionnaires. The Statistical Package for the Social Sciences (SPSS) version 20 was used to perform descriptive analysis and inferential analysis of t-test in this study.

In finding out the distribution of students based on their writing apprehension level before and after treatment, the SLWAI questionnaire was analysed by summing up the respondents' ratings on a five-point Likert

scale of the 22 items. For the negatively worded statements, responses were reversed-scored so that the response indicating the most amount of apprehension was always assigned a value of 5 and the response indicating the least amount of apprehension was assigned a value of 1. Thus, in all instances, a high score represents high apprehension. Based on these scores, subjects were grouped into three apprehension levels determined by the mean and standard deviations (SD) of scores.

A separate paired-samples t-test was used to determine the difference between the pretest and posttest scores on SLWAI for the respective Control group (non-blogging) and Experimental group (blogging). The standard alpha level of $p=.05$ was pre-selected for the level of significance in all t-test in this study as commonly used by educational researchers (Gay, Mills & Airasian, 2009).

A prior independent t-test was performed to compare the overall pretest means for the writing apprehension variable between the Experimental group and Control group to ascertain that both the Experimental group and Control group were equivalent in ensuring the validity of the results (Huck, 2004). With the pre-selected standard alpha level $p=.05$ for the level of significance, the results indicated that there was no significant difference on the SLWAI pretest mean scores (p -value is .524) between the two groups. Hence, both the groups were considered to be equivalent in this study. This qualified for the use of Independent Samples t-test for hypothesis testing of posttest scores on writing apprehension between the two groups to find out whether the posttest scores of writing apprehension were significantly different between these two groups. The standard alpha level $p=.05$ was pre-selected for the level of significance in this independent-samples t-test.

RESULTS

The results of this study are presented based on the research questions. The first research question – What is the level of writing apprehension among diploma ESL students? – was examined through descriptive analysis of data as in Table 1. The students were grouped into three apprehension levels. Scores that were one or more standard deviation above the mean scores were judged to be high-apprehensive, and scores that were one or more standard deviation below the mean scores were judged to be low-apprehensive.

Table 1: Number of Students in Three Writing Apprehension Levels Before and After Blogging/non-blogging According to Rroups

Apprehension Levels	Experimental Group (N=79)		Control Group (N=76)	
	Before Intervention (Pre)	After Intervention (Post)	Before Intervention (Pre)	After Intervention (Post)
High Apprehension (HA)	14 (17.7%)	11 (13.92%)	14 (18.42%)	16 (21.05%)
Average Apprehension (AA)	50 (63.2%)	56 (70.88%)	48 (63.15%)	46 (60.53%)
Low Apprehension (LA)	15 (18.98%)	12 (15.18%)	14 (18.42%)	14 (18.42%)

The results for the experimental group show that the majority of students experienced average level of writing apprehension before (63.2%) and after (70.88%) writing through blogging activities. The pre-blogging result shows that 14 (17.7%) students experienced high apprehension (scores equal to or greater than 79) and 15 (18.98%) students had low apprehension (scores equal to or smaller than 57). After the intervention, there was an equal decrease of 3.79% students who experienced high apprehension (11 (13.92%) – scores equal to or greater than 78), and 12 (15.18%) had low apprehension (scores equal to or smaller than 59). The majority of students had average apprehension level before and after intervention with 50 (63.2%) and 56 (70.88%) students respectively.

The results for the control group revealed that there was an increase of 2.63% in high-apprehensive students after writing through non-blogging activities which was from 14 (18.42%) (scores equal to or greater than 79) to 16 (21.05%) (scores equal to or greater than 78). There was a decrease of 2.62% students who had average apprehension and no change in low-apprehensive students. The majority of students had average apprehension level before and after instruction with 48 (63.15%) and 46 (60.53%) students respectively.

The second research question – What is the effect of ESL writing task through blogging on the scores of writing apprehension before and after intervention for the Experimental group compared to the Control group? – was examined through null hypothesis testing using paired samples t-test. Results from the separate paired sample t-test performed for the Experimental group and Control group are presented in the following Table 2 and Table 3.

Table 2: Null Hypothesis 1: Results of Paired Samples t-test on Writing Apprehension (SLWAI) Test Scores Before and After Treatment for Experimental Group

Posttest	Measure	N	Pretest	t	df	Sig. (2-tailed)
Mean (Std. Deviation)			Mean (Std. Deviation)			
68.51 (10.144)	SLWAI	79	69.41 (10.337)	.520	78	.605

The result obtained for the Experimental group revealed that the mean for the pre-test and post-test scores of the writing apprehension test (SLWAI) was 69.41 and 68.51 respectively as shown in Table 2. There was a slight decrease mean of 0.899 after the intervention. Analysis of the comparison of mean shows that the t-value obtained was .520, and the two-tailed significance value ($p=.605$) was greater than the pre-selected significance value of .05 ($p>.05$), indicating that the difference between the pre-test and post-test scores on SLWAI was not significant. Thus, the results have failed to reject the null hypothesis. The results indicated that there was not a statistically significant difference in levels of second language writing apprehension before and after intervention (writing through blogging) for the Experimental group.

Meanwhile, the results obtained for the Control group show that the mean for the pre-test and post-test scores on the writing apprehension test (SLWAI) was 68.30 and 68.70 respectively as shown in Table 3.

Table 3: Null Hypothesis 2: Results of Paired Samples T-test on Writing Apprehension (SLWAI) Test Scores Before and After Instruction for Control Group

Measure	N	Pretest	Posttest	t	df	Sig. (2-tailed)
		Mean (Std. Deviation)	Mean (Std. Deviation)			
SLWAI	76	68.30 (11.140)	68.70 (9.765)	-.678	75	.500

There was an increase mean of 0.395 after instruction. Analysis of the comparison of mean shows that the t-value obtained was .678 and the two-tailed significance value ($p=.500$) for the pre-test and post-test indicated that $p>.05$, and thus the difference in the scores of SLWAI before and after instruction (writing through non-blogging) for the Control group was not significant. Therefore, the results have failed to reject the null hypothesis. The results indicated that there was not a statistically significant difference in the levels of second language writing apprehension before and after instruction (writing through non-blogging) for the Control group.

The final research question – Is there any significant difference in the post-test scores of writing apprehension after intervention/instruction between the Experimental group and Control group? – was examined through null hypotheses testing using an independent samples t-test as in Table 4.

Table 4: Null Hypothesis 3: Results of Independent Samples T-test on Writing Apprehension (SLWAI) Test Scores after Intervention/Instruction between Experimental and Control Group

Group	N	Mean	Std. Deviation	Std. Error Mean
Post WA Experimental	79	68.51	10.144	1.141
Control	76	68.70	9.765	1.120

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means	
	F	Sig.	t	df
PostWA Equal variances assumed	.021	.886	-.119	153
PostWA Equal variances not assumed			-.119	153.000

Independent Samples Test

	t-test for Equality of Means				
	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
				Lower	Upper
PostWA Equal variances assumed	.905	-.191	1.600	-3.353	2.971
PostWA Equal variances not assumed	.905	-.191	1.599	-3.350	2.968

The mean for the posttest scores on the SLWAI test after intervention and instruction for the respective Experimental and Control group was 68.51 and 68.70 respectively. There was a difference of 0.191 between these groups in which the Control group revealed a higher mean than the Experimental group. The result of comparison of mean after intervention/instruction revealed that the t-value obtained was -.119 and the two-tailed significance value ($p=.905$) for the posttest writing apprehension (SLWAI) test scores indicated that $p>.05$ and thus not significant. Hence, the results have failed to reject the null hypothesis. The results indicated that there

was not a statistically significant difference in the level of second language writing apprehension between the Experimental (blogging) group and the Control (non-blogging) group after intervention/instruction.

DISCUSSION AND CONCLUSION

The term “writing apprehension” commonly refers to the tendency of a person to avoid the process of writing (Cheng, 2004; Daly & Miller, 1975; Hanna, 2009) and it is one of the crucial determinants of success in writing. Hence, language instructors are to find viable ways in helping students deal with their apprehension in writing and weblogging appears to offer the potential in confronting this issue in this technological era.

In the present study, most diploma ESL students had average level of apprehension. The results from null hypothesis testing also indicated that writing tasks through blogging may not have affected writing apprehension in a way that is significantly different from the use of the traditional ESL writing method using pen and paper. In other words, ESL writing task through blogging does not necessarily engender reduced writing apprehension that promotes less resistant writers among second language learners. Hence, the findings contradicted the idea that authentic online learning environment represented by the weblog fosters stress and anxiety-free environment as suggested by Kavalianskiene (2010), Yang (2013) and Lin, Li, Hung and Huang (2014), to name a few. The results were also consistent with the claim by Strampel and Oliver (2008) and Lin, Groom and Lin (2013) that the public nature of weblogging clashes with Alm’s (2009) idea of weblogs as a “safe, protected writing environment” for most L2 writers. Exposure of one’s thoughts in the public space of the weblogs may have made students feel pressured and apprehensive in writing as opposed to feeling comfortable and secure (Farwell & Kruger-Ross, 2013; Kelley, 2008; Lin, Groom & Lin (2013) as well as Song & Yuen, 2008). Therefore, this study suggests that writing through blogging is as anxiety-inducing as writing using pen-paper in the traditional classroom that resulted in the insignificant impact of blogging in reducing the students’ writing apprehension.

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Student Readiness on a Newly-Designed Blended Learning English Language Proficiency Course in UiTM

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ABSTRACT

In the field of education, technology has developed vastly in becoming one of the main media of instruction in schools, institutions or even training programmes. Educators from all over the world are now looking into new implementations in replacing the old conventional way of teaching to enhance a better learning environment among students in this era of globalization. Special attention is now focusing into what is known as a combination of e-learning and face to face learning (F2F) called blended learning. This paper was conducted among 156 Diploma undergraduates of the Universiti of Teknologi MARA (UiTM) Shah Alam, Malaysia which investigated students' readiness of a newly-designed blended learning English language proficiency course under the Academy of Language Studies (ALS). Correlation between students' readiness and their enjoyment going through the new course is also investigated. Findings indicate that Diploma students of UiTM Shah Alam exhibit above-medium levels of readiness toward blended learning and that there is a negative correlation between students' readiness with their enjoyment going to ELC classes. Further recommendations of the research are also discussed in the paper.

Keywords: Blended learning, Student Readiness

INTRODUCTION

Blended Learning

Recently there have been a number of empirical researches investigating in the area of blended learning. The topic has become a major concern, especially in the field of education where teachers, lecturers and instructors question, argue, discuss and experiment on the positive and negative outcomes it may influence teaching and learning environments. Even the term 'blended learning' itself has always been a constant issue to what it actually means (Twigg, 2003). Upon agreement from many researchers, blended learning can be defined as an effective integration of different modes of delivery, teaching and learning styles from an adoption of a systematic approach to the use of technology combined with the features of a face to face interaction (Krause, 2007). Different methods and styles of teaching have its own strengths and weaknesses. Although it seems that the implementation of blended learning has its challenges, weaknesses and risks either from institutions in Malaysia or from other countries, the basic concept still stands as a strong source of instructional method among many more researchers who believe in the imperativeness of students to adapt with the fast pace of technology. According to a study, blended learning is a resourceful methodology that can prop and augment meaningful educational experiences (Twigg, 2003; Garrison & Kanuka, 2004).

Through much research it can be considered that blended learning may provide a number of benefits whether in the area of education, business or even in the corporate industry which include; greater access to a range of appropriate, personalized and individualized learning and teaching resources, greater accommodation and convenience, greater flexibility, cost effectiveness and affordability, greater student and faculty satisfaction, help allay feelings of isolation, anxiety and frustration among learners, encourage participation in class, enhance learning process, improve pedagogical richness of face to face teaching and e-learning, broader opportunities, utilize computer aided assessments and technological adoption, as well as encourage and motivate students through interactive collaboration. (Boyle, Bradley, Chalk, Jones & Pickard, 2003; Dufy & Kirkley, 2004; Moore, 2004; Bonk & Graham, 2005; Sharpe, 2006; Sharma & Barrett, 2007; Stracke, 2007; Joachim & Petra, 2008; Bath & Bourke, 2010; Staker &

Horn, 2011). Taken together, this final group of assertions support the view that a blended learning system can provide strong positive implications to students' learning environment. Although even up until now, the majority of foreign language teaching and learning is still largely conducted toward F2F learning in classrooms, there is a rapid growth in the use of technology which provides language teachers and students with more opportunity in exploring the most suitable mix of teaching and learning styles for a given task. Purcell, Heaps, Buchanan and Friedrich (2013) claim that students nowadays should be introduced with more combination of online learning and traditional classes because they are familiar with technology since they were born. Thus, it is believed that with the combination of both F2F learning and web-based technology, students learning a language can gain more benefit and experience a more quality education.

Furthermore, it is also proven that with the use of a blended learning environment, this can create opportunities for learners in overcoming the problem of applying the language not only in class, but also outside of class since blended learning focuses on the attempt to encourage and develop independent learning or known as 'autonomous learning'. As stated from Motteram and Sharma (2009), cited from Barrs (2011), with the usage of interactive, communicative and collaborative platforms such as the email, instant messaging, wikis, blogs, forums, social-networking sites and virtual learning environments, students learning a foreign language are able to overcome the disconnection of applying the language outside the classroom. The implementation of blended learning may also help teachers and students in overcoming the major problem of time constraints.

Student Readiness

The concept of student readiness in an online environment was introduced in 1998 by Australian researchers known as Warner, Christie and Chow who defined it into three categories; students' preferences for the form of delivery as opposed to face-to-face classroom instructions; student confidence in using electronic communication for learning and, in particular students' ability in the use of Internet and computer-mediated communication; and also the ability to engage in autonomous learning (Hung, Chou, Chen, & Own, 2010). Subsequently, more and more researchers around the world began to further develop extensive and intensive

theories on student readiness in the blended learning environment. In 2010, Hung, Chou, Chen and Own developed and validated a multidimensional instrument for college students' readiness on online learning known as the Online Learning Readiness Scale (OLRS) that was categorized into five dimensions including; self-directed learning, motivation for learning, computer/Internet self-efficacy, learner control, and online communication self-efficacy. Student readiness can be separated into two components, which are technical readiness and self-directed readiness.

Academy of Language Studies, UiTM

In Universiti Teknologi MARA, the Department of English and Linguistics is the largest department in the Academy which caters all English language needs of the University. For Diploma levels, APB provides courses such as; Consolidating Language Skills (BEL 120); Communication Skills (BEL 130); Preparatory Course for MUET (BEL 260); English for Academic Purposes (BEL 311); as well as English for Occupational Purposes (BEL 312). Coming into the new millennium, Malaysia's former Ministry of Higher Education urged universities across the country to focus more on the fundamentals of life-long education as well as the need of ICT in higher education under the 11th Malaysian Plan (cited in Chai & Poh, 2009) from Farahiza (2010).

Along with this parallel goal of the government, UiTM also strive its best in fully utilizing every technology provided within the medium of instruction. With the inspiration to develop UiTM in becoming a distinguished and international standard university, the implementation of blended learning was established in 2009 under the collaboration between the Academic Affairs Division and i-Learn Centre. The programme involves both students and lecturers which is also aimed to reduce problems of space constraints in face to face learning environment. Two models were developed under this programme including Model A and Model B which differentiate the lessons being learnt in a specific week. For example Model A provides a combination of two hour face to face learning with a two-hour e-learning in one whole week while Model B is also a combination of both, but conducted through a four hour face to face learning in one week and another 4 hour fully online learning in a different week. However, the distribution of hours is optional in UiTM whether it may be under the ratio of 50:50, 60:40, or

70:30. In addition, extension of tutorial sessions which is entirely based on e-learning is also being encouraged in the institution (Blended Learning for Lecturers, Students and Admin Guideline of UiTM, 2009).

Based on these models, the Academy of Language Studies developed a new English course named as “Integrated Language Skills” (ELC) replacing BEL 120, BEL 260 as well as BEL 311 which has been launched for only one semester. Unlike before, where the previous course combined all the four components of English namely listening, reading, writing and speaking, this new course focuses on only one particular skill for one semester. Semester one (1) focuses on the skill of listening; semester two (2) focuses on the skill of speaking; semester three (3) focuses on reading; and semester four (4) focuses on writing. Although ELC remains a three hour credit, the new course includes a three hour face to face session per week and an addition of three and a half hours for e-learning in which students must complete certain individual and group-work tasks. Since the design of ELC requires students to participate more actively during class and also during non face to face sessions, it is important that students motivate themselves in adopting with different learner strategies in order to be able to keep in pace with the new course. As a whole, this new course is developed not only for the goal of enhancing language skills, but also designed to equip students with necessary skills that are able to boost their confidence when communicating in English. With the inclusion of the blended learning system, students no longer go through the ‘chalk-and-talk’ system where they must listen to the teachers’ instructions, but are now able to participate more actively by utilizing a variety of materials in varied situations.

STATEMENT OF THE PROBLEM

It is important to understand that in order to discover the effectiveness of a particular blended learning course, there are numerous ways for a researcher to look into. Studies carried out by Huey, Foong, and Salwah (2007) and Hung, Chou, Chen, and Own (2010) as well as other numerous foreign and local research have indicated that the effectiveness of blended learning is attached closely with students’ behaviour which can be predicted through students’ readiness to learn. Although in UiTM itself, literature shows that there are a number of research done that look into student readiness

(Norshima, Syazwan, Nor Azilah, & Annurizal, 2013; Lai & Chong, 2007; Chow, Foong, & Salwah, 2007; Junaidah, 2007) no study has actually been conducted to investigate student readiness under UiTM's new English course, ELC which was launched in March 2014.

Therefore, as new innovations of blended learning modes are continuously being examined across the globe, it is vital that an investigation on student readiness should also be conducted upon this newly-designed blended learning English Language Proficiency course under the Academy of Language Studies (ALS) of the Universiti Teknologi MARA (UiTM). Due to the gap of knowledge, it is prominently clear that there is a need to extend further research in the field of blended learning so that researchers and especially educators are able to identify the best practice or model that can be implemented under a blended learning system. The result of the study is believed to be beneficial for many parties especially in the field of education where the knowledge of different language-based blended learning models can be extended and also for the future advantage of the Academy of Language Studies (ALS) as well as for Universiti Teknologi MARA as a whole.

Research Questions

Research questions that will be investigated in this study include:

1. Are Diploma students of UiTM Shah Alam ready for this newly-designed blended learning course?
2. How does students' enjoyment going to ELC classes correlate with their readiness of the new course?

Research Design

As qualitative and quantitative approaches were conducted, the main research design in this study is regarded as a mixed methods research design. As the main aim of this study is to investigate students' readiness in blended learning for ELC, the quantitative approach will provide the breadth in the findings and the qualitative approach will provide depth in understanding the phenomenon under scrutiny. In this study qualitative design comprises a

10% interview session with the students while quantitative design includes descriptive surveys looking at the average score of students' readiness and correlation coefficient which looks at the relationship between students' readiness and students' enjoyment going to ELC classes.

Sample

The total number of UiTM Shah Alam students is approximately 47,000 which include various faculties and programmes. Sampling in this research however involves a population of 289 Diploma students. According to Krejcie and Morgan (1970) the appropriate number of respondents from a population of 280 is 160. Therefore, as means of reliability, the number of respondents from this study is 156 students ranging from 19 to 23 years old. These students are Diploma undergraduates from the Faculty of Art Design and the Faculty of Sport Sciences, mostly comprised Malay students or *Bumiputras* (indigenous) from semester one (1) to two (2) which were chosen through a purposive sampling technique. The reason for choosing Art and Design as well as Sport Sciences students is because they make up of the largest number of all Diploma programmes in UiTM, Shah Alam compared to other minor programmes such as Business Management and Accountancy which only had not more than 30 students.

Data Collection

Two (2) methods were applied in the process of collecting data in this particular research; First – distribution of questionnaires and second – interview sessions. For the first process, distribution of questionnaires was conducted at UiTM Shah Alam's main hall, Dewan Agung Tuanku Canselor (DATC). Among 230 students, only 156 questionnaires were retrieved and a number of 15 students were willing to participate in the interview session. The interview session was also conducted at DATC which was done right after all the questionnaires were obtained.

Instrumentation

In this research, the main instrument used is the questionnaire based on a research of Hung, Chou, Chen, and Own (2010) who conducted a study in investigating the most reliable and valid system that measures student readiness in the blended learning context called The Online Learning

Readiness Scale (OLRS). In addressing terms of reliability and validity, the researchers used a confirmatory factor analysis (CFA) to evaluate the hypothetical model of the study which resulted into categorizations of five dimensions including; self-directed learning (0.871), motivation for learning (0.843), computer/Internet self-efficacy (0.736), learner control (0.727), and online communication self-efficacy (0.867). As the OLRS measurement model of student readiness composites a reliability of more than 0.7, the model is considered an acceptable value for reliable construct (Fornell & Lacker, 1981).

The questionnaire was divided into 4 sections including Part A, Part B, Part C, and Part D. Part A requires the respondents' demographic data; Part B includes 3 subjective questions where participants are able to explain certain reasons to their answers; Part C includes a number of 36, 5-point Likert Scale ranging from 1 (strongly disagree) to 5 (strongly agrees) on their readiness of a blended learning environment in ELC; and Part D provides a list of six options for participants to tick on their opinions that lead to a successful blended learning environment. Furthermore, 10% of the respondents were randomly chosen to be interviewed.

Data Analysis

The data in the study is analyzed using inferential statistics which allow researchers to make inferences from the sample. The main statistical tool that is used in the study is descriptive analysis which is conducted to investigate the average score of students' readiness. Besides that, the study also uses a correlation technique. Moreover, data from the interview sessions were tapped, transcribed and categorized into two groups which are; students who preferred blended learning in an English class; and students who preferred face to face learning in an English class.

FINDINGS AND DISCUSSION

Are Diploma Students of UiTM Shah Alam Ready for this Newly-designed Blended Learning Course?

From the Table 1, the mean score for Students Readiness is 3.9144. According to the designer of the OLRS model, a mean score that ranges

from 3.60 to 4.37 indicates that students exhibit above-medium levels of readiness (Hung, Chou, Chen & Own, 2010). As the mean score for the Art and Design as well as Sport Sciences Diploma students in UiTM, Shah Alam ranges from 3.60 to 4.37, it can be concluded that these particular students exhibit above-medium levels of readiness upon the ELC course.

Table 1: Student Readiness Average

	Average Score
Mean	3.9144
Median	3.9722
Std. Deviation	.52343
Skewness	-.229
Total	156

Statistical analysis from the findings shows that the average score of student readiness is 3.9722 indicating that Diploma students of Art and Design as well as Sport Sciences of UiTM, Shah Alam exhibit above-medium levels of readiness in ELC which is believed to be related with students' good computer skill knowledge as well as feeling of comfort in using technology and browsing the internet. This conclusion is also derived from the interview session which showed that all of the students did not mention anything on the difficulties of using computers or soft-ware during ELC classes but was more to difficulties in completion of tasks. Therefore, this research supports the view from Purcell, Heaps, Buchanan and Friedrich (2013) which claim that students nowadays should be introduced with more combination of online learning and traditional classes because they are familiar with technology since they were born. Findings from Purcell, Heaps, Buchanan and Friedrich (2013) show that 67% of students from the United States are comfortable using technology and 85% of them use it daily.

How Does Students' Enjoyment Going to ELC Classes Correlate with their Readiness of the New Course?

The data show that there is a weak negative correlation between enjoyment of going to ELC classes with students readiness in the course ($r = -.165$, $p\text{-value} = .040$) which implies that students who enjoyed going to ELC classes reported lower student readiness on the new course.

Table 2: Correlations between Readiness and Enjoyment in ELC Classes

		Do you enjoy going to ELC classes?	Student Readiness Average Score
Pearson Correlation	Do you enjoy going to ELC classes?	1	-.165*
	Student Readiness Average Score	-.165*	1
Sig. (2 tailed)	Do you enjoy going to ELC classes?		.040
	Student Readiness Average Score	0.40	
N	Do you enjoy going to ELC classes?	156	156
	Student Readiness Average Score	156	156

*. Correlation is significant at the 0.05 level (2-tailed).

The study finds an interesting discovery that although there was a high percentage of students who believed that technology would increase motivation, data show that there is a weak negative correlation between enjoyment of going to ELC classes with students readiness in the course ($r = -.165$, $p\text{-value} = .040$). This simply means that students who enjoyed going to ELC classes reported lower student readiness of the new course ($M = 3.9722$). Fortunately, this circumstance can be explained through the 10% sample of students who were interviewed in the study. Findings show that a majority of the students from this group did feel nervous or unconfident for several reasons. Although all of the students from this group agreed that blended learning is preferable for an English class, one particular student mentioned that the reason she felt unconfident in doing the online assignments was her concern that it may affect her CGPA while another student clearly explained that the nervousness comes only when the task was thought to be too challenging and nothing to do with the other daily activities. This can be understood that the factor which made students enjoy going to ELC classes was primarily for other reasons that did not relate with online tasks.

Results from the interview also revealed that students who liked going to ELC classes had higher expectations of themselves and that the challenge in online tasks made them worried and sometimes unconfident if they were not able to meet these expectations. The study therefore concludes that there is a high probability that the ELC online assignments might be too difficult for the Diploma students' level and that it should be re-examined to avoid future complications of the new blended learning design. This situation clearly highlights a study from Marsh (2012) who stated that because pushing up motivation is also perceived as a great challenge in language learning, it is essential to have the right level of motivation in a language class because if an instructor gives a task which is too easy, it is unlikely for the students to improve, while if the tasks given are too difficult, this might cause students to give up easily. Furthermore, if students are given tasks that do not interest them, this would fail to motivate the students at all.

IMPLICATIONS

The results of the study reveal that students' readiness of certain blended learning environments can be closely connected with their relationships with the instructors. Therefore, the study suggests that teachers, lecturers or instructors of a blended learning class must not only focus on the tasks given to students but must also look into aspects of the learners itself. This way, as students develop the knowledge of managing to become more organized in a blended learning environment they also become more interested in participating in class. Practicing these activities in a blended learning class before giving the students their main tasks is believed to be able to reduce anxiety as well as encourage students to develop a close relationship with their instructors. At the same time, these friendly activities also allow lectures to get to know more of the students' strengths and weaknesses in a blended learning English language proficiency course.

Apart from that, the study also reveals that the importance of a lecturers' role in inculcating constant motivation among students. According to Lai (2011) in this technological era, extrinsic motivation is considered a vital element in increasing motivation in a classroom which is governed by reinforcement contingencies where it involves constellation of closely related beliefs, perceptions, values, interests and actions. The study suggests

that as instructors, it is significant that reminders of positive words should constantly be articulated to the students so that they are always in a positive mind and attitude, especially in a blended learning environment where students need to step out of their comfort zone.

FUTURE RECOMMENDATIONS

It is vital that further research should be done to investigate effective teaching instructions in a blended learning environment which can lessen student's anxiety as well as an intensive investigation in improving tasks distribution in the online ELC courses which should also focus to lessen anxiety among students. Based on this study, it is believed that tasks which are too difficult could lead to anxiety in a blended learning environment and that ineffective teaching instructions could cause lack of motivation from students. Effective teaching instructions include minor tasks and activities that can be conducted in a blended learning class in order to encourage students to become more confident. On the other hand, tasks distribution in a blended learning environment should focus on aspects which can be too difficult for different learners' prior knowledge in technology. Therefore, future research should look into different levels of blended learning tasks for different levels of students.

CONCLUSION

The main objective of this study is to find out whether Diploma students of Art and Design as well as Sport Sciences in UiTM Shah Alam are ready to learn the newly-designed blended learning English language proficiency course, called ELC. The study also investigates whether there are differences among different gender, courses and semesters as well as seeking out on the relationship between students' enjoyment going to ELC classes with their readiness on the new course and the relationship between students' perception of technology as a tool for increasing motivation in learning with their enjoyment going to ELC classes.

Based on evidence from the findings, it can be concluded that Diploma students from semester one and two, Art and Design programmes as well as

Sport Sciences programmes attitude and readiness on this particular newly-designed blended learning English language proficiency course is mainly affected by the students' attitudes and belief of instruction in the course with less impinge on the design, technological tools, content, management or infrastructure of ELC. This discovery can be connected with other empirical research findings that the effectiveness of a blended learning environment is attached closely with students' behaviour which can be predicted through students' readiness of learning (Huey, Foong & Salwah, 2007). That is why according to Brophy (2010) in blended learning, students' motivation is strongly believed to be related to intrinsic motivation which is connected with students' thoughts, beliefs, goals and situated dynamic relationships between students and the environment.

In this case, intrinsic motivation was found to be largely due to students' relationship with the instructors as supported from evidence from statistical analysis as well as interview sessions. It seems that the main reason students liked going to ELC classes was because of their fondness of the instructors' teaching style as well as the instructors' attitudes towards the students. Readiness in the ELC course was also linked to students' goal to do the best in class so that they would impress the lecturer and so that they would achieve good grades in their CGPA. When it comes to difficulties in completing the tasks in ELC, students seem to become more confident and comfortable only with the guidance and support of their lecturers, regardless if they are taking Listening Skills in semester one or Reading Skills in semester two. Without motivation from the lecturers, students become nervous, embarrassed and de-motivated in going through the learning process.

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Level of Academic Stress among E-Learning Student-athletes

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ABSTRACT

Academic stress refers to the impact that educational organizations may produce on their students by imposing too many tasks with great competition from other students. Lower academic stress has been linked to higher performance in studies through e-learning. The aim of this research was to identify and compare the level of academic stress among different types of e-learning users among student-athletes' such as Frequent, Partial and Rare-user. The 34 items of Academic Stress assessing seven factors were used to collect data. One hundred and twenty students were selected to participate in this study. The results showed that the Group Stress ($\bar{x}=18.1146$) and Peer Stress ($\bar{x}=14.4036$) were higher in studying among the Frequent e-learning users. It was identified that Time Management Stress ($\bar{x}=14.1621$) was higher among the Partial e-learning users. The Rare e-learner users' stress level was higher in Teachers Stress ($\bar{x}=17.3397$), Result Stress ($\bar{x}=19.1528$), Test Stress ($\bar{x}=18.3346$) and Self-inflicted Stress ($\bar{x}=15.1019$). The findings in this study provide a useful insight to educators to motivate the rare-users to engage in e-learning in order to reduce their academic stress, since high level of academic stress is associated with poor academic achievement.

Keywords: Academic Stress, Frequent, Partial, Rare-user

INTRODUCTION

Hussien and Hussien (2006) defined stress as the situation by which an individual suffers from physical and psychological hyper tension resulted from factors that cannot be handled and exceeds human capability to cope. The effects of long term stress are illustrated in a series of stages proposed by Hans Selye (Feldman, 2011; Ampofo Boateng, 2009). This model, known as general adaption syndrome (GAS), suggests that the physiological response to stress follows the same set of pattern regardless of the cause of stress. The first stage, “alarm” and “mobilization” occurs when people become aware of the presence of a stressor. According to the biological perspective, the sympathetic nervous systems become energize and help the individual to cope initially with the stressor. However, if the stressor persists, that person moves into the second response stage, called “resistance” stage. During this stage, the body is actively fighting the stressor biologically. During the resistance period, people use a variety of means to cope with the stressor. Sometimes they are successful with some degree of physical or psychological wellbeing. For example, a student becomes stressful for failing several courses, might spend longer hours studying and seeking to cope with the stressful circumstances. If resistance is inadequate, people enter the last stage called “exhaustion” stage. During the exhaustion stage, a person’s ability to fight the stressor declines to the point where negative consequence of stress appears, like physical illness and psychological symptoms in the form of inability to concentrate and irritability.

As we know, campus life at times can be purely stressful for undergraduates. These undergraduates might experience stressors in managing their finances, making friends, shyness, jealousy, overloaded courses, presenting papers, assignments, test, quizzes, final examination, practical training and completing their project papers and theses. For some undergraduates it can be a challenge, but to most of them it can be perceived as a stressor. Some may feel overwhelmed with the academic stress and may drop out. The level of stress in undergraduates could impact the climate of the environment, especially their social skills by influencing their behaviours and academic performance. People with high level of stress show lower levels of social competencies to handle relationships well and adapt to a variety of social situations. Previous studies showed that college students who experience high levels of stress are more likely to practise bad habits,

tend to experience psychological problems have low self-esteem, poor physical health, lack of sleep, continuous tension, fatigue, headaches and digestive problems (Vincent, Yahaya, Julinamary, Sarimah, Nagoor Meera & Mohd Rahizam, 2014; Wilson & Pritchard, 2005). Laurence, William and Eiland (2009) conducted a survey on 453 undergraduates, 25% of them reported having experienced depressive symptoms. This study indicated examinations, fear of failing, shortage in clinical time, decrease in self esteem and prompt reduction in time spent in recreational activity have been associated with higher stress levels.

Stress in studies or academic stress is basically defined as the impact that educational organizations may produce on their students with too many tasks and great competition with other students (May & Casazza, 2012; Kilpatrick, Hebert & Bartholomew, 2005). The everyday pressures of life have the ability to undermine an individual's comfort and security while creating problems for people in establishing their psychological identity, which in return may lead to vulnerability to stress and anxiety (Saipanish, 2003). Undergraduates should learn the ways to cope with academic stressors such as time management, studying, classroom task, grades, jobs, money, friends and others. It is very common that when students experience high level of stress, this condition affects their motivation, examination performance, class attendance and assignments negatively.

It was assumed that those undergraduates who actively involved in e-learning, made a good preparation academically and therefore, their academic stress should be less than those who seldom or rarely engaged in e-learning. Thus, the present research determined the level of academic stress on those undergraduates' actively engaging in e-learning, partially using e-learning and rare-user.

AIM OF THE STUDY

The aim of this research was to identify the level of academic stress among types of e-learners. It aimed at comparing the level of academic stress among different types of e-learners. It sought to identify the level of academic stress between frequent, partial and rare users of e-learning.

METHOD

This survey was conducted using a set of questionnaire namely, Academic Stress. Academic Stress is a self-reported measure that provides an estimation of the level of academic stress. The Academic Stress research was carried out using Cronbach reliability test (Ying & Farn, 2009). Factor 1 (Teachers stress) showed 0.90, factor 2 (Result stress) showed 0.89, factor 3 (Test stress) showed 0.92, factor 4 (Studying in group stress) showed 0.87, factor 5 (Peer stress) showed 0.85, factor 6 (Time management stress) showed 0.87 and factor 7 (Self-inflicted stress) showed 0.86. The α value of the overall academic stress inventory was 0.90. This demonstrated the reliability of the various factors of the academic stress pre-test questionnaire achieved the levels required by the estimation standards of George and Mallery (2003). The 34 items of Academic Stress assessed seven factors as in Table 1.

Table 1: Seven Factors of Academic Stress

No	Factors	Items
1	Teachers stress	9
2	Result stress	5
3	Test stress	4
4	Studying in group stress	5
5	Peer stress	4
6	Time management stress	3
7	Self-inflicted stress	4

The respondents for this survey were student-athletes from the Faculty of Sport Science and Recreation, at Universiti Teknologi MARA (UiTM), Shah Alam. One hundred and twenty student- athletes were selected to participate in this study. They were categorized into three groups according to their use of e-learning (Frequent, Partial and Rare-user). Frequent users are those who engage in e-learning frequently or always. Partial are those who use e-learning sometimes. Rare-users were individuals who very rarely or seldom use e-learning.

RESULT

Respondents' Profile

The profile of the e-learning respondents described their gender, ranking, types of sports involvement and age. Table 2 shows the overall results of the respondents' profile on 75 male and 45 female athletes. The overall mean age for respondents was 21.08 years old. The age of male student-athletes varied from 19 to 25 years, where the mean age was 22.28 years old. The female student-athletes age ranged from the minimum of 19 to the maximum of 23 years old. The mean age for female respondents was 21.88 years old.

The variable "rank in sports" is gathered through this study. This variable is categorized into four levels such as the university, district, state and country. The result showed that 46 respondents had participated at national level, whilst 27 respondents participated at state, 20 had participated at district and 27 respondents participated at university level. Furthermore, there were three groups of e-learners. There are 60 frequent (always used), 35 partial (sometimes used) and 25 rare-users (very rarely used) of e-learning. The CGPA of e-learners category showed that the majority of the respondents who had CGPA more than 3.0, belongs to Frequent users (68.33%).

Table 2: Respondents' Profile (n=2)

Variables	Frequent	Percentage	Mean	SD
Gender				
Male	75	62.50		
Female	45	37.50		
Athletes' Rank				
University Players	27	22.50		
District Players	20	16.67		
State Players	27	22.50		
National/Country Players	46	38.33		
E-Learning User				
Frequent	60	50.00		
Partial	35	29.17		
Rare-User	25	20.83		
CGPA of E-Learning User				
Frequent Group				
Less than 2.5	9	15.00		
2.5 to 3.00	10	16.67		
More than 3.0	41	68.33		
Partial Group				
Less than 2.5	18	51.43		
2.5 to 3.00	10	28.57		
More than 3.0	7	20.00		
Rare-User Group				
Less than 2.5	15	60.00		
2.5 to 3.00	7	28.00		
More than 3.0	3	12.00		
Age				
Overall			21.08	1.97
Male			22.28	1.72
Female			21.88	1.18

Mean of Academic Stress

The results in Table 3 show that e-learning Frequent users were higher in group study stress (\bar{x} =18.1146) and Peer stress (\bar{x} =14.4036). Rare-users of e-learning were higher in Teachers stress (\bar{x} =17.3397), Result stress (\bar{x} =19.1528), Test stress (\bar{x} =18.3346) and Self-inflicted stress (\bar{x} =15.1019).

Table 3: Mean of Academic Stress Based on the E-Learning User

Academic Stress	Frequent	Partial	Rare-user
Teachers stress	12.4451	15.4177	17.3397
Result stress	14.9840	17.4031	19.1528
Test stress	11.8201	14.7133	18.3346
Group study stress	18.1146	12.2153	10.6107
Peer stress	14.4036	12.9140	10.2155
Time management stress	11.3411	14.1621	12.7122
Self-inflicted stress	11.3494	13.7185	15.1019

Level of Academic Stress

One way ANOVA showed high significant differences on the levels of academic stress among e-learning users, $F(2, 120) = 17.2104$, $p < 0.01$ (Table 4). E-learning student-athletes belong to Frequent, Partial and Rare-user categories.

Table 4: Level of Academic Stress Based on E-Learning Users

Categories of e-learning Users	Mean	Value-F	Value-p
Frequent	13.3612	17.2104**	0.000
Partial	15.4521		
Rare-user	22.1145		

** $p < 0.01$

Post-Hoc Tukey Test in Table 5 showed that the level of academic stress on Non e-learning users was higher than Frequent ($p<0.05$) and Partial categories ($p<0.05$). Furthermore, the level of academic stress among Partial e-learners was lower than Rare-users ($p<0.05$) but higher than Frequent users ($p<0.05$). In addition, the level of academic stress on Frequent users was lower than Partial ($p<0.05$) and Rare-users ($p<0.05$).

Table 4: Post Hoc Tukey: Level of Academic Stress Based on E-Learning Users

Categories of E-learners	Frequent	Partial	Rare-user	N
Frequent		*(-1.337)	* (-1. 857)	60
Partial			* (-1.182)	35
Rare-user				25

* $p<0.05$

DISCUSSION

Mean of Academic Stress

The mean of academic stress showed that Frequent users were lower in all the factors of academic stress, except for group stress and peer stress, compared to Partial and Rare-users of e-learning. Frequent users engage in e-learning frequently, therefore they had a very good preparation for the subject or examination. This reduced their anxiety level and enhanced their self confidence, which helped to lower their academic stress. Rare-users of e-learners were higher in most of the stress factors including teachers stress, result stress, test stress and self-inflicted stress. Partial users of e-learning scored the highest in time management stress and second highest is in teachers stress, result stress, test stress and self-inflicted stress.

Level of Academic Stress

Overall the results show that the student-athletes in the Frequent categories exhibited lower level of academic stress compared to Partial category student-athletes, whereas Rare-users showed the highest levels

of academic stress. In other words, the result of this research means that the higher the usage of e-learning, the lower their academic stress would be. In Malaysia, so far no research has been done involving these three categories of users, so the findings on the current research could not be compared with that of previous research. However, the knowledge obtained from e-learning is the main factor that determines the level of academic stress. E-learning helped to enhance student-athletes' abilities to do well in their studies and lower their academic stress level. Therefore, the levels and factors of academic stress may differ from the frequently use e-learning student-athletes to the rare-user student-athletes. The frequent enhanced knowledge through e-learning determines the academic stress level.

There are many challenges in academic like too many assignments, tests and examinations. Previous studies have proven that stress is present in educational environments and it is more frequent with homework and tests, the lack of time to complete assignments and the inability to understand the materials (Diaz, 2010; Pulido, Serrano, Valdes, Chavez, Hidalgo & Vera, 2011; Roman, Ortiz & Hernandez, 2008). E-learning is considered as the best tool to prepare well and understand materials taught in class, test, examinations and assignments. Therefore it reduces their stress level especially the academic stress.

The CGPA surveyed with the three groups provided some valuable information. Most of the student-athletes' in Partial and Rare-user groups are those undergraduates who have CGPAs less than 2.5. Furthermore, during the discussion in class, it was found that some of them are repeaters of several subjects and always submit their assignments after the due date. In other words, they are left behind, thus they scored highest academic stress. Contradictory, Table 1 showed, undergraduate student-athletes' in Frequent group are those with CGPAs more than 3.0 (68.33%). They are considered good or excellent achievers. Therefore, they scored the lowest in academic stress. However, this research showed that there is a negative relationship between the use of e-learning and academic stress. Furthermore, those undergraduates' attendance is lower than 75% but belong to Frequent group, has a higher CGPA. In other words, those undergraduates who miss the class frequently but are active in their e-learning manage to gain high grades. Thus, it can be concluded that e-learning might be more effective than attending classes. It becomes very common that undergraduates always

complain that the classes are boring, they feel sleepy and cannot concentrate. Most probably e-learning is more effective for those undergraduates who experience similar problems.

CONCLUSION

The results of this research show that the overall frequent e-learning users scored lower in academic stress and Rare-users, the highest. The result also showed the existence of a strong negative relationship between the level of academic stress and use of e-learning. However, future research is necessary to determine this. This finding would benefit educators to motivate rare-users to engage in e-learning in order to reduce their academic stress, since high level of academic stress is associated with poor academic achievement.

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Blended Learning Module for a Course in Statistics

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ABSTRACT

Instructors for mathematical and statistical courses generally feel that it is quite impossible to have an effective teaching and learning process if the blended learning teaching style were to be adopted. The traditional teaching instruction of 'chalk and talk' still has many proponents. To find out the truth of this conjecture, we experimented with 298 students who had enrolled for Introduction to Statistics course at a public university in Malaysia. We had enrolled the course as Blended Learning with the Institute of Learning and Quality Management (ILQAM) at the beginning of the semester (May-October 2014). A video power point for each chapter of the course syllabus was developed and a detailed blended learning scheme of work was outlined to the students. Students were assessed using online quizzes, written quizzes, written tests, and final examination. Two hours of the total four contact hours per week was allocated to students' Self-Learning while the other two hours was allocated to Assisted-Learning sessions. Results from t-test showed that examination marks scored by students instructed with blended learning were not significantly different from examination marks scored by students instructed using traditional teaching. Results of students' perceptions on the blended learning module were also presented. In conclusion, blended learning is feasible for statistics courses and is beneficial to both students and instructors.

Keywords: Hybrid Learning, e-content, statistics, module dimension, t-test, student perception

INTRODUCTION

Determining how students learn most efficiently is one of the leading goals of research in education. For the last 30 years, many researchers and educators revolutionized the area of statistics education in an effort to be more equipped with the growing population of students across a wide range of practice that are required to complete coursework in statistics (Moore, 1997; Roiter & Petocz, 1996; Yilmaz, 1996). Many students have little interest in learning mathematics and even less interest in learning statistics. In order to attract students' attention, teachers use computer technology in statistics classroom together with other reformed efforts in statistics education (Garfield, 1995; Ben-Zvi, 2000; desNicholls, 2001; Mills, 2002). Until recently, most of the traditional learnings are instructor-led approach where students have access to the experts, engage in questions and discussion, open to social interaction and have the opportunity to learn from others. However, with the improvement of technology it is possible to regenerate the way people learn and to present the information to them (Cobb, 1992; Moore, 1997; Garfield, 1995; Rosling, 2007; Garfield & Ben-Zvi, 2007). Being exposed to social networks such as Facebook and instant messaging technologies such as WhatsApp and Telegram, the present generation of students prefers an individualized or less structured environment in teaching and learning process. In other words, they need self-paced learning material. Hence, educators are now facing with the challenges of combining traditional and emerging technology to balance different students learning styles (Felder, 1988).

Statistics is considered as a mathematical subject that requires students to do a lot of exercises in order to acquire the problem solving skills meted out in the subject's syllabus (Ahmad, Shafie & Janier, 2008). Instructors are naturally expected to demonstrate in front of students the different ways of solving statistical problems in class sessions. Students find Statistics and Mathematics to be difficult subjects because not only they have to understand theories, but also memorize formulae as well as visualizing the practical application of some of the theories. Hence, the acceptable practice is to have mathematic instructors present in person to offer an effective learning mode. As such there is a general opinion among statistics and mathematic instructors that it is quite impossible to have an effective teaching and learning process if the blended learning method was adopted for statistical and mathematical courses.

In considering to the problem described in the above paragraph, a blended learning module was developed for a statistics course coded QMT181 (Introduction to Statistics). The module was applied for one semester (four months) at a public university. The primary objective of this paper is to evaluate the module by comparing final examination scores of students undergoing Blended Learning module with scores by students who followed the traditional teaching approach. The other objective was to discover students' perceptions on the module. The main research hypotheses for this study were formulated as follows:

- H_0 : Examination scores by students instructed with Blended Learning are not significantly different from examination scores by students instructed using traditional teaching.
- H_1 : Examination scores by students instructed with Blended Learning are significantly different from examination scores by students instructed using traditional teaching.

LITERATURE REVIEW

The Definition and Concept of Blended Learning

Blended learning can be defined in many ways. The idea comes from the blended term, which is defined as mix, merge, integration or combination. Blended learning is a composition of traditional types of learning and e-Learning (Collis & Moonen, 2001). In addition, hybrid is another term found in most literatures. Hybrid or blended learning can be translated as a combination of traditional learning and online learning (Collis & Moonen, 2001). E-Learning is the learning process aided by computer technology and the internet connection. Even though educators and learners strongly admit that traditional teaching has its important role in teaching function (Mandic, 2010), the development in Information and Communication Technologies (ICT) cannot be averted. Hence, blended learning is becoming more popular in educational system with positive consequences especially to the students. According to Hisham et al. (2006), blended learning represents the integrated combination of traditional learning with web based online approaches, the mix of media and tools expanded in e-Learning environment and the combination of number of

pedagogical approaches. Implementation of blended learning is to merge the strengths and overcome the weaknesses either in traditional method or e-learning (Azizan, 2010).

Learning Styles and Benefits of Blended Learning

Despite the fact that blended learning may appear to be a better chance for education improvement, it may show some significant impediments in terms of application. Learners' individual contrasts, for instance, their learning attributes and learning styles should not be disregarded since individual's characteristics and learning styles in teaching and learning are major factors in effective teaching (Sarasin, 1999). A study by Felder and Silverman (1998) which focused on engineering students found that the failure of knowledge delivery comes from the contradiction between traditional teaching styles versus common learning styles. This gap will create problems such as absenteeism and boredom, causing the students to lose their interest in the subject matter.

Blended learning may offer a solution because in this teaching mode, instructors are no more the sole source of knowledge instead they are expected to be facilitators as well as motivators to students. Rovai and Jordan (2004) define blended learning as a new method of learning that offers flexibility and convenience to the educators and learners. Specifically, this new alternative of learning will help and guide workers who want to pursue their studies while they are working. Several literatures found in Matheos et al. (2012) suggest that this alternative strategy of teaching and learning can intensify better performance in knowledge transfer. Tayebnik and Puteh (2013) investigated the advantages of blended learning over face-to-face teaching and found that blended learning can be viewed as an effective approach in terms of students' learning experience, student-student interaction as well as student instructor interaction, inducing students sense of community and enhance collaborative task.

Success and Failure Factors of Blended Learning

Webster and Hackley (1997) outlined several factors for successful blended learning implementation; they were competency in Information Technology, different teaching styles, and positive attitude and mindset

towards the learning process. In addition, Volery and Lord (2000) put forward that educators should have good knowledge in information technology and use different teaching styles in order to maintain students' or learners' interest. In contrast, a study from Sun et al. (2008) pointed out seven factors that contribute to the failure in implementing blended learning: the learner computer anxiety, poor instructor attitude toward e-Learning, poor e-Learning course flexibility (learners' perception of the efficiency and effects of adopting e-Learning in their working, learning, and commuting hours), poor e-Learning course quality (virtual characteristics of e-Learning such as online interactive discussion and brainstorming, multimedia presentation for course materials, and management of learning processes), low perceived usefulness (degree of work improvement after adoption of a system), low perceived ease of use (users' perception of the ease of adopting a system), and low diversity in assessments. Prior literatures on distant learning studies show varied results. Dellana et al. (2000); Iverson et al. (2005); Sooner (1999); Jones et al. (2005) concluded that distant learning is as powerful as traditional classroom learning while others (Terry et al., 2001; Ponzurick, 2000) observed that graduate students in conventional face to face beat those in web course. In conclusion, to attract, retain, and motivate learners, e-Learning courses should be flexible (Trasler, 2002), have high diversity in assessments as well as students and instructors ability to adapt to ICT (Sun et al., 2008). Means, Tayebnik et al. (2013) concluded that students in a blended learning environment performed better than those receiving face-to-face instruction.

Perception and Attitude towards Blended Learning

Tanveer (2011) studied students' attitudes towards integrating e-learning in classroom language teaching and found that the majority of students preferred blended learning. Similarly, a study on Palestinian university students was carried out by Adas and Abu Shmais (2011) showed that the majority of learners expressed their positive attitudes towards blended learning. Moreover, Hirata and Hirata (2008) conducted a study about attitudes of Japanese students towards hybrid learning and found that most of the students thought that blended learning was more effective whilst few students preferred traditional learning. In addition, a study from Ahmad, Shafie, and Janier (2008) revealed that the student perceptions towards blended learning were positive. These findings indicate that current

learners are ready for the interactive teaching and learning as long as the educator or instructor prepares quality online materials. However Grandzol (2004) discovered uncertain evidence about learning outcomes as measured by examination scores for an MBA statistics course. Grandzol found those students' perceptions in terms of enthusiasm; preparation, grading, and clarity of instruction were identical for both conventional and blended learning. Držid, Seljan, Džigunovid, and Lasid-Lazid (2012) conducted a study on university students in Zagreb learning English for special purposes. The results showed that students' communication with their instructors was better in traditional learning whereas a few students who were taught with blended learning obtained better marks over those of traditional learning, but with no significant difference.

Dimensions of Blended Learning

In 2012, Matheos et al., produced a paper discussing the impacts of different dimensions of blended learning for the success of educational environment. Ahmad et al., (2008) applied a blended learning approach with three dimensions, face to face lecture, face to face tutorial sessions, and Self-Paced learning based on website materials. Valiathan (2002) introduced three approaches for blended learning which were Skill Driven, Behaviour Driven and Attitude Driven. Ahmad, Shafie and Janier (2008) choose Behaviour Driven (BD) approach in Engineering Mathematics subject in order to motivate and assist the students to understand the subject. Behaviour Driven can be defined as a learning approach to develop specific attitudes and behaviours among learners. This approach blends collaborative learning events through instructor-led classroom sessions (lecture face to face, instructor-led, coaching, and some feedback activities), tutorials (face to face interaction, simulation using developed courseware and interaction with material or the exercises discussed in the class and some feedback activities), and web based activities (interactions and discussions facilitated through technology). Web-based activities offered flexibility learning in time and place in order to access and study the material on e-Learning.

Carman (2002) provided five key ingredients as important elements of a blended learning process: i) live events (synchronous, instructor-led learning events in which all learners participate at the same time, such as in a live "virtual classroom"), ii) online content (learning experiences that

the learner completes individually, at his own speed and on his own time, such as interactive, internet-based or CD-ROM training), iii) collaboration (environments in which learners communicate with others, for example, e-mail, threaded discussions and online chat), iv) assessment (a measure of learners' knowledge. Pre-assessments can come before self-paced events to determine prior knowledge, and post-assessments can occur following scheduled or online learning events, to measure learning transfer), and v) reference materials (on-the-job reference materials that enhance learning retention and transfer, including PDA downloads, and PDFs).

Delialioglu and Yildirim (2007) conducted a study on students' perceptions of the effective dimensions of interactive learning by Computer Networks and Communication students. The findings of the study showed that the way instructivist (knowledge flows from instructor to the student) and constructivist (knowledge is a construct in the mind of learner) elements are blended, the need for metacognitive support (supporting learners by helping them monitor and regulate their own learning process), authentic learning activities, collaboration (learners work in pairs or small groups to accomplish goals), source of motivation (extrinsic and intrinsic motivation), individualized learning, and access to the internet played important roles in students' learning in the hybrid course. In conclusion, the dimensions of blended learning discussed in literatures boil down to three basic approaches, assisted or guided learning, self-learning, and assessments. These dimensions were applied in this study's blended learning module.

Dimensions of Blended Learning Module

The blended learning module consists of three dimensions namely Self-Learning, Assisted Learning, and Assessments. Self-Learning comprises i) an audio video PowerPoint slide which provides lectures and interactive quizzes for all the chapters in the syllabus, ii) notes, texts and reference books for further reading, iii) online quizzes, and iv) a detailed blended learning scheme of work, provided to every student as a schedule guiding students and lecturers throughout the semester. Assisted Learning comprises; i) face to face tutorial and discussion classroom sessions, ii) instant messages using an instant messaging tool such as WhatsApp, and iii) a forum made available on i-learn. Assessments comprises i) online and written quizzes, ii) written tests, and iii) final examination. These three

dimensions were consecutively applied throughout the semester following the blended scheme of work. The blended learning module dimensions are depicted in Figure 1.

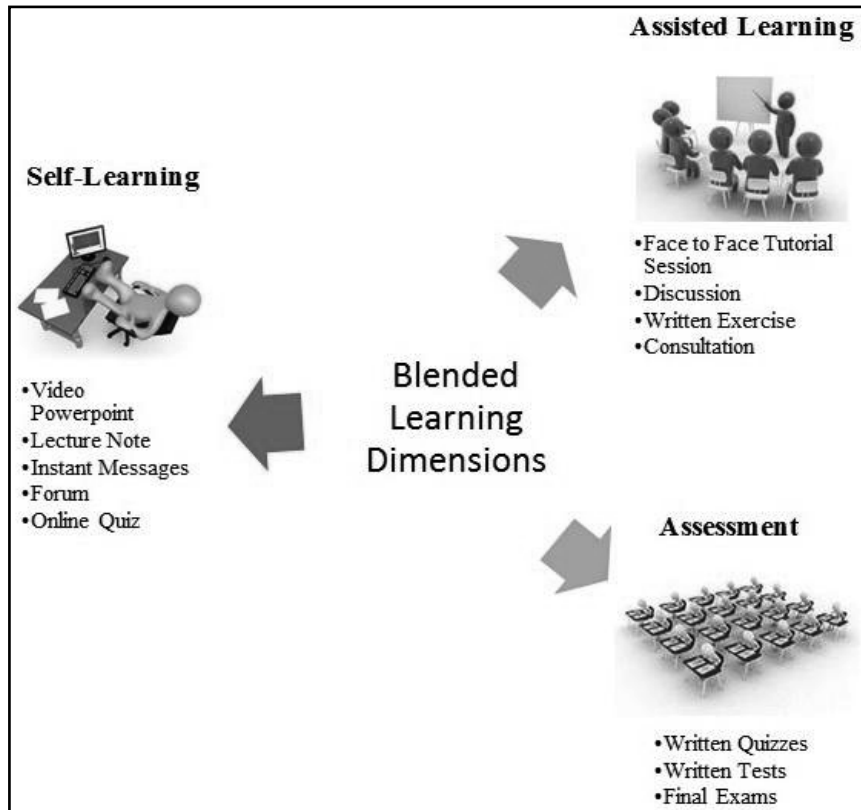


Figure 1: Dimensions of Blended Learning

RESEARCH METHODOLOGY

A total of 298 parts two, three and four Diploma students (semester May-October 2014) took an introduction to statistics course (QMT181) instructed by four lecturers. Two lecturers (190 students grouped into seven classes) opted to apply blended learning module in conducting their lectures while two others applied the traditional approach (108 students grouped into three classes).

During the lecturers' first meetings with students, lecturers who opted to use the blended learning module provided students with audio video PowerPoint for all the chapters in the syllabus and explained the blended learning scheme of work. Traditionally, the course consisted of four hours per week of face to face lectures and tutorials but with blended learning module, it was reduced to two hours Assisted Learning while the other two hours were allocated to Self-Learning. During Self-Learning sessions, students were expected to listen to audio video PowerPoint's, read notes and textbooks after which they were expected to do online quizzes. Every chapter has at least one online quiz. During Assisted Learning, the lecturers conduct tutorial sessions where exercises and tutorial questions are discussed. In these sessions students can ask whatever questions they have about the topic and clarify any misunderstandings. Even though two of the four contact hours were allocated to Self-Learning, for topics that are more difficult and need more assistance, all four contact hours may be utilized to give more time for problem solving exercises.

Students were assessed by online quizzes (which constitute 5% of total final mark), written quizzes for chosen chapters (5% of final mark), written tests (30% of final mark), and final examination (60%). Online quizzes were posted on I-learn, which is the university's e-Learning application. The online quizzes were made available for repeated trials; the main intention was to encourage students to make an effort at trying to understand and memorize certain facts after they had listened to the video PowerPoint slides. Thus, 5% was allocated to the total marks students scored for all the quizzes. Hopefully this would be a motivation for them to earn as much scores as they could. However, students could repeat doing the quizzes within the limited time the quizzes were made available.

One of the worries of mathematics or statistics lecturers in implementing blended learning is how to assess students' solving method. This is because mathematics and statistics involve not only understanding factual knowledge but also the process or procedures in arriving solution to problems. The lecturers insist that they should go through manually students' methods in solving problems so that they know students are using the correct method to get the solution. Thus, online quizzes alone would be insufficient. In this module, we complemented online quizzes with written quizzes and written tests. In this way, students were also assessed manually to see whether they were using correct methods in solving problems.

In order to find out whether blended learning module is at least as effective as traditional method, an independent t-test analysis was conducted to compare the means of final exam scores across the blended learning status. A survey of students' perception on the blended learning module was also conducted to gauge students' experience taking a statistics course offered in blended learning mode.

ANALYSIS AND FINDINGS

Comparison of Means

Comparison of means was conducted using Independent Sample T-Test in SPSS version 21. It is known that one weakness of the 'mean' is that it is influenced by extreme values. Thus, measures have to be taken to make sure that comparison using 'mean' is valid. One way is to verify that groups involved in comparison have almost the same dispersion among their scores. Hence, before we compare the group mean scores, dispersion of scores for each group was first calculated using the Coefficient of Variation (CV). CV is a relative dispersion to the mean which is the standard deviation expressed as a percentage of the mean (shown in Table 1).

Table 1: Descriptive Measures and Coefficient of Variation of Scores for Each Group

Group	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Coefficient of variation (%)
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	
A (BL)	25	37.00	87.50	64.8200	14.17074	-.268	.464	22
B (BL)	33	25.50	90.50	55.3333	17.35190	-.203	.409	31
C (BL)	27	22.00	87.50	56.5556	18.55000	-.292	.448	33
D (BL)	34	22.00	89.50	61.5882	18.75297	-.328	.403	30
E (BL)	38	23.00	79.50	49.1053	13.13143	.128	.383	27
F (BL)	15	39.00	86.50	55.9000	14.08038	1.081	.580	25
G	30	30.50	86.00	62.4000	16.80538	-.685	.427	27
H (BL)	19	33.00	93.50	65.1053	18.84187	-.404	.524	29
J	37	20.50	90.00	58.2568	18.60355	.011	.388	32
K	41	23.00	85.50	52.6220	15.26056	.333	.369	29

*Groups A, B, C, D, E, F and H were instructed using blended learning module

*Groups G, J and K were instructed using traditional teaching

There were two groups (A with CV = 22% and F with CV = 25%) with dispersion markedly different from the rest. The other eight groups can be considered to have similar dispersion. To illustrate diagrammatically, CV for each group was plotted against their frequencies as shown in Figure 2.

Marked different dispersion					Marked similar dispersion							
					x	x						
x					x	x	x	x	x	x	x	x
22	23	24	25	26	27	28	29	30	31	32	33	

Figure 2: Distribution of CV for Each Group

The two groups (A and F) were separated from the other eight groups that have almost the same CV. Five groups (151 students) were instructed using blended learning module, while the other three groups (108 students) were instructed using traditional approach. The independent t-test was conducted to compare the means of final examination marks between teaching approaches, Blended Learning vs Non Blended Learning. Table 2 shows the result of the independent T-Test.

Table 2: Results of Independent T-Test

t-value	Degree of Freedom	Significance (2-tailed)	Std. Error Difference	95% Confidence Interval of the Difference	
				Lower	Upper
-0.453	258	0.651	-1.01852	2.24672	3.40572

*Equal variances assumed

The result from the t-test shows that there is no significant difference between the final examination marks scored by students undertaking blended learning module and the final examination marks scored by students instructed with traditional teaching method. Thus, the null hypothesis was not rejected.

Students' Perception on Blended Learning

To capture students' perceptions on the blended learning module, a short questionnaire was developed and distributed to the students. Students were asked if they had heard of blended learning before starting the module. Only 40.8% of the students were familiar with it, while the rest (59.2%) were not (Table 3). 68.3% were clueless on what blended learning is, 12.7% thought that blended learning might be scary and only 19% thought that blended learning would be fun (Figure 3).

Table 3: Students Awareness towards Blended Learning

Heard of Blended Learning	
Yes	40.8
No	59.2

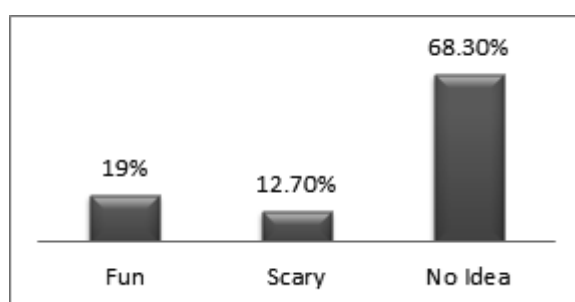


Figure 3: Opinion on Blended Learning before the Module Starts

Students were also asked if they would prefer other mathematical subjects to be conducted as blended learning as well. 21.1% said yes while the rest (78.9%) did not prefer other mathematical subjects to be offered in blended learning mode (Table 4).

Table 4: Students Preference to apply Blended Learning to other Subjects

Prefer blended learning for other mathematical subjects	
Yes	21.1
No	78.9

There were three components in Self-Learning and Assisted-Learning dimensions that contributed to the highest percentage of students who confessed to have problems. The components were video PowerPoint (69.7%), online quizzes (50%), and class tutorials (9%) (Figure 4). On the other hand, the component that best helped the students to understand the subject was classroom tutorials as shown in Figure 5.

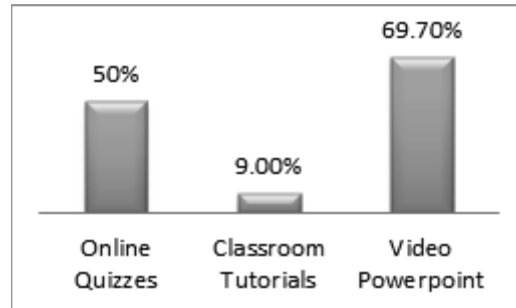


Figure 4: Components with Highest Percentage of Students who Face Problems

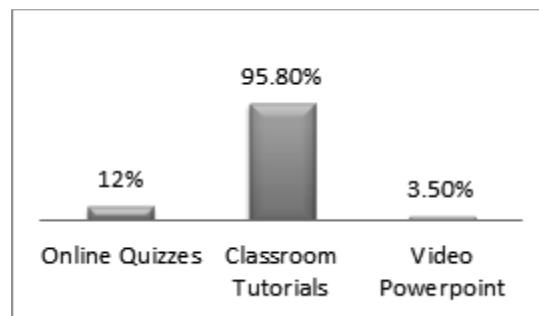


Figure 5: Components that Best Helped Students' Understanding

LIMITATION OF STUDY

One of the limitations of this study is that there were different lecturers teaching different groups of students. This may prompt different teaching styles among different lecturers that may have different influence on students' learning gain. We tried to overcome this limitation by using final examination marks as comparison instead of the final graded scores. In this university, the final graded scores consist of the continuous assessment marks (quizzes and tests) which were handled by the lecturers individually plus the final examination marks. Except for tests' questions, the quizzes and assignments (if any) were not standardized across all groups of students. However, the final examination questions as well as the marking scheme

were standardized. Furthermore, most lecturers also practised common marking (a lecturer marks the same questions for all students) which further enhanced standardization in marking questions. There is also a time lapse of about three weeks between the last lecture and the final exam date. During this time the students were left totally on their own to prepare for the final examination. Hopefully this time lapse and standardization will diminish if not nullify the impact of different teaching styles conducted by the different lecturers.

The second limitation of this study is the difference in students' abilities and efforts that may cause different variances in distribution of marks across the 10 groups of students. We tried to overcome this limitation by conducting Independent T-Test for groups having almost the same dispersion in final examination marks only. By doing this we hope to be able to avoid making erroneous conclusion. We did not make comparison based on failure rate per group because making comparison based on failure rate per group would not enable us to overcome this limitation as the failure rates will only tell us the number of weak students per group whereas blended learning module was meant for every student in the groups. Furthermore a group that has more weak students would be expected to have higher failure rate irrespective of whether they had undergone blended learning module or not.

DISCUSSION AND CONCLUSION

During Self-learning, students had abundance of materials to browse as well as to work on. With video PowerPoint slides explaining the theoretical part of each chapter as well as demonstrating worked examples, lecturers had more time to discuss problems and more problems could be attempted during classroom sessions. However, lecturers must be well versed with the subject in order to provide a summary of the chapter to stimulate further understanding and to be able to guide the students through all the tutorial questions. The video lectures also helped to overcome insufficient number of class sessions to finish the syllabus due to classes being cancelled because of public holidays or programs that either lecturers or students were required to attend.

Class sessions became more interesting because no one fell asleep when classes were interactive discussions and problem solving sessions; students took active part in question and answer activities because having read the textbooks, notes, and watched the video lectures they could contribute to the discussion. Personally, as lecturers we looked forward to classes whereby we were able to attract students' attention to our subject without having to stick to one way traffic' flow of information that usually caused students to fall asleep or trying hard to keep awake.

Results from this study showed that there was no significant difference in final examination marks scored by students who undergone blended learning module and final examination marks scored by students under traditional approach. This can be taken as evidence that blended learning module is as effective as traditional approach as far as examination scores are concerned. In fact during the time lapse before examination date students under blended learning module had the advantage of going through lectures for every chapter (via listening to video PowerPoint) repeatedly as well as personally consulted lecturers through WhatsApp, Telegram and forum application in I-learn. This was a great help in increasing their learning gain.

While many students were keen and excited about this mix method of teaching and learning, there were students who were i) too lazy to listen to video power point slides, ii) couldn't care less about their marks thus not enthusiastic in obtaining as much as they could in online quizzes, and iii) not matured enough to be able to want to gain the most out of available learning opportunities. Students who participated in this study were Part 2 and Part 3 Diploma students, where just a year ago they were attending secondary schools. Hence they were still familiar with the traditional style of 'chalk and talk' delivery which made them very dependent on their teachers as their source of knowledge. Therefore some of them found it very difficult to do independent study by listening to educational videos and tried the exercises presented in the slides as well as reading notes or textbooks on their own. We found that as lecturers, we also had to act as motivators and facilitators. Good students performed very well, but poor students mostly could not keep their patience and concentration long enough to finish listening to the videos.

In general, the results from the survey of students' perceptions on blended learning module were not very encouraging. We think that this was expected as students were no longer 'spoon fed' but had to be more independent in searching of knowledge. There was quite a big change in the teaching and learning process from traditional to blended learning. Thus, it will need a lot of adjustments in the student's attitude to achieve confidence and comfort.

In conclusion, blended learning is possible for conducting statistics courses and is beneficial to both students and instructors. Their performance in final examination showed that students who were instructed using blended learning module were not at a disadvantage compared to students who were instructed with traditional method. In fact, during Self-Learning dimension in blended learning module, the students experienced numerous benefits intrinsically such as time management, self-discipline, patience as well as self-motivation. These are valuable experiences in intellectual training needed by every university student in this decade.

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Investigating on Students' Acceptance on the Usage of Videos as Teaching Materials

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ABSTRACT

As the online and blended learning has started to be accepted as delivery methods for teaching, the educators in institutions of higher education need to explore on how to conduct online class by using multiple types of digital contents to deliver their learning objects. This paper discusses the findings of an empirical study in accepting video as one of the teaching materials to support blended learning activities. Three sets of videos that contain the learning objects for three different courses were distributed to the students through i-Learn portal during their online class. Questionnaires were distributed one week after the videos had been viewed by the students to assess their acceptance of the new approach and the satisfaction on learning using videos. The study was carried out on 120 students from Diploma in Computer Science taking two different computer science courses and 40 students from Diploma in Sport Science taking IT Essential for Sports course. The analysis from the returned questionnaires by the students shows that they can adapt with the new approach since most of the students' are computer and Internet literate. At the same time, they are also gradually adapting various types of learning materials.

Keywords: Blended learning, online learning, students' acceptance, teaching video

INTRODUCTION

Teaching in higher institutions becomes a big challenge to every educator as teaching delivery methods nowadays does not involve face to face lecture sessions and consultation hours only. Blended learning is one of teaching delivery methods that is being used in Universiti Teknologi MARA (UiTM). It combines face to face lectures with non-face to face computer mediated technology. Non-face to face is online learning activities or commonly described as e-learning. The intention to use e-learning relies on individual characteristics, computer self-efficacy and internet self-efficacy (Lee, Hsiao & Purnomo, 2014).

To implement a successful non-face to face session, there are a few activities being suggested by i-Learn Center to help lecturers in delivering the course contents. i-Learn portal is an official UiTM's Learning Management System (LMS) that provides features for all users to support online activities such as content sharing platform, conducting online quizzes, online submission for assessments, and forum discussion. There are lots of learning objects or learning materials in variety of formats that have been uploaded to the LMS since it was officially established. Referred contents are inclusive of text format and learning objects in presentation tools format, interactive courseware, audios, videos and hyperlink to the source of material for ease of reference. Even though previous research by Joi, Camille and Krista (2010) found that there were different expectations and perceptions between various terms of online learning, the provided materials for online learning are still the same. As users of videos for teaching material, Badrul and Mohammed (2015) highlighted that it must be relevant to the student learning objective. Hence, it will be attractive enough to grasp the students' attention and provide them the necessary understandings.

Previous acknowledged researchers have conducted studies and found various advantages of using videos as teaching materials. Hampton (2002) stated that multisensory skills can be developed since the video is a learning material that includes the audio and visual together and also allows the learners to control the video navigation such as play, replay, pause and rewind to the sections of the lessons needed. Mishra (2001) highlighted the videos that show practical and real-life activities are very useful as they can eliminate the cost of conducting experiments and presentations

repeatedly. Using videos as learning materials can also help in saving the cost of repeating the same experiments or demonstrations (Jung, 2005) and Tooth (2002) stated that even though some of the videos are costly to produce, they are very useful for demonstration purposes. In relation to prior information provided, teaching materials are one of the predictors of perceived usefulness of e-learning and playfulness is the predictor of intention to use e-learning (Lee, Yoon & Lee, 2009). Hence, it is important to investigate the acceptance and effectiveness of video usage as teaching materials in order to support the implementation of blended learning in the university

METHODOLOGY

A quantitative method using questionnaire has been adapted in this study. Online questionnaires were given to students who had completed reviewing the materials through i-Learn portal. This study is targeting students as respondents as they play the important role in this blended learning process and become the receivers of the knowledge delivered through the video material. Three groups of students that received different teaching videos from 3 different courses are selected as respondents for this study.

The research design is shown in Figure 1. The questionnaire that was developed comprised 2 parts measured on a 6-point Likert scale. The first part is on the demographic item. The items in part two consisted of evaluation on perception and effectiveness of videos as teaching materials.

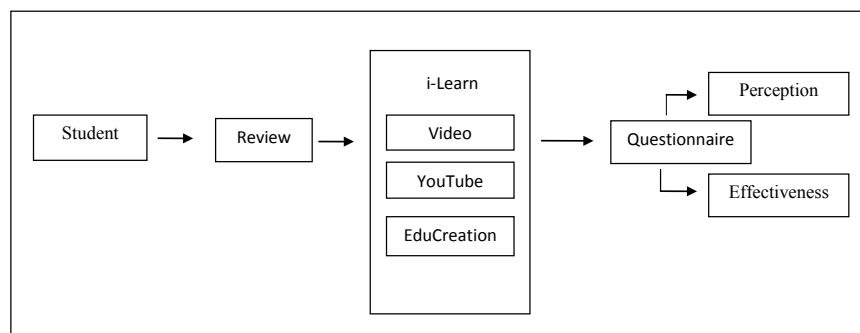


Figure 1: Research Design

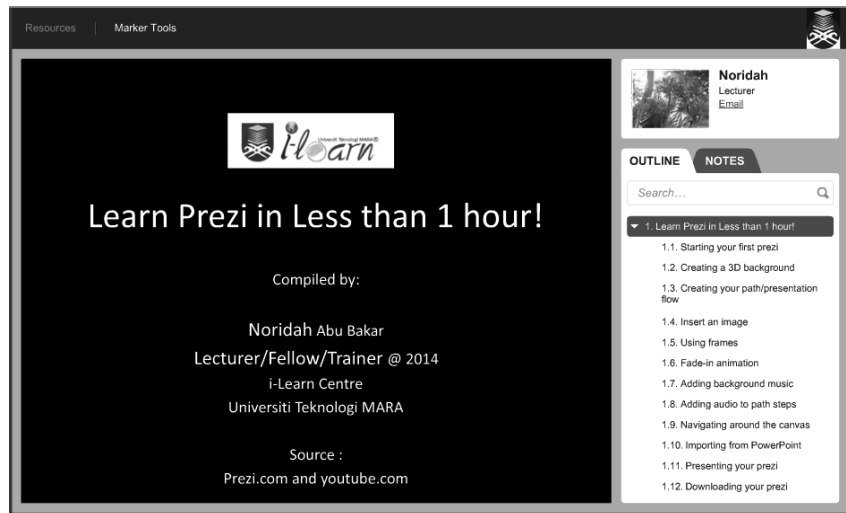


Figure 2: Screenshot on Video for the Course SPS105 IT Essential for Sports

Since the students are those taking ‘IT Essentials for Sports (SPS105)’ course, the videos given to the students are compiled from YouTube website, demonstrating how to use a presentation tool called Prezi. The students need to follow the given instructions in the video to help them to produce their presentation materials using Prezi application software. The screenshot of the provided course is shown in Figure 2.

Figure 3 illustrates the video for second group of students who are taking ‘Computer Organization (CSC159)’ course. The instructor recorded the video herself. It contains the demonstration and explanation on arithmetic operation that can be performed using different base numbers.

The other video material used in this study is video for Practical Approach in Operating System (CSC204) course enrolled by Diploma in Computer Science students, who become the third group of respondents. In this video, the instructor recorded the explanation using Edu Creation teaching tool that contains protection files mechanism and storage allocation techniques. The instructor also demonstrates the calculation of protection code and size of storage allocation for each technique. The sample of the image taken from the video is presented in Figure 4.

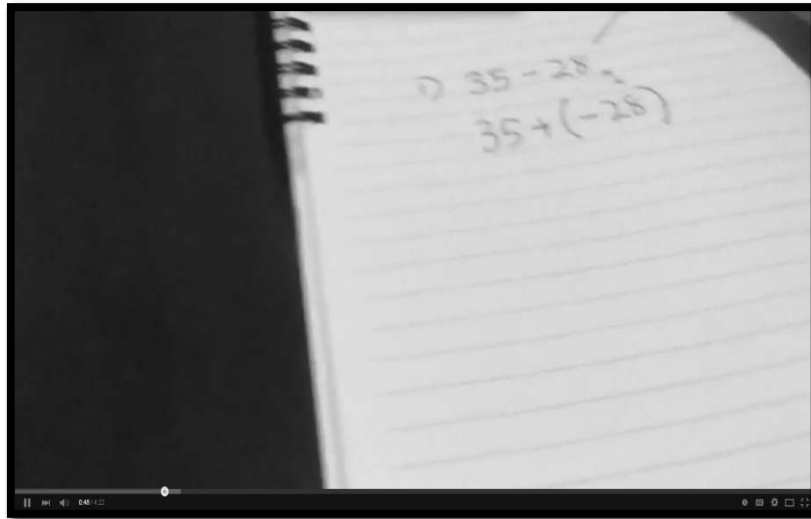


Figure 3: Screenshot of the Video for Course CSC159 for Diploma in Computer Science

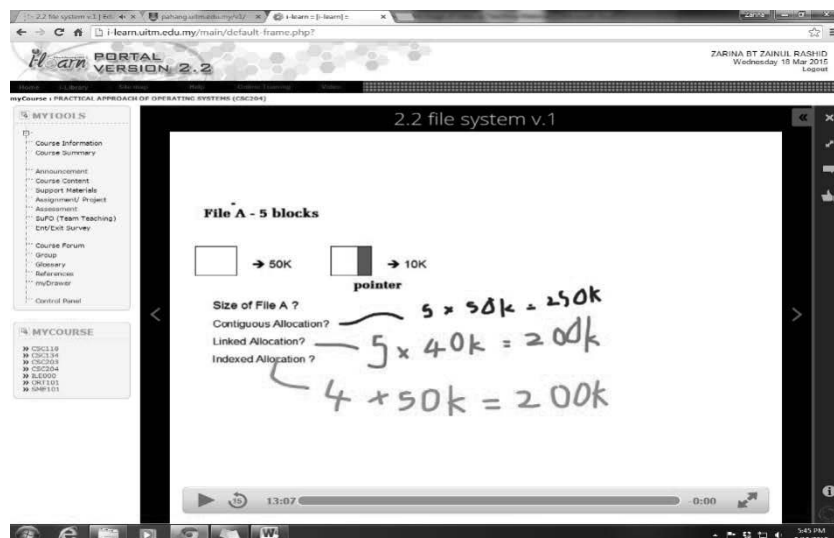


Figure 4: Screenshot of the Recorded Video for Course CSC204 for Diploma in Computer Science

DATA ANALYSIS AND DISCUSSION

The collected data has been inserted into the SPSS software for further analysis. A total of 160 responses have been collected and this includes 100% of the online form filled up by the students. The students were selected through purposive sampling from classes conducted by the researchers who are from Faculty of Computer and Mathematical Sciences (FSKM) and Faculty of Sports Science and Recreation (FSR) in our institution.

Figure 5 shows the demographic information on gender while Figure 6 shows the percentage of students by each faculty. As it is a norm that the higher education institutions in Malaysia are dominated by women, the higher percentage of students who answered the survey also clearly shows that 60% were female students and the remaining 40% were male students. With regards to the portion of students by faculty, 75% of the responses were from FSKM and the remaining 25% were from FSR.

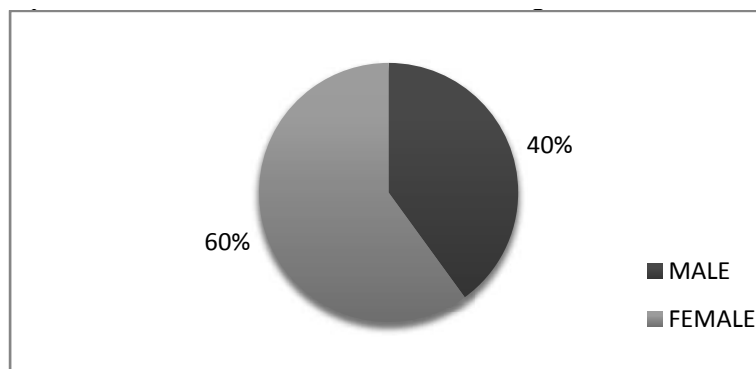


Figure 5: Demographic Information on the Respondents' Gender

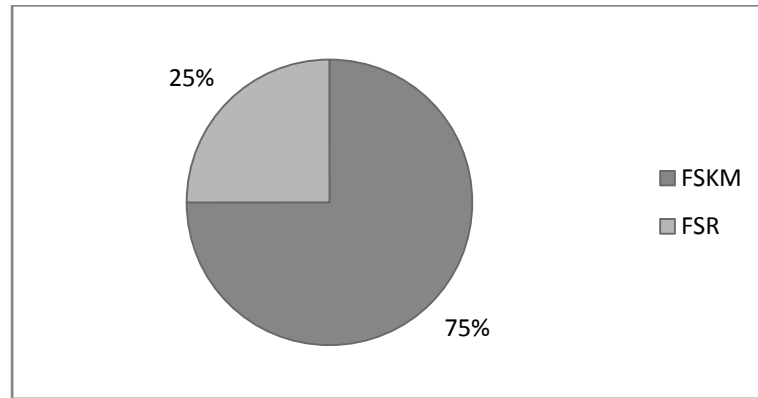


Figure 6: Percentage of Respondents by Faculty

Table 1 shows the collected data from 160 respondents were used in the calculation of Cronbach's Alpha and 100% taken for analysis. No missing data were recorded as the online data collection method was used with the setting of mandatory field in the form.

Table 1: Case Processing Summary

List wise deletion based on all variables in the procedure.		N	%
Cases	Valid	160	100.0
	Excluded ^a	0	.0
	Total	160	100.0

Table 2: Reliability Testing

Variables	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Perception	.89	.888	5
Satisfaction	.89	.894	5

Cronbach's alpha is a popular test in measuring interim consistency. As explained by popular authors in research methods, Sekaran and Bougie (2009); in general, reliabilities less than 0.60 are considered poor, while

those in the 0.70 range are acceptable, and those over 0.80 are good. The obtained alpha score as shown in Table 2 for both perception and satisfaction is 0.89. This indicates that the scale has high internal consistency and proven that the items for each variable are reliable and positively correlated to one another. Thus, it can be accepted for measurement.

Once the reliability test showing a supportive result, the analysis proceeds with the descriptive statistics. For each item, its mean and standard deviation were identified. The computed mean rating for each item that is greater than 2.50 indicated expression of agreement with the items, while means below than 2.50 indicated expression of disagreement with the statement.

Result in Table 3 shows that all the items had mean ratings greater than 2.50. The highest mean below the acceptance variable is 'The given videos is meaningful' with mean 4.29 (SD= 0.982). It shows that the given videos mostly meet their expectations or not poor to facilitate their learning. Even though the statement 'I am able to become a self-learner by learning through videos' shows the lowest means of 3.78 (SD=0.904), all of the students actually rated them above the theoretical mean of 2.50 with reference to the standard deviation value. Indeed, when the videos were given to the students to facilitate their learning, they were so eager to view them and started to focus themselves in learning. This visibly indicated that the acceptance level in learning through videos is relatively high. Apart from that, they also agreed that the videos were interesting, which were suitable to facilitate their learning and supported the statement that other lessons should consider using the videos as well to support learning activities.

Table 3: Descriptive Statistics of Students' Rating

Elements of evaluation for the video-based lesson	Mean Rating	Std. Deviation
<u>Elements for acceptance</u>		
I am able to become self-learner by learning through videos.	3.78	.904
The given videos are meaningful.	4.19	.858
Learning through videos is interesting.	4.29	.982
Videos are suitable to facilitate my learning.	3.97	.921
Educators should also use videos in other lessons.	3.94	1.080
<u>Elements for effectiveness</u>		
It is easy to understand most of the contents in the video lessons.	3.78	1.020
It is easy to follow the video lessons.	3.84	.988
I love the part that we can repeat the video lessons as frequently as we like.	4.76	1.025
The content in the video covers most of the lessons that I need.	3.98	.945
I am satisfied with this learning method (video lessons).	3.99	.971

The mean rating of the items for each of the variables measured as rated by the respondents was computed for both faculties involved in the study. Table 4 shows the mean rating for both groups is high and appears relatively close for most of the questions or items. The result shows that the FSKM students ($M=3.91$, $SD=0.78$) and FSR students ($M=4.41$, $SD=0.68$) are both positively supporting the video lessons method. With regards to the effectiveness, there is also a positive response by the FSKM students ($M=3.94$, $SD=0.85$) and FSR students ($M=4.46$, $SD=0.64$). The overall result shows that the students accept the videos as teaching materials even though they are from different groups, different content creators and different areas of studies.

Table 4: Group Statistics

	Faculty	N	Mean	Std. Deviation	Std. Error Mean
Mean Perception	FSKM	120	3.9083	.78340	.07151
	FSR	40	4.4100	.68530	.10836
Mean Effectiveness	FSKM	120	3.9400	.84559	.07719
	FSR	40	4.4600	.63762	.10082

CONCLUSION

This study demonstrates that the students expressed a positive preference for accepting videos as one of the teaching materials. Three types of different recorded video were used and the finding indicates that these videos are effective in terms of delivering the content. Furthermore, the students expressed a strong preference for the video lessons that can be repeated as frequently as they like. Even though different groups of students with different areas of studies have some different perceptions and feedback towards the effectiveness of video learning method, regardless of the overall positive result obtained, it is believed that the students accept this method of teaching and quality learning experience can be improved through usage of videos as online teaching materials. The students will have positive attitude towards e-learning when they find it easy to use and useful for their coursework (Adewole-Odesi, 2014) and in this study, the videos are proven to be easy and useful for online teaching material.

Nevertheless, as usage of video is good for learning aids and one of the delivery methods for learning materials, it is also necessary to consider learning experience that actively engages students when developing teaching materials. Future work will be needed to consider a more flexible approach to improve quality and value in learning experience.

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Andragogy Characteristics of Undergraduate Students' Towards Web-Based Technology of Learning in Association to Teaching Strategies

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ABSTRACT

An increasing number of undergraduate students' enrolment and high capability of technology advancement contribute to an enormous change in the teaching and learning perspectives. It has led to an evolution in the educational field. Traditional teaching strategies are no longer favourable and have been traded with web-based technology teaching strategies. This new style of teaching strategy demands a high level of students' responsibilities' to be more independent and highly self-directed and motivated towards their own learning. In other words, they must be andragogy oriented. This study attempted to investigate the readiness level among undergraduate students towards web-based technology learning. The main purpose of this work is to identify whether undergraduate students who are categorized as young adults are andragogy oriented individuals. The questionnaire used in this study is based on Malcom Knowles adult learner assumptions. The instrument was validated and the alpha coefficient reliability index obtained using Cronbach method was 0.94. The results indicated that half of undergraduate students possess andragogy characteristics, whereas the remaining is still beyond andragogy characteristics. It is also demonstrated that almost 70% of the students exhibit adult characteristics in self-directed, readiness to learn and motivational level assumptions, whereas for the criteria of need to know and experience assumptions, around 50% of the students are still

beyond andragogy orientation. The outcomes demand the lecturers to be more responsive and receptive on students' readiness levels towards the web-based technology learning in association to their teaching strategies.

Keyword: Andragogy characteristics, Knowles theory, learning strategies, web-based technology, young adults

INTRODUCTION

The development of technology has brought a tremendous evolution in an educational field. Web-Based Technology learning's such as online learning, e-learning, m-learning, blended learning have started to swing out traditional teaching strategy which is based on lectures and textbooks. The web-based technology teaching strategies are admitted by most educators as an effective teaching style which brought a number of advantages such as effective learning, global resources' accessibility, flexible place, time and schedule and cost saving (Dzakaria et al., 2012). It involves the application of new types of teaching materials such as slides, audiotapes, motion pictures and video.

Much works related to web-based teaching technology has been studied (Khweileh & Aljarrah, 2010; Bollash, 2010; Dzakaria et al., 2012; Chiheve & Blankson, 2010). Most of the research is focusing on adult learners and virtual students who return to higher institutions to enhance and strengthen their knowledge. The results demonstrated that most of the learners tend to view web-based technology learning as positive learning strategies and they are ready to use it (Khweileh & Aljarrah, 2010; Dzakaria et al., 2012, Bollash, 2010; Blankson, 2010). However, not much information on young adult learners has been reported. Chiheve (2013) suggested that fully web-based technologies of teaching strategies are not suitable for undergraduate students since they are still lacking self-directed learning. He recommended applying blended self-directed learning with some traditional methods as alternatives.

The other supporting study investigated the impact of problem-based learning (PBL) on pre-service teachers' beliefs about technology use and their intended teaching practices according to lesson plans. The research

question examined the teachers' beliefs in three sub-categories: 1) teachers' pedagogical beliefs, 2) teachers' self-efficacy beliefs for technology integration, and 3) teachers' beliefs about the perceived value of computers for instructional purposes. It is found that no statistical significance on any measure related to teachers' beliefs (Park and Ertmer, 2007). Thus, the use of problem-based learning in comparison to traditional teaching approaches (control) does not significantly have an impact on pre-service teachers' beliefs regarding technology use.

The instructional designers and educators have been advocating for the intelligent integration of learning technology. Another approach to web based learning is digital game-based learning (DGBL). Reviewers have consistently found that games promote learning and/or reduce instructional time across multiple disciplines and technologies. Games are effective because of what they embody and what learners are doing as they play a game. Games can influence learning and skills (hand-eye coordination, visual processing, the learning of facts and simple concepts).

The game must be comparable in quality and functionality to commercial off-the-shelf (COTS) games, which are very effective in teaching the content, skills, and problem-solving needed to win the game. This DGBL approach is gaining acceptance because of its practicality, and research shows that it can be effective. It is certainly possible for modern game design to cross multiple disciplines such as Art, English, Mathematics and Psychology. On the other aspects, not all teachers have the skill sets needed for game design, not all teach in areas that allow for good content, not all can devote the time needed to implement this type of DGBL and this approach is unlikely to be used widely (Van Eck & Richard, 2006).

The success of web-based teaching strategies relies on several factors such as facilities, material, lecturers' readiness and most importantly the students' readiness. As claimed by Perrin (2010) and Chametzky (2014), the implementations of web-based technology in education require students to have their own control over their learning. Besides, it also demands them to attain a high motivation level and self-responsibility in their learning process.

The concept of andragogy has been introduced by Malcolm Knowles in his theory known as Knowles' Andragogy Model (Knowles, 1998). Andragogy describes teaching strategies which apply learner centeredness with the highly independent learning environment. Andragogy consists of learning strategies such as demonstration, experimental, role play, simulation and case study which focus on adult learning characteristics. It is often interpreted as the process of engaging adult learners with the structure of learning experiences. In this theory, Knowles highlighted six assumptions which describe adult learning characteristic. The six assumptions include need to know, self-directed, learning experience, readiness to learn, learning orientation and motivation.

Need to Know

Knowles et al. (1998) have identified three components of need to know which encompass how learning is conducted, followed by the need to know, and why learning is important.

Self-directed

Self-directed learning is conceived as self-learning in which learners have the primary responsibility for planning, carrying out and evaluating their own learning experiences (Elliger, 2004). When students take responsibility for their own learning, they become active (Chametzky, 2014). Masier (2010) found that incorporating self-directed learning in teaching and learning required students-involvement and collaborative learning scenario rather than traditional pedagogical teacher-led instruction. Gehring (2000) concluded that andragogical theory prescribes a process of self-evaluation, in which the teacher devotes their energy in helping the adults to get evidence for them about the progress they make toward their educational goals.

Learning Experience

Adult learners have a lot of experiences in their life and they become part of the richest resource for learning. By creating these cognitive connections to previous knowledge, adult learners make the acquisition process easier (Chametzky, 2014). Although it has been reported that their experiences can shape the learning outcomes, in some cases, they can act

as hindering factors (Wilson, 2005). Some of the barriers reported are comfortable with familiar teaching methods from their past educational experiences and resistance to learning, especially, new and unfamiliar subject contents.

Readiness to Learn

Readiness is seen as a learning behavior which allows students to continue learning on their own efforts. Learning is more effective if it corresponds with a need to know (Caruth, 2014). Understanding adults' readiness to learn is important because the concept of a development task for adults is connected to their own choice of time and learning content (Terehoff, 2002). Readiness to learn is influenced by the need to perform the roles and tasks (Wilson, 2005). It is noted that readiness is influenced by freedom of choice, volunteers and level of knowledge in a particular subject or skill. In addition, Ahmad and Abdul Majid, (2010) reported that a culture could be a strong influence in the development of self-directed learning readiness. In addition, Hondzel (2013) stated that readiness to learn and orientation to learn are both influenced by the adult learners' emotional states and stress levels. These emotional states and stress levels can be easily altered by creating a healthy educational environment such as caring and understanding relationship with the lecturers who provide a strong social atmosphere that reduces stress and promotes appropriate emotional connections for learning to occur.

Learning Orientation

For adults, education is a process of improving their abilities to survive with life problems, In other words, adults learn because they need to address issues in their lives. Thus, they enter the learning process from a performance-centered or problem-centered mind-set (Forrest & Peterson, 2006). Understanding adults' orientation to learning perspectives can help lecturers to create learning experiences that will address and resolve the problem area.

Motivation

Adults are ultimately motivated to learn internally and it is well-known that effective learning occurs when personal goals, interests, attitudes, and beliefs come from learners rather than the instructors. Past research has consistently reported positive and robust correlations between the learner's motivational level and his or her academic achievement (Kyong, 2005). Esposito (2004) stated that learners, who credit themselves for success, tend to have higher motivation and persist longer at performing task as they believe they are controlling their success or failure. Similarly, Hopstock (2008) indicated that motivated participants learn more and perform better than unmotivated participants. However, some previous work reports that adult learners' motivation is very complex and subject to change (Wilson, 2005). The level of motivation among students may fluctuate along the learning period and lecturers have to play a big role to keep their motivational level at maximum. In work conducted by Jayakumar (2010), overall survey results indicated that most of the students enrolled in tertiary education, especially in the engineering courses are expecting their teachers or lecturers to be essentially effective in executing functions such as providing motivation, planning and allocating scarce resources. Similarly, Mezei (2008) concluded that students need to be encouraged throughout the learning process so that they can become more self-regulated and autonomous.

LITERATURE REVIEW

Previous research reported that adult learners, who are being taught andragogically become engaged in the learning process and they are ready for learning, learn more, experience more meaningful learning and enjoy learning (Caruth, 2014). In this perceptive andragogy is defined as the science of understanding of theory and supporting practice of lifelong and life-wide education of adults. Md Noor et al. (2012) have conducted a study on andragogy and pedagogy, learning model preferences among undergraduate students. The results show that the majority of undergraduate students preferred a combination of pedagogical and andragogical orientation in their learning process. Similar findings are reported by Choy and Delahaye (2002) who concluded that higher institutional students within age 18 to 24

preferred a learning approach that utilized both pedagogy and andragogy characteristics. In work reported by Chiheve (2013), it is observed that Accounting students at Zimbabwe Polytechnic were partially self-directed and required guidance from their lecturers in their learning process.

O'Shea (2003) in her review of research in nurse education suggested that many nurses and nursing students prefer direct teacher-structured experiences, although they have a positive attitude towards andragogy teaching methods. This suggests that preference for teaching and learning methods must take account of students' preferred learning styles as well. Similar findings were reported by Al-Modhefer (2009), who observed the first-year nursing students at Queen's University Belfast. In a survey conducted by Levett-Jones (2005) on undergraduate nursing education shows that teacher-centered model is still preferred especially at an earlier stage of educational period. The author suggests that the successful introduction of self-directed learning requires adequate teacher and student preparation. There must be a balance between teacher-directed and student directed approaches of learning, the learner's preferences and styles of learning. The success of self-directed learning approaches depends on students' preference and readiness for self-directed learning. In this aspect, the nurse educators implement the concept.

Another work reported on pedagogy or andragogy preferences among higher institution students is a survey conducted by Tasir et al. (2008). The authors conducted a survey on online teaching preferences among pre-service teachers in Malaysia. The findings show that some students preferred learning based on the pedagogical principle orientation while the others prefer andragogy orientation. It is also noted that the final year of pre-services teachers can work independently since their self-concept has progressed to the self-directed learning practice. However, the authors reported that they still needed guidance from their lecturers as they were not prepared to accept the full responsibility of planning their own learning process.

Mohamed (2012) conducted a survey among undergraduates of psychology programme at the Open University Malaysia (OUM). OUM is one of the most popular colleges for distance education programme among adult learners to pursue their studies in Malaysia. The results showed that

the students are still beyond andragogy characters in terms of motivation. Although the students return to college on their own, they still require lecturer's motivation to keep them engaged in their studies.

In other work, Canoway (2009), conducted a survey to identify adult characteristics among three adult age groups; emerging adults (18-25), young adults (26-39), and mature adults (40-59). The result shows that regardless of the ages, all the participants' exhibit adults' characteristics as listed by Knowles. Although she predicts the matured adults should carry a higher level of adult characteristics, the analysis shows no significant difference in the areas of self-directedness, need to know, experience or readiness to learn. However, matured adults possess as higher motivational level as compared to other group of ages.

William (2004) measured self-directed learning readiness scale among nursing students which involved problem based learning program. The result shows that the readiness among the students is at an average level and no significant differences are observed between the first and final year students. This finding indicated that the nursing students are still beyond andragogy characters' and lecturers need to enhance their teaching styles not only on knowledge upgrading, but also including the development of adults' characters.

Based on previous research, it is evidently seen that undergraduates who are mostly young adults are partially adult learners. Thus, the implementation of web-based technology learning may not sound practical. However, an increasing demand from society to enhance learning and enrich knowledge and soft skills among professionals and individuals in work place forces higher institutions to practise web-based technology of learning in their educational process. Besides, global educational goals require graduates to become autonomous and lifelong learners. Thus, it has created a big challenge to the higher institutions in their implementation of a web-based technology teaching strategies. In order to understand their readiness level toward web-based technology teaching strategies, an understanding of the andragogy characteristics may be a good start. The outcomes will give some clues on their readiness level towards web-based technology teaching strategies and consequently help lecturers to plan, prepare and implement various web-based technology teaching strategies that balance with students' characteristics and preferences.

OBJECTIVES

Most Mechanical Engineering and Business Management undergraduates are 19 to 22 years old, which can be classified as young adults. Different groups of individuals learn differently. The main purpose of this work is to determine the andragogy characteristics of undergraduates in web-based technology teaching strategies. The survey is designed to determine the andragogy characteristics among the undergraduate students at UiTM Pulau Pinang based on the Knowles Andragogy Theory. The findings will give information about adult characteristics of undergraduates. It will also help the lecturers in selecting and designing suitable teaching strategies, teaching modes and teaching materials which suit the students' characteristics. Finally, it will reveal the readiness level of the undergraduates in web-based technology teaching strategies.

METHODOLOGY

This study applied quantitative method where a 5-point scale (1 – Strongly disagree, 2 – Disagree, 3 – Neither agree nor disagree, 4 – Agree, 5 – Strongly agree) was used to collect data. The instrument consists of 25 measurable items to investigate adults learning characteristics among the undergraduate students. The questionnaire is based on Malcom Knowles adult learner assumption which was adapted and modified from Wilson's (2005) questionnaire. On the 25 items tested, 5 items each measured assumption no. 1 (need to know), assumption no. 2 (learner's self-concept), assumption no. 3 (learner's experience), assumption no. 4 (readiness to learn) and assumption no. 6 (motivation). Assumption no. 5 on orientation to learn is not measured in order to avoid confusion and misunderstanding among students.

The survey instrument is adapted based on Knowles measurement. The Cronbach's alpha coefficient is calculated using SPSS software. The internal consistency of alpha coefficient in the questionnaire was 0.94. The result shows that the alpha coefficient is very high which indicates that the question in the survey is reliable to measure the adult characteristics. The alpha coefficients for each assumption are listed in Table 1.

Table 1: Validity Coefficient of Assumption

Assumption	Item	Alpha coefficient
Need to know	1 - 5	0.70
Self-concept	6 - 10	0.82
Readiness to learn	11 – 15	0.84
Experience	16 – 20	0.84
Motivation	21 - 25	0.88

Descriptive statistics is used to accomplish the research purpose. The survey instrument is a 5-point scale. The responses are scaled from 1 to 5 points. Any assumption with a mean score of 4 and above is concluded to be andragogy characteristics and any assumption with a mean less than 4 is considered beyond andragogy characteristics. In other words, they carry pedagogy characteristics. The summary of the categorization is listed in Table 2.

Table 2: Categorisation of Pedagogy and Andragogy Characteristics According to Mean Score

Mean Score	Categorisation
1.00 - 3.99	Pedagogy characteristics
4.00 - 5.00	Andragogy characteristics

Sample

A simple random and cluster sampling is used in this study. A total of 270 undergraduate students participated in this survey. The distribution of the sample according to programme, gender, age, ethnic and homeland is summarised in Table 3. It is noted that more than 80% of the Mechanical Engineering students are male whereas the remaining is female. However, diverse distribution is reported for Business Management students where more than 80% are female, whereas the male is below 20%. More than 50% of the respondents come from rural areas and the majorities are Malays. In terms of age, most of the students are in the age range of 19 to 22.

Table 3: Demographic Characteristics of the Sample

	Diploma level	Degree level
Total student	103	167
Gender		
Male	84 (82%)	23 (14%)
Female	19 (18%)	144 (86%)
Age (yrs)		
19	37 (36%)	0 (0%)
20	2 (2%)	47 (28%)
21	25 (24%)	49 (29%)
22	32 (31%)	51 (30%)
23	6 (6%)	11 (7%)
24	1 (1%)	6 (4%)
25	0 (0%)	3 (2%)
Ethnic		
Malay	101 (98%)	159 (95%)
Other Bumiputera	2 (2%)	8 (5%)
Homeland		
Rural	60 (58%)	97 (58%)
Urban	41 (40%)	68 (41%)
Non response	2 (2%)	2 (1%)

RESULTS AND DISCUSSION

The values of mean and standard deviation for five assumptions measured in the survey are summarized in Table 4. The overall mean is 4.0194 which is above accepted limit (>4). This indicates that the undergraduate students demonstrated andragogy characteristics which are student-centered, independent, ready to explore the knowledge, motivated and responsible for their own learning. However, the means for need to know and experience assumptions are reported below than the acceptable limits. The findings reveal that most of our students are partially adults. Although the overall means represent andragogy characteristics, individual assumptions prove that the students are only matured in certain characters. In other words, they carry dual orientation, pedagogy and andragogy. This sounds reasonable

since our undergraduates are young adult. At this stage, young adults usually undergo the transition stage where they are moving from pedagogical orientation to andragogical orientation.

Table 4: Mean and Standard Deviation of Undergraduate Adult Characteristics

Assumption	Description	Mean	Std
1	Need to know	3.8452	0.5106
2	Self-directed	4.1430	0.5471
3	Readiness to learn	4.0748	0.5624
4	Learners' experience	3.9185	0.5763
5	Motivation	4.1156	0.5753
Overall		4.0194	0.5543

From a total of 270 respondents, 56% (150/270) obtain a mean score ≥ 4 , which expresses adult learner characteristics, while the remaining of 44% are still pedagogy learners. Among five Knowles adult learners' assumptions, self-directed, readiness to learn and motivation show the highest percentage, i.e. around 70% as shown in Figure 1 which demonstrated that the majority of the undergraduate students are independent, ready to learn and intrinsically motivated in their studies. Whereas for need to know, less than 50% of the students are having score below 4, which indicated the majority of them are still unclear of what and why they are supposed to know in terms of the particular knowledge and skill. Similarly, experiential assumption is also seen to have lower scores. This finding sounds reasonable since most of our students are not exposed to working experience and real life environment.

Correlation analysis was performed to see any relationship between andragogy characteristics toward age and gender factors. It is observed that there is a significant relationship on gender and age and the andragogy characteristics. However, the strength of the relationship is very weak which is below than 20%. The correlation analysis data are shown in Table 5.

Based on the results, it is clearly revealed that the undergraduate students are partially adult learners. The majority of the undergraduate students are found to have a combination assumption of pedagogical and andragogical tendencies in their learning process. This demonstrated that they are not fully ready for web-based technology teaching strategies.

Table 5: Correlation Analysis between Mean Score, Age and Gender

		Mean Score	Age	Sex
Mean Score	Pearson Correlation	1	.133*	.183**
	Sig. (2-tailed)		.028	.003
	N	270	270	270
Age	Pearson Correlation	.133*	1	.136*
	Sig. (2-tailed)	.028		.025
	N	270	270	270
Sex	Pearson Correlation	.183**	.136*	1
	Sig. (2-tailed)	.003	.025	
	N	270	270	270

*. Correlation is significant at the 0.05 level (2-tailed)

From the viewpoint of the first assumption which is need to know, we can see that the majority of undergraduate the students are still unclear of what they are supposed to learn, how they are supposed to learn and why they need to learn. We may suggest that this is due to the force factors. It is noted that, some of the students joined the programme because they 'have to' not because they 'want to'. Some of them joined this programme because of the influences from parents, while others may join this programme because they do not get better job opportunities that suit their interests.

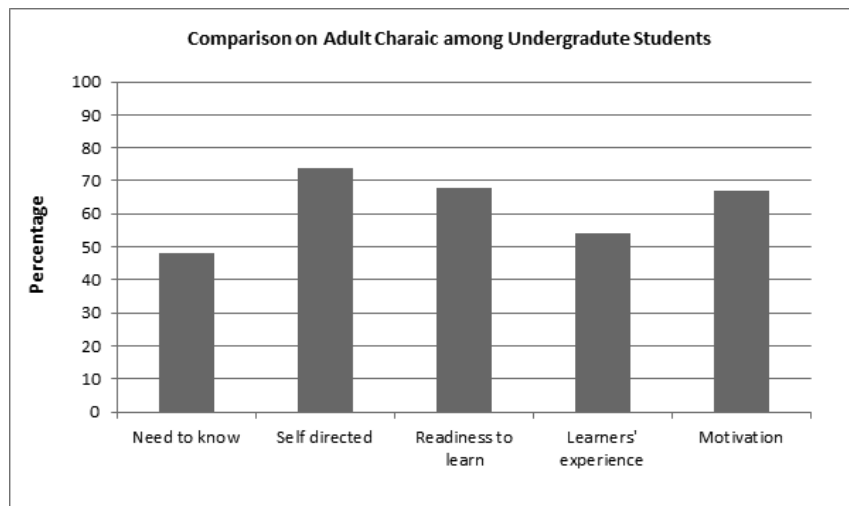


Figure 1: Percentage of Students with Adult Characteristics: Breakdown by Assumptions

For a self-directed learning, positive results are seen. The overall mean score gained for this assumption is 4.1430 (Table 4), which is more than 70% mean score above acceptable limits. Although it is a positive finding, the lecturers still need to be aware of a minority group which is still beyond andragogy characteristics. In other words, lecturers are still required to balance their teaching strategies according to pedagogy and andragogy principles.

Similar observation is seen on the third assumption. The overall mean score is also above acceptable limits. The findings demonstrated that the undergraduate students are ready and carry adequate readiness level in their learning. However, the readiness characteristic among the students needs to be further developed especially for the minority group with a mean score below acceptable limits.

In terms of learners' experience, the mean score is slightly below than the accepted limit. Almost half of the respondents achieved a mean score above the acceptable limit. These findings are reasonable since most of the undergraduate students have no working experienced and rarely have an exposure to the real working life environment (Chametzky, 2014). They start

their earlier education at primary and secondary schools before continuing their studies in the higher institutions without any working experience. The findings discovered that the undergraduate students do not gain benefit from any working experience in their learning process.

Finally, for motivation assumption, the mean score is above accepted limits. As shown in Figure 1, almost 70% of the degree students achieved a mean score above 4. This indicated that the undergraduate students are accomplished with an adequate motivational level that will help them to stimulate their learning process. Although it sounds positive, the lecturers are still required to play a big role in continuously enhancing the students' motivation. As claimed by Esposito (2005) and Hoptstock (2008), motivation is the most important aspect in learning. Students with high motivational level will show high interest and engagement in their learning process which will consequently create an effective learning.

Comparison between Mechanical Engineering and Business Management Students

Table 6 and Figure 2 show comparison between the Mechanical Engineering and Business Management students in terms of mean score, standard deviation and percentage of students score which are above acceptable limit for each assumption. The data shows slight differences in mean score for all assumptions. However the trend is still similar where assumption 1 and assumption 4 are still reported below acceptable limit while assumptions 2, 3 and 5 indicated values more than the acceptable limit for degree level. It is also found that the percentage of students with the scores above accepted limits for each assumption for business management students is marginally higher compared to the Mechanical Engineering students. Correlation analysis using SPSS software (as shown in Table 7) proved that there is a significant relationship between the two clusters. However, the relationship is very weak, which is approximately around 15%.

Table 6: Comparison of Mean and Standard Deviation between Mechanical Engineering and Social Science Students

	Mechanical Engineering			Business Management			
Assumption	Description	Mean	Std	Score ≥ 4(%)	Mean	Std	Score ≥ 4(%)
1	Need to know	3.7107	0.4929	34	3.9281	0.505	56
2	Self-directed	4.0893	0.5385	68	4.176	0.5514	77
3	Readiness to learn	4.033	0.5322	69	4.1006	0.5804	68
4	Learners' experience	3.7922	0.5394	46	3.9964	0.586	59
5	Motivation	4.0311	0.5392	68	4.1677	0.592	66
Overall		3.9313	0.5284		4.0738	0.5630	

Table 7: Correlation Analysis between S&T and SS Cluster

		C	Mean Score
C	Pearson Correlation	1	.147*
	Sig. (2-tailed)		.015
	N	270	270
Mean Score	Pearson Correlation	.147*	1
	Sig. (2-tailed)	.015	
	N	270	270
*. Correlation is significant at the 0.05 level (2-tailed)			

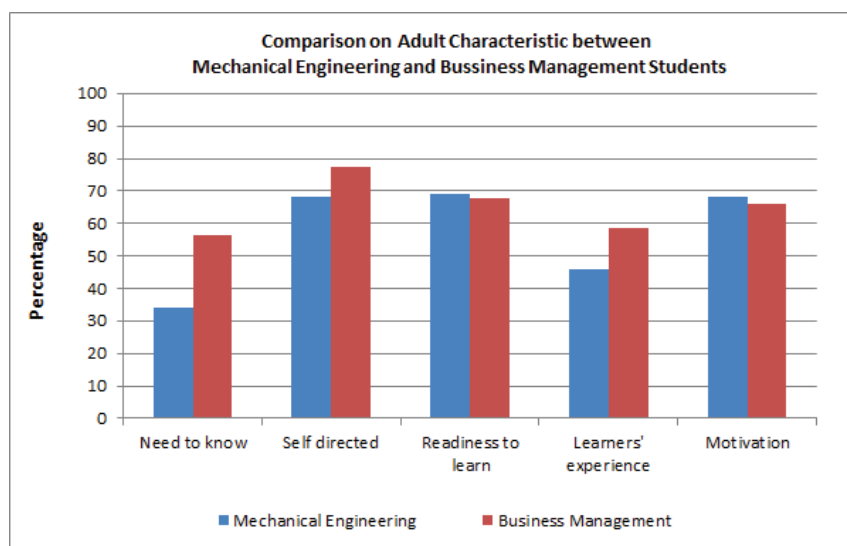


Figure 2: Percentage of Students with Adult Characteristic: Comparison between Mechanical Engineering and Social Science Students

Based on the findings, it can be concluded that the undergraduate students at UiTM Pulau Pinang are partially adult. This indicates that they are not ready to be fully exposed to web-based technology learning strategies. Almost half of the participants are dependant, lack of self-directed and not fully responsible for their own learning. The implementation entirely based on web-based technology learning strategies may not be completely successful. Thus, it is necessary for the higher institution to firstly prepare or develop the students with high andragogy characteristics before moving to a new technology based of learning strategies.

Recommendation in Enhancing Students' Andragogy Characteristics and Acceptance Level in Web-based Technology Teaching Strategies

Lecturers play a big responsibility to continuously develop andragogy characteristics in the undergraduate students in addressing the transformation towards web-based technology teaching strategies and in ensuring a successful implementation of the learning process. Subsequently, it will increase their acceptance level to web-based technology teaching styles.

Based on the findings, we would recommend some engagements activities that can be practiced to enhance the students' andragogy characteristics and increase their acceptance level in the web-based technology learning styles.

1. The basic principle to increase students' andragogy characteristics is by creating an active engagement environment in classes. Lecturers are free to utilize multiple teaching strategies that are able to create active engagement between students and lecturers and among the students. Varied teaching strategies have been recommended such as a discussion session, question and answer, students' presentation, role play, debate, brainstorming, etc. Through these activities, students are forced to actively engage in their learning process, thus, developing self-directedness and readiness to learn characteristics.
2. Probe students on what they need and explain why they need to learn certain concepts, theories, skills, etc. These would help the students to value their learning and realize the gap between where they are and where they should be. In addition, lecturers must be creative to interconnect the knowledge delivered with real-life problems and practical solutions. Establishing something with more realistic examples will enhance the students' interest and grow their need to know characteristic.
3. Encourage students to choose the learning activities, course materials and assignment topics based on their field of interest. When the learning activities suit their interests, these will empower students to explore the learning process with successful outcomes. At the same time, lecturers should continuously guide them to monitor and evaluate their learning objectives to ensure the learning process is moving in a positive direction.
4. Students with a higher motivational level tend to be successful in their learning. However, as human nature, motivation is usually fluctuated and strongly influenced by many factors, especially feeling and emotion which are known to be very sensitive and unstable in young adults. To keep students motivation constantly at optimum level, lecturers must play an important role to continuously motivate the students.

Challenges and Barriers

The main challenge and barrier toward implementation of web-based technology education is the students' readiness and willingness to learn. These new learning methodologies require students to have strong andragogy characteristics which are rarely accomplished by undergraduate students. In such situation, it challenges lecturers' competency to continuously developing those characteristics which force lecturers to implement andragogy approaches during teaching.

It is concluded that the web based learning in UiTM Pulau Pinang is in its infancy. Based on analysis, there is no evidence to prove that students learn more from web based learning as compared to the traditional methods. In addition, there is minimal information about the acceptance level of web based learning programme.

Another factor that has been claimed which further hindered andragogy approaches in higher education institution is the course syllabus. The course syllabus acts as an operation road map and it has traditionally been considered a standard step in crafting courses and teaching college students. As acknowledged, most of the current course syllabuses were developed based on pedagogical approaches. Currently, UiTM is in the process of revising its curricular and syllabuses which can be a good start to consider andragogy approaches to match with teaching methods.

By looking at pedagogical qualities and site resources, the vast majority of educational web sites prove to be the unripe fruits of the promising but still immature web technology. In relations to the efforts initiated by UiTM towards blended learning, a lot of efforts are needed to ensure comprehensive and systematic pedagogical qualities and resources are there to support the learning and teaching processes.

The technological infrastructure has great potential for the development of unique learning transactions and modes, but most of the web sites used only have limited communication resources and pedagogical aspects. Today, this support is not yet a function in most educational web sites. Thus, it is concluded that most of the educational web sites are still predominantly text-based and do not yet exhibit evidence of current pedagogical approaches.

CONCLUSION

The overall survey results demonstrated that only 56% of undergraduate students reveal andragogy characteristics. These findings confirmed that undergraduate students, who are young adults, cannot be classified as adult learners. The results also indicated that about 70% of the students are andragogy oriented in term of self-directed, motivation and readiness to learn assumptions. The findings remark that Mechanical Engineering and Business Management undergraduate students at UiTM Pulau Pinang are dependents, lack self-direction and are not fully responsible for their own learning. Without strong andragogy characteristics, the success of web-based technology of learning styles will not be achieved. Consequently, the students' academic performances will be affected.

It has revealed that most of the undergraduate students are partially adult learners and they are still in the transition towards web-based technology of learning. It is practical for higher learning institutions to consider students' learning styles and preferences, their self-efficacy level and readiness to learn, motivational level as well as their backgrounds and exposures to the real working life environment before embarking on the system.

RECOMMENDATION FOR FUTURE WORK

In order to achieve educational goals in preparing graduates with highly andragogy characteristics and attaining a high readiness level in web-based technology learning styles, higher institutions are recommended to continuously explore variable factors such as educational policies, curriculum development, lecturers competencies and web-based technology facilities including soft and hard tools instead of focusing only on students factors.

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Effectiveness of Algorithm Visualisation in Studying Complex Algorithms: A Case Study using TRAKLA2

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ABSTRACT

Algorithm visualisation (AV) can be utilised to improve students' programming and programme comprehension skills. Visual tools motivate students and teachers to more effectively study or teach complex algorithms. This study demonstrates that AV tools significantly improve student skills and scores and enhance understanding of complex algorithms to a degree greater than those of less complexity. TRAKLA2 is a visualisation tool used to enhance the process of learning algorithm construction and optimization. To assess the effectiveness of TRAKLA2, students were given an algorithm test prior to being introduced to the software. Students then used TRAKLA2 to learn five different types of algorithms. Analysis of students' feedback from questionnaires and tests showed greater levels of improvement in understanding complex problems as compared to those of less complexity. Our results show that TRAKLA2 enhances the understanding of complex algorithms and is an effective tool for algorithm teaching and learning.

Keywords: algorithm visualisation, algorithm learning, complex algorithms, TRAKLA2, MatrixPro

INTRODUCTION

Students often have significant problems learning basic programming concepts. Many educators agree that teaching programming to novice is a complex and difficult process (Robling 2010; Lahtinen, 2006). The problems arise from both lack of teaching resources and large class sizes that often prevent adequate personal instruction (Tuparov et al., 2012). Subsequently, there is a need for instructional tools that support independent student learning (Rajala et al., 2009). One method tested as a means to help students learn basic programming concepts is software visualisation (Nikander et al., 2010; Schoeman et al., 2013). This branch of software engineering uses graphics and animation to illustrate different aspects of computing (Nikander et al., 2010; Stasko et al., 1998; Price et al., 1993) and is divided into two sub categories: programme visualisation and algorithm visualisation (AV). Programme visualisation uses various visual techniques to enhance the students' understanding of computer programmes and is typically used to illustrate actual, implemented programmes. AV illustrates algorithmic concepts as abstractions and is independent of any actual algorithm implementation.

There are very few studies on the effectiveness of AV tools. Thus, it is important to examine how visualisations can be utilised to help teachers plan which tools to use, when to use them, and for what topics (Rajala et al., 2011). Algorithms play a central role in many areas of computing, requiring students to become familiar with a wide range of examples (Robling et al., 2011).

There are many software systems used to visualise algorithms (Nikander et al., 2011). GASP (Shneerson et al., 2000; Tal et al., 1994), GAWAIN (Hausner et al., 1998), and Vega (Hipke et al., 1998) illustrate geometric algorithms, while Hull2VD (Fisher, 2004) and VoroGlide (Icking, n.d.) provide visualisations for Voronoi diagrams (Aurenhammer, 1991) and GeoWin (Basken, 2002) is the visualisation tool specifically for the LEDA algorithm. TRAKLA2 is an AV tool capable of automatically assessing exercises (Nikander et al., 2010). Studies show that it enhances student motivation to learn and understand algorithms when properly engaged in a learning task (Rajala, 2010). TRAKLA2 is a learning environment that utilises visual algorithm simulation to deliver tracing exercises to students

(Malmi et al., 2004). The system automatically assesses students' solutions and provides feedback on the correctness of the simulation. There are two major differences between the visualisations included in TRAKLA2 and previous systems (Nikander et al., 2009). First, TRAKLA2 exercises are designed to be used in teaching geoinformatics, while other systems are designed primarily for teaching general computer science. Second, the tracing exercises offer a different type of interaction to other systems (Nikander et al., 2009). The students solve problems by constructing their own algorithm animation sequences using visual interaction. This occurs at the level of constructing the engagement taxonomy (Naps et al., 2003). Therefore, unlike other systems, algorithm creation is not required prior to constructing a new animation.

In this study, we applied the learning environments associated with TRAKLA2 and MatrixPro (Karavirta et al., 2004) (which are based on the same core as TRAKLA2) to courses teaching data structures and algorithms. Our results indicate an improvement in student comprehension of complex algorithms.

PREVIOUS WORKS

TRAKLA2 is among the most widely used AV tools. The program allows the learner to control the visual representation of the data structures manipulated by the algorithm and to build data structures by dragging and dropping their elements through the use of a graphical user interface. TRAKLA2 exercises require learners to choose a series of operations that will alter the state of the data structure to achieve a particular outcome. For example, students might build a tree-type data structure by repeatedly dragging new values to the correct locations in the tree. Alternatively, the learner can practise and gain understanding of an algorithm by examining its step-by-step execution to produce a model solution (Fouh et al., 2012).

In 2002, Korhonen et al., carried out the first intervention study with an earlier version of TRAKLA2 using three randomised student groups to compare final examination results between students completing instructed simulation exercises in a classroom session and those using a web-based learning environment. The results showed that if the exercises were the same,

there was no significant difference in examination results between students who had undertaken exercises on the web or in the classroom. However, in cases where the exercises were more challenging, there was a significant difference in the results.

TRAKLA2 was introduced at the University of Turku by Laakso et al., 2005. The learning capacity of students using TRAKLA2 during classes teaching data structures and algorithms was compared to those not using the software. Additionally, survey data were collected tracking changes in students' attitudes towards web-based learning environments. The results showed that TRAKLA2 increased positive attitudes toward web-based learning. According to student self-evaluations, the best learning outcomes were achieved by combining traditional and web-based exercises. Furthermore, overall student performance improved compared to results from 2003, when instruction was undertaken using only traditional methods.

In 2007, Myller et al. conducted an experimental study focusing on engagement taxonomy. The learning outcomes were compared with students taught using visualisation on different engagement levels. The results indicated that higher levels of engagement had a positive effect on students' results in favour of the intervention group, especially where students without previous knowledge of data structures or algorithms were concerned.

In 2009, Laakso et al. studied the effects of AV on collaborative teaching and learning. The use of visualisations for collaborative learning introduced new challenges for visualisation tools. Pre- and post-tests were used as instruments in the experiment. No statistically-significant differences were found in post-testing between randomised groups and not all of the students that were assigned participated at the engagement level. Students also did not solve TRAKLA2 exercises, but instead only watched the model solution. By regrouping the students based on the monitored behaviour, differences were discovered in the total and pair average based on the post-test scores.

TRAKLA2 has also been used for teaching spatial data algorithms (Nikander et al., 2009). The study analysed students' progress using qualitative methods to discover how the new system altered learning outcomes. TRAKLA2 use increased examination scores associated with learning spatial data algorithms.

PROBLEM STATEMENT

There is growing interest in evaluating the educational impact of AV tools, with many results indicating their positive effects on the learning process. The effectiveness of AV methods depends on the appropriate use of AV tools. Studying AV effectiveness based on problem complexity provides valuable information to lecturers and students regarding the necessary time constraints associated with using AV tools. The impact of problem complexity on the effectiveness of AV tools has not been discussed in previous research. This study investigates the relationship between problem complexity and the effects of using AV tools to enhance the ability of students to solve complex problems. The aims of this study can be summarized as follows:

1. Confirm that AV-based tools enhance the learning process associated with data structures and algorithms.
2. Show that AV-based tools enhance students' ability to solve complex algorithmic problems as compared to problems of lesser complexity.

Research Design

An experiment was conducted to evaluate the ability of TRAKLA2 to enhance the ability of students to learn problems of varying complexity. The research aims to answer two questions: 1) Does TRAKLA2 help students to learn data structures and algorithms? 2) Is there a difference in how TRAKLA2 helps students learn complex problems compared to problems of lesser complexity?

The experiment was conducted in the data structures and algorithms course at the Universiti Kebangsaan Malaysia (UKM) during the first semester of the 2013-2014 academic year. Students were taught algorithms conventionally without using any visual software. Three weeks prior to testing, students were instructed to prepare for a test on binary search (basic algorithms), insertion sort and merge sort (sorting algorithms), and depth-first search (DFS) and breadth-first search (BFS) (search trees). Following this test, students were introduced to TRAKLA2 and given 2 weeks to prepare for a second test on the same topics.

The attitudes of the UKM students were evaluated through a questionnaire administered following the second test. A second questionnaire was administered to evaluate whether TRAKLA2 enhanced learning problems of greater or lesser complexity, the extent to which TRAKLA2 helped students learn the algorithms being tested, and the amount of time students spent learning the topics. Students ranked the topics according to how helpful TRAKLA2 had been, as well as how the topics were designed, developed, and explained.

Methods

The experiment included two tests containing questions of varying complexity and a questionnaire to evaluate student attitudes toward the usefulness of TRAKLA2. Students were examined alone during the experiment and while taking both tests. The style of questions for both tests was identical. The only differences in testing parameters involved the students' ability to practise problems using TRAKLA2 prior to the second test and the questionnaires administered to students after using TRAKLA2 for the specified topics.

Participants

The Faculty of Information Science and Technology at UKM has been offering courses on Data Structure, and Analysis and Design of Algorithms for undergraduate computer science students in order to teach the skills of algorithm analysis and design techniques. The courses cover the main concepts and principles of data structures and algorithm design and analysis. The experiment was undertaken with a class of 32 undergraduate students.

Materials

Both tests consisted of the same seven questions, with each question having multiple steps scored individually. In each question, the students were presented a code fragment and asked to define the output or the state of the programme. The first three questions presented pseudocode representing a binary search algorithm and asked the student to describe the steps involved in finding a number from an array of numbers using the algorithm. The fourth question presented pseudocode describing an insertion sort algorithm and asked the student to arrange an array of numbers using the algorithm

and describe the contents of array variables throughout the sorting process. The sixth question presented pseudocode representing a DFS algorithm and asked the student to describe the process of exploring nodes in a graph and annotate into a table the order in which each node was visited. The seventh question asked the student to explain the process associated with a BFS algorithm using the same format as described in the sixth question.

A questionnaire was administered to students following the second test in order to evaluate their attitude regarding the effectiveness of TRAKLA2. The questions examine their levels of progress in each subject based on the complexity of the problems and the time required to obtain higher scores in the second test as compared to the first. Some examples of questions are as follows: “What was your skill level before using TRAKLA2?”; “What is your skill level after using TRAKLA2?”; “How many example problems were solved using TRAKLA2 to obtain the highest possible score?”; “How long did it take to practice the problems using TRAKLA2?”; “Rank the effectiveness of TRAKLA2 for learning five algorithms: (1) Binary Search (2) Insertion Sort (3) Merge Sort (4) DFS (5) BFS”.

PROCEDURES

The study was performed in the final 3 weeks of the first semester of the 2013-2014 academic years. One week prior to the first test, students were advised to prepare for examination on five subjects taught during the semester. The time reserved for the examination was 120 minutes. Following the first test, each student independently used TRAKLA2 for 2 weeks prior to the second test. The highest possible score for both tests was 100%. The questionnaire was completed by students independently after practising for 2 weeks using TRAKLA2. Finally, comparisons of the results from each test were used to evaluate student progression, with questionnaire responses used to further validate the test results.

RESULTS AND DISCUSSIONS

The results indicate that TRAKLA2 effectively increased student comprehension of complex algorithms compared to those of lesser

complexity. In the first test, the students' mean score was 40%. In the second test, after practising with TRAKLA2, the mean score increased to 75.4%. This illustrates the effectiveness of TRAKLA2 as an AV tool. Interestingly, student progress in each topic varied according to problem complexity.

In the first test, the scores for (i) binary search, (ii) insertion sort, (iii) merge sort, (iv) DFS, and (v) BFS were 50%, 35%, 80%, 20%, and 20%, respectively. Following TRAKLA2 use, the scores increased to 80%, 75%, 100%, 65%, and 65%, respectively. The increases were 30%, 40%, 20%, 45%, and 45%, respectively.

The feedback from the questionnaire (Table 1) validates the observed improvement in test scores. Students reported that their skills in all topics increased following TRAKLA2 use (Table 1 and Figure 1). The perceived skills of the students improved for binary search by 25%, insertion sort by 30%, merge sort by 5%, DFS by 35%, and BFS by 40%. According to questionnaire results, it is possible to rank TRAKLA2 effectiveness regarding the increase in student skill as follows: 1. BFS, 2. DFS, 3. Insertion Sort, 4. Binary Sort, and 5. Merge Sort. These results show that TRAKLA2 was most effective at improving student understanding of the most complex algorithms as compared to those of lesser complexity.

Table 1: Average Scores of Student Questionnaire Responses

	Binary search	Insertion sort	Merge sort	DFS	BFS
What was your skill level before using TRAKLA2?	70%	60%	90%	50%	45%
What is your skill level after using TRAKLA2?	95%	90%	95%	85%	85%
How many example problems were solved using TRAKLA2 to obtain the highest score?	7 times	10 times	5 times	10 times	10 times
How long did it take to practice the problems using TRAKLA2?	10 min	15 min	10 min	45 min	50 min

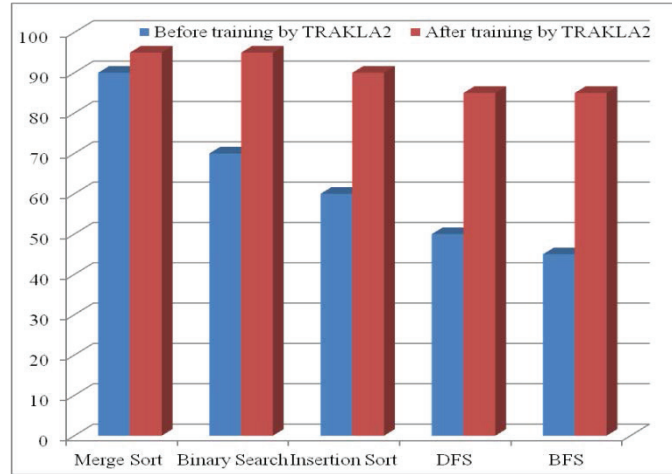


Figure 1: Comparison of Student Scores Associated with Different Algorithms Before and After Using TRAKLA2 to Prepare for Tests

CONCLUSION

In this study, two tests were administered to students on five subjects of varying complexity. The first test was administered without students having prepared using any AV tools. The second test was administered following student preparation using TRAKLA2. A questionnaire was given to students to evaluate their attitudes regarding TRAKLA2 effectiveness in helping them learn problems of varying complexity. The results indicate that TRAKLA2 is most effective at helping students to learn complex algorithms.

TRAKLA2 use increased test scores associated with questions related to less complex algorithms by 5%, as compared to a 40% increase associated with complex algorithms. Furthermore, students indicated that TRAKLA2 improved their ability to learn complex algorithms to a greater extent than those of lesser complexity, confirming the results observed from the test scores. These results illustrate the effectiveness of AV tools in teaching and learning complex algorithms.

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Refining the Flesch Reading Ease Formula for Intermediate and High-Intermediate Esl Learners

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ABSTRACT

ESL instructors tend to rely on their judgment in estimating the difficulty level of reading passages for their learners. This common sense method, despite being drawn from experience, gut feeling and intrinsic knowledge of the learners' ability, is neither efficient nor objective. A more objective method is available such as using readability formulas to estimate the difficulty level of the passages. One of the highly reliable readability formulas which have been validated to be used in an ESL/EFL context is the Flesch Reading Ease (FRE) formula. The FRE formula has a difficulty scale that ranges from 0 (the least difficult) to 100 (the most difficult), which is rather broad and general. Therefore, it was the intention of this study to refine the FRE difficulty scale for the use of a specific group of learners and identify additional predictors of passage difficulty to enhance the ability of the formula in estimating the difficulty level of reading passages. To do that, the study replicated Vogel and Washburne's (1928) process of developing modern readability formula. Reading passages at intermediate and high intermediate levels from several ESL reading coursebooks were analyzed. Three computational tools, the Flesch Reading Ease formula, Writer's Workbench 8.18 and WordSmith Tools 4.0 were used to extract information related to the text characteristics of the passages at text, sentence and word levels respectively. Findings of the study revealed the development of a more refined FRE formula at intermediate difficulty level scale. This refined formula, referred as IDL Formula, used the FRE scores and the coverage of the first 2000 high frequency words of English (HFW scores) of the passages as predictors of passage difficulty. This formula

is able to measure 88.7% of passage difficulty, and has a high reliability with the Bormuth mean cloze scores. This formula is meant to be used by ESL instructors, test-setters, materials writers, publishers and curriculum designers to estimate the difficulty level of reading passages at intermediate and high-intermediate levels.

Keywords: difficulty level, Flesch Reading Ease formula, intermediate scale, readability, reading passages.

INTRODUCTION

Matching learners with reading materials that match their language ability is a perennial concern of ESL instructors. It is not an easy task to ensure the difficulty level of reading materials is within the range of learners' language ability. ESL instructors usually rely on their personal judgment to determine the difficulty level of reading materials selected for their learners.

This common sense method, despite being drawn from experience, is very subjective and could lead to inconsistency. Instructors are found to be consistent in ranking reading materials according to the difficulty level (Chall, 1958; Gunning, 2003). However, their ranking could be inaccurate and inadequate if it is compared to an objective method of measuring materials difficulty. Hancioglu and Eldridge (2007) found the opposite results. The participants were asked to rank five reading materials from the easiest to the most difficult and the results showed that the ranking was inconsistent except for one reading material that was ranked as the easiest almost unanimously.

Besides that, this method is unreliable if it is done by untrained instructors (Klare, 1984). Klare (1984) also claimed that judgment of materials difficulty by untrained instructors could not be relied upon as their ratings often varied by several grade levels. The same evidence could be found in a study conducted by Anealka (2010a), who asked the participants to rate the difficulty level of five reading passages. The results showed that there was no agreement in the rating of the difficulty level of these five reading passages. This inconsistency could be due to the length of experience the instructors have in teaching the target ESL learners. As

reported, 63.9% of the respondents had more than 15 years of experience teaching ESL learners, 22.2% of the respondents had between 10 to 15 years of experience and the remaining 13.9% had less than 10 years of experience.

The present study, however, did not undermine the role of judgment in determining the difficulty level of reading materials for ESL learners. It acknowledged the use of judgment as it was pertinent in aspects dealing with content meaningfulness, moral values and topic variety. Rather, the study intended to enhance the efficiency of this method by combining it with a more objective method of estimating the difficulty level of reading materials.

The most common objective approach to estimate reading materials difficulty is by using readability formulas. The use of readability formulas in estimating difficulty level of reading materials has received many positive reviews (refer to Klare, 1969; Gilliland, 1972; Flesch, 1979; Fry, 1989; Weaver & Kintsch, 1991; Jones, Evanciew & Anderson, 1995; Chavkin, 1997; Stephens, 2000; Parker, Hasbrouk & Weaver, 2001; Bailey, 2002; Fry, 2002). Additionally, some readability formulas, including the one used in this study, the Flesch Reading Ease Formula, have been widely used and tested for their reliability (Chall, 1958; Klare, 1969; Hamsik, 1984; Greenfield, 1999; Shokrpour, 2005).

THE FLESCH READING EASE (FRE) FORMULA

The Flesch Reading Ease formula is a readability formula that measures how easy written materials can be read and understood (Richards, Platt & Platt, 1992). It is regarded as one of the oldest and most reliable readability formulas (Klare, 1969) which can be relied on without too much inquiry (readabilityformulas.com).

The FRE score is derived from a formula created by Rudolf Flesch in 1943 (revised in 1948). The formula uses the average sentence length and the average number of syllables per word as predictors of materials difficulty. The FRE formula is displayed in Figure 1.

$$Y = 206.835 - 1.015(X_1) - 84.6(X_2)$$

Y = Reading Ease Score
 X_1 = Average Sentence Length
 X_2 = Average number of syllables per word

Figure 1: The Flesch Reading Ease Formula

The formula uses scores between zero and hundred (0-100) to measure the readability level of reading materials. Higher scores indicate the materials are easier to read and understand, and lower scores indicate the materials are getting more difficult to read and understand. The descriptive categories used by the formula are displayed in Table 1.

Table 1: Descriptive Categories used in the Flesch Reading Ease Formula

Reading Ease Score	Descriptive Categories	Estimated Reading Grade
90 – 100	Very Easy	5 th Grade
80 – 90	Easy	6 th Grade
70 – 80	Fairly Easy	7 th Grade
60 – 70	Standard / Plain English	8 th and 9 th Grade
50 – 60	Fairly Difficult	10 th to 12 th Grade (High School Sophomore to Senior)
30 – 50	Difficult	In College
0 - 30	Very Difficult	College Graduate

ASSUMPTIONS OF THE STUDY

Despite the availability of a more objective approach to estimate difficulty level of reading materials, most of the readability formulas are meant for general English language users. There is no specific reference on the difficulty range for specific groups of learners that ESL instructors can refer to when selecting reading materials. The most common reference available

is the difficulty scale of the Flesch Reading Ease formula. Scores of the Flesch Reading Ease formula can be grouped into seven difficulty levels starting from 'Very Easy', 'Easy', 'Fairly Easy', 'Standard English', 'Fairly Difficult', 'Difficult' and 'Very Difficult' (see Table 1). The difficulty scale also provides the groups of readers, using grade levels, who can read and understand reading materials rated at the respective categories. However, this information is not sufficient, as it is too general. It only tells how readable the reading materials are in a very broad sense, and the group of readers that can comprehend them. It does not provide any indication on a more specific range of materials difficulty a reader can possibly handle for instance, ESL learners at intermediate and high-intermediate levels.

Since there was no specific reference on the difficulty range of reading materials for intermediate and high-intermediate ESL learners, to begin with, assumptions about the difficulty level of these materials needed to be made. This was based on Sinclair's (1992) advice that a researcher should always begin with "hypothesis and hunches, however vague..." (cited in Alsree, 1997). This study therefore started with the assumption that the difficulty level of reading materials for ESL learners at intermediate and high-intermediate levels started somewhere between the lowest and the highest ended of the intermediate difficulty level (IDL) scale as shown in Figure 2. The research assumption is indicated by the broken line in Figures 2 and 3.

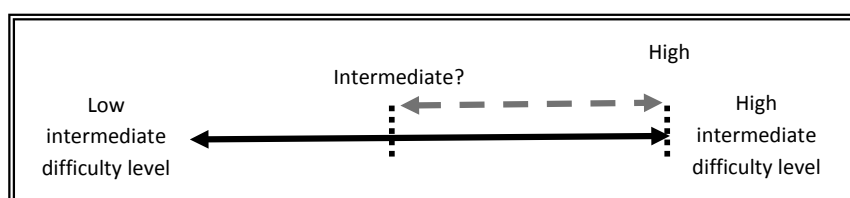


Figure 2: Research Assumption on the IDL Scale

Looking at the IDL scale from the Flesch Reading Ease scale, it was again assumed that the intermediate and high-intermediate reading materials should fall in the range 70 and 30 or 'Plain English' and 'Difficult'. Figure 3 shows the Flesch Reading Ease Scale.

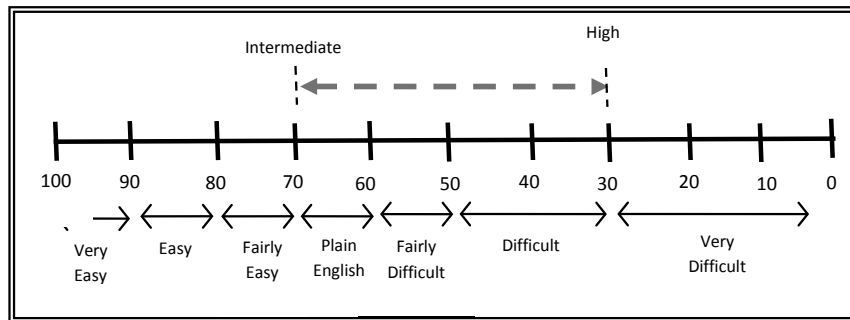


Figure 3: Research Assumption on the Flesch Reading Ease Scale

This difficulty scale of reading materials at the two levels was rather broad and general. Therefore, based on this research assumption as a starting point, this research would pursue to define and refine the IDL scale to describe needs of the learners at intermediate and high intermediate level. Statistical tests were used to determine where the Intermediate point began and the High-intermediate point ended. The IDL scale established by the study was plotted between the two points. With this, the refined IDL scale would serve as the reference for ESL instructors to use in selecting reading materials for ESL learners at these two levels.

AIMS OF THE STUDY

The main aim of the study was to refine the FRE difficulty scale for the use of intermediate and high-intermediate ESL learners. The study also aimed to identify additional predictors of materials difficulty that can enhance the ability of the formula in estimating the difficulty level of reading materials. For the purpose of this study, one type of reading materials used in teaching reading skills – reading passages, was used to create the corpus of intermediate and high-intermediate materials.

METHODOLOGY OF THE STUDY

This study used the modified process of creating readability formula for a specific group of learners as used in Anealka (2010b). This process, to a

large extent, replicated the process taken by Vogel and Washburne's (1928) in establishing the difficulty level formula to measure difficulty level of reading passages. The modified process of creating readability formula for a specific group of learners is shown in Figure 4.

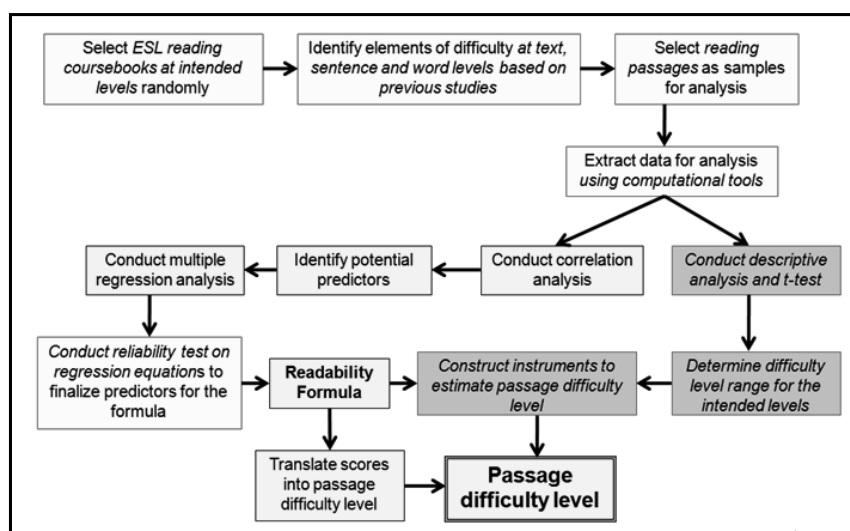


Figure 4: The Modified Process of Creating Readability Formula for a Specific Group of Learners (Anealka, 2010b)

Selection of Samples

The present study used three sets of ESL reading coursebooks from three prominent publishers namely Oxford, Heinle & Heinle and Thompson Learning publication houses. Each set comprised two reading coursebooks, one at intermediate level and the other one at high-intermediate level. The selection of the coursebooks was at random.

Elements of passage difficulty were determined based on previous studies and literature. There were many factors that could affect reading materials difficulty. Some of the factors were readers' background knowledge (Johnson, 1981; Carrell, 1987; Day, 1994; Nuttall, 1996; Oakland & Lane, 2004; Hudson, 2007), interest and motivation (McLaughlin, 1968; Shehadeh & Strother, 1994; Day, 1994; Johnson, 1998; Oakland & Lane, 2004), organization of the reading materials (McLaughlin, 1968; Shehadeh

& Strother, 1994; Day, 1994; Hudson, 2007; Mesmer, 2008), legibility of the reading materials (Shehadeh & Strother, 1994; Day, 1994; Johnson, 1998; Mesmer, 2008) and complexity of words and sentences in the reading materials (McLaughlin, 1968; Richards, Platt & Platt, 1992; Shehadeh & Strother, 1994; Day, 1994; Chavkin, 1997; Johnson, 1998; Oakland & Lane, 2004; Stenner & Stone, 2006; Mesmer, 2008).

Although many of the factors had not yet been quantified, readability of reading materials was highly correlated with two factors that could be easily measured: sentences and words (Bailey, 2002). Chavkin (1997) identified that the most strongly associated factors to readability were word difficulty and sentence length. These two factors or variations of these two factors could be found in all readability formulas currently in use (Chavkin, 1997). Studies had confirmed that inclusion of other factors in the formula contributed more work than it improved the results (Stephens, 2000). It showed that readability of reading materials could sufficiently be measured using word difficulty, sentence length and variations of the two. There was no need to include factors other than word difficulty, sentence length or the variations of the two.

Out of these many factors, only quantifiable sentence and word-related factors were selected as the present study involved the use of computational tools to extract relevant information from the passages. Therefore, six text characteristics were selected as elements of reading passage difficulty: the overall difficulty as measured by the Flesch Reading Ease formula (FRE), the average sentence length (ASL), the use of simple and compound sentences (S/Cd), the use of complex and compound-complex sentences (Cx/CdCx), the average word length (AWL) and the coverage of high frequency words within the different words used in the passage (HFW).

The present study used all the words and sentences in 75 selected reading passages taken from the selected coursebooks at the two levels. It was necessary for the present study to use whole passages because it intended to look at the overall passage difficulty level and not just at sentence and word levels only.

Instruments for Data Collection

Extraction of data from the sample passages was done using the three computational tools, Flesch Reading Ease Writer's Workbench 8.18 and WordSmith Tools 4.0. Readability Statistics function in Microsoft Word was used to generate the FRE scores of the passages. Writer's Workbench 8.18 was used to extract information on the ASL, S/Cd and Cx/CdCx from the passages and WordSmith Tools 4.0 was used to extract information on the AWL and HFW of the passages.

Data Analysis

The present study used both descriptive and inferential statistics to analyze the data. The study also performed all the necessary tests to fulfill the assumptions required prior to conducting inferential analysis. Types of analysis performed were descriptive, correlation and multiple regression analyses. The descriptive analysis was used to establish the range of passage difficulty for intermediate and high-intermediate levels. The correlation analysis was used to determine the relationship between passage difficulty level and text characteristics of the passages that contributed to the difficulty level of the passages, while the multiple regression analysis was used to determine which of the text characteristics could be the significant predictors of passage difficulty. The types of test performed were t-test and reliability test. The t-test was used to determine whether there was a significant difference between the text characteristics of intermediate from high-intermediate reading passages, while a reliability test using the Bormuth Set (1971) was conducted to determine the reliability of the equations resulted from the multiple regression analysis. Regression equation that produced higher correlation with the Bormuth mean cloze scores was selected to be the formula to estimate passage difficulty level for ESL learners at intermediate and high-intermediate levels.

Results

Results of the descriptive analysis displayed in Table 2 show that on average, reading passages at intermediate level are easier than reading passages at high-intermediate level. It can be seen from the means scores of FRE, ASL, S/Cd, Cx/CdCx, AWL and HFW.

Table 2: Means Scores of Text Characteristics of the Passages

Text Characteristics	Intermediate	High-Intermediate
FRE	54.32	48.05
ASL	17.93	19.74
S/Cd	51.37	45.58
Cx/CdCx	48.63	54.42
AWL	4.63	4.83
HFW	66.99	60.18

Note: FRE= Flesch Reading Ease; ASL= Average Sentence Length; S/Cd = Simple/Compound; Cx/CdCx = Complex /Compound-Complex; AWL= Average Word Length; HFW = High Frequency Words

Results of the t-test as displayed in Table 3, show that the means of text characteristics in the intermediate reading passages are significantly different from those of high-intermediate passages. The results show that these characteristics could be used as predictors of passage difficulty level for ESL learners at the two levels.

Table 3: Results of the T-test

Text Characteristics	t-value	P
FRE	-3.884	.000
ASL	3.329	.001
S/Cd	-2.052	.044
Cx/CdCx	2.052	.044
AWL	4.591	.000
HFW	-5.053	.000

Note: FRE = Flesch Reading Ease; ASL = Average Sentence Length; S/Cd = Simple/Compound; Cx/CdCx = Complex /Compound-Complex; AWL = Average Word Length; HFW = High Frequency Words

However, results of the correlation analysis, displayed in Table 4, show that only four out of six potential predictors are significantly correlated with the difficulty level (DL) of the passages. This results show that S/Cd and Cx/CdCx could not be used as predictors of passage difficulty for ESL learners at the two levels.

Table 4: Relationships between the DL of the Passages and the Text Characteristics of Intermediate and High-Intermediate Reading Passages (n=75)

	DL	FRE	ASL	S/Cd	Cx/CdCx	AWL	HFW
DL		-.816*	.362*	-.083	.083	.778*	-.774*
FRE	-.816*		-.375**	.173	-.173	-.895**	.423**
ASL	.362*	-.375**		-.582**	.582**	.286*	-.435**
S/Cd	-.083	.173	-.582**		-1.000**	-.109	.056
Cx/CdCx	.083	-.173	.582**	-1.000**		.109	-.056
AWL	.778*	-.895**	.286*	-.109	.109		-.475**
HFW	-.774*	.423**	-.435**	.056	-.056	-.475**	

** Correlation is significant at the .01 level * Correlation is significant at the .05 level
 Note: FRE = Flesch Reading Ease; ASL = Average Sentence Length; S/Cd = Simple/Compound; Cx/CdCx = Complex/Compound-Complex; AWL = Average Word Length; HFW = High Frequency Words

Another potential predictor, AWL, is dropped as it does not fulfil one of the assumptions required prior to conducting multiple regression analysis. The stepwise method of regression analysis also confirms that only FRE, ASL and HFW could be the potential predictors of passage difficulty. Results of the analysis, as displayed in Table 5, show that FRE, HFW and ASL contribute 89.6% to the difficulty level of the passages. These three variables are predictors of passage difficulty $F(3,71)=213.061$, $p<.05$. Although as a whole, these three variables contribute 89.6% to the difficulty level of these passages, individually, the three variables have different contribution to the difficulty level of the passage. From the results of the multiple regression analysis, FRE has a moderate significant correlation with passage difficulty level, $r=.622$, $p<.05$. HFW also has a moderate significant correlation

with passage difficulty level, $r=.561$, $p<.05$. However, ASL has a slight significant correlation which is almost negligible with passage difficulty level, $r=.115$, $p<.05$.

Table 5: ANOVA of FRE, HFW and ASL of IR and HIR Passages

	df	Sum of Squares	Mean Square	F-Value	P-Value
Regression	3	50.209	16.736	213.061	.000
Residual	71	5.577	.07855		
Total	74	55.787			

R Square = .900, Adjusted R Square = .896

Results of the second multiple regression analysis, as displayed in Table 6, shows that FRE and HFW contribute 88.7% to the difficulty level of IR and HIR passages. These variables are predictors of passage difficulty $F(2,72)=290.761$, $p<.05$. The results also show that both FRE and HFW have a moderate significant correlation with passage difficulty level, $r=.596$, $p<.05$ and $r=.522$, $p<.05$ respectively.

Table 6: ANOVA of FRE and HFW of IR and HIR Passages

	df	Sum of Squares	Mean Square	F-Value	P-Value
Regression	2	49.641	24.820	290.761	.000
Residual	72	6.146	.08536		
Total	74	55.787			

R Square = .890, Adjusted R Square = .887

A reliability test is conducted on the two equations to check their consistency in estimating the difficulty level of a reading passage. The reliability test is important so as to ensure the equation chosen as the difficulty level formula yields a consistent difficulty level when ESL instructors use it to estimate difficulty level of reading passages.

An alternate-forms technique of estimating reliability, which is also referred to as the equivalent-forms or parallel-forms technique (Ary, Jacobs & Razavieh, 2002) is used to test the reliability of the two equations. Thirty-two reading passages taken from the Bormuth Set and the established mean cloze scores of these passages obtained in the original study (Bormuth, 1971) are used to perform the reliability test of both equations. These 32 passages, ranging in length from 239 to 300 words, excluding titles, have become the foundation for readability formula revision in Chall and Dale (1995) and Greenfield (1999).

The two equations are used to calculate the y-values of these passages. These y-values are then correlated with the established mean cloze scores of the passages. A correlation analysis using Pearson Product-Moment Correlation Coefficient is conducted to determine the relationship between the established mean cloze scores and the y-values calculated using both formulas. Results in Table 7 show that there is a high significant positive correlation between the established mean cloze scores and the y-values of the passages estimated by both equations, $r=.884$, $p<.01$ for the first equation and $r=.908$, $p<.01$ for the second equation.

Table 7: Correlation Analysis between the Y-Values and the Mean Cloze Scores of the Passages in the Bormuth Set (n=32)

Y-Values of	Mean CLOZE Scores
First Equation (FRE, HFW & ASL)	.884**
Second Equation (FRE & HFW)	.908**

** Correlation is significant at the .01 level (2-tailed)

Based on the results, it can be concluded that both equations are reliable and can consistently predict the difficulty level of a passage. However, the second formula is selected as the difficulty level formula to estimate the difficulty level of IR and HIR passages for ESL learners as it is more reliable than the first equation. The formula, henceforth referred as the 'IDL Formula', is determined by two predictor variables, FRE and HFW. The 'IDL Formula' is shown in Figure 5 below.

$$Y = .06812(X_1) + .06757(X_2) - 4.878$$

Where:
 Y= Y-Value
 X_1 = Flesch Reading Ease Score
 X_2 = Coverage of High Frequency Words

Figure 5: The 'IDL Formula' to Estimate Difficulty Level of IR and HIR Passages

Higher FRE and HFW values lead to higher Y-values and lower FRE and HFW values lead to lower Y-values. The Y-values are then translated into Intermediate Difficulty Levels (IDL) as shown in Table 8. Reading passages that have a y-value between 4.5-5.4, 3.5-4.4, 2.5-3.4, 1.5-2.4 and 0.5-1.4 are placed at IDL¹, IDL², IDL³, IDL⁴ and IDL⁵ respectively.

Table 8: Conversion Table for Y- Values

Y-Values	Difficulty Level
4.5 – 5.4	IDL ¹
3.5 – 4.4	IDL ²
2.5 – 3.4	IDL ³
1.5 – 2.4	IDL ⁴
0.5 – 1.4	IDL ⁵

Using the IDL formula and the ranges for FRE and HFW scores determined from the descriptive analysis, the IDL scale for ESL reading passages is established. The research assumption stated earlier claims that the intermediate difficulty range would be between 30 and 70. However, the results show that the range is between 30 and 65. Results of the study also show that ESL learners at intermediate level can use reading passages rated at IDL¹ – IDL⁴, while ESL learners at high-intermediate level can use reading passages rated at IDL² – IDL⁵. Table 9 shows the refinement of the FRE difficulty scale using the IDL Scale (IDL¹-IDL⁵).

Table 9: Refinement of the FRE Difficulty Scale using the IDL Scale (IDL¹-IDL⁵)

		<div><div></div><div>(research assumption)</div><div></div></div>																								
Scale		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100				
FRE		Very Difficult					Difficult					Fairly Difficult			Plain English		Fairly Easy		Easy		Very Easy					
Intermediate Difficulty Level Scale	IDL1											FRE (59-65); HFW (74%-80%)														
	IDL2						FRE (44-65); HFW (59%-80%)																			
	IDL3						FRE (30-65); HFW (50%-80%)																			
	IDL4						FRE (30-58); HFW (50%-78%)																			
IDL5	FRE (30-44); HFW (50%-64%)																									

CONCLUSION

The descriptive and the t-test results of the study that deal with text characteristics of intermediate and high-intermediate reading passages for ESL learners lead to somewhat predictable conclusions: intermediate reading passages are easier to read and understand as opposed to high-intermediate reading passages and vice versa. Despite these not surprising outcomes, the descriptive analysis and the t-test are significant as they provide a solid foundation to refine the intermediate difficulty range. Other sentence and word factors that can affect the difficulty level of the passages should be considered as well.

However, results in the correlation analysis only see the potential of FRE, ASL, AWL and HFW as predictors of passage difficulty level and not S/Cd and Cx/CdCx. The multiple regression analysis eliminates another predictor, AWL, and finalizes two potential equations to serve as the difficulty level formula to refine the intermediate difficulty scale. A

reliability test is conducted and results of the test show that the formula with two predictors (FRE and HFW) is more reliable than the formula with three predictors (FRE, HFW and ASL). The two-predictor formula is chosen over the three-predictor formula to serve as the difficulty level formula in the present study. This formula is meant to be used by ESL instructors, test-setters, materials writers, publishers and curriculum designers to estimate the difficulty level of reading passages at intermediate and high-intermediate levels.

Results of these analyses are used to refine the IDL scale. The development of the refined IDL scale enables the users to select appropriate reading passages for ESL learners. The reliability of the 'IDL Formula' is high (.908). However, only 88.7% of the difficulty factors are accounted for. Therefore, users should not expect a one-to-one relationship between predicted difficulty level and the actual difficulty level of the passages.

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E-Portfolio: From the Perspective of Pre-service Teachers

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ABSTRACT

There has been a huge transformation in the educational assessment where educators move from traditional pen and paper tests to other alternative forms of assessment. This resulted in the use of e-portfolio as a tool for assessment for students to document their learning process. This paper studied 15 pre-service teachers' views through semi-structured interview sessions. The focus of the interviews was to investigate the pre-service teachers' perspectives on the benefits and challenges of using e-portfolio as part of their module assessment. It resulted in three categories for the benefit (Articulation of ideas; allows creativity and allows deeper reflection) and challenges (Fair use; time limitation and neglecting content) of using e-portfolio respectively. This paper also further probed on the criteria of e-portfolio hosts that attracted the pre-service teachers to use as platforms to park their e-portfolio. The three categories for the criteria for e-portfolio hosts are user-friendly, compatibility with mobile gadgets and level of familiarity. The findings also showed that the pre-service teachers are able to think and reflect on their practices when they document the learning online. The findings also further suggested various recommendations on the use of e-portfolio as part of assessment, especially in preparing future teachers who are reflective in their practice.

Keywords: e-portfolio, assessment, pre-service teacher

INTRODUCTION

An electronic portfolio or e-portfolio in short, is a systematic collection of work, learning evidences and materials that capture user's achievements determined by a theme (Gray, 2008). As learning evidences are parked on Web and include various media, e-portfolio is also known as digital portfolio or online portfolio. Of late, there has been a huge transformation in the educational assessment where educators move from traditional pen and paper tests to other alternative forms of assessment (Gray, 2008; Chau & Cheng, 2010). Many emphasized on the use of portfolio, as it facilitates students to reflect on their own learning, leading to a more holistic individuals who meet the learning outcomes of any modules. This paper intended to study learners' perceptions on the benefit and challenges of using portfolio as part of their module assessment.

Portfolio as an Assessment Tool

Portfolios are used in the educational arena to achieve various aims from documenting experiences, providing key points for educators' and learners' discussion, communicate expectations, developing learners' self-expressions and so on. A portfolio is usually deemed a more authentic assessment tool compared to other traditional assessment methods (van Wesel & Prop, 2008). This is because rather than the learners showcasing what they have learned, a portfolio documents what a particular learner can do with what he or she has learnt. However, it does not mean that any other assessment tools are less authentic or valid, but different means of assessment are seen as more useful depending on the nature of the purpose of assessment. Portfolio is most aligned with the outcome when learning processes can be demonstrated with a product (Chang, 2008). This paper hence, focuses on the use of portfolios as means of assessment.

Portfolio and e-portfolio

E-portfolios, like traditional portfolios, can facilitate students' reflection on their own learning, leading to more awareness of learning and needs. However, users of an e-portfolio may include various evidences and media such as hyperlinks, audio, images, animations and other creative media in communicating ideas and thoughts, especially when it is online.

In the literature, there have been various studies looking at the many benefits of an e-portfolio as compared to its paper-based counterparts (van Wesel & Prop, 2008; Woodward & Bablohy, 2004). However, it must be noted that educators should not neglect the aim of portfolios or e-portfolios. These two types of portfolios should be viewed based on their shared merits, such as, their potential in supporting students' self-reflection and promoting the achievement of learning outcomes.

Good learners, typically, have a higher level of metacognitive knowledge and regulatory skills than poor learners. Metacognitive knowledge offers the insights needed to change the learning process to fit the changing task demands (Ertmer & Newby, 1996). Promoting these metacognitive skills via experience-based reflective learning enhances students' growth competence - ability for continuing development (Korthagen, 2001). Working on a portfolio stimulates these self-reflecting skills by collecting material and writing reflections (Driessen, 2008). By utilizing reflective thinking skills, students are also able to evaluate results of their learning efforts and effectiveness of learning strategies in certain situations (Ertmer & Newby, 1996).

Driessen et al. (2007) found through their study that creating an e-portfolio improves student motivation, more user-friendly for portfolio evaluators, and delivers the same content quality compared to its paper-based counterparts. They also found that students spent significantly more time preparing an e-portfolio than a paper-based one. However, many factors can be attributed to the case of students spending more time on completing an e-portfolio - most probably due to the difficulties faced in technicality of technological resources and the like (Gijbels, van de Watering, Dochy & van den Bossche, 2006). Although this was not mentioned in the study by Driessen et al. (2007), researchers have achieved the consensus that developing a portfolio supports the metacognitive skill of reflection, and certain aspects of both that might lead to a different level of support.

Artifacts, both physical and virtual (e.g. computer software), contain affordances, properties of an artifact "that make it easier to do some activities, harder to others. Each has constraints, preconditions, and side effects that impose requirements and changes on the things with which it interacts, be there other technology [artifacts], people, or human society at

large.” (Norman, 1993, p.243) Understandably, paper-based and e-portfolios contain some overlapping, but, more importantly for this research, some different affordances. A paper-based portfolio, for instance, only affords a linear structure, whilst an e-portfolio affords a more network like structure (via hyperlinks). An e-portfolio affords integration of multimedia while a paper-based portfolio does not.

In this paper, the potential of using e-portfolio as an assessment tool is further probed to find out learners’ perceived-benefits and challenges in developing and maintaining an e-portfolio.

THE STUDY

This study investigates the preferences, benefits and challenges on the use of e-portfolio as an assessment tool among pre-service teachers who are the students of Diploma in Education (Primary Education) in a Malaysian private university. 15 pre-service teachers were included as the respondents of this study as they are the group that made up the first and the second batches of the program. These pre-service teachers have all experienced developing and maintaining e-portfolio as an assessment method for modules that they undertake. Using a case study as research design, this research is governed by three research questions:

1. What are the criteria of an e-portfolio host that encourage pre-service teachers to use it as their platform?
2. How do the pre-service teachers perceive the benefits of e-portfolio as an assessment tool?
3. How do the pre-service teachers perceive the challenges of e-portfolio as an assessment tool?

The semi structured interview protocol used in this study comprised 5 items adapted from a study by van Wesel and Prop (2008). All the 15 pre-service teachers were interviewed for their views where each individual interview lasted for about 20 to 30 minutes. All the interview sessions were recorded in audio and were transcribed. The transcripts were given back to

the participants for member check and for further analysis. The categories emerged were also cross-checked with an expert in instructional technology as a triangulation effort to enhance the reliability of the findings. The findings are reported in the following sub-heading, with excerpts from the interviews to illustrate views inferred by the respondents. The respondents are labelled with numbers. For example, R1 refers to Respondent 1 and R2 refers to Respondent 2.

FINDINGS AND ANALYSIS

The findings in this section are reported corresponding to the research questions which governed this study.

The criteria that Influence the Respondents' Choice for e-portfolio Platforms

The respondents were asked about the aspects of online platforms that they look for when they choose one for their e-portfolios. They were many responses that indicated by the respondents which can be categorized into three, namely i) user friendly platforms, ii) level of familiarity and iii) compatibility with mobile gadgets.

Category A1: User friendly platforms

Under this category, it can be seen that the respondents are more particular with the design of the e-portfolio, and the diversity of media allowed by the platform which can provide satisfactory final look at their e-portfolio. All of the respondents interviewed indicated responses which can be grouped under this category. For example, R1 looked for professional finishing of his portfolio without needing to know the HTML codes. He mentioned:

"I can design the website to fit the content of my blog, without ever having to worry about codes. It's very easy to design a professional looking site." (R1)

For others, the ample choices of templates and user-friendly features of any platform attracted them more, especially when they can insert tabs and

media into their e-portfolio with ease. R14 and R9 inferred to this category through their responses.

“Weebly have quite many of ready-made templates. It is easy to use, just drag and drop.” (R7)

“I will choose the one with various layouts and easy to use.” (R14)

“I will definitely go for things which are user-friendly, easy to upload pictures and videos, good power navigation.” (R9)

As all of the respondents inferred responses indicating this category, the responses showed that the respondents are more likely to choose something which is time-saving and able to meet the outcomes they have set forth for themselves. The feature of drag and drop, for example, enable them to complete their work with ease and offers professional-looking site. This is especially important if their e-portfolio is a part of their module assessment.

Category A2: Compatibility with mobile gadgets

Under this category, respondents inferred ideas that they tend to choose platforms which are compatible with both their desktop computers and tablet computers. As such, they can seamlessly edit their work-in-progress on-the-go, at any time and place. P13 mentioned that it is important for a platform to be available and compatible with both her laptop and tablet computer. She said,

“To me, it is also important for it to be compatible on both iPad and computer. Then, I can work from anywhere regardless of the time.” (P13)

Working on the e-portfolio from any place and time is also true especially when ideas can be jotted down straight into the e-portfolio content, and media can be inserted from the storage of the tablet computer itself.

Category A3: Level of familiarity

This category was differentiated from the category “User friendly” delineated above because the respondents were taught explicitly the features of certain platform. For example, R3 mentioned that she was taught on how to use Wix through a hands-on workshop, and she basically knows how to develop a site hosted by Wix. The following is the excerpt from an interview with R3.

“I was taught to use it in a seminar, formally. Whereas, I am not so comfortable with Google Site as I have only learned it through a rushed tutorial.”

For R6, she preferred to use Google site as she is familiar with the Google Apps. This is evident from her excerpt as follows:

“I choose Google site for my portfolios because I’m used to it. I find it simple to use and I can link other Google platforms, like... add in Google docs.” (R6)

R3 and R5 showed that both of them tend to choose platforms which they have readily known, most probably because they do not have to learn and re-learn how to use certain e-portfolio hosts.

Pre-service Teachers’ Perceptions on the Benefits of e-portfolio as an Assessment Tool

The pre-service teachers agreed that e-portfolios benefitted them in many ways. Based on the responses analyzed, the responses can be categorized into three, namely i) easy articulation of ideas, ii) allows creativity and iii) allows deeper reflection.

Category B1: Articulation of ideas

The respondents indicated that having digital platforms of their work allows them to express their ideas through various media, and still makes it interesting. For example, R5 mentioned that:

“I have learnt how to use some of the online platform such as Wordpress or Wix to do my e-portfolio; I can also insert some

of the pictures (visual aids) on the page to make my e-portfolio more interesting and to make the reader more understand about the content that I wrote. I can also upload some pictures and also write a long message about the picture that I have taken which help me to explain better about my content.” (R15)

R7’s response was also in congruent with what R15 has mentioned, which is the use of video is able to help them illustrate what they intend to articulate to their reader. R7 reiterated the following:

“...especially when we want to present the content with a support video. It can’t be denied that sometimes, thousands of words are less effective than seeing a real example. Video often can help to explain the situations that are hard to convey through words.” (R7)

Another feature of e-portfolio that the students find helpful was the unlimited words that allow them to explain thoroughly what they meant. To them, they are bonded to write in succinct ways if word limit is an issue, especially if reporting in a paper-based portfolio where they need to consider printing cost. This point was illustrated by R3.

“The good thing is because online texts are not bounded by word limits or space limits, due to printing costs or whatever. And so, one can include as many graphics to illustrate a point. Instead of explaining a lesson plan, one can attach an e-version of it, which makes for easier compilation. I can also edit as I please, even nearing the deadline, until my point becomes clear.” (R3)

Category B2: Allows creativity

Besides the feature of allowing them to articulate ideas better, they also find e-portfolio benefitting as they allow them to unleash their creativity. R2 provided her response expressing that e-portfolios are helpful in letting her include many creative elements in her work. She inferred this through the following response:

“This is because I can add in pictures, organize my points by creating a column on the top and I can add navigation. Instead of

writing my reflection on a piece of A4 paper, I prefer creating an e-portfolio to write my reflection because I can be more creative in presenting my content.” (R2)

R2’s response was consistent with what R11 has shared in the interview session. R2 found that e-portfolio “allow [her] to insert media, links and the wide range of resources from online. They allow [her] to show [her] creative side and experiment with an online tool.

Category B3: Allows deeper reflection

Another interesting category found was the ability to reflect deeper when the work is submitted through e-portfolios. As deep reflection comes from active observation and rigorous thinking, R3 believed that the convenience of jotting down and thinking about something during and after observation make it convenient for her and encourage reflection. R3 mentioned:

“...since we are always with our devices, it’s convenient for us to do reflection. Sometimes I may hesitate to reflect on the content learnt because I don’t know where to start, or where to write it on.”

R12 on a similar note found that the use of portfolio was encouraging for her and so she: *“Used [her] e-portfolio to show [her] day-to-day challenges as a new teacher, as well as how [she] have grown week by week.”* Congruently, R8 thought that: *“Placing e-portfolio as part of the assessment allows deeper reflection as it gives us a platform to express inner thoughts and processes.”*

Besides that, R8 also supported her views with the following response:

“I feel that by making an e-portfolio, I could actively record my data and also my process of doing the assessment. Hence, my work is always up to date with whatever I have done... when doing work online, there are less room for error, and more room for adjustments and customization to be made.”

R15 contributed to this category, mentioning that her thoughts seemed more organised on an e-portfolio compared to a paper-based portfolio. She mentioned the following:

“The ease of online portfolio makes it so much easier to categorize thoughts than on paper. I find myself able to think and reflect deeper.”(R15)

Overall, it can be inferred that the respondents found that using an e-portfolio was more accommodating for them to have deeper reflection on the content of certain modules.

Pre-service Teachers’ Perceptions on the Challenges of e-portfolio as an Assessment Tool

This subheading highlights the responses given by students on the challenges they faced for having an e-portfolio as part of their assessment tool. The feedback given by the respondents can be generally grouped under three categories, namely i) fair use, ii) time limitation and iii) neglecting content.

Category C1: Fair use

This category inferred the inability to freely share the photos which the respondents have taken to support or illustrate their point. Although the respondents mentioned that one of the benefits of using e-portfolios is the ability to share photos and videos, the respondents need to ensure that they are careful with the photos or videos they shared in their e-portfolios.

R3 provided responses that supported this point, extending her use to not only photos and videos, but also lesson plans. She mentioned: *“... there are so many other restrictions for e-portfolios. For example, use of student photos, classified lesson plans, easily traced by search engines. This allows people who aren’t supposed to see it may accidentally stumble upon it.”* Her point is especially true as the respondents’ need to maintain an e-portfolio which documents what they have learned in their placement schools. Hence, they need to take photos or videos of students’ learning most often than not to illustrate what they observe.

Category C2: Time limitation

The second category encapsulates responses that developing and maintaining e-portfolio can be time-consuming, especially in the initial stage. For example, R3 mentioned: *"...to waste time to design and set up the website"*. R6's responses also were consistent with what R3 has suggested, as he felt that he has to re-create a new email address to host different websites for different modules. R6 mentioned *"I face difficulties in setting up the website. For example, Wix only allows for one blog platform for the site."*

Category C3: Neglecting content

This category provided another insight to how the respondents find e-portfolio as challenging for them. Responses that were grouped under this category contributed to the understanding that they tend to focus on the technicalities of setting up an e-portfolio, and that resulted in them not putting much effort on the content. This can be clearly inferred from R3's response as follows:

"Demands for too much to be covered in an e-portfolio. Because a website has to look multi-faceted/interesting, I find myself spending more time making my website look good or setting up the website than actually reflecting on my practice." (R3)

Similarly, R11 attributed her challenges in using e-portfolios to knowing how to use it, instead of focusing on what to write. R11 mentioned the following:

"The challenge of the e-portfolio was being new to it. I had to figure out how to properly use it to make the e-portfolio the way I wanted. Most time, it was hard to even know what I wanted. Sometimes, I spend too much time trying to figure out how to use it and also by playing around to make my website look nice." (R11)

This category shows that there is a divergent from what the e-portfolio is set to achieve, which is for students to develop deep reflection and quality content. Instead of focusing on the content, the respondents felt that to develop a nice layout and professional-looking site, they must spend more time focusing on those facets, instead of contemplating much about the quality of the content they inserted on the site.

DISCUSSION AND CONCLUSION

The findings of this study were congruent with what other researchers have found in their study (Driessen et al., 2007; Gijbels et al., 2006), that most students find it motivating to develop an e-portfolio as they are able to unleash their creativity and be more reflective in thought. The participants in this study also further suggest that the convenience of capturing photos and other relevant learning evidences in their tablet computers makes them maintain an e-portfolio more efficiently. That allows more time to deeply reflect on other contents.

However, the findings of this study also suggest that there are many issues that educators have to pay more attention to before including e-portfolios as part of the assessment. From the data gained, it showed that students need more time in preparing for their e-portfolios as they need to take care of both technicality and the depth of the content presented on the e-portfolios platforms chosen by them (Category C3). It also seems apt to provide a hands-on course to expose students to the platforms readily available and advise them to use a standard portfolio host across different modules. Such initiative will enable the novice to learn how to start developing an e-portfolio, instead of wasting time navigating through things they are not familiar (Category C2). Through such workshop also, the pre-service teachers could be exposed to the function of privatizing their e-portfolios, to curb the rising issues of fair use, especially in this advance digital age (Category C1). This issue of fair use is particularly unique to the teacher training programme as school placements involve many documentation of their practice and observation in school where videos and photos of children learning are common.

In conclusion, it can be said that the use of e-portfolio in the modules as part of the assessment is encouraging thinking among the pre-service teachers. It meets the aim of reflective practice that the teacher training programme has set forth to achieve among its prospective graduates as future teachers. However, the issues and challenges raised by the respondents in the study must be addressed to ensure the effective implementation of such assessment, and to produce graduates who are not only reflective in their thoughts, but in their practice too.

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Instructors' Perception on Integrating A Learning Management System in Teaching ESL Adult Learners Online Reading

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ABSTRACT

Most educational institutions utilize Learning Management Systems (LMSs) as learning and teaching portal for online learning programmes. It is a system that allows the institution to manage and monitor instructors, learners and content of courses. Nonetheless, due to this relatively new learning environment, most online teaching methods have not yet incorporated pedagogic principles in which could lead to ineffective teaching thus resulting in unsuccessful learning. In Second Language teaching and learning, it is crucial for instructors to understand and utilize this system for online language learning. Although, the LMS may provide the tools and features that could support teaching in an online learning environment, the lack of instructors' understanding of an LMS environment may prevent learning from taking place. Therefore, the aim of this study is to investigate the instructors' perception of using LMS (i-Class) in teaching, particularly English as a Second Language (ESL) online reading for adult learners of Universiti Teknologi MARA (UiTM), Shah Alam, Malaysia. Active and less active instructors were interviewed. This qualitative study revealed that the instructors' perceptions are mainly positive towards integrating the system in teaching online reading, specifically encouraging

online participation and monitoring learners' performance. However, the findings also suggest that learners' online engagement is dependent on the instructors' commitment to online teaching.

Keywords: Learning Management System (LMS), ESL online reading, adult learners, online participation, Second Language teaching and learning

INTRODUCTION

Like many other higher learning institutions that offer online learning, UiTM also utilizes an LMS to connect with learners who have opted online learning. To meet with the demands of online learning, the university has developed i-Class, which is the LMS for learners and instructors to use as a platform for both learning and teaching activities. Using LMSs for online learning has generally received positive reviews from the users especially learners. Previous researchers (Nasir, Alwi & Said, 2007; Steel, 2007; Abdullah et. al., 2008; Palmer & Holt, 2009; Abdullah, Ahmad & Hashim, 2009; Ayub et. al., 2010) indicate that learners have positive attitudes towards the use of LMS technology in their learning process. The features of an LMS like forum, discussion board, e-mail, chat and other technological support learning tools extend face-to-face time with their instructors. This allows instructors to reinforce what is learned in face-to-face classroom. Moreover, because the fact that learning can be done at anytime and anywhere, it inevitably increases learners' online participation and engagement.

UiTM offers various online programmes to those who seek to pursue their education in a flexible mode of learning. The online programmes entail that learners attend face-to-face seminars and also participate online. Such mode of learning attracts working adults or professionals to enrol into various programmes offered by the university. i-Class, acts as a vehicle or tool for the management of the university to update or upload relevant information and materials regarding the courses offered. Besides that, most importantly, the system also serves as a social network where these learners communicate with each other via the technological support features that are available in the system. Among the asynchronous features of i-Class are email, discussion board (i-Discuss) and bulletin board. Institute of Education

Development (InED), UiTM is established to ensure the smooth running of the online learning programmes offered by the university. The learners meet their instructors face-to-face five times for each semester. They interact and meet the instructors and other learners for a 2 hour face-to-face seminar. Among the activities conducted during the seminars are attending lectures, doing on-going assessments, discussing with instructors and other peers.

For all the Diploma and Degree programmes in UiTM, they are required to take up English as a Second Language (ESL) Proficiency courses. Among the ESL compulsory courses are BEL120 (Consolidating Language Skills) and BEL260 (Preparatory English for Malaysian University English Test) in Semester 1 and 2. Each course has a Reading component.

LITERATURE REVIEW

Online learning instructors have multiple roles and responsibilities that they have to carry out in making online learning a success. Previous researches reported that instructors have overlapping roles as instructors, designer and manager (Yang & Cornelious, 2004; Langdon & Taylor, 2005; Morris & Xu, 2005; Phillips, 2006; Emelyanova & Voronina, 2014; Toland, White, Mills, & Bolliger, 2014). More often than not, there is a blurring line that delineates among these roles when they are actually put into practice. This means that instructors of online learning have to juggle all these responsibilities. Without this realization instructors may feel overwhelmed or frustrated when they are confronted with multiple tasks which demand more time and work. Palmer and Holt (2009) observe that due to the extra tasks and time, most instructors are less satisfied with using LMS than learners. In the case of UiTM online learning programme, Nasir, Talib, and Hassan (2007) reported that the management often receives complaints from learners regarding instructors' lack of online interaction in i-Class. The cause of these complaints may originate from the responsibilities of UiTM online learning instructors have to take on. Among their responsibilities are to assist and guide learners in reading self-instructional materials and web-based materials. In addition, they have to initiate online discussion among learners, provide the learners with skills to answer questions and manage the assignments and projects. Besides online interaction, they have to conduct face-to-face seminars where they need to distribute, conduct,

collect and grade the assignments. Finally, they are responsible to grade the tests and exams as well as provide feedback to the managers. These responsibilities may have affected the instructors' commitment in teaching online. According to Al-Busaidi and Al-Shihi (2010) the success of the use of LMS in any institution begins with instructors' acceptance which is then followed by participation from learners. Therefore, successful online learning requires involvement from not only the learners, but also most importantly the instructors.

In making learners engaged with online learning, instructors are the key players to use the LMS system to its most potential. Morgan (2003) discovers that initially the reason behind the adoption of using LMS by instructors was the novelty and potential of the technology that it has to offer. From a survey of faculty members of University of Wisconsin System, the use of LMS then deteriorated over time among 5% of the surveyed respondents because they resented the time consuming process of uploading materials (Morgan 2003). This seems to be the main factor to reduce the use of the LMS. However, they maintained that the LMS is integral in terms of managing and supplementing face-to-face teaching especially in areas of learners participation and feedback, grading and maintaining communication with learners. Instructors are keen to use the system because it reduces administrative tasks and supports the traditional classroom. Harrington, Staffo, and Wright (2006) believe that effective management means efficient loading of teaching materials without consuming too much time when using the LMS. If it takes more time than usual, instructors may not be able to manage other workload. Therefore, these instructors use the LMS as an adjunct to their teaching. However, how the instructors adapt the LMS to convey their teaching is not really clear. Garrote and Pettersson (2007) argue that instructors use the tools in the LMS not because they are IT savvy but they think more on saving time and merely support a traditional teaching process. In their study, instructors do not use the tools in the LMS based on pedagogical impact that they would have on learners. Instructors are more concerned on using the technology to lessen the burden of managing classes. Yang and Cornelious (2005) mentioned that there is a tendency for instructors to translate the pedagogic principles in face-to-face classrooms to online learning scenario which leads to unsuccessful learning.

Steel and Levy (2009) believe that whether the tools in the LMS are successfully used or not depends on the individual, the instructor. Instructors may have differing pedagogical philosophies and beliefs that they transfer or assert in their teaching. Thus, when there is a mismatch, it creates tension and could only overcome if there is a solution for it. This diversity seems to be bane of using a standardized LMS which does not fit all. It can be said that, there has been mixed perceptions on using LMS despite of the technological features and benefits that it offers. In spite of these discrepancies in views of instructors using LMSs, researches on instructors using LMS are still lacking (Palmer & Holt, 2009; Steel & Levy, 2009; Al-Busaidi & Al-Shihi, 2010; Little-Wiles, Hundley, Worley & Bauer, 2012).

STATEMENT OF PROBLEM

Several researches that investigate learners' perception on the use of LMS further revealed that their participation is dependent on the instructors' involvement in engaging them in online learning. For example, a survey by Steel (2007) on Australian G08 sandstone university students reveals that they do not expect the online instructors to be IT savvy, but they expect consistent and quality teaching in using the LMS. Another study on learners of University Putra Malaysia shows that instructors play an important role to initiate and motivate the learners to continue using the learning portal (Ayub et al., 2010).

These findings are also consistent with a study on the use of i-Class, UiTM, whereby learners expected everything to be taught by instructors just like the full time mode of instruction (Nasir, Talib & Hassan, 2007). Due to this expectation, the management of online learning programmes in UiTM, often received complaints about instructors who seemed to be under utilizing the system. Another study on an evaluation of UiTM online learning programmes reveals that learners have differing opinions when asked about their instructors (Nasir, Alwi & Said, 2007). These findings highlight the fact that most learners have positive experience in integrating technology in their learning experience. On the contrary for the instructors, their experiences using the LMS may not be as positive as to the learners. Harrington, Staffo, and Wright (2006) concur that learners usually pressure and expect instructors to use technology as frequently and effectively as

possible. In defence of the instructors, nonetheless, Nasir, Talib, and Hassan (2007) suggest that learners should have a better grasp of the concept of online learning, mainly to be autonomous, so that the pressure is lessened. From these studies, there are discrepancies in terms of the expectations from learners and instructors in using LMSs. A study by Mohd Ramli, Darus and Abu Bakar (2011) explored the use of UiTM LMS for ESL Reading through investigating learners' metacognitive online reading strategy. It was revealed that learners did not utilize the available features as they should. Learners were found to mostly use Global Strategy that puts priority on having a purpose to log in. Thus, this indicates that learners needed a specific task or instruction from the instructors to be given to them in order to get them engaged on the LMS. One of the major points emphasized in these studies, is the expectation for the instructors to provide quality and consistent online learning experience to the learners.

There is a need to investigate instructors' use of i-Class. Thus the objective of this study is how instructors perceive in using i-Class for online reading of ESL adult learners. To gain an in-depth investigation, active and less active instructors were interviewed.

These research questions guide the study:

1. What is the active instructors' perception of using i-Class in ESL online reading?
2. What is the less active instructors' perception of using i-Class in ESL online reading?

RESEARCH DESIGN

The study intends to investigate the use i-Class by online learning instructors of UiTM, Shah Alam, Selangor campus in teaching ESL online reading to adult learners. In order to gain insights of the use of i-Class by the instructors, a case study research design is considered appropriate. A case study is the study of a single phenomenon (Bogoan & Biklen, 1998; Bryman, 2004; Marshall & Rossman, 2006). A series of one to one interviews with the instructors was conducted to obtain descriptive data on their use of i-Class.

A distinction of active and less active instructors was made to provide a better insight of the investigated phenomenon.

PARTICIPANT

The research participants were the instructors of UiTM. The instructors of ESL proficiency courses of UiTM are appointed by the Academy of Language Studies (ALS), UiTM and InED, UiTM. In order to get a comprehensive description of the situation, both active and less-active instructors using i-Class were selected. Identifying the lecturers was based on information from the ESL Proficiency Course Coordinator. According to the Course Coordinator, every semester the instructors' performances are evaluated based on their login frequencies and learners' evaluation. Active instructors are categorized as instructors who logged into i-Class frequently. On the other hand, the less active instructors are those who seldom log into i-Class. It is stipulated by InED that instructors must log into the system at least 10 times. The categories of instructors are shown in Table 1.

Table 1: Instructors Interviewed for the Research

Instructor	Courses taught	Active	Non active	Experience (no of semesters)
1 (I1)	BEL260	√	-	4
2 (I2)	BEL120	-	√	8
3 (I3)	BEL120	√	-	3
4 (I4)	BEL120	√	-	10
5 (I5)	BEL120/260	-	√	10
6 (I6)	BEL260	-	√	6

The instructors' teaching experience in teaching UiTM online programmes using i-Class ranged from 3 to 10 semesters. Three instructors were identified as active and 3 instructors were identified as less active. The researcher made several appointments and conducted recorded interviews.

RESEARCH INSTRUMENT

Semi-structured interview questions were used during the interviews with the instructors (Appendix I). These types of questions were used because they allow flexibility for the researcher to adapt and adjust questions as the interview progressed.

Analysis of Data

All the recorded interviews were recorded using MP3 recorder and transcribed verbatim using Microsoft Office Word. Then, the transcriptions were uploaded and analysed using a qualitative data analysis software, NVivo Version 8.

FINDINGS AND ANALYSIS

Initial analysis of the interviews of Active Instructors and Less Active Instructors shows that i-Class is mainly used to complement learning and teaching. The most used feature as mentioned by these instructors is i-Discuss, an online forum in i-Class. A more in-depth analysis of the interviews of the 6 active instructors of the use of i-Class revealed the following sub themes. These sub themes highlight the differences of perceptions between Active Instructors and Less Active Instructors in using i-Class.

Active Instructors

In the interviews it was found that the active instructors had put emphasis on online participation when they were asked to describe the learners' online activities, even though the requirement for online participation is only 10%. Though this may seem to be minimal requirement, these active instructors had developed online activities on their own in order to get the learners engaged in learning online.

Specific Instructions

As far as online participation was concerned, active instructors found this aspect to be as important as face-to-face learning. To urge the learners

to participate further, an active instructor explained explicitly to learners at the beginning of the semester what is considered as online participation.

“And for reading as well, each of the students for participation mark, from the first seminar itself, I inform them that their participation marks, the ten marks will come from online participation.” (I1)

Another consideration that these active instructors revealed that, to increase online participation is by giving specific instructions or train learners with specific skills on how to participate in online discussions. As this excerpt of the interview reveals:

“I do tell them that if you do not participate from time to time and I actually specified that answers like... “Yes”, “No,” “Okay”... does not count as participation. Some of them just, “Uhhh.” [noded] “I see.” I tell them that does not count, if you want to discuss, you really want to be online, you give something constructive.” (I3)

This interview excerpt with I1 also stated the significance of specific instructions.

“I highlight this is the kind of question you can ask; what, when, who, but I do tell them do not ask too many who and make sure it's not a Yes and No question. Not only requiring a Yes or No, but you has to have at least one sentence to answer the question.” (I1)

Instructions were given by the instructor so that the learners were aware of the extent or the value of their online participation. It can be said that these active instructors, explicitly outlined and demonstrated the importance of online participation to the learners.

Follow-up and Structured Activities

Realizing that learners were not going to participate online unless proper and guided instructions were given, another active instructor contended that an instructor cannot simply leave the learners to discuss on

their own in discussion boards or online forums. She insisted that online activities needed to have immediate feedback and follow up activities. When asked the significance of following up and constant feedback, she claimed that,

“Err... yeah... better than just open discussion you know when you just open up. ‘Okay, today we discuss about reference’ that method doesn’t work.” (I1)

This finding corroborates with Garrett’s (2009) view that only structured feedback and activities ensure learners make full use of the features and tools that technology provides.

Furthermore, the instructor contended that cutting down tasks that are considered unnecessary or troublesome by the learners, like downloading reading materials, increases this sense of responsibility and thus elevate online participation. The instructor explained that she had provided hardcopies of the reading materials instead of uploading the materials to i-Class because of the reasons in the interview excerpt below,

“The reason being is that when you entrust student with too many responsibilities, they will tend to delay, do not want to do it. They will give all sorts of excuses.” (I1)

She also added that,

“[...] I do it for them is because through my experience when you cut down the amount of works that they have to do, they are more willing to responds to whatever you want them...” (I1)

This particular instructor took on extra responsibilities so that learners would feel obligated to participate since they run out of excuses not to.

In the interviews with the active instructors, it did not only show that initiatives were taken to make learners engaged by developing online activities, but they also sought other means to increase participation. When there is a loophole in i-Class, they seek other alternatives for instance other messaging platform. An active instructor used Yahoo Messenger, another

chat platform that may be more accessible to encourage learners to interact and participate online. She expressed this in this interview excerpt,

“Yes. And I don’t encourage them to call me, especially when I’m teaching I don’t entertain phone calls. So, I just tell them you either e-mail me and if I’m on YM, you just give message there. Or either you can just simply text me, “Puan, I have an enquiry here. I really need to know when you are free to talk.” Then, we’ll get back...” (I3)

All in all, the motivating factor for learners to participate online is widely determined by the extent of the weight of assessment and the assistance from the instructors. This is because these adult learners have professional and personal commitments which may be the factors that influence their learning commitment like time spent online. Also, the problem of online participation is not isolated to reading online. It is a problem of online learning as a whole. Therefore, instructors play a significant role to ensure learning also continues outside the walls of the classroom. Al-Busaidi and Al-Shihi (2010) indicated in their study that instructors who embrace the use of technology in online learning usually portray personal innovativeness to engage learners to use the LMS. The active instructors of this study developed online activities that fit the learners’ motivation to go online and be engaged.

Autonomous Learning

A recurring theme that emerged in the interviews with the active instructors is regarding the learners’ lack of motivation to participate not only for online reading, but also for overall online participation. These adult learners’ needed to be given constant motivation to keep them engaged in learning especially learners who are working adults. This challenge was expressed by this active instructor, as shown in the transcript below,

“Erm... I guess it is attitude, but my bigger concern of ePJJ is the participation. You need to participate, not only attend the seminar, to actually put yourself into this class, your effort. Most of them think that you can just like attend one or two seminars and then you know there are couple of questions on portal and they can get by. But, that’s not the case.” (I3)

The instructors see the need for these learners to be autonomous in order to make online learning beneficial for this target group. However, they expressed their frustrations that learners seemed refuse to be autonomous and preferred the instructors to design and develop a structured learning approach. For instance, an active instructor maintained that it is the attitude of learners that determine the extent of use of i-Class as this excerpt illustrates,

“I don’t face many problems. The problems are not i-Class, the problems are more of the students. They want to participate or not, you know...” (I4)

Furthermore, Instructor 3 felt that the learners should continue to learn language beyond the classroom by getting engaged online as in this quote,

“That’s the problem for me. That’s why I always tell them, ‘You need this book’ or ‘You need to go onto this website, and then try to understand on your own. I cannot really be there for you.’ I do tell them this is more of independent learning thing. If you think you can do this, okay, you are good. But if you can’t be independent, I really can’t help you. Hmm...” (I3)

Therefore, essentially, the availability of the online learning features and tools of i-Class does not ensure that learners would use them. This finding further support the idea by Garrett (2009) that for ESL learners to continue using the language outside the classroom, instructors and content developers and designers have to stress on following up activities.

LESS ACTIVE INSTRUCTORS

From the interviews, the less active instructors described that they prefer face-to-face instruction. The implication is that there were less online activities that led to less learners’ online participation. The less active instructors were asked about learners’ online participation which, make up 10% of their final grade. They described that these learners did participate online without specific instructions or follow-up activities.

Less Online Instruction

A less active instructor stated that for the adult learners, the Internet is easily available and accessible to them. Thus, the learners participated online regardless whether there was or was not any instruction as this interview with Instructor 5 shows,

“...and Internet is very much connected to English and we have lots of English materials in the internet. So, if the face to face student, we have to ask them, either they have the Internet facility to ask them to do some more research and things like that but for this adult student who is online learners we can take things for granted. We can be sure that Internet is the facility that is with them, so then, there will be easier for us to ask them to search for current issues, things like that.” (I5)

Instructor 2 concurred that specific instructions were not necessary as these excerpt reveals,

- “I: Do you, I mean teach your students or tell your students how to ask the questions in i-Class?
- I2: Honestly, I did not. Do we need to teach them how to ask questions? [LAUGH]” (I2)

When further asked about the rationale for lack of online instructions, a less active instructor justified that specific instruction might discourage learners to participate as this excerpt reveals,

“But, what is countered for is active participation for you to say, to agree or for you to disagree even though you have reason or not that is the secondary. Because not many student can disagree with reason and provide reason. If we expect too much, it will be a building block when they can't give reason, so they won't participate. I say the minimum is that I want to have participation where agree or disagree.” (I5)

Face-to-face Instruction

A sub theme that echoes among the less active instructors is the preference of face-to-face instruction in teaching reading. All instructors have printed modules and textbooks to assist them in teaching the course. The less active instructors used these texts to teach reading face-to-face. Therefore, most reading activities were done during the face-to-face seminars as this particular instructor expressed that,

“Uhhh... I would say depends, actually. Sometimes, if they don’t understand in the seminar, they will ask again in i-Class. But, most explanation in reading I would prefer in the seminar. Yeah...” (12)

The less active instructors claimed that certain reading concepts or skills were better explained face-to-face. For example, teaching reference words in particular was taught face-to-face by using modules or textbooks to assist the learners and they were able to grasp the concept easier.

“The module because there are past years questions over there and then, it’s easy for me to say, the word ‘they’ over here refers to the Malaysian citizens. For example, this line - I would easily okay now, you put an arrow to your anaphoric or cataphoric references. It’s easier for me to show them face to face with the help of markers and whiteboards, easier... rather than to do it online. I don’t know how to put the arrows and [show it to them?] Yes, and to type things again it will be hmmm... time consuming.” (15)

This instructor felt that she could explain a certain concept clearly face-to-face, especially when it involves teaching items that are pertinent to their examination. In addition, the instructor suggested that understanding of the text can be measured immediately through learners’ facial expressions or verbal discussions. The immediate response that the instructors received from learners face-to-face ensured that the taught skills were acquired. In contrast, she claimed that using features like forum discussion in i-Class might not reflect learners’ level of comprehension. For example, learners’ responses in discussion thread like “I agree” or “I understand” might not

reflect the level of comprehension. The instructor felt that i-Class might not provide a supportive or non-threatening environment for these adult learners.

Based on the analysis of interviews with the less active instructors, it can be assumed that they were doubtful of themselves as moderators for the online learners due to the demanding and time consuming tasks.

Use LMS to Manage Learners

The less active instructors described that online activities using i-Class were mainly for managing learners online. i-Class features that were frequently used were features that allow them to perform these managing tasks.

For the less active instructors, one of the managing tasks using *i-Class* as a platform is to disseminate information to these distant learners. Among the features used by the instructors were for example, i-Discuss as a forum for discussion, *Announcement* as a bulletin board to put up course information, *myDrawer* as a storage to upload examination papers and other relevant teaching and learning materials. In between face-to-face seminars, the instructors usually uploaded examination questions to the LMS as this instructor described in the interview,

“What I do basically is I give them the... err... past years questions, right? Because they only have five meetings, so I give them online, right? Past year exam paper, so what they do is they answer the questions and we meet in class and I go through the answers with them.” (I6)

These asynchronous features were used by instructors to post information, questions or announcements. Instructor 6, who is a less active, further described that online interactions between the instructor and learners were most of the time restricted to sending and receiving assignments as she stated, “That’s what I do with writing, then I print their... whatever they wrote, then I mark the paper and give it back to them. I don’t give them through online, but in the class.” (I6).

i-Class helped Instructor 5 to gauge whether the learners are motivated to learn and stay in the programme as this interview excerpt reveals,

“I do not realize that but, I realize that because I usually calculate the participation mark at the end of semester. I allow the student to participate till the last day, okay. [You open the channel until the last] Yeah... it’s an opportunity for them. I assume if you’re not free now, you might be free later. As long as you participate, right, so at the end of the semester we can... we’ll have to check the reason for the students who disappear from the exam, right? [Give reason...] or whatever it is, so, there is strong relationship of few participation and disappearance at the end of the semester.” (I5)

Interestingly, the instructor drew attention to the correlation between low online participation and the rate of drop outs. To this particular instructor, i-Class helped her to identify problematic learners and thus, managing these distance learners was easier. i-Class plays a significant role of not just to make learners engaged online but also engaged throughout the course of their learning programmes.

DISCUSSION

It can be said, overall, the active instructors have a positive attitude in integrating technology into their teaching. These instructors spent time in creating materials and activities to get learners engaged. Most importantly, from this study, these active instructors highlighted the significance of follow-up and feedback activities in order to get learners engaged, particularly ESL adult learners.

Assessment is part and parcel of any learning programmes to measure achievement and performance. In the case of this study, the active instructors put priority in achieving examination goals and completing assessment requirements. These active instructors were aware of the potentials of the technology of i-Class, but they have to adapt their pedagogical beliefs and practices to accommodate and encourage learners. It is a practice that they were accustomed to do because of learners’ expectations.

Overall, the less active instructors also have positive views on using i-Class in their teaching practices. The findings of the interviews with the less active instructors suggest that the instructors were using i-Class for mainly two reasons. i-Class was used to assist them in monitoring learners' online participation and distributing materials to learners by uploading examinations to these distant adult learners. This current study appears to support the idea by Weaver, Spratt and Nair (2008) who found in their study that the instructors focus more on the administrative issues when using the LMS than teaching itself.

Another important finding, the less active instructors indicated that spending time for conducting online activities was a burden. This seems to be a major obstacle that hinders these instructors to integrate technology as an effective language teaching tool. The less active instructors have the perception that integrating technology burdens their teaching and increases their responsibility. The less active instructors should be exposed to the possibilities of integrating i-Class to enhance their teaching through proper training. They are actually moderators or facilitators that could extend the use of the language outside the classroom.

CONCLUSION

Apparently, from the findings of the interviews of both groups, i-Class needs to be improved in terms of connectivity and user-friendliness. The instructors remarked that the management should assist online instructors in terms of making the system more accessible. Harrington, Staffo, and Wright (2006) found that adequate technical support from the management is usually the uppermost concern expressed by online learning instructors. With the technical problems faced, nevertheless, the active instructors indicated that they sought other online platforms to compensate the flaws in the system. Such effort is commendable but the management of the institution needs to seek for practical solutions and viable alternatives to support these instructors. Though other means may be effective as well, the management or the institution should take the instructors' views and experiences into consideration to improve i-Class.

In a nutshell, i-Class is used as online learning platform for these instructors to connect with learners outside the four walls of the classroom. The extent whether i-Class plays a significant role as a means to ensure continuous use of the targeted language largely depends on the instructors.

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APPENDIX 1

Interview Questions

1. What are the difficulties that you face when teaching online reading skill? Vocabulary?
2. Do you use the current LMS to teach reading skills? Is it sufficient? Why?
3. Can you describe how do you usually teach reading skill? How much time do you spend teaching reading?

4. Are you satisfied with the present online learning environment in teaching reading skills?
5. If you wish to improve the teaching process of reading skills online, how would you do it?

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