Game playing as a strategy to improve Team Cohesion, support for collaborative U-Learning

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Abstract: This study investigated how a game playing strategy embedded in collaborative u-learning activities affect students' Team Cohesion and Learning attitude and their learning performance. Participants in this study were fifth grade students in elementary school (N=64); they were randomly assigned into the experiment group and the control group. The Experimental Group and Control Group will be assigned different English activity in the first stage, and in the second stage, two groups conducted the same collaborative u-learning activities. The results indicate that game playing strategy can greatly enhance students' Team Cohesion and Learning Attitude in our study.

Keywords: Game playing, Team Cohesion, U-Learning, Collaborative

1. Introduction

In Taiwan, English is the important second language. Consequently, enhancing student's English ability has become important educational policies. For learners, vocabulary knowledge and reading ability are the most important components of performance in second language learning(Huckin, 1995), Folse (2004) indicated that vocabulary is essential to English learning for second-language learners. Therefore, it's a vital issue to develop a sound approach by which to assist students in learning English vocabulary. In recent years, with the rapid evolution of computer technology and the prevalence of mobile devices, learning has changed transformed from traditional classroom learning to digital and mobile learning. For vocabulary learning, many studies have tried to explore, how to use mobile devices to support vocabulary learning (Chen & Chung, 2008; Hong, Hwang, Tai, & Chen, 2014; Y. M. Huang, Huang, & Lin, 2012).

According to related studies, ubiquitous learning is an effective teaching methods, because combining u-learning can effectively trigger learners' learning motivation(Chiou, Tseng, Hwang, & Heller, 2010; Jeng, Lu, & Lin, 2010; Ogata & Yano, 2004) and enhance their learning performance(El-Bishouty, Ogata, & Yano, 2007; Rogers et al., 2005). Liu and Chu (2010) indicated that incorporating ubiquitous into the English learning activities could achieve a better learning outcomes and motivation.

According to this viewpoint, many researchers have been interested in ubiquitous learning, and has been successfully applied to many subjects (Y.-M. Huang & Chiu, 2014; Y.-M. Huang, Huang, &

Wu, 2014). Researchers have pointed out that using mobile devices may enhance collaborative learning and promoted better interactions between students in the activities because students can use it to coordinate collaboration between them. Lai and Wu (2006) argued that using mobile devices can effectively enhance students' attitudes and performance in collaborative learning.

However, an earlier study show that there are many problems of online collaborative learning, such as difficulties in communication, the lack of shared, and the imbalance(Roberts & McInnerney, 2007; Tseng & Yeh, 2013). Therefore, the dynamic within the team is also an important consideration in building Team Cohesion(Kwon, Liu, & Johnson, 2014). Consequently, this study proposed a game playing strategy which is embedded in collaborative u-learning activities for helping students to building Team Cohesion.

2. Research Methods

2.1 Participants

This study investigated how a game playing strategy embedded in collaborative u-learning activities affect students' Team cohesion and their learning performance. Participants in this study were fifth grade students in elementary school (N=64); they were randomly assigned into the experiment group and the control group.

Figure 1 shows the experimental flow of this study. Before the experiment, this study distributed pretest to subjects to find if there is significant difference between two groups. After the subjects filled out the questionnaire, the researcher conducted experiment on two groups. In the first stage, the students in the experimental group conducted collaborative crossword game as Figure 2. While the students in the control group conducted ordinary learning activities. In second stage, the two groups conducted the same collaborative u-learning activities for learning English vocabulary as Figure 3.

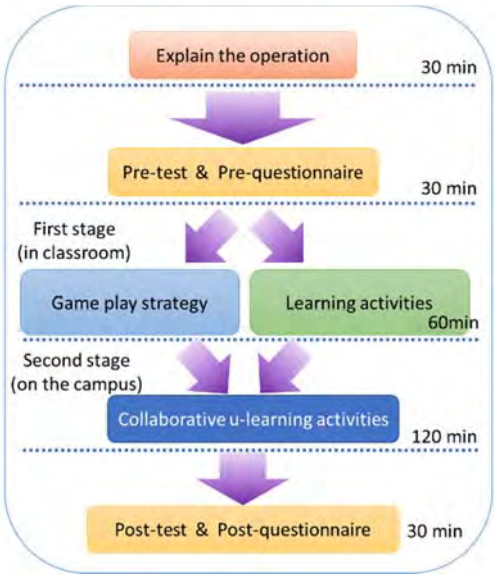

Figure 1. Experimental procedure

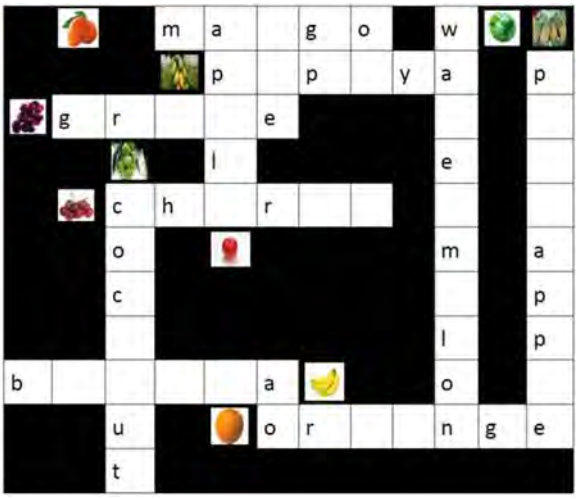

Figure 2. Collaborative crossword game

Figure 3. Collaborative u-learning activities for learning English

3. Result and Discussion

This study used the pre-test scores as covariate for one-way ANOVA to avoid any interaction effects from the pre-test on the students' learning outcomes. As listed in Table 1, the pre-test mean for the experimental group was 57.97 and 57.81 for the control group. The results did not reach a level of significance, f=0.005, p> .05. It suggests that homogeneity of two groups of variables is supported.

Table 1: The one-way ANOVA results for the pre-test scores.

	Group	N	mean	SD	f
Pre-test	Experimental	32	57.97	9.233	0.005
	Control	32	57.81	9.046	

According to Table 2, the post-test mean for the experimental group was 72.19, and 70.31 for the for the control group. Results of statistical analysis showed a no significant difference in learning

performance between two groups, f=2.416, p>.05. This result suggests that learners in the first stage with different learning activities didn't produce a significant difference within learning performance.

Table 2: The one-way ANOVA results for the post-test scores

	Group	N	mean	SD	f
Post-test	Experimental	32	72.19	4.568	2.416
	Control	32	70.31	5.070	

*$p < .05$

As listed in Table 3, the experimental group students' Team Cohesion were significantly higher than the control group students, t=8.99, p<.001). That is, the students who conducted game playing strategy had higher Team Cohesion than those who conducted ordinary learning activities in the first stage.

Table 3: The one-way ANOVA results of Team cohesion

	Group	N	Mean	SD	f
Team Cohesion	Experimental	32	4.36	0.38	8.99**
	Control	32	4.12	0.23	

*p < .05

As listed in Table 4, the experimental group students' Learning Attitude were significantly higher than the control group students, t=-17.384, p<.001). That is, the students who conducted game playing strategy had higher Learning Attitude than those who conducted ordinary learning activities in the first stage.

Table 4: The one-way ANOVA results of Learning Attitude

	Group	N	Mean	SD	f
Learning Attitude	Experimental	32	4.33	0.23	17.384***
	Control	32	3.95	0.46	

*$p < .05$

4. Conclusion

In this study, we proposed a game playing strategy which is embedded in collaborative u-learning activities for helping students to building Team Cohesion. Based on the experimental results, we found that game playing strategy can greatly enhance students' Team Cohesion and Learning Attitude which is consistent with the findings of the past research(DeVries & Edwards, 1973; Huyen & Nga, 2003; Randel, Morris, Wetzel, & Whitehill, 1992; Roberts & McInnerney, 2007; Sharan & Sharan,

1976). Thus, we suggest that teachers can using game playing as a strategy to improve Team Cohesion, support for collaborative U-Learning. This study has certain limitations, such as manpower. The limitation of this study is too small of sample size in this experiment. In the future research, we will consider some experiments with a larger sample size of students and conduct more complete research investigate the relationships between Team Cohesion and Learning Styles.

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