

Factors Influencing Rote Student's Intention to Use WBL: Thailand Study

Watcharawalee Lertlum, and Borworn Papasratom

Abstract—Conventional WBL is effective for meaningful student, because rote student learn by repeating without thinking or trying to understand. It is impossible to have full benefit from conventional WBL. Understanding of rote student's intention and what influences it becomes important. Poorly designed user interface will discourage rote student's cultivation and intention to use WBL. Thus, user interface design is an important factor especially when WBL is used as comprehensive replacement of conventional teaching. This research proposes the influencing factors that can enhance student's intention to use the system. The enhanced TAM is used for evaluating the proposed factors. The research result points out that factors influencing rote student's intention are Perceived Usefulness of Homepage Content Structure, Perceived User Friendly Interface, Perceived Hedonic Component, and Perceived (homepage) Visual Attractiveness.

Keywords—E-learning, Web-Based learning, Intention to use, Rote student, Influencing.

I. INTRODUCTION

In recent years the volume of Web-based learning (WBL) has increased significantly in World Wide Web and opened up a whole new chapter in education.

WBL can create new leaning environment and change learning and teaching style [1]. Learning by WBL does not only use the web as a domain for learning, but also enable student in one place to learn from instructor from another place [2], [3]. Moreover, WBL draws student attention to topics that they like and concern. Basically, it draws student attention to relevant information and understands it. Thus, when asked student to perception and recall the learning material, meaningful student can define, explain, and comprehend almost all of the important terms and facts in the lesson and can also use the subject matter to solve problems by generating many possible solutions. By contrast, rote student is learning things by repeating them without thinking about them or trying to understand them. Consequently, understanding what influences rote student's intention to use WBL becomes increasingly important because it is not effective to apply conventional WBL for rote student.

Beside rote learning style, student in developing countries also depends too much on the teacher as the complete source

of knowledge [4]. The use of WBL as a comprehensive replacement has significant effect on believes, learning behavior, and relationships between student and teachers. Accordingly, it is imperative to influence rote students to aware, accept, and attend to WBL.

Previous research showed that if universities desire to influence student to increase participation in their WBL, they should try to understand student's need, and must consider about student's acceptance or satisfaction [5], [6]. Furthermore, many researches (for example: [7], [8]) have been published on how to influence student to attend and intend to learn by WBL system. However, no one purpose about what influences rote student's intention to use WBL.

II. RESEARCH MODEL AND METHODOLOGY

The purpose of this research is to examine factors affecting rote student perception of WBL system. 'The Technology Acceptance Model (TAM) [9] is one of the most accepted theories for explaining the assimilation of technologies. Previous researches confirmed that TAM could be used for evaluating user's acceptance in technology [10], [11]. Nevertheless, we made an argument that rote student need to have perception on the following factors:

A. Perceived Usefulness of Homepage Content Structure (PUHCS)

If students thought that online classes provide them with more advantageous skills for their careers, Perceived Usefulness of Homepage Content Structure (PUHCS) of WBL would influence their decision to take online classes. Previous researched confirmed that if student feels that WBL is useful, it should be possible to perceive the usefulness as an important factor in influencing student's intention to use WBL [7], [12], [13].

B. Perceived User Friendly Interface (PUFI)

Perceived User Friendly Interface (PUFI) refers to Perceive Ease of Use that was purposed by Davis [9]. Student will perceive PUFI of WBL if it easy to use and navigate. In order to provide ease of use WBL needs to be clear and quick for student who is not interested in drill down to access further information and system.

C. Perceived Hedonic Component (PHC)

Previous researches (for example, [14], [15]) suggested the use of hedonic components to influence user. Moreover, Van der Heijden also confirmed that "The hedonic nature of an information system is an important boundary condition to the

Watcharawalee Lertlum and Borworn Papasratom, School of Information Technology, King Mongkut's University of Technology Thonburi, 91 Suksawasd 48, Bangmod, Thungkru, Bangkok 10140 Thailand (phone: +66 (0) 2470 9841, e-mail: watchara@it.kmutt.ac.th and borworn@it.kmutt.ac.th)

validity of the technology” [16]. PHC are the issues of involvement, entertainment, and emotion that can influence student to enjoy and concentrate to learn. Hedonic can hold the student’s intention via interactive features. It also influences students to discover knowledge at their own pace and in their own way [17]. The elements that should be provided to influence individual student in classroom are challenge, curiosity, control, and fantasy [18], [19].

D. Perceived (homepage) Visual Attractiveness (PVA)

Recent researches (for example: [15], [16], [20], [21]) found that good web page designed will make student to attend WBL. It also increases student’s intention to learn. Perceived Visual Attractiveness (PVA) enhances user perceptions of interface and includes adjectives describing features of novelty and modern, inventive, impressive, appealing, and aesthetic.

Beyond that, we detected sub-factors of each four factors. The critical PUHCS sub-factors accuracy, easy to understand, simple, and usefulness. Three sub-factors of PUFI are easy to navigate, clear, and quickly. The considered sub-factors of PHC are challenge, fantasy, and curiosity. Novelty and modern, inventive, impressive, appealing, aesthetic are critical to PVA.

The proposed model for influencing rote student’s intention to use WBL is shown in Fig. 1. Table I gives detailed description on each factor. Accordingly, we establish the hypotheses as appeared in Table II.

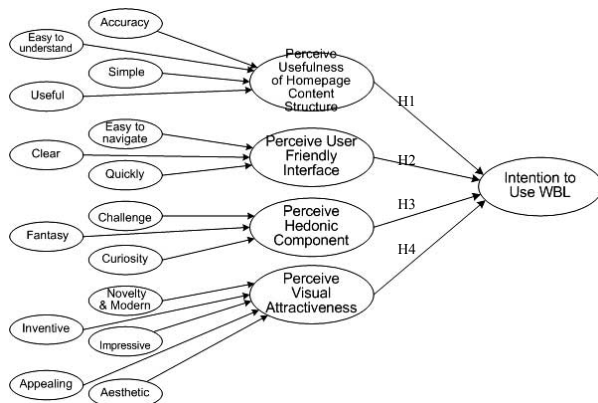


Fig. 1 The enhanced TAM Model for influencing rote student’s intention to adopt WBL

III. EVALUATION

The evaluation of the proposed model was carried out using both quantitative and qualitative measures. The quantitative data were gathered through student’s questionnaire. The qualitative data were gathered through observations and 10-15 minutes focused interviews. The hypotheses were tested at the individual level of analysis.

TABLE I
RESEARCH CONSTRUCTS

Factor	Definition	Tools
Perceived Usefulness of Homepage Content Structure (PUHCS)	Students perceive that using WBL is benefit and would enhance their learning effectiveness.	- Accuracy - Easy to understand - Simple - Usefulness
Perceived User Friendly Interface (PUFI)	Students perceive that using WBL makes it easy to do their learning.	- Easy to navigate - Clear - Quickly
Perceived Hedonic Component (PHC)	Students perceive that they have fun during learning by WBL system and the web components encouraged and influenced them to become more interested in learning.	- Challenge - Fantasy - Curiosity
Perceived Visual Attractiveness (PVA)	Students perceive that homepage is pleasing and can influence them to become more interested in using WBL.	- Novelty and modern - Inventive - Impressive - Appealing

TABLE II
HYPO THESES

Hypotheses	Description
H1	Perceived Usefulness of Homepage Content Structure has a positive effect on rote student’s intention to use WBL
H2	Perceived User Friendly Interface use has a positive effect on rote student’s intention to use WBL
H3	Perceived ease of use has a positive effect on rote student’s intention to take online classes.
H4	Perceived ease of use has a positive effect on rote student’s intention to take online classes.

A. Sample

Samples are 252 students enrolled in university programs in five urban private and public universities. 43.7% of the samples were woman. The mean age of the respondents was 23 years with a standard deviation of 3.49 years. Most of the samples were IT-Literate Users.

B. Instrument development

Questionnaire used in the research were adapted from previous studies. PUHCS and PUFI were adapted from Davis’ TAM model [9]. The measure of hedonic component was adapted from Malone, T. and M. Lepper [18] and Childers, Terry et al. [15]. The items used to measure homepage visual attractiveness were adapted from Fogg B.J [21] and Nelson J., [22]. A list of the items is provided in the appendix. The questionnaire consisted of six sections (details about personal information, PUHCS, PUFI, PHC, PVA, and overall reaction to the WBL system). Each item is rated on a scale of 1 to 5 (Strongly Disagree to Neutral to Strongly Agree).

Reliability of the items was evaluated using Cronbach’s alpha. The reliability coefficient for all scales, which was higher than the acceptable reliability level of 0.7 for this kind of study, is 0.922 indicating that the question is fairly easy and thus 99.2% of the samples scored it.

TABLE III
RELIABILITY OF MEASURES

Factors	Items	Mean	S.D.	Cronbach's alpha	S.D. item alpha (Variance extracted)
Perceived Usefulness of Homepage Content Structure (PUHCS)	PUHCS1	3.68	0.94	0.752	0.756
	PUHCS2	3.11	0.97		
	PUHCS3	3.19	1.03		
	PUHCS4	3.97	1.11		
	PUHCS5	2.97	0.85		
	PUHCS6	3.96	1.05		
	PUHCS7 (Removed)	4.26	3.21		
Perceived User Friendly Interface (PUFI)	PUFI1	3.59	0.92	0.699	0.702
	PUFI2	3.85	0.93		
	PUFI3	4.33	0.97		
	PUFI4	4.23	1.01		
	PUFI5	2.98	0.99		
Perceived Hedonic Component (PHC)	PHC1	3.19	0.94	0.849	0.843
	PHC2	3.29	1.08		
	PHC3	3.58	1.03		
	PHC4	3.6	0.99		
Perceived Visual Attractiveness (PVA)	PVA1	3.98	0.95	0.885	0.886
	PVA2	3.84	0.95		
	PVA3	3.88	0.99		
	PVA4	3.64	1.02		
	PVA5	3.87	1.01		
Intention to Use WBL System (IUWBL)	IUWBL1	3.5	0.96	0.716	0.716
	IUWBL2	3.44	0.92		
	IUWBL3	3.82	0.97		
	IUWBL4	3.95	0.98		

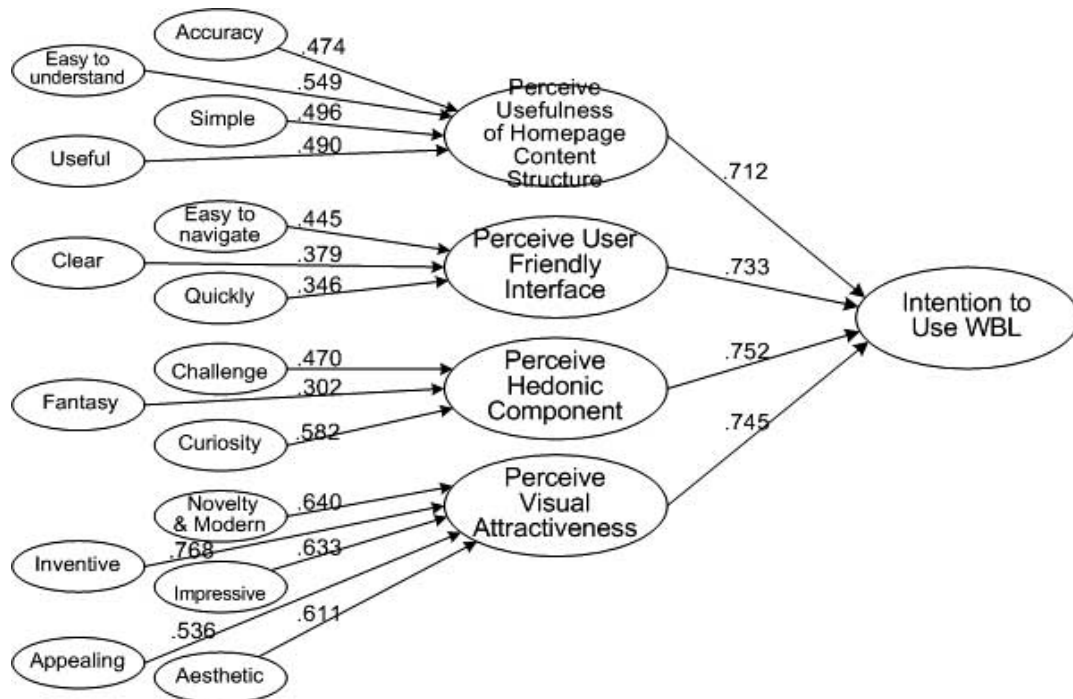


Fig. 2 Model testing result

The high Cronbach's alpha values for PUHCS (8 items, $\alpha=0.814$), PUFI (6 items, $\alpha=0.764$), PHC (5 items, $\alpha=0.847$), and PVA (6 items, $\alpha=0.9$) mean that the measurements of these variable are reliable, valid, and acceptable. Data analysis was performed by SPSS Version 11.5 correlation analysis as shown in Table III. The model testing result is shown in Fig. 2. Each arrow in the diagram represents a statistically significant relationship between variables. All hypotheses were generally supported.

IV. ANALYSIS AND DISCUSSION

The results of this research clearly point out that the factors influencing rote student's intention to use WBL include Perceived Hedonic Component (PHC) as a critical success factor, Perceived Visual Attractiveness (PVA), Perceived User Friendly Interface (PUFI), and Perceived Usefulness of Homepage Content Structure (PUHCS). In other words, rote student perceives that the construction (PHC, PVA, and PUFI) and the content (PUHCS) of WBL homepage have affected their intention to use WBL system. For a successful WBL adoption, WBL system should actively pursue various ways to make student feel that using WBL system is hedonic, attractive, easy to use and useful.

Elements that highly influenced rote student's decision to continue using the WBL system are as follows:

- Student will fun during learning with new knowledge and experience, achievable the goal, audio and visual effects, emotionally appealing, and humor.
- Features that could make the site easy to use are picture, wording, instructions, and style.
- Features that could influence student to make decision to continue using the WBL system are useful contents, online assignments, online discussions, online teaching, and online tutorials.

The essential ingredients of WBL homepage for rote student in developing country are shown in Fig. 3. The interface is based on empirical ideas of the rote student's intention to adopt WBL model. We emphasize the use of all four factors in designing web page to increase a student's intention to use WBL. Rote students will be influenced by contents, graphic design, and layout. They can also interact with WBL through various actions, for example, online discussions by way of chat room, online teaching with VDO conference and VDO streaming, and online tutorials via instant messaging. Table IV shows the guideline to enhance intention to use WBL.

V. LIMITATION

Samples of this research were composed of urban students. Most of urban students are IT-literate user, frequently use, and have easy to access WWW. Thus, it might limit the generalizability of the results. However, this study is the pilot of a larger scale study of not yet e-learning ready country. The next phase of data collection will gather from students who are novice user and do not have easy access to WWW.



Fig. 3 An example WBL homepage

TABLE IV
GUIDE TO ENHANCE INTENTION TO USE WBL

Factors	Items	Mean
Perceived Usefulness of Homepage Content Structure	Accuracy	Make it easy to verify the accuracy of the information on site and clarify the site's purpose
	Easy to understand	Show examples of learning content
	Simple	Ease to read the contents
	Usefulness	Offer easy or news access to recent homepage features
Perceived Hedonic Component	Easy to navigate	Separate topic by bulleted lists, highlighted, and tab
	Clear	High contrast between text and background
	Quickly	Provide search engines to help student find what they need
Perceived Visual Attractiveness	Challenge	Enhance the activity that have a variable problem level and numerous level goals
	Fantasy	Enhance emotionally appealing fantasies and metaphors with physical or other systems that student already understands
	Curiosity	Provide optimal level of informational complexity
Intention to Use WBL System	Novelty and modern	Design site as professional.
	Inventive	Decorate the page with meaningful image
	Impressive	Design site as a great in size or degree, or is done with a great deal of skill
	Appealing	Able to attract interest or draw favourable attention
	Aesthetic	Concerning or characterized by an appreciation of beauty or good taste

TABLE V
SURVEY INSTRUMENT

Perceived Usefulness of Homepage Content Structure (PUHCS)	
PUHCS1	Using WBL system makes it easier to do my learning.
PUHCS2	Using WBL system improves the quality of the study I do.
PUHCS3	Using WBL system enables me to accomplish tasks more quickly.
PUHCS4	Using WBL system supports critical aspects of my learning.
PUHCS5	Using WBL system enhances my effectiveness on the learning.
PUHCS6	There are many useful tools for learning on the WBL system that I expect it to have.
Perceived User Friendly Interface (PUFI)	
PUFI1	I find it easy to get the WBL system to do what I want to do.
PUFI2	I can easily find the information I want when surfing on web.
PUFI3	The process of transaction on web is convenience.
PUFI4	Interacting with the WBL system quickly respond.
PUFI5	I can more easily learning online with better quality than on the traditional learning.
Perceived Hedonic Component (PHC)	
PHC1	I have fun during learning by WBL system.
PHC2	The activity that has a variable difficulty level is good for me with motivation.
PHC3	The activity that has a multiple level goals is good for me with motivation.
PHC4	The activity that has a curiosity encouraged me to become more interested in learning.
Perceived Visual Attractiveness (PVA)	
PVA1	The inventive homepage can make more attractive.
PVA 2	The impressive homepage can make more attractive.
PVA 3	The modern and novelty homepage can make more attractive.
PVA 4	The appealing homepage can make more attractive.
PVA 5	The aesthetic homepage can make more attractive.

TABLE VII
CORRELATION MATRIX

	PUHCS	PUFI	PHC	PVA	IUWBL
PUHCS	1.000				
PUFI	0.445	1.000			
PHC	0.316	0.379	1.000		
PVA	0.333	0.353	0.504	1.000	
IUWBL	0.712	0.733	0.752	0.745	1.000
(Intention to use WBL system)					

Correlation is significant at the 0.01 level (2-tailed).

TABLE VI
FREQUENCY TABLE

Context	Tools	Frequency	Percent
Influencing student's decision to continue using the WBL system	Useful Contents	183	72.6
	Online Assignments	146	57.9
	Online Discussions	138	54.8
	Online Teaching	129	51.2
	Online Tutorials	128	50.8
Making the site easy to use	Picture	187	74.2
	Wording	162	64.3
	Instructions	144	57.1
	Style	103	40.9
	Hyperlinks	90	35.7
Student has fun during learning	Icons	81	32.1
	Fonts/Text	78	31.0
	Site Map	16	6.3
	New Knowledge & Experience	192	76.2
	Achievable the Goal	154	61.1
	Audio and Visual Effects	152	60.3
	Emotionally Appealing	133	52.8
	Humour	128	50.8
	Uncertain Outcome	93	36.9
	Randomness	81	32.1
	Optimal Level	60	23.8
	Metaphors with Physical/System	34	13.5

Bold face is identical the high level support student's intention

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