AN EXPLORATION OF THE ATTITUDE AND LEARNING EFFECTIVENESS OF BUSINESS COLLEGE STUDENTS TOWARDS GAME BASED LEARNING

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ABSTRACT

This study aimed to explore the attitude and learning effectiveness in game based simulations from college students' perspective. The participants included 189 business college students in Taiwan. The main instrument employed in this study was McDonald's video game. Additionally, participant selection, data collection and analysis; and results relevant to the research questions of this study are presented.

KEYWORDS

learning effectiveness; digital game, game based learning, attitude toward game based learning

1. INTRODUCTION

New generation students are so different from past learners and it seems they cannot live without computers technologies. Digital games have a considerable impact on students' life and learning. Games have been defined as an immersive, and enjoyable activity in which a challenging goal is pursued (Freitas & Oliver, 2006; Kinzie & Joseph, 2008). It is more attractive for students to learn the complex knowledge via digital simulation game for college students (Prensky, 2003; Bayliss, 2007;). Generally, games are designed more visual, interactive, and focused on problem-solving (Mitchel & Savill-Smith, 2004; Pasin, & Giroux, 2011). Games usually include clear objectives, and they provide tasks with multiple difficulty levels to adapt to the prior knowledge and skills of learners; therefore, games are considered an effectiveness educational tool (Gentile & Gentile, 2008). Moreover, many research have found that game based learning can enhance learning motivation and learning outcomes (Dickey, 2011; Sung & Hwang, 2013).

Thus, this study used college students as participants and aimed to explore what their learning effectiveness and attitudes are during the game based learning.

The following research questions were proposed in this study:
1. What are the college students' attitudes toward game-based learning?
2. What are the college students' learning performance regarding the subject content knowledge after game-based learning?

2. LITERATURE REVIEW

Game Based Learning (GBL) is a widespread application teaching or learning strategy in Education, especially for teachers to connect learning content and reality that make learners stay in a simulation world. In the beginning, the learning potential generated through games has been examined in university classrooms since the 1950s, particularly by business schools (Gros, 2007; Lichtenwalter & Baker, 2010). With the technology developed, the computer game was developed and applied for educational purposes from 1960s (Wolfe & Crookall, 1998). Nowaday, digital GBL courseware has been utilized as an instructional tool in cross disciplines ranging, such as international relations, engineering and biology to nursing and social work (Lichtenwalter & Baker, 2010). Research also indicated that the use of gems to teach educational content raises students' learning and motivation (Gee, 2005, Prensky, 2003; Sung & Hwang, 2013).

3. METHOD

3.1 Participants and Procedure

All experimental tasks and data collection were conducted via a computer system. One hundred and eighty-nine business major undergraduates (50 males and 139 females) participated in this study. The participants' mean age was 18.9 years. All participants filled out an informed consent form before the experiment.

Tests and questionnaire were conducted with regard to the learning effectiveness and attitude toward game based learning. This study conducted pre-experimental design to process one-group pre-test and post-test design. Before the participants played the McDonald's video game, the pre-test was given in the class. The participants were request to playing the played the McDonald's video game at least half hour per day. After a week, the post-test and questionnaire were given to participants in the class.

3.2 Instrument

3.2.1 The Framework and the Characteristics of the Simulation Game

The main instrument employed in this study was the McDonald's Video Game. In this study, the Mcdonald's was developed by the Italian company La Molleindustria, a free download of Flash games (website: http://www.mcvideogame.com/downloads-eng.html). The researchers also translated the English version of tutorial guidance in Traditional Chinese version for participants. There are four scenarios in McDonald's game, including natural breeding farm, artificial breeding farm, McDonald's store, and Head office (Fig. 1-4).

Figure 1. McDonald's Store

Figure 2. Artificial Breeding Farm

Figure 3. Natural Breeding Farm

Figure 4. Head Office

3.2.2 Learning Content Test

In order to know the learning effectiveness of college students' content knowledge of business and management subject, the researchers gave two set of multiple choices tests, developed by 2 subject experts, for participants. Two set of 30-item multiple choice tests were considered the same difficulty and gave college students for their pre-test and post-test. The total score of each set test is 30- points.

3.2.3 Game based Learning Attitude Questionnaire

One of the goals of this study is to explore the college students' perception about simulation game based learning. To achieve this goal, this study examined how the students perceived the learning experience with the simulation games in the course.

The researchers developed the questionnaire of game based learning attitude to measure the responses of participants following completion of the simulation game. This questionnaire comprised a total of 12 questions. Questions were ranked on a scale of 1 to 5 with 1 representing "strongly disagree" and 5 representing "strongly agree".

4. RESULTS

4.1 Result Analysis for Learning Content Test

After the experiment, the t-test result (t(188) = 35.827, p<.01) showed the significant difference between the pre and post tests (Table 1). The mean score of the pre-test was 6.429 and the mean score of the post-test was 18.452. Hence, business college students gain better scores regarding the subject content knowledge of business and administration after game based learning.

Table 1. T Test of learning content tests

	n	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
pre-test	162	6.429	2.643	.179	35.827	161	.000**
post-test	162	18.452	4.364	.296			

**p<.01

4.2 Result Analysis for the Questionnaire toward Game Based Learning Attitude

The questionnaire was meant to determine how the subjects felt about game based learning. For the 12 question items, the average score was 4.18 (SD=0.77), as shown in Table 2. Overall, the participants has positive attitude toward game based learning.

Table 2. Mean score of the questionnaire toward game based learning attitude

Item	Mean	SD
Q1 The Chinese instruction provided makes it easy to use the "game-based simulated learning materials."	4.29	.94
Q2 This "game-based simulated learning materials" is easy to use.	4.00	.71
Q3 Overall, I'm satisfied with the interface design of this "game-based simulated learning materials."	4.06	.66
Q4 This "game-based simulated learning materials" could help me learn the knowledge of productivity management in business administration.	4.13	.72
Q5 This "game-based simulated learning materials" could help me learn the knowledge of human resource management in business administration.	3.91	.87
Q6 This "game-based simulated learning materials" could help me learn the knowledge of marketing management in business administration.	4.21	.69
Q7This "game-based simulated learning materials" could help me apply what I learned.	4.06	1.03
Q8 This "game-based simulated learning materials" could extend my knowledge about business administration.	4.35	.93
Q9 Overall, I'm satisfied with the way of learning through this "game-based simulated learning materials."	4.53	.72
Q10 I will be more motivated on learning with game-based simulated learning materials.	4.30	.68
Q11 It will be more interesting than lectures only in class if instructors apply game-based simulated learning materials on their teaching.	4.20	.58
Q12 I hope that instructors could utilize game-based pedagogy to assist general instruction in the future.	4.10	.70
Total mean	4.18	.77

5. CONCLUSION

Overall, Business college students felt positive toward the McDonald's video game based learning material. Business college students will be more motivated through game based learning from their perspectives in this study. Based on the research results, the business students also have better performance on learning content

after game-based learning. These results can tell us two things: a) as other studies claimed that GBL can promote students' learning performance (Blunt, 2006; Gros, 2007; Lichtenwalter & Baker, 2010); b) GBL can help students link learning content and authentic world. In the future, the researchers might explore how student's learning motivation effects their performance through game based learning.

ACKNOWLEDGEMENT

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