An Empirical Study of College Students' Learning Satisfaction and Continuance Intention to Stick with a Blended e-Learning Environment

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Abstract—Based upon the expectation-confirmation theory (ECT), this study propose a theoretical model. The model examines the impacts of the critical antecedents on college students' English learning satisfaction and continuance intention to stick with a blended e-learning environment. The model was validated using a questionnaire survey on 313 college students. The researchers applied the partial least squares (PLS) method to validate the measurement properties and proposed hypotheses of the proposed research model. The findings indicate that, in general, college students are satisfied with the model and show positive continuance intention to stick with the blended e-learning system for their English learning. Our results can provide insight for the practices regarding planning and implementing a blended e-learning system to improve college students' learning satisfaction and facilitate their continuance intention to stick with a BEL environment.

Index Terms—expectation confirmation theory, learning satisfaction, English as foreign language, blended e-learning

I. INTRODUCTION

Today, the ubiquitous feature of e-learning makes learning and teaching through the Internet more convenient than ever before [1].With the potential benefits of e-learning in language education, educational institutions and teachers devote significant efforts toward the applications of web-based curricula [2]. Using e-learning platforms, English learners can communicate and interact with other learners or native speakers with the target language in a time-saving and cost-effective way [3,4]. However, traditional e-learning may suffer from the problems such as lack of peer interaction, extra costs for content materials, e-learning platform maintenance, and the needs for tutorial supports. Furthermore, students' satisfaction and learning effectiveness in such pure virtual e-learning environment has also been questioned [5].

With the possible concerns and dissatisfaction with e-learning, instructors are searching for other instructional solutions to enhance students' learning effectiveness. One of those solutions is the blended e-learning (BEL). This new style e-learning method has been discussed to be a promising alternative of learning approach. The term, BEL, can be defined as an instructional method that integrate multiple learning delivery methods, including most often face-to-face classroom with asynchronous and/or synchronous learning. It is characterized as maximizing the best advantages of face-to-face and online education [5]. As BEL might continue to impact student language

learning, it is critical to examine the influencing factors regarding how to improve the effectiveness of English teachers' instruction and students' learnings. Since a BEL system is a relative new channel for language learning materials delivery and knowledge acquisition. The teaching and learning mechanisms of BEL might still not be completely understood [6]. Besides, the related theoretical backgrounds are also under-developing.

The adoption of a BEL system in supporting language learning has made it significant to probe the crucial determinants that would entice learners to use a BEL system and improve their language learning satisfaction and continuance intention to learn English in such environment. Thus, it requires academic and practical discipline to understand what critical factors may influence on students' satisfaction and continuance intention towards BEL systems. Therefore, based on the expectation-confirmation theory, in this study, we proposed a research model to examine the critical factors influencing college students' English learning satisfaction and continuance intention to stick with a BEL environment.

II. THEORETICAL DEVELOPMENT

A blended e-learning (BEL) environment integrated the use of multimedia and web-based technologies and became a new method for language learning and teaching. The blend could be between any form of instructional technologies, such as videotape, 3D animation, augmented virtual reality, e-learning etc. with traditional classroom instruction [5]. There has been an increasing trend towards the use of blending e-learning and face-to-face activities with students participating in language learning and interaction with their instructors and classmates [5].

Learners' perception and attitude towards BEL environment in language learning have been the focus of numerous studies. For example, Calisir et al. [7] pointed out that students appreciated and valued the learning process while they experienced using the blended e-learning technologies. Their findings indicated that students who viewed integrated web-based applications into class as an important part of the course demonstrated high intention and perceived in-class work as relevant to their needs. In addition, a survey, conducted by Chen et al. [8], investigated English as a foreign language (EFL), students' attitude regarding the use of the Internet and web-based language learning activities. They indicated that the use of the BEL system made English learning more interesting and more enjoyable for the students as BEL system pro-

vided timely and a variety of information. Most students indicated that they will continue to use the BEL platform because they recognized it as an efficient learning tool and should be integrated in the course. In general, BEL can facilitate learners' proactive involvement and positive attitude towards language learning and the opportunities for learners to access and share information without the limitation of time and space.

The expectation-confirmation theory (ECT) proposed by Oliver in the marketing field has been widely applied to the evaluation of user satisfaction and post-use behavior [9]. Adding the perceived usefulness of technology acceptance model in his research model, Bhattacherjee [10] further extended expectation-confirmation model and proposed a post-acceptance model of IS continuance to explore the continuous usage intention of e-bank users. He argued that the confirmation of expected benefits is positively related to user satisfaction with prior IS use that, in turn, would further determine users' IS continuance intention.

Adapted the perspective of Bhattacherjee's concept in this study, we defined confirmation of expected BEL outcome as the degree in which a learner believes that using BEL systems will help him or her to attain gains in learning performance. This concept is set as post-use expectation to dispel the time changes of pre-use expectation. It suggests a path-dependent process whereby users' expectation confirmation influences their satisfaction, in turn to impact on the continued usage intentions. Besides, the concept of BEL continuance intention has been empirically examined as the critical latent variable. Chen et al. [3] indicated that the attitude of adopting e-learning has a relationship with continuance intention among experienced students.

Furthermore, students' learning satisfaction is a good surrogate for user acceptance and is often used to measure learners' attitude in e-learning studies. Thus, we conceptualize the students' attitude towards BEL systems as the learning satisfaction with the BEL systems. It is defined as the sum of students' behavioral beliefs and attitudes that result from aggregating all the benefits that a student receives from using a BEL system. Moreover, Lu and Lee [11] defined continuance intention of stickiness as user intention to continuously return to the website for browsing, and willingly return to the website to browse for longer. In sum, there are causal relationships among students' confirmation of expected BEL outcomes, learning satisfaction, continuance intention of stickiness towards BEL[12]. Thus, we would argue that college students' confirmation of expected BEL outcomes after usage of BEL would affect learning satisfaction, and in turn, BEL satisfaction would further determine if they would continuously stick with BEL. Thus, we propose

H1: A higher level of BEL learning satisfaction will positively associate with students' continuance intention to stick with BEL.

H2: A higher level of confirmation of expected BEL outcome for the BEL systems usage will positively associate with BEL learning satisfaction.

The quality and reliability of a BEL system, as well as easy access to appropriate educational technologies, material content, and course-related information are important determinants of e-learning effectiveness [13]. Thus, system characteristics and courseware functionality were identified as critical factors of technological environment for BEL systems. They are expected to influence the learner to use and accept BEL systems. Terzis et al. [12] defined system characteristics as to perceived ability of an e-learning system to provide flexible access to instructional and assessment media. Accordingly, we define system characteristics as the perceived ability of BEL to provide flexible access to course materials, turn in assignments, complete tests and quizzes online.

Appropriate BEL systems courseware functionality, as well as effective design, representing hybrid course content and transparent content for knowledge transfer, are core components of BEL systems design. In this study, we define courseware functionality as the compatibility and presentation of course content and information in BEL systems. Text, hypertext, graphics, audio and video, computer animations and simulations, embedded tests, and multimedia information are some examples of courseware functionality in BEL systems environment [14]. System characteristics and courseware functionality of BEL systems have the potential to directly affect perceived usefulness of systems that are thought to be similar concepts with the confirmation of BEL outcome expectations of BEL systems in this study. Several empirical evidences have argued that both courseware functionality and system characteristics affect the effectiveness of BEL [15]. That is to say, students perceiving a higher level of system characteristics and courseware functionality in BEL systems will lead to a higher level of BEL outcome expectations for BEL systems users. Thus, we propose the following hypotheses:

H3: A higher level of BEL system characteristics will positively associate with confirmation of BEL outcome expectations.

H4: A higher level of BEL system characteristics will positively associate with BEL learning satisfaction.

H5: A higher level of BEL courseware functionality will positively associate with confirmation of BEL outcome expectations.

H6: A higher level of BEL courseware functionality will positively associate with BEL learning satisfaction.

Based on the foregoing discussions, we develop an explanatory research model to explore the causal relationships among critical factors influencing students' English learning satisfaction and their continuance intention to stick with BEL as shown in Figure 1.
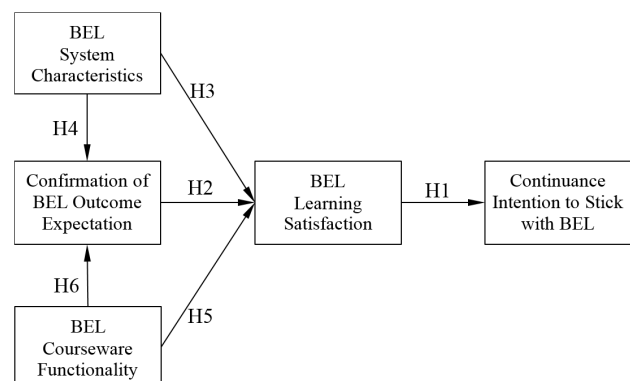

Figure 1.   Research model

III. RESEARCH METHODOLOGY

Developing the questionnaire of this study began with identifying the related constructs of students' continuance intentions to use BEL systems and generating the corresponding scale items. Prior literature was reviewed to ensure that a comprehensive list of items was developed. Once the item list for the initial questionnaire was generated, an iterative personal interview process was conducted to refine the draft instrument. These interviews enabled us to gauge the clarity of the tasks, assess whether the instrument captured the desired phenomena, and verify that important aspects have not been omitted. This process continued until no further modifications to the questionnaire were necessary. Feedback from the interview processes served as the basis for correcting, refining, and enhancing the draft scales.

The survey of this study was conducted at a university of science and technology in Taiwan. Students who enrolled in an EFL course were coded and randomly selected from the student list in the administration system of this university. The randomly selected students were self-administered the 24-item questionnaire after the mid-term examination to ensure that they have actually the BEL system. For each question, respondents were asked to circle the response which best described their level of agreement. Finally, a total of 328 questionnaires out of 368 distributed were collected, giving the response rate of 89.13 percent. Fifteen invalid responses with incomplete answers were dropped from the study. This left 313 data for statistical analysis with an 85.05 % valid return rate.

IV. DATA ANALYSIS AND RESULTS

To ensure the phenomena captured, in this study, representing the constructs of the conceptual framework, the validity and reliability of the instrument were assessed by partial least squares method. Smart PLS 3.0 was applied for the statistical analysis [16]. All of the items developed and operating definitions of constructs are based on the review of refereed theories, relative literature and researches in related field. The experts in the disciplines of EFL and distance learning will also be invited to review all of the items of the instrument to reassure the content validity. The alpha-coefficients are used to represent for each of the constructs in the model proposed [17]. In order to assure the confirmatory nature in the study, validity and reliability of the scales should be confirmed adequately. As shown in Table I, all items have significant loadings above the threshold value of 0.707 [18].

Table II shows the composite reliability, average variance extracted (AVE) and square root of the AVE, as well as the correlations between the constructs. The composite reliability values for all constructs were above the recommended level of 0.70, indicating adequate internal consistency. All constructs shared more variance with their indicators than with other constructs. Thus, the convergent and discriminated validity of all constructs in the proposed research model can be assured.

For the hypotheses testing, the path coefficients and explained variances for the conceptual model in this study are shown in Figure 2. T-statistics and standard errors were generated by applying the bootstrapping procedure with 500 samples and the path coefficients were re-estimated using each of these samples. We found that all specified paths between constructs in our research model

had significant path coefficients. The analysis results indicate that the model explained 48.9 percent of the variance in continuance intention to stick with BEL. Similarly, 63.8 percent of the variance in BEL learning satisfaction, 68.6 percent of the variance in confirmation of BEL outcome expectations was explained by the related antecedent constructs.

As for the hypothesis H1, effectively drawn from BEL learning satisfaction to continuance intention to stick with BEL, was supported by the significant path coefficients. That is, students' learning satisfaction positively influences their continuance intention to stick with BEL. With the significant path coefficients, the analysis results also provide support to the hypotheses H2, effectively drawn from confirmation of BEL outcome expectations to BEL learning satisfaction. In addition, Hypotheses H3-H6, drawn from system characteristics and courseware functionality to confirmation of BEL outcome expectations and BEL learning satisfaction were also supported by the

TABLE I.
FACTOR ANALYSIS (N=313)

Construct	Item	Loading	Construct	Item	Loading
System Characteristics (SC)	SC1	0.850	BEL Outcome expectations (BOE)	BOE1	0.912
	SC2	0.813		BOE2	0.915
	SC3	0.901		BOE3	0.900
	SC4	0.841		BOE4	0.853
	SC5	0.885		BOE5	0.895
Courseware Functionality (CF)	CF1	0.887	Continuance Intention to Stick (CI)	CI1	0.903
	CF2	0.882		CI2	0.916
	CF3	0.877		CI3	0.909
	CF4	0.914		CI4	0.892
	CF5	0.915		CI5	0.892
Learning Satisfaction (LS)	LS1	0.947	Learning Satisfaction (LS)	LS3	0.949
	LS2	0.955		LS4	0.936

TABLE II.
INTER-CORRELATION AMONG CONSTRUCTS

Construct	SC	CF	BOE	LS	CI
System Characteristics (SC)	0.86				
Courseware Functionality (CF)	0.82	0.90			
BEL Outcome Expectations (BOE)	0.79	0.79	0.90		
Learning Satisfaction (LS)	0.75	0.74	0.74	0.95	
Continuance Intention (CI)	0.75	0.81	0.72	0.70	0.90
Composite Reliability (CR)	**0.93**	**0.95**	**0.95**	**0.97**	**0.96**
Average Variance Explained (AVE)	**0.74**	**0.80**	**0.80**	**0.90**	**0.81**

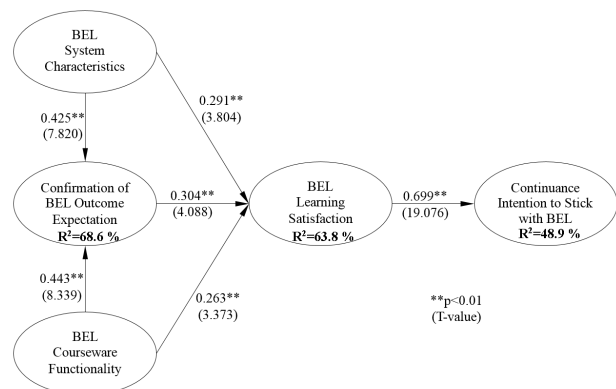*Diagonal elements are the square roots of AVE.

Figure 2.   Analysis results

significant path coefficients. Overall, both system characteristics and courseware functionality have direct effects on confirmation of BEL outcome expectations and BEL learning satisfaction, in turn; those critical influencing factors provide a salient impacts on students' continuance intention to stick with BEL.

V. DISCUSSIONS AND CONCLUSION

Based upon the expectation-confirmation theory, this study presents a theoretical model that was for examining the key determinants of student learning satisfaction and continuance intention to stick with BEL. Our empirical results indicate that BEL system characteristics, courseware functionality and confirmation of BEL outcome expectations, are three critical antecedents of learning satisfaction with BEL that will have further impact on college students' continuance intention to stick to use the BEL system. These findings provide initial insights into those principal factors that are likely significant antecedents for planning and implementing BEL platforms to enhance college students' language learning satisfaction. Given the applications of BEL technologies are wide spread in all kinds of educational fields, such research issues can contribute to theory development as well as for practice in e-learning field.

Although our study provides insights into what determines student learning behaviors in a BEL environment, it has several limitations that also represent implications for future research. Firstly, the use of a self-report instrument in this study has typical short comings of the survey methodology. Secondly, this study sets a timely stage for future research in understanding the determinants of learning satisfaction and continuance intention in a BEL environment. It would be interesting to conduct a longitudinal study to understand the relationships among the identified research variables as a useful extension to the current study. Thirdly, the nomological framework was validated using data gathered from a purposively selected university in Taiwan. The fact that the participants come from one university in a country limits the generalize ability of the empirical results. Finally, the research findings need further endeavors to find additional antecedents of student learning satisfaction and using behaviors with BEL.

By and large, as the blended e-learning applications continue to impact students' language learning, the importance of the adoption of BEL systems into English as a foreign language (EFL) education has increased significantly. Thus, in order to effectively implement BEL systems, it is crucial for academic and education practitioners to keep on cumulating their effort from the continuation of rigorous scientific approaches, educational theories, and well-targeted procedures and techniques in the area.

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