

Applying the Technology Acceptance Model to Investigate the Factors Comparing the Intention between EIVG and MCG Systems

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Abstract– This study investigated technology acceptance model of students by using Embodied Interactive Video Games (EIVGs) and Mouse Click Games (MCGs) to learn English tenses. Junior high students (N = 200) were selected, and divided into two groups. Selected students in both EIVG and MCG group have to practice English tenses five times. After the practice, all students have to fill the technology acceptance model questionnaire. The results of this study indicated that students' attitude and intentions may influence by the Perceived Usefulness. If the game makes students learn more from the content, it will trigger students' attitude and intention to use game-based learning systems.

I. PURPOSE

The English tenses learning were chosen in time study because Taiwanese students usually mistake the use of verb when they learn English. In Chinese, the tense of verb in a sentence doesn't have to be changed by person and tenses, whereas the tense of verb has to be changed in English learning. So, we hope that using the Embodied Interactive Video Games (EIVGs) and the Mouse Click Games (MCGs) can make English learning become much more interesting. And we also want to know that which game-based learning system can trigger students' interest of tenses learning in English.

II. RESEARCH DESIGN

A. Methodology

All the participants were divided into two groups. One uses the EIVG system, and another uses the MCG system. Participants in both EIVG and MCG group were allowed to practice English tense five times. The content of the two systems are the same. After the five-time practice, the technology acceptance model questionnaires were given to participants.

B. Participants

The participants consisted of 200 8th grade students, and they were divided into two groups. One group uses the EIVG system, and another group uses MCG system to learn English tenses.

C. Instruments

The instruments in this study are the Embodied Interactive Video Game, the Mouse Click Game, and the questionnaire of Technology Acceptance Model.

1) The Embodied Interactive Video Game

The Embodied Interactive Video Game (see Fig. 1.) is created by Digital Game learning Laboratory of National Taiwan Normal University. One Group of the participants in this study uses the EIVG system to learn English tenses. The EIVG utilized graphics, and interactivity via a webcam. The system was able to track transactions during the game to provide a profile of the player's performance that can be used for record.



Fig. 1. Embodied Interactive Video Game

2) The Mouse Click Game

The Mouse Click Game (see Fig. 2.) is designed by Digital Game learning Laboratory of National Taiwan Normal University as well. One Group of the participants in this study uses the MCG system to learn English tenses. The MCG utilized graphics, and interactivity via a mouse. The system was able to track transactions during the game to provide a profile of the player's performance that can be used for record.



Fig. 2. Mouse Click Game

3) Technology Acceptance Model Questionnaire

According to Davis' Technology Acceptance Model [1], and the study of Liu, Liao, and Pratt [2], the Technology Acceptance Model Questionnaire was designed by the researcher. The interface of the game refers to Connolly, Stansfield, and Bolye's questionnaire [3], and the anxiety of game learning refers to Horwitz's questionnaire [4]. Synthesizing the entire subject, we developed the technology acceptance questionnaire for this study. The questionnaire is a 5-point Likert-type scale, and the total subjects are 40. The validity of KMO value is .940, and X^2 value is 7789.240 ($p < .01$) in this questionnaire. The Cronbach's α value of this questionnaire is .972, and it represents the reliability of this questionnaire is accepted.

D. Analysis

In this study, we try to use LISREL to do path analysis, and find out the relationship between the variables (see Fig. 3.).

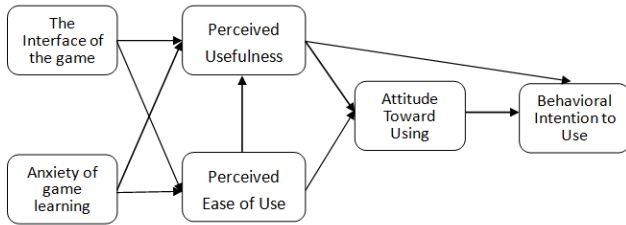


Fig. 3. Path Analysis.

III. FINDINGS AND CONCLUSION

In the path analysis of using Embodied Interactive Video Game (see Fig. 4.) , we can see that the anxiety of game learning to perceived ease of use, the interface of the game to perceived usefulness, perceived usefulness to attitude toward using, perceived ease of use to attitude toward using, and attitude toward using to behavioral intention to use are significant. From the path analysis, we can find out that the anxiety of game learning may influence perceived ease of use. It represents that students have higher anxiety may think that the EIVG learning system is easy to use. The interface of the game may also influence perceived usefulness, perceived usefulness and perceived ease of use may influence students' attitude toward using the EIVG system. Students' attitude may influence their behavioral intention to use the EIVG system for learning in the future.

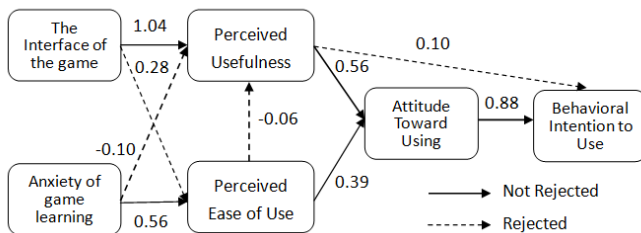


Fig. 4. Path analysis of using Embodied Interactive Video Game.

In the Path Analysis of Using Mouse Click Game (see Fig.

5.), we can see that the anxiety of game learning to perceived usefulness, perceived ease of use to perceived usefulness, perceived usefulness to attitude toward using, and attitude toward using to behavioral intention to use are significant. From the path analysis, we can find out that the anxiety of game learning may influence perceived usefulness. It represent that students have higher anxiety may think that the MCG learning system is useful in learning. Students' attitude may be affected by the MCG learning system is useful or not, and Students' attitude may also influence their behavioral intention to use the MCG system for learning in the future.

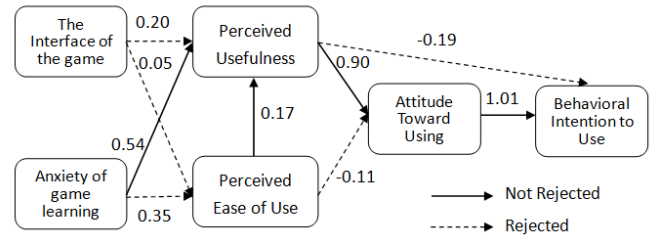


Fig. 5. Path analysis of using Mouse Click Game.

Synthesizing the findings, we inference that the stability of the interface, and the anxiety may influence students thinking of the usefulness between the two game-based learning systems. The anxiety may also influence students' thinking of the operation is easy to use or not. The usefulness of the content in learning may influence students' attitude. If students' think that game-based learning can help him to learn English, it will enhance the intention of him in the future.

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