

Taiwanese University Freshman Students' Behavior and Belief Factors in Using On-line Practice Exams to Improve Their English Proficiency

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ABSTRACT

This study focuses on investigating the correlations of university freshman students' actual learning behaviors with their personal behavioral intentions, attitudes, language abilities, and self-efficacy in using on-line practice exams for their English acquisition. The targeted participants were 238 freshman students who have experienced two semesters of American Magazine Center's on-line practice exam training requested by the school. The researcher adapts Ajzen's Theory of Planned Behavior (TpB) Model and utilizes survey questionnaires as research tools to study how and to what degrees do students' attitudes, language abilities, and self-efficacy correlate with their intentions and actual behaviors. The purpose of this study is also to find out the determining factors that predict students' intentions and that ultimately affect students' learning behaviors as these variables could result the success of the utilization of on-line English practices. Analyzed by path analysis and stepwise regression analysis, the collected data indicated that there are significant correlations among all the variables except students' attitudes with their self-efficacy. The result of this study implicated that the success of students' English practices on line heavily relies on their attitudes toward the exam program, language abilities, and self-efficacy in computer operation as these variables are positively correlated with their behavioral intentions which also significantly affect their actual behaviors. Thus, the findings of this study have theoretical and practical implications for strengthening the learning effectiveness of students' use of on-line English practice exams.

INTRODUCTION

The rapid growth of the internet technology has led to many new avenues for distance learning. In fact, as the web-based technology constantly improves, the quantity of available on-line learning resources also keeps expanding (Rajguru & Deshmukh, 2012). As the matter of fact, students who often practice English skills with computer assisted learning and testing tend to perform better in class and foster autonomous learning (Yi, 2011). In Taiwan, the majority of universities and colleges have offered computer assisted testing system for their students to autonomously practice English skills. However, a successful implementation of computer assisted language learning and on-line assessments were not only based on the perceptions of teachers and developers, but also students' intentions (Jamieson, et al., 2005). The gap between learners' intentions and the administrators' expectations regarding the autonomous learning in the utilization of on-line practice exams has a great impact on the effectiveness of the implementation.

The purpose of this study

This study aims to fill the gap between students' and teachers' concerns about the use of on-line

practice exams in English acquisition. The researcher's purpose is to find out the factors that can significantly influence university freshman students' intentions and ultimately affect their actual behaviors toward their on-line English practices. To examine the behavioral factors regarding students' utilization of on-line practice exams, the researcher applied Ajzen's (2006) revised TpB model to design the following study structure. The structure included five variables: SA (students' attitudes toward the exams), SL (students' language abilities), SS (students' self-efficacy in using on-line practice exams), BI (students' behavioral intentions), and AB (students' actual behaviors).

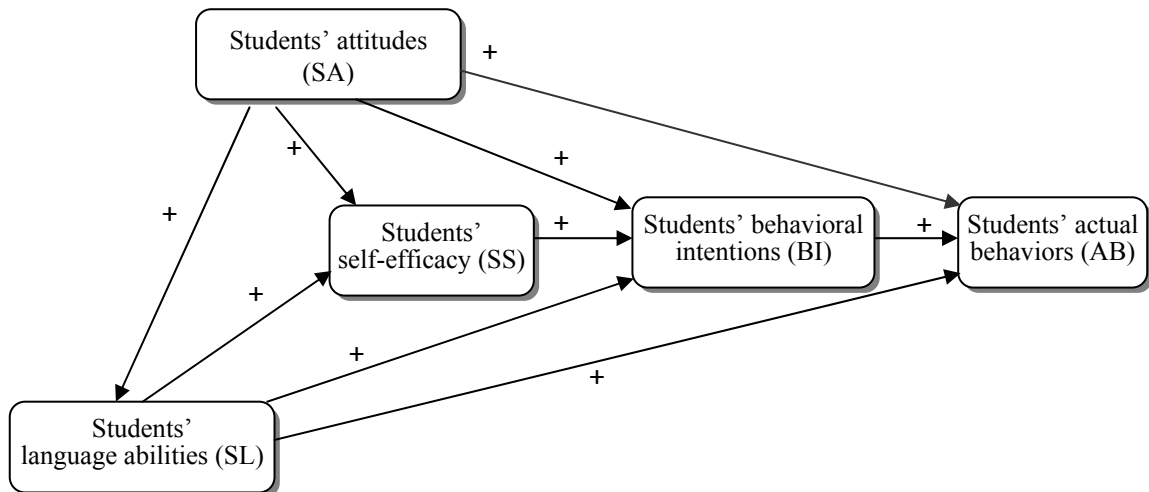


Figure 1: The Conceptual Framework of This Study (Organized by the researcher)

Research questions

The research questions of this study are as follows:

- (1) To what extent do SA, SL, and SS relate to each other?
- (2) To what extent do SA, SL, SS and BI affect AB?

The research questions of this study aims to investigate the relationships and correlations among SA, SL, SS, BI, and AB. The researcher's purpose is to discover the determining factors that have most predictions on students' behavioral intentions which ultimately affect their learning behaviors as these variables should result the success of the utilization of on-line English practices.

Instructional Methods

The participants of this study were university freshman students who have finished two semesters of English classes that incorporated with mandatory on-line English practice exams. The exam database, developed by the Taiwanese English-language Education Company, American Magazine Center (AMC), included hundreds of tests classified as intermediate and high-intermediate levels for students to practice at their convenience. AMC's e-Learning platforms contain learning materials, interactive resources, and practice exams. Practical resources of the system are as follows: (1) stimulated GEPT testing system, (2) pronunciation interactive curriculum system, (3) supplementary teaching interactive curriculum system, and (4) multimedia grammar interactive curriculum system (AMC, 2012). The course included at least eight mandatory on-line practice exams each semester, with the scores added into the final grades.

LITERATURE REVIEW

In Taiwan, implementing computer assisted language learning (CALL) for English acquisition has been commonplace for years. Since early 1991, there has always been computers assisted language education seminars being hosted in Taiwan (2009, Liou). According to empirical and theoretical findings, there has been a great improvement for computer assisted learning and testing in language learning as they have shifted their focus from the use of CD-ROM to internet-based learning environments (Colabianchi, 2001). Presently, computer assisted testing has usually been considered as an effective tool for teachers to audit their students' learning results (Wang, et al., 2012). In fact, research suggested that CALL can enhance students' language learning especially in writing accuracy and the main advantages of encouraging students taking tests on line have positive effect on the result of students' evaluation (Mohammadi, et al., 2012). In light of the fact that computer assisted learning and testing are capable of providing instant feedback and reinforcement in learning, students actually benefit more than teachers with such technology (Hughett, 1981).

Theoretical Framework

Almekhlafi & Ghaleb (2006) indicated that due to technology improvement, foreign language teachers have utilized computer assisted programs as their teaching aids and supplemental exercises for students. As such, the utilization of CALL in foreign languages learning has aroused much attention in the EFL field. Although the benefits of computer assisted learning and testing can result in effective learning, successful implementations of the program mainly depend on students' intentions and autonomous practice, and actual utilization of the system. In order to raise students' intentions and actual behaviors in the utilization of computer assisted testing, the researcher adapted Ajen's (2006) Theory of Planned Behavior (TpB) model to examine the relationships among (a) students' attitudes toward the exams, (b) students' language abilities, (c) students' self-efficacy in using on-line practice exams, (d) students' behavioral intentions, and (e) students' actual behaviors.

Research showed that language courses incorporated with multimedia instructions were effective for learners from West Germanic groups (Klassen and Milton, 1999). Ayres' (2002) study also reported that in recent years, students' attitudes towards computer assisted learning in English classes have increased to a significant level. The study also indicated a strong correlation between learners' attitudes and the level of their computer literacy. Nowadays much research supports the fact that students' attitudes toward computer assisted lessons tend to be positive in most cases (Almekhlafi, & Ghaleb, 2006). Consequently, learners' attitudes toward the use of computer testing were the key element for their behavioral intentions and actual behaviors.

In this study, students' language abilities refer to the level of their self-reported English proficiency. The measurements were based on the classification of the General English Proficiency Test (GEPT) into five levels: elementary, intermediate, high-intermediate, advanced, and superior. For teachers, evaluating students' English abilities in the classroom is important as the evaluation indicates the effectiveness of their teachings. However, this task can be difficult as the progress of students' language acquisition often occur at different rates. As such, teachers may consider incorporating computer assisted learning and testing to monitor students' interactions and to evaluate their performances in their language classrooms (Uncok, 2012).

Furthermore, Bandura (1999) had explained that self-efficacy as a measurement of one's ability to succeed in a certain situation. Recent studies suggested that students' computer efficacy have positive

influences to their learning behaviors. In other words, students who demonstrate higher level of mastery in computer operation tend to obtain knowledge more effectively than others. In fact, students' learning outcomes and learning processes were significantly related to their computer self-efficacy (Moos & Azevedo, 2009). Since learners' self-efficacy is correlated with their learning outcomes, it is important to include students' self-efficacy in using on-line practice exams in the research model.

Theory of Planned Behavior Model (TpB)

Presently, Ajzen's TpB model is proven effective in many domains (Cunningham & Kwon, 2003). For example, Kalafatis, et al. (1999) utilized TpB in their marketing studies. Foster, Myers, and Newman (2001) recognized TpB's effectiveness in the medical field. Hrube and Daigle (2001) applied TpB in the study of leisure (as cited in Cunningham & Kwon, 2003). Hsu (2006) utilized TpB to analyze the possibility of providing a learner-centered teaching environment in college education in Taiwan. According to Ajzen's (2007) own investigation and collection, hundreds of researchers have adapted the Theory of Planned Behavior (TpB) model in their presentations, theoretical papers, dissertations, articles, and other publications. In addition, HBM, Janz and Becker (1984), Sheppard, Hartwick and Warshaw (1988), and Armitage and Conner (2000) recognized TpB as a reliable and effective tool to predict people's intentions and behaviors in the fields of psychology, business, communication, health, and so forth (as cited in Wang, 2006). The Theory of Planned Behavior has been an effective and predictive tool that helps researchers investigate the influences of the participants' attitudes toward behaviors, subjective norms, and perceived behavioral controls to the participants' intentions and their actual behaviors (Ajzen, 2006). In this study, the researcher adapted Ajzen's TpB model to design the conceptual framework, hoping to understand how and to what degree each variable affects students' intentions, actual behaviors and their relationships. Adapting the TpB model in this study, (a) normative beliefs referred to students' attitudes toward the exams, (b) control beliefs meant students' self-efficacy in using on-line practice exams, and (c) behavioral beliefs indicated students' language abilities.

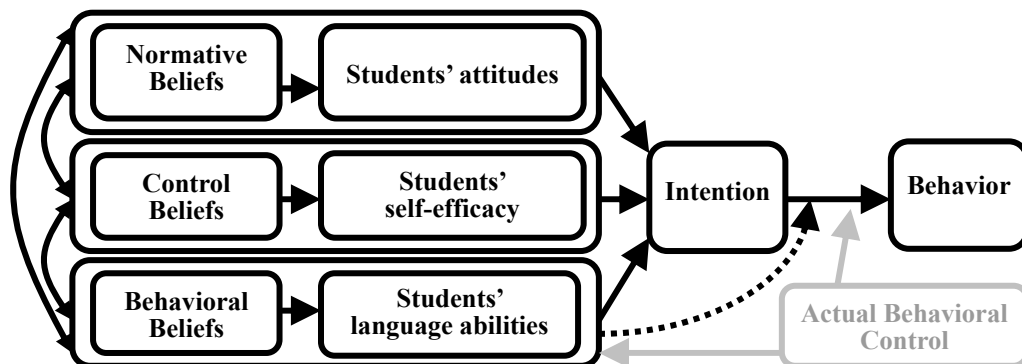


Figure 2: The Adaption of Ajzen's TpB Model to This Study(Organized by the researcher)

METHODOLOGY

Targeted participants

This researcher conducted the research at a medical university in central Taiwan. The targeted population only focused on students who have attended two semesters of freshman English classes and had experiences in taking mandatory on-line practice exams in 2011. According to the self-reported data from the school, the total numbers of freshman students in the second semester of 2011 were 1491 (608

males; 883 females). This study aimed to survey six freshman English classes of 242 university freshman students from different academic majors.

Hypotheses

The path plot model of this study used SA as exogenous variable and SL, SS, BI, AB as endogenous variables. Figure two indicated the hypotheses of cause-and-effect paths among the research variables.

The hypotheses of this study were as follows:

H1. *There were positive correlation among SA (students' attitudes), SL (students' language abilities), SS (students' self-efficacy), BI (students' behavioral intentions), and AB (students' actual behaviors).*

H2. *SA directly influenced AB;*

H3. *SA influenced AB through BI;*

H4. *SA influenced AB through SS and BI;*

H5. *SA influenced AB through SL, SS, and BI;*

H6. *SA influenced AB through SL and BI;*

H7. *SA influenced AB through SL.*

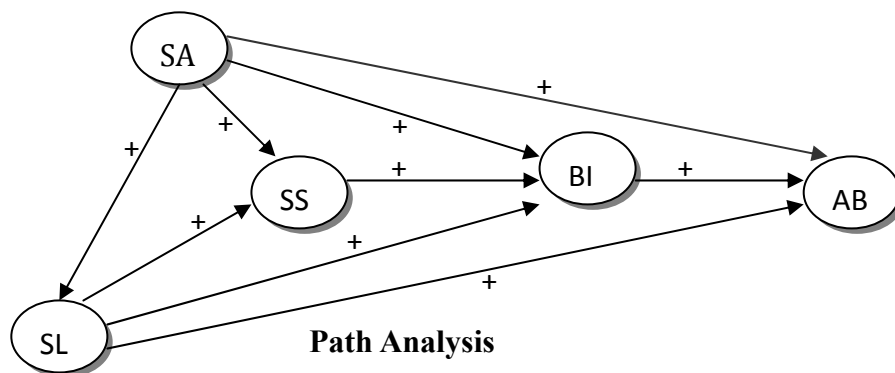


Figure 3: The Path Plot Model of This Study (Organized by the researcher)

Survey instrument

The researcher referred to the review of literature, Ajzen's (2006) Theory of Planned Behavior (TpB), and Huang's (2008) CLT survey, to design the questionnaire. The survey instrument included five self-reported sections: (1) students' attitudes toward using on-line practice exams (SA); (2) students' language abilities (SL); (3) students' self-efficacy in using on-line practice exams (SS); (4) students' behavioral intentions in using on-line practice exams after class (BI) and (5) students' actual behaviors in using on-line practice exams (AB). All the participants' answers were measured on the five-point Likert rating scale: 5 means strongly agree; 4 means agree; 3 means neutral; 2 means disagree and 1 means strongly disagree.

Validity & reliability

The researcher utilized an item-total correlation coefficient analysis (r) to test the internal consistency of the questionnaire and to delete inadequate survey questions. After the test, the remaining survey questions passed the item-total correlation (r) which was larger than 0.30 to reach a statistical significant level (0.05). For reliability, the research used factor analysis on every variable to ensure their accuracy. As such, Cronbach's Alpha Coefficient was applied to test each variable's reliability. The

Cronbach's α of SA, SL, SS, BI, and AB were 0.812; 0.873; 0.791; 0.837 and 0.891 respectively. After the validity and reliability examination, a total of 51 questions remained in the formal questionnaire: SA (12 questions), SL (12 questions), SS (12 questions), BI (10 questions), AB (5 questions).

DATA ANALYSES

Formal survey and data collection

The researcher passed 242 formal survey questionnaires to the participants and finally collected 238 valid questionnaires. The valid questionnaires included 45 students from the Applied Chemistry Department; 41 students from the Nursing Department; 36 students from the Sociology and Social Work Department; 43 students from the Public Health Department; 40 students from the Nutrition Department and 33 students from the Medical Department. The effective response rate was 98% and the participants' backgrounds were well balanced. The participants' majors were organized in the pie chart and bar chart (see figure 4).

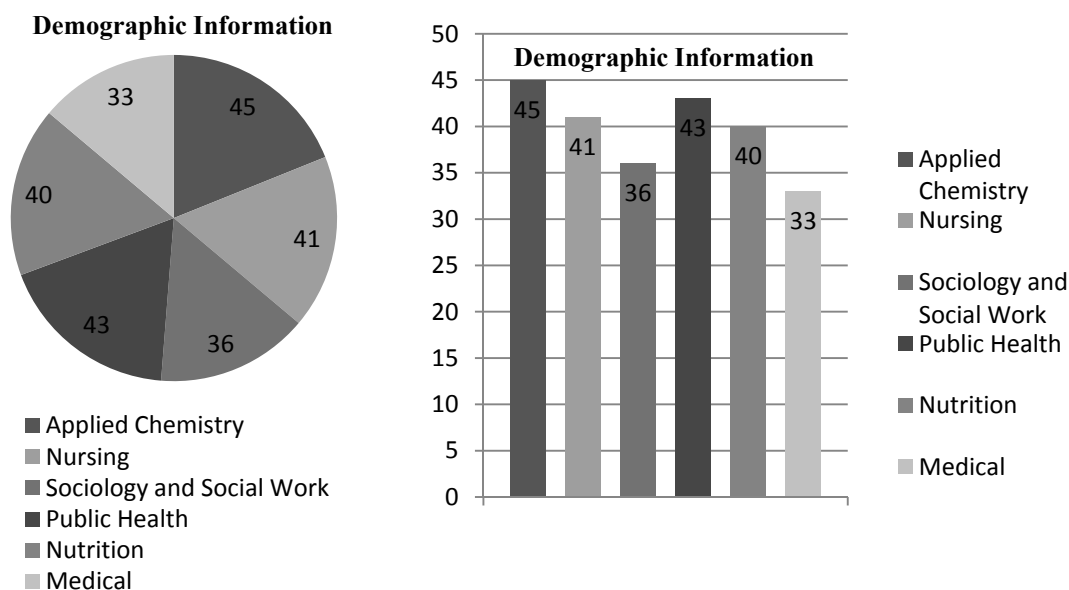


Figure 4: Demographic Backgrounds of the Participants (Organized by the researcher)

The relationships among SA, SL, SS

The researcher utilized Pearson Product Moment Correlation Analysis to analyze the correlation in each two pairs of SA, SL, and SS. The data indicated that the correlation coefficient of SA and SL was 0.821 (very significant). The correlation coefficient of SA and SS was 0.474 (insignificant). The correlation coefficient of SL and SS was 0.782 (significant). The result of these analyses explained that there were significant relationships between each pair: SA and SL, SL and SS, except SA and SS. Consequently, the researcher proved that when students used on-line practice exams to improve their English abilities, (a) their attitudes were very strongly correlated with their language abilities; (b) their language abilities were also significantly correlated with their self-efficacy. However, students' attitudes were insignificantly correlated with their self-efficacy.

Path analysis

Based on the hypotheses of this study, the paths of cause-and-effect correlations among the five variables were processed with four regression analyses. (1) In the first multiple regression analysis, the dependent variable was BI and the predictor variables were SA, SL, and SS. (2) In the second multiple regression analysis, the dependent variable was SS and the predictor variables were SA and SL. (3) In the third multiple regression analysis, the dependent variable was SL and the predictor variables was SA. (4) In the fourth multiple regression analysis, the dependent variable was AB and the predictor variables were SA, SL, and BI.

The first multiple regression analysis indicated that the (R^2) was .415 and the error coefficient was .765. Based on the path coefficient of path analyses, BI (dependent variable) and SA, SL, and SS (predictor variables), the three predictor variables all reached statistical significance. Their (β) were .741***, .682*** and .174*** respectively. The second multiple regression analysis showed that the (R^2) was .387 and the error coefficient was .782. According to the path coefficient of path analyses, SS (dependent variable) and SA and SL (predictor variables), the two predictor variables' (β) were .012 and .576*** respectively. The cause-and-effect relationship from SA to SS was insignificant whereas from SL to SS was significant. The third multiple regression analysis indicated that the (R^2) was .314 and the error coefficient was .828. Based on the path coefficient of path analyses, SL (dependent variable) and SA (predictor variable), the predictor variable's (β) was .739***. The fourth multiple regression analysis showed that the (R^2) was .536 and the error coefficient was .681. According to the path coefficient of path analyses, AB (dependent variable) and SA, SL, and BI (predictor variables), the three predictor variables all reached statistical significance. Their (β) were .159***, .678*** and .184*** respectively.

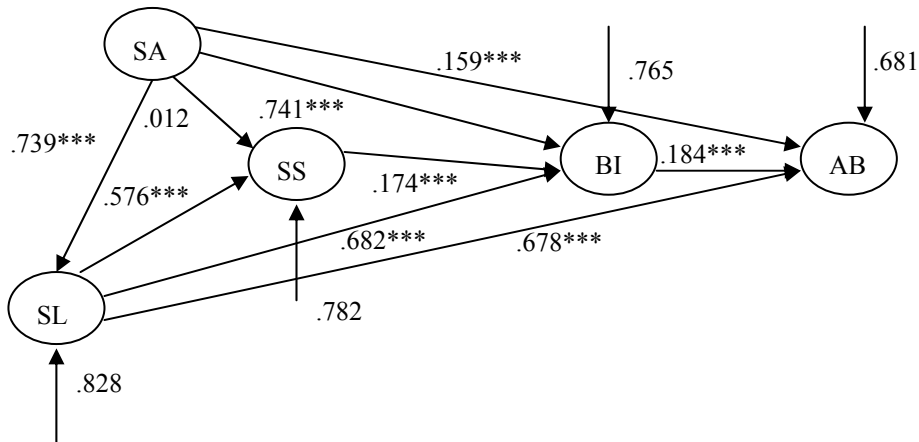


Figure 5: The Overall Path Analysis for Regression Model(Organized by the researchers)

CONCLUSIONS AND SUGGESTIONS

This study applied Ajzen's TpB model to investigate how freshman students' actual behaviors in utilizing on-line practice exams to improve their English abilities were influenced by their attitudes, language abilities, self-efficacy, and intentions. By revealing the correlations among the variables in this TpB model, the researcher could make persuasive suggestions for teachers to better direct students' actual learning behaviors in effective utilization of on-line practice exams for their English acquisition. To summarize the result of this study, students' actual behaviors (AB) was significantly influenced by their

attitudes, language abilities, self-efficacy, and intentions. However, students' behavioral intentions were mainly influenced by their learning attitudes. In other words, students' attitudes were the key for the successful implementation of on-line English practices. Secondly, students' learning attitudes had a direct and significant influence toward their language abilities whereas students' attitudes had no significant affect to their self-efficacy in computer operation. Instead, students' self-efficacy was influenced by their language abilities which further influenced their behavioral intentions and actual behaviors. Further explanations about this research were as follows:

In answering the first research questions, there were significant correlations among students' attitudes (SA), students' language abilities (SL), and students' self-efficacy (SS). Among the three variables, the Pearson correlation analysis suggested that each of the two variables were highly correlated but SA and SS had no significant relationship. This result can be concluded that when students were utilizing on-line practice exam, SA and SL, SL and SS were positively related to each other. Nevertheless, SA and SS had no significant influence to each other. To answer the second research question, the overall path analysis had indicated that there were ten significant paths for each variable to affect students' actual behavior (AB) but only one insignificant path that could not affect AB through other variables. The ten paths that significantly affected AB were as follows: (1) SA→BI→AB; (2) SA→SL→AB; (3) SA→SL→SS→BI→AB; (4) SA→AB; (5) SA→SS→BI→AB; (6) SL→AB; (7) SL→BI→AB; (8) SL→SS→BI→AB; (9) SS→BI→AB; (10) BI→AB. The only path that had no significant influence was SA→SS.

As the overall path analysis indicated in figure four, students' actual behavior (AB) in utilizing on-line practice exams to help them improve their English was directly and significantly influenced by their attitudes ($\beta = .159^{***}$); language abilities ($\beta = .678^{***}$) and behavioral intention (.184^{***}). In addition, there were significant and positive correlations among (a) SA→AB; (b) SL→AB; (c) BI→AB. In terms of indirect influences, students' actual behaviors (AB) in utilizing on-line practice exams was affected (a) from SA through BI; (b) from SA through SL; (c) from SA through SL, SS, and BI; (d) from SA through SS and BI; (e) from SL through BI; (f) from SL through SS and BI; and (g) from SS through BI. However, the only insignificant correlation occurred at the path from SA to SS ($\beta = .012$).

Moreover, the influences of each SA, SS, and SL to BI (students' behavioral intentions) also reached a significant level. It was clear that students' behavioral intentions in utilizing on-line practice exams to improve their English fluency was significantly affected by students' attitudes ($\beta = .741^{***}$); students' self-efficacy ($\beta = .174^{***}$); students' language abilities ($\beta = .682^{***}$) and there were positive correlations in each path. What is more, students' language abilities was affected by students' attitudes ($\beta = .739^{***}$). Although there were positive correlation between students' language abilities and students' self-efficacy, the relationship between students' attitude and students' self-efficacy did not reach a significant level. Furthermore, students' language abilities were very significantly affected by students' attitudes ($\beta = .739^{***}$) and the data indicated that there was a positive correlation between the two variables.

The results of this study suggested that students' actual learning behaviors were significantly affected by their attitudes, language abilities, self-efficacy, and behavioral intentions. The success of students' actual application to using on-line practice exams as a tool for their English acquisition does not simply depend on teachers' mandatory requests or the school promotion for the learning system. In fact, teachers should take students' attitudes, language abilities, and self-efficacy into consideration when encouraging students to actually spend their time utilizing the system. Therefore, students' attitudes, language abilities, and self-efficacy not only significantly affect their behavioral intentions but also influenced their actual behaviors. In order direct students' actual learning behaviors to the effective use of

on-line practice exams, students' attitudes toward the on-line testing system must be positively transformed before the actual practice of the exams. To reach this goal, teachers may consider providing students' with previous learners' positive feedbacks to reduce the current students' anxiety and resistance against the on-line practice system. As students' practice frequencies increase, their self-efficacy in computer operation and language abilities will also improve. Eventually, the positive relationships among students' attitudes, language abilities, and self-efficacies will influence their intentions and will ultimately affect their actual learning behaviors. With the utilization of these approaches, both meaningful on-line English practices and effective learning should occur in the class.

Limitations and future research

Based on the result of this study, a successful implementation of computer assisted English learning and testing must take students' attitudes, language abilities, and self-efficacy, behavioral intentions and actual learning behaviors into consideration. This study may serve as a reference for those colleges and universities that have invested much money on their computer assisted English learning assessment system, but at the same time, are facing difficulties and serious resistances from their learners. In the future, it will be interesting to apply the TpB model on the investigation of other variables that may also have the potentials to affect students' behavioral intentions and actual behaviors through qualitative and quantitative research.

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