Web-Based Teaching And Learning Approach (WBTLA) Usability In Institutions Of Higher Learning In Malaysia

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ABSTRACT

Today teachers in schools and lecturers in institutions of higher learning are endowedwith a wide range of new teachingexperiencesthrough web-based teaching and learning approaches (WBTLA), which is not possible before through thetraditional classroom approach. With the use of WBTLA emerged problems related to usability in technical, pedagogical and contextual aspects of teaching and learning. This paper examines usability problems in the context of teaching and learning at higher institutions of learning in Malaysia. By using the framework proposed by Hadjerrout(2010), a survey was carried out to determine the aspects related to usability and the extent to which lecturers believed that they enjoyed teaching as well as faced difficulties in employing WBTLAin their classes. The findings show that while lecturers agreed on technical and pedagogical usability and the extent of difficulties involved which they could overcome, their perceptions and beliefs of contextual usabilityand the extent of the difficulties involvedare less clear. This leaves much to the ability and willingness of each respective institution to invest in the technology and provision of training to the lecturers. Despite the problems identified the lecturers do see that WBTLA has good prospects in the future.

Keywords:

INTRODUCTION

In the past ten years the web-based learning teaching learning approach (WBTLA) has increasingly become dominant in the educational landscape, be it at schools or at higher education institutions. It provides teachers, lecturers and students with a new and wide range of teaching-learning experience such as accessing information at any time and place, online presentation of information, interactive task-based activities, effective dissemination of information, and long distance education that is less possible in traditional classrooms (Nam & Smith-Jackson, 2007). As a powerful teaching learning approach it is expected to enhancelearning outcomes. However, despite the increasing use and adaptation of WBTLA, it is undeniable that web-based learning environment (WBLE)remains in the domain of technical experts rather than educatorsand learners (Nam & Smith-Jackson, 2007). The potential of WBTLA as alearningstrategywillonly be realized when both technological application and pedagogical issues are resolved(Govindasamy, 2002; Hamid, 2002; Saade, 2003; Watson, 2001).Nevertheless, most higher institutions of learning in Malaysia have widely employed WBTLA and thus encouraged the creation of WBLE. Since WBTLAuse requires a shift in pedagogical and technological paradigms some students and lecturers in particular will face problems related to ability to embark on the WBTLAandimbibing positive attitude towards using it. Sahin and Thompson (2006),for example, found out that although technology is mostly used in administration and researches, it is rarely used in teaching and learning. Regardless of that,each institution of higher learning in Malaysia takes pride in encouraging the creation of WBLE by installing Web technologies and Internet services as a delivery mode in the forms of HTML, URL, browsers, e-mail, and file transfer facilities, and so forth, which can include Web 2.0 tools, such as Wikis and Blogs. These installations allow collaborative and communication activities on the Web (Norton & Hathaway, 2008)apart from incorporating multimedia applications and animations, video and audio clips, film, and

graphics, and those developed with multimedia authoring software, such asAuthorware, ToolBook, and Flash.However, as pointed out by Iding, Crosby, and Spetiel (2002), and Jonassen et al. (2003),quite a sizeable number of faculty memberswere unable to use WBTLAand some even have negative attitude towards WBTLAuse in everyday classes.

LITERATURE REVIEW

Becker (2000)and Cuban (2001) found that a large number of faculty members did not effectively use information and communication technologies in teaching and learning. In order to facilitate teaching and learning, a number of researchers (Kukusska-Hulme& Shield, 2004; Nokelainen, 2006) suggest that developers need to designWBTLAwith suitable usability to meet the learners' and teachers' needs. Hadjerrouit (2010) suggested a model of evaluating usability of web-based teaching and learning resources which constitutes three important dimensions, namely pedagogical usability, technological usability and contextual usability. From the pedagogical usability viewpoint, current WBTLA lacks a number of features that would make it more flexible, interactive, motivating, and collaborative. Hence in dealing with pedagogical issues, WBLE must be extended to captureelements pertinent to learning. WBTLA with advanced online multimedia features is difficult to design, and therefore current systems are still limited in their pedagogical usability. Martinidale, Cates, and Qian (2005) pointed out that the current WBLE is substantially difficult to create especially that which tries to accommodate the demands of constructivist learning. Likewise, Liu and LaMont Johnson (2005) found a lack of fit between existing WBLEandwhat teachers, educators, and learners need, as well as a lack of connection between WBLEdesignand educational standards.

The pedagogical value of WBTLA lies in helping learners discover and explore things forthemselves through interactive, flexible, differentiated, and motivating activities. Liu and LaMont Johnson (2005) as well as Martinidale et al. (2005) found that most WBTLA provideslittle support for achieving high level flexibility, interactivity, feedback, differentiation, and collaboration. Thisis because most WBTLAs are developed without a previous analysis of learners' needs. Clearly, alearner-centeredness to WBTLA requires a change from teacher-centered instruction to a learner-centered one (John & Sutherland, 2009). While pedagogical usabilityaims at supporting the learning process, technical usabilityon the other handinvolvestechniques for ensuring a trouble-free interaction with the software. Thus technical usability aims at minimizing cognitive load resulting from the interaction with the software and thus facilitates the learning process.In other words technical usability is related to how software is able to meet the need for consistency, learner satisfaction, minimal user actions and minimal memory load, simplicity and reduction of complexity in a WBLTA insupport of student learning (Nielsen, 1993; Scheidermann, 1998). According to Nielsen (2000) three factors are involved in Web usability, namelypage design, content design andsite design. Page designrelates to cross platform, speed of page access, and page linking and thus itdescribes how easy it is to use the pages of the web-based materialswhich associate with figures, multimedia elements, logo, and illustrations.Contentdesignindicates how easy it is to read the content of the web-based materials and how efficient it is to access it.Site design associates withlinking and navigation indicating how easy it is to access the menus, and navigatethrough the links and screens of the web-based materials.

Contextualusability is about totalrelationshipsbetween students and surrounding elements within a teaching and learning situation.Brousseau(1998) uses the term milieu where learning is described as emerging from exchanges between the students and a milieu organized with teaching intentions. Accordingly, milieu is everything in the situation the learners can act on. It can be divided into two categories: material and non material milieu. Material milieu includeselements such as subject matter, curriculum and its objectives, infrastructure, student PC-ratio in the classroom, and textbooks. The non material milieu consists of the stakeholders involved in school education, fellow learners in the classroom, and teachers.Themilieu forms the basis for the process underlying the design and use of web-based materials.In this context learning occurs through adaptation of the student to the milieu(Brousseau, 1998), and this view is consistentwith Piaget's view on learning as an adaptation process (Piaget, 1972).

CONCEPTUAL FRAMEWORK

The concept of usability has been defined by a number of researchers;however,a complete definition in a specific context isdifficult to develop(Petersen, 2007; Simbulan, 2007).Nielsen (1993,2000)proposed that a definition focusing on technical usability tends to be limited when it comesto pedagogical softwaredesign and WBLE creation. The goal of technical usability is to minimize thecognitive load resulting from interaction with the software in order to free more resources forthe learning process itself. On the other hand, most of the conventional usability relates to the learning process and utility of pedagogical software involving the need for consistency, learner satisfaction, minimal user actions and minimal memory load, simplicity and reduction of complexity (Nielsen, 1993; Scheidermann, 1998).Therefore the usability concept must be extended to capture issues that are fundamentalto learning. The literature on learning theories points to the fundamental differences andsimilarities between them (Lin & Hsieh,

2001). However, in schools and institutions of higher learning a mix of learning theoriesisemployed.

In the teaching and learning environment at tertiary level lecturers are free to use any learning theories and approaches deemed comfortable and appropriate for them and their students. Nevertheless, lecturers must allow circumstances surrounding the learning situation to help them decide the most appropriate approach to learning(Karagiorgi&Symeou, 2005). Teachers however need to consider that WBTLAs are more likely to be learner-centered than other methods (John & Sutherland, 2009). In order to realize maximum learning benefits,designingof WBTLA particularly at the tertiary level requires an adaptation of a constructivist platform and also integration of pedagogical usability issues.

According to Kay, Knaack, and Petrarca (2009) at present little is known about students' and teachers'perceptions of WBTLA in either schoolsor higher learning institutions. Hence it is difficult to conceive that technical and pedagogical usability within a specific context of teaching and learning as disjointed activities. They are closely related to each other (Mayes & Fowler, 1999; Tselios, Avouris, &Komis, 2008).In addition cultural factors as in the non materialmilieurendered change difficult (Belland, 2009; Jamieson-Proctor, Watson, Finger, Grimbek,& Burnett, 2007). This means that such a change demands a massive shift in values related to institutional culture, teaching, and learning, as well as an intensive commitment to individualized learning (Maddux, 2005). These obstacles are very difficult to overcome unless technology is incorporated into content and methods for a specific learning context built forlongerduration.

The concept of pedagogical usability has been addressed by Nokelainen (2006). He defined a set of criteria that can be applied to digital learning; namely:

- Understandability - providing a well-structured description of the subject
- Information, in which the content should be wellorganized;
- Added value - offering more learning potentialitiesthan traditional teaching –learning environment;
- Goal-orientation – orienting tolearning utility and meaningfulness interms of the learning goals set.
- Time – limiting to acceptable time frame for learning;
- Interactivity. Providing support for interactivity through easy and userfriendlyaccessibility;
- Multimedia – allowing multiple representation of information through various

  multi-media elements;
- Motivation – containing intrinsically motivatingtasks;
- Differentiation – adaptable the students' age, development,and interests;
- Flexibility – providing different levels of difficulty for all students;
- Autonomy – allowing students to work on their ownwithout being dependent on lectures;
- Collaboration – facilitating to collaborate in problem solving;
- Variation – allowing different learning resources be used to enrich the WBLE.

As for technical usability as mentioned earlier, Nielsen (2000) suggested factors which include contentdesign,page design, and site design. The criteria for these designs are:

- Content design – ease in accessing and reading the content uploaded;
- Page design-ease in the use pages and associatedfigures, multimedia elements, logo, and illustrations.
- Site design - ease in accessing menus and navigatethrough the links of the web-based learning materials.

Contextualusability is about relationships between students and surrounding elements within a teaching and learning situation (Brousseau, 1998) which can include:

- Non material milieu such as textbooks, IT infrastructure, curriculum and subject matter.
- Material milieusuch as fellow students, lecturers and instructors.

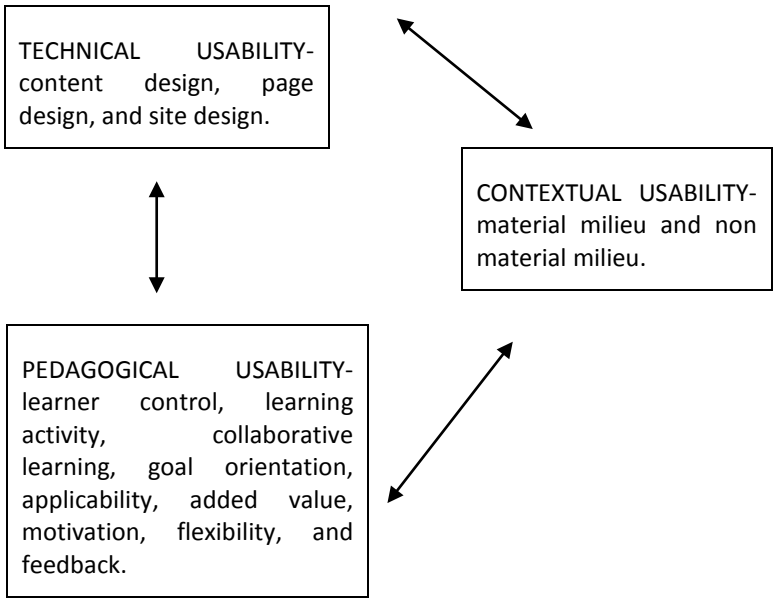

Figure 1:The three dimensions of usability.

Figure 1 shows the inter-linkages among three dimensions of usability-- technical, pedagogical and contextualof WBTLA.

In teaching and learning students and lecturers alike find WBTLA new in that they have to overcome difficulties in technical and pedagogical abilities to understand and furthermore to apply them in integrative settings within a specific context of teaching and learning of the classroom.Despite the complexity and thus the difficulty involved in capturing the degree of usability of the WBTLA, exploring usability through each of the three dimensions as shown in Figure 1 would in some way able to gauge the usabilityof the present WBTLAs at the institutions of higher learning.

OBJECTIVES

The objectives of this study are to investigate:

1. Lecturers' viewsregarding technical, pedagogical and context usability of WBTLA.
2. Lecturers' comments about what they like and dislike on issues related to

   usability of WBTLAand how it could be improved.

METHOD

This study was carried out in the form of survey, using questionnaire as a method of data collection. The sample consisted of 157 lecturers from four fields of studies namely: social science and business, science and mathematics, art and design, and linguistics in 15 purposively selected institutions of higher learning both public and private.

The subjects were conveniently sampled, constituting 62 males and 95 females, and they were engaged in

teaching at various undergraduate levels from first year to fourth year. The analysis is done quantitatively for the first objective and qualitatively done for the second objective. For the first objective data were gathered through a questionnaire which was completed by 157 lecturers from four fields of studies.The breakdown was 30 in science and mathematics, 55 in social science and business, 32 in art and design and 40 in linguistics. Thequestionnaire was administered to the lecturers at the end of the second semester. The questionnaire contained 25 five-point Likert scale items in which response 5 indicates "Strongly agree"; 4 indicates "Agree"; 3indicates"Neither Agree or Disagree";2 indicates "Disagree"; and 1 indicates "Strongly Disagree". The questionnaire was adapted from the study by Hadjerrout(2010), and verified for face validity through the opinion of four experts in the field of instructional technology.However, factor analysisconductedin the main study for technical usability confirmed the existence of four factors accounting for 72 percent of the variance, for pedagogical usability twelve factors accounting for 65 percent of the variance and contextual usability nine factors accounting for 62 percent of the variance. The Cronbach alpha reliability for the questionnaire was 0.88.

For the second objective the lecturers were required to respond to two open-ended questions and also provide comments on what they like and dislike about the WBTLA, and any improvements deemed necessary. Like the questionnaire, the open ended questions were also subjected to verification from the same experts in the field of instructional technology. They all agreed on the ability of the questions to extract the responsesrequired of the lecturers.Descriptive statistics were used to analyze the questionnaire; the interviews were qualitatively analyzed thus yielding highlights of the views regarding the strengths and weaknesses and suggestions for improvement of the WBTLA.

RESULTS

For the first objective three aspects were examined, and they are lecturers' views of technical, pedagogical and context usability of WBLTA in each of the lecturers' institutions of higher learning. The median for all the scores on technical usability was 2.11 and this is used as a cut-off point for positive and negative scores. As shown in Table 1, in terms of technical usability of WBTLA, it is found that for page design the mean score was 3.88 while the standard deviation was .550. These indicate that the respondents found that page design is fairly easy to perform for WBTLA. For content design the mean score was 3.02 and the standard deviation was .611indicating that designing content was not too difficult though meaning that it is quite manageable for them to understand and be able to use symbols, logo, figures, pictures, and illustrations. For site design the mean score was 3.86 while the standard deviation was .718indicating thatthere is very little problem posed in the use of menus, screenshots and navigation through the screens.

Table 1: Means and Standard Deviations for the Technical Usability Criteria (n = 157)

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	Mean	Std. Deviation
Page design	3.88	.650
Content design	3.02	.611
Site design	3.86	.718

For pedagogical usability the median score for all the items was 3.45. This was taken asthe cut-off point for the decision on high or low scores on the items related to pedagogical usability. As shown in Table 2,lecturers' views of the pedagogical usability of WBTLTAs are as follows: for understandability the mean score was 3.52 while the standard deviation was .775 indicating that the lecturers agreed that they realized that the use of WBTLA helped in the students' understanding of the subject content. Furthermore, as shown by the item on added value the mean score was 3.08 and the standard deviation was .660 indicating that these lecturers agreed that it was better to use WBTLA in teaching their subjects than other forms of learning which relied on textbooks or on the lecturersthemselves.

For goal-orientation the mean score was 2.77 and the standard deviation was.865which showed that these lecturers disagreed that they could solely relyon using the WBTLA in their teaching as the students would like their learning to be varied in approach.With regard to time the mean score was 3.67 and the standard deviation was

.984which showed that these lecturers agreed WBTLA facilitated student learning of the subject matter than other learning approaches which relied on books and other learning materials. On task-based activities the mean score was 3.73 and the standard deviation was .720 indicating that the lecturers agreed that the students found the task-based activities to be interactive, instructive, informative and exciting.On the use of multimedia, the lecturers strongly agreed thatanimations, graphics, and pictures provide support for their students'understanding of the subject matter. This is shown in the mean score of 4.22 and standard deviation of .586. With regard to the motivation the mean score was3.35 and the standard deviation was .906which meant that the lecturers agreed that the WBTLAs were

In terms of WBTLAflexibility in catering to the needs of students from different backgrounds,the mean score was 4.18 and the standard deviation was .966 which indicated that the lecturers agreed that WBTLAsareadaptableto a variety of students' backgrounds such as differences in age, development, and interest.Onlearning autonomy the mean score was 3.85 and the standard deviation was .741which indicated that the lecturers found that the students were much more independent in their learning and less dependent on the lecturers. For collaboration the mean score was 4.11and the standard deviation was .815 showing that according to the lecturers WBTLA encouraged students to becollaborative. Finally, in terms of the WBTLA capacity to providevariationin learning,the lecturers indicatedthatin their teaching and in student learning WBTLA proved a little difficult to be employed together with other modes of teaching and learning and this is indicated by the mean score of 2.24 and the standard deviation of .713.

Table 2:Means and Standard Deviations for the Pedagogical Usability Criteria (n = 157)

	Mean	Std. Deviation
Understandability	3.52	.775
Added value	3.08	.660
Goal-orientation	2.77	.865
Time	3.47	.904
Activity	3.73	.720
Multimedia	4.12	.586
Motivation	3.35	.916
Flexibility	4.18	.966
Autonomy	3.85	.741
Collaboration	4.11	.815
Variation	2.24	.713

For contextual usability the questions asked are related to two dimensions, material milieu and non material milieu. The mean cut-off point in deciding whether the score was positive or negative is based on the total median score of 3.15. In terms of using books and journals in combination with the web-based learning materials the lecturers agreed that WBTLA would also need to employ other forms of resources and materials such as books and journals. Regarding the ability of the ITinfrastructure to support the WBTLA, the reply was positive but, as shown by the standard deviation, there was quite a variation among the responses by the lecturers. On whether WBTLA could fit the curriculum requirement the response was highly positive but there was also quite a variation in the lecturers' responses. On whether it is able to cope with the need of all subject matter the responses were highly positive with the mean of 4.26 but again there was quite a variation in the responses of the lecturers as shown by the standard deviation of 1.121. Referring to students' attitudes towards the WBTLA, the responses of the lecturers were that the students' attitudes were quite positive, with the mean score of 3.54 while there was a substantial variation among these attitudes as indicated by the standard deviation of 1.312. On the lecturers' attitudes towards employing WBTLA in their teaching the responses were fairly positive as shown by the mean of 3.33 while there was quite a substantial

variation in the responses as shown by the standard deviation of .957. Finally the view on institutional policy in providing support for the WBTLA use, the responses as indicated by the lecturers were positive and there was not much variation in their views among the institutions.

Table 3:Means and Standard Deviations of Context Usability (n = 157)

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	Mean	Standard Deviation
Material Milieu:		
Books/journals	4.52	.820
IT Infrastructure	3.88	.911
Curriculum	4.26	1.121
Subject Matter	4.12	1.024
Non-Material Milieu:		
Students	3.54	1.312
Lecturers and Instructors	3.33	.957
Institution policy	4.32	.645

For the second objective the lecturers were asked to comment on what they like and dislike on issues related to usability of WBTLA and how would they go about improving it.Although there is a variation in the opinions of the lecturers in this study with regard to what they like about WBTLA, more than 70 per cents of the lecturers agreed that WBTLA istechnicallyandpedagogically usable in many aspects. Depending on the creativity and the ability of the lecturers, their lesson presentations can be made powerful and interesting. Many of them mentioned that with the aid of audio-video, and animations presentation of the content can be very captivating and thus it is not only much more informative but also can help to get attention of students who before were found less motivated to learn.Consequentlythe lectures agreed that the majority of students will find learning through WBTLA much more interesting thanthe conventional classroom approach. Because learning is made easier than before, this will actually help in motivating the students which in turn helps to improve their learning.

However, a number of the lecturers mentioned about the problems they faced in aligning the WBTLA with the curriculum content and the curriculum requirement particularly with learning outcomes related to skills such as scientific skills, and all kinds of soft skills.

Lecturers also mentioned that theirtask in providing and prescribing extra learning materials will be much less burdensome as they found it adequate to provide only some guides related to the sources where relevant materials can be sought online. In this way students are much more independent and at times more resourceful than they used to be in the conventional classroom.The students are found to be able to get information about the subjects from varied sources and this helped in enriching materials dealt in the class settings. Furthermore, the lecturers reported that with the WBTLA more and varied activities could be planned and implemented. The amount of text and figures for example can be uploaded and by using those uploaded information the students could perform required activities alone or with their friends or even with others who have an interest in the subject.Owing to the potential for collaborative teaching and also learning some lecturers found that they could assign students to work in groups. They could also collaboratively prepare their teaching, in the forms of both materials and techniques with other lecturers. For them WBTLA helped to enrich their teaching experience. For the students collaborative learning which is not confined within class hours also helps them to complete their assignments and other tasks within the time allocated.

While the lecturers agreed on the pedagogical usability of WBTLA they also indicated the lack of technical, pedagogical and contextual usability of the WBTLA in a number of areas.Quite a number of lecturers, particularly the senior lecturers and those in non-science based fields, were not quite familiar with many of the technicalities of

WBTLA. They found designing of the content, as well as animations, video, and audio recording difficult and sometimes beyond their ability to handle.They pointed out that it was not so easy to navigatethrough the menus, screens, and links of the web-based learning resources. Furthermore it is also time consuming to download graphics and the technicaldesign of the video films, particularly when servers or lines do not always function efficiently, thus did not always work as expected.

Pedagogically too the lecturers pointed out that although the WBTLA can be motivating and interesting to the majority of the students, tailoring it to meet the students' age, development, and interests is quite a task. It may be stimulating for many students to use web-based resources in the WBTLA. However, there are students, although only a minority, who prefer a more traditional way of instruction such as using of books and hard copy materials, and lecturer as playing the main role during the class sessions. Thus lecturers have to respond to this need which means that planning and executing a lesson could be quite tricky.

On the negative side of contextual usability the lecturers on the whole pointed to the inefficiency of either the servers or the lines to provide services as expected. According to many of them although lines and servers were quite efficient on the whole, in some institutions lines and servers were quite often down; worse still when they happen at times when they are needed most. Many of the lecturers mentioned that one of the causes of the breakdowns was the poor maintenance of the IT facilities. They also pointed out that in some institutions the facilities provided were sometimes inadequate and almost obsolete.

A number of suggestions were proposed for improving WBTLA. The majority of the lecturers mentioned that short courses or training on a continuous basis for lecturers should be conducted in areas related to technicalities in handling web-based resources, designing of teaching-learning approach of web-based resources and adapting of web-based learning materials for specific learning. Since lecturers come from different fields of studies and not all of them are well equipped with technical or pedagogical knowledge and skills to use WBTLA an academic staff training unit will be desirable to handle the training. It should be able to diagnose the needs of the lecturers, monitor their performance and provide the necessary training to equip them with what is required of WBTLA.

The lecturers also pointed out that since they are required to perform many other duties such as carrying out research works, preparing working papers for conferences, writing journal articles apart from writing books and doing public service, and for some doing administrative work, it would be helpful if they received support in terms of staff to help them in preparing resources for teaching-learning, and performing other related chores. In relation to the facilities the lecturers wanted each respective institution to provide adequate facilities both in the forms of hardware such as designated server for video lectures, and high speed bandwidth; network services such as wikis,

blogs, collaboration (CSCW) tools, and simulation to include e-mail, usenet, chats, discussion and forums; and e-learning platforms such as LMS, LCMS and E-journals which connects to such titles as Proquest, Emerald and ACM, and e-learningsoftware for testing and assessment, e-portfolios, vocabulary trainers, and games. Other e-learning platforms such as Blackboard, Clix,and Desire2Learn, and the open-source platforms such as ILIAS, Moodle, OLAT, and Sakai.4 can also be installed. Above all the maintenance of both the hardware and network services must be done regularly for effective service provision.

DISCUSSION AND CONCLUSIONS

To be in line with the present pedagogical development, institutions of higher learning in Malaysia would like teaching and learning to be in the form of blended mode. This means that the present teaching and learning approach has to accommodate the web-based learning environment. To successfully embark on this change the institutions must install e-learning technology for implementing the new teaching and learning approach and also provide both the expertise and improve the motivation among the lecturers. All institutions have seriously taken steps to install the e-learning technology and services and also to ensure that the lecturers employ the available resources.

The degree of the usability as indicated by the lecturers for the technical and pedagogical dimensions is encouraging, meaning that the lectures are not only able to master and employ both the technical and the pedagogical expertise to conduct their courses but also are convinced of the benefits gained from the technology and the adapted pedagogy. From this study the variations among the lecturers seemed to come from the different fields of study. However, the contextual usability seemed to be problematic for most of the lecturers particularly for some institutions which are unable to provide adequate e-learning facilities, services and the maintenance as required for conducting the WBTLA. From the results of the study it is clear that WBTLA is not only acceptable but will have its place at the tertiary level teaching and learning environment of the future. For this to take place without undue obstacles the contextual usability must be positive. Each institution must invest in the technology of web-based

learning and also ensure that the lecturers acquire adequate expertise in the area while maintaining the highest quality of services and technology.

The main goal of this study was to determine WBTLAusability in higher learning institutions in Malaysia. In undertaking this study the conceptual framework proposed by Hadjerrouit(2010) was used. The first dimension in the framework was the technical usability of which the lecturers, particularly those in the non-science fields were aware of the difficulties involved. However, they are able to overcome the hurdles and found managing the technical side of the WBTLA beneficial to student learning. As for pedagogical usability, the lecturers admitted that they had no problem with it and found the WBTLA had many positive effects on the process of learning and in the learning outcomes.For the contextual usability the majority of the lecturers admitted that this was beyond their control hence the degree of usability varied with the institutions. This is the dimension for which most lecturers come out with a number of suggestions; they suggested that each respective institution assess the adequacy of the services provided and take drastic steps to overcome any important problems so that the lecturers will be motivated to embark on WBTLA.

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