

Acceptance Level of Junior High School Students of Network Educational Games

Guo-Wei Chen^{1*}, Chung-Shan Sun²

¹ Assistant Professor of Department of Digital Applications, University of Kang Ning, Tainan

² Professor of Department of Industrial Technology Education, National Kaohsiung Normal University, Kaohsiung
ken@ukn.edu.tw

Abstract: *The development of network games has opened up a brand new era of digital learning and has also inspired another kind of educational model. Context learning with games not only achieves the objectives of education, but also makes learning as fun as playing games. If learners can learn through playing games, the model of traditional learning can become more vivid and interesting. By promoting educational games, we can bring about an evolution of the model of educational activities.*

The purpose of this study is to figure out the impacts of “concentration,” “sense of control,” and “sense of immersion” on junior high school students by investigating the acceptance level of network educational games on the “Educational Portal of Taipei City – Flying Sky Interaction Learning Campus” in Taipei City. This study also considers three background variations, including “gender,” “grade,” and “urban or rural” respectively. The results show that the acceptance level of the educational game websites is generally above average. We also find that the students in higher grades have greater self-control when it comes to the “sense of immersion.” Therefore, we can adopt a new type of learning model in the future via the improvement of the content and interface of educational games.

Keywords: educational game 1, network game 2, digital learning 3

1. Origin of research

Network games not only facilitate learning motivation, but stimulate the willingness of active learning by learners. Though digital learning can bring several benefits, there are still some cases where learners overindulge network games. Computers, the Internets, and other information technologies have induced efforts to re-evaluate educational systems (Robert K. Logan, 2001). The antiquated culture of school systems has already been changed by the introduction of new ITs. The relationship between the new educational models and works has to be re-built. The relevant impact of network games has attracted the attention of many researchers, too.

In the definition given by Wikipedia, “Educational games are games which fulfill a number of educational purposes. Some games may be explicitly designed with educational purposes, while others may have incidental or secondary educational value. All types of games may be used in an educational environment. Educational games are games that are designed to teach people about certain subjects, expand concepts, reinforce development, understand an historical event or culture, or assist them in learning a skill as they play. Game types include board, card, and video games.” In recent years, computer games have already become a fashion wave in the world. People can play games either with their computers or smart phones. Now, computer games seem to be a novel form of art (Wark 1994; Atkins 2003). Meanwhile, such a novel form of artistic creation has, as well, exerted significant impact on many domains such as media, cultural creativity, education, etc. (Gee 2003).

Unlike some scholars such as Provenzo(1991) and Anderson & Ford(1986) worry about the negative impact of pornography, violence, and anti-social behavior in games. Others still believe that games can help the youth to learn. They think that games can make learning more interesting and students can “learn” from “doing”. Therefore, the abilities of problem-solving, collaborative learning and so on can be enhanced (Bowman 1982 ; Amory et al 1999; Prensky 2000). They trust that games can make learning more interesting (Malone, 1980; 1983;) and students can “learn” from “doing” (Thiagarajan 1998; Thatcher 1990; kirriemuir & McFarlane 2004) which enhances problem-solving

capability, collaborative learning capability, and other capabilities (Whitebread 1997; Bruckman 1998) (quoted from Shang, Jun Jie, Lee, Fang Le, Lee, Hao Wen, 2006)。

This study is conducted with the educational game “Flying Sky Interaction Learning Campus” on the website of the “Educational Portal of Taipei City.” In this study, the acceptance level of junior high school students of the educational games will be investigated as well as the impact of educational games.

2. Research objectives

- a. Investigate the acceptance level of junior high school students of network educational games.
- b. Compare the acceptance levels of network educational games with diverse background variables among junior high school students.

3. Research design

3.1. Object of research

This study focuses on investigating the acceptance level of junior high school students in Taiwan of network educational games. The accidental sampling is based on students in grades 7, 8, and 9 in An Nan and He Shuen Junior High School in Tainan City. 250 copies of the questionnaire were collected for evaluation. There are three background variables, including “gender,” “grade,” and “urban or rural” respectively. Moreover, “the acceptance level of network educational games” is used as the dependant variable and is classified into three parts, including “concentration” (8 questions), “sense of control” (7 questions), and “sense of immersion” (7 questions). The scenario of the questionnaire is described as follows:

Table 3-1 Scenario of Questionnaire Retrieval Regarding Acceptance Level to Network Educational Game

	distribution of questionnaire	Retrieval of questionnaire	Valid questionnaire	Valid retrieval rate
male	123	123	123	49
female	127	127	127	51
total	250	250	250	

3.2. Tools of research

The scale is adapted from the one in “Degree of Delight Found in Digital Learning Game by Learn” in the master thesis “Study of Design and Evaluation Indicator of Digital Educational Game” by Su Rong-chang (2007) of the Graduate Institute of Management Information Systems of National Cheng Chi University. The scale was previously divided into eight parts, and since the evaluated samples of this study involve the most unstable stage of learning development, junior high school, we only selected (1), (5) and (6) as the measurement tools, including concentration, sense of control, and sense of immersion. The evaluation included item analysis (a descriptive statistic test, comparison of extreme groups, homogeneity tests and other methods for verification), a validity test (using construct validity of the factor analysis scale to conduct correlation analysis between sub-scale and total scale as well as sub-scale and relevance, and the correlation coefficient is greater than 0.7), and a reliability test (Cronbach’s α coefficient and re-tested reliability to confirm internal consistency and homogeneity). The three items include a total of 22 questions which are classified according to a Likert scale for statistic computation, where 5 represents strongly agree, 4 indicates agree, 3 is for neutral, 2 means disagree, and 1 is for strongly disagree.

3.3. Information collection

This study chose An Nan and He Shuen Junior High Schools of Tainan City as its research samples to investigate the acceptable level of network educational games. One reason is that the researcher live in Tainan City, so that was easy for him/her to distribute and collect questionnaires and related works. Secondly, the researcher has friends teaching in these two schools, so that it was convenient to ask for cooperation when distributing and testing the questionnaire.

The time of the test was based on the designated time-span used in previous related information curriculum, while eight games from “Flying Sky Interaction Learning Campus” were used as the target test for measurement with question design. First, the teacher conducts 5 minutes of testing explanation, students are given 35 minutes to play the games, and then the test is implemented in 10 minutes.

3.4. Information processing

After the research questionnaires were retrieved, they were analyzed according to frequency distribution, mean, and standard deviation to understand the conditions of centralization and de-centralization. Next, an independent sample t-test was used to verify and analyze gender, and the difference between urban and rural students, and one-way ANOVA was used to analyze samples of different grades.

4. Research findings

4.1. Acceptance Level of Network Educational Games by Junior High Students

Table 4-1 Mean and Standard Deviation of Scale Score regarding Acceptance Level of Network Educational Games by Junior High Students

	male		female		t	total	
	M	SD	M	SD		M	SD
concentration	3.33	.78	3.35	.71	.06	3.34	.74
sense of control	3.82	.79	3.76	.76	.46	3.80	.78
sense of immersion	3.17	1.00	3.03	.90	1.41	3.10	.95

As shown in the table, the higher than medium level of acceptance (meaning that there is one item in the questionnaire that represents “neutral”) for the three aspects of concentration, sense of control, and sense of immersion among junior high students, indicates that the educational games of the “Educational Portal of Taipei City” received widespread recognition by the junior high students. Moreover, the results have sufficiently explained that the “Educational Portal of Taipei City” is an effective multimedia technology which is suitable for application for educational purposes.

4.2. Junior high students with diverse background variables show diverse acceptance levels of network educational games

As learned from the aforementioned table, junior high students of different genders do not show any prominent difference in regard to the three aspects of concentration, sense of control, and sense of immersion; in other words, both male and female students are more or less the same in terms of concentration, sense of control, and sense of immersion. Given equal rights for both males and females, students of the two sexes are entitled to the right of education, and so the learning environment and conditions provide the foundations for the acceptance of digital education. Therefore, the learning processes both genders encounter when playing network educational games are, to a great extent, the same. This is why the table indicated that both male and female students show similar levels of acceptance in terms of the three aspects of concentration, sense of control, and sense of immersion.

Table 4-2 Variance Analysis Table regarding Acceptance Level of Network Educational Game by Students of Different Grades

	grade 7		grade 8		grade 9		F
	M	SD	M	SD	M	SD	
concentration	3.42	.80	3.16	.56	3.20	.59	2.6

sense of control	3.89	.79	3.58	.75	3.68	.71	2.49	
sense of immersion	3.25	.95	2.87	.83	2.76	6.88	6.88**	1>3

***P<.001

Students from different grades do not show any particular difference in terms of the two aspects of concentration and sense of control; however, a prominent difference is found with sense of immersion, meaning that students in grade 7 are found to have a greater sense of immersion than those in grade 9. The results indicate that since students in grade 7 show inferior self-discipline and independence than those in higher grades because they are younger and have only just recently left the elementary school learning environment. As such, they are more likely to indulge into the gaming context without awareness. Thus, it is reasonable to expect that students from higher grades should be able to exercise greater self-control when playing network educational games. Moreover, the content design of educational games has to be more absorbing before it is able to appeal to students of higher grades.

Table 4-3 Variance Analysis Table regarding Acceptance Level Network Educational Games from Different Areas

	city		country		t
	M	SD	M	SD	
concentration	3.36	.75	3.24	.72	.85
sense of control	3.84	.76	3.56	.82	4.79**
sense of immersion	3.08	.94	3.17	1.00	.29

***P<.001

As learned from the aforementioned table, junior high students from different areas do not show any prominent differences with regard to the three aspects of concentration, sense of control, and sense of immersion; in other words, students either from urban or rural areas have shown similar degrees of concentration, sense of control, and sense of immersion. Given the context of dense population in Taiwan and the vigorous promotion of digital learning within education in recent years, the digital gap between rural and urban areas has gradually been eliminated, especially since digital educational has been delivered through the Internet. As a result, learning processes of learners have become closer. This is why the acceptance levels of educational games among students from urban and rural areas are more or less the same.

5. Conclusions and recommendations

5.1. Research conclusions

Based on the deductions from the measurements results of this study, the mean acceptance level of network educational games among both male and female junior high students is found to show centralized distribution, and there is no prominent difference between the two. One reason could be that education has become universal, so that there is no prominent difference in the mean. However, the mean from students of the three respective grades living in the city is higher than that of those who live in rural areas.

Though the mean acceptance level of educational games among junior high students from different grades is more or less the same, this study also found that the sense of immersion among students of grades 8 and 9 is lower than that of grade 7 students (F value 6.88); in other words, students of higher grades are less likely to indulge in educational games. The reason could be that students of higher grades have more experiences with other exciting and rich network games. After all, the establishment of websites for educational games which are essentially for education which can hardly be as thrilling and tempting as commercial game websites. Thus, educational game websites are relatively less tempting to junior high students of higher grades who are accustomed to exciting contexts. On the other hand, it is also

possible that junior high students of lower grades may exercise weaker self-control as they have just left elementary school, so that educational games can still have sufficient attraction for them.

5.2. Research recommendations

5.2.1. The government should plan as a whole to integrate professionals from various categories of education to contribute their expertise, and design educational games

In Taiwan, we have considered ourselves the “Island of Technology,” but we are still stuck the old “red ocean strategy” mindset, for we lack long-term and integral programming. As a result, related industries have conducted their own development, so Taiwan has developed into an OEM zone producing wafers, motherboards, panels and other components for major international producers. Hence, the technology in Taiwan is unable to stimulate related industries and compete with other countries internationally. At the root, this is attributable to the fact that related industries cannot fully work to integrate resources, resulting in the weakening of integral competitiveness. If the government can integrate planning for programming and invite digital education professionals of from the related industry, the government and academia could contribute their expertise and wisdom, and gather practitioners of digital learning to obtain practical expertise for carrying out the design of educational games. Such educational games can, definitely, overcome the stereotype of being divorced from the needs of students. This would not only help improve t design level of educational game interfaces, but also enrich the content of educational games, which could help to stimulate the output of the entire educational game industry.

5.2.2 Enrich the content of educational games and avoid following the same pattern of producing didactic

The very initial philosophy in the facilitation of multimedia teaching material for assisted teaching is to improve upon previous monotonous and unchanging ways of teaching conducted in the classroom, so that sound-light and audio-visual effects are used to attract the attention of learners as they focus on the missions and objectives of game content. This can help to enhance the learning effect; however, if the very nature of educational games remains the same as lectures, there might be a negative effect. Therefore, “education through entertainment” is considered as the most critical mission; despite the fact that the content of educational games could involve serious loyalty and piety or national heroic stories, they can become intimate and closer learners’ lives with the application of interesting and vivid game design, as well as novel and considerate interface design. As such, learners will not fell like they are being lectured, thus achieving the objective of silent transformation through immersion. On the other hand, educational games should carefully review and stipulate content. Thus, dazzling far-fetched effects, which lack educational significance, should be avoided.

5.2.3. Stipulate classification systems for educational games, and program diversity levels of educational games

Classification systems with network utilities have been conducted in several countries for years. The purpose to prevent young learners who are far from mental and physical maturity from being able to click on websites that would hinder their physical and mental development. This can also be the case for game websites. Nonetheless, though some talked earnestly about this topic, many remain ignorant, and most people do not follow this trend; in fact, more restrictions on certain websites could even arouse greater curiosity. The behaviorist Skinner suggests that rewards or reinforcement could be an important factor during the processes of learning, and if the abovementioned trend can be capitalized to promote classification systems of educational games, we can, for instance, blend issues such as crime prevention, bi-sexual education, law education, finance and investment, and virtue education. Thus, we can work to orient educational games to achieve educational objectives, and subordinated interests can be used as incentives (for example, learners could obtain school stationery as a reward). Consequently, games can deepen the sense of learning achievement, and diversification of educational games can be enriched indirectly by creating classification systems for educational websites.

5.2.4. Encourage students from related departments to join in the design and production of educational games, and reward those outstanding students who bring their talents into play

For the time being, there are a lot of departments related to “digital content” within in Taiwan. For instance, information engineering and information management departments work on hardware development and program composition; as for those who work departments related to visual communication design, information communication, and multimedia game design, they could specialize on interface beautification and composition of story script. Though talents from various departments could focus on their expertise, there are few interdisciplinary talents that can work for integration. Nonetheless, there could, for sure, be talented people that can work on links from various fields, and achieve inter-disciplinary work in the future. If we can encourage students to produce educational games in as many ways as we can, it is possible that they might, in terms of function or objective, not be able to demonstrate as much as professionalism. However, we believe that the best approach is for students to consider the rules of educational games from their own perspectives and work toward establishing the proper mindset for producing educational games.

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