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The effect of Learning Community for Game-Based English Learning

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Abstract: In recent years, English Vocabulary plays such an important role in the learning arena. However, most students felt boring when they were reciting English words which lead to lower learning motivation or higher dropout rate. Hence, many presently researches emphasized on Game-Based Learning approach, combining video games to learning that makes the learning process more interesting. Therefore, this research is aimed to discuss whether the Learning Community could enhance students' learning achievement in Game-Based Learning and to probe into different Gaming Methods, Self-Efficacy, as well as the Community Roles influenced learning achievement and learning activities among students. The participants in this research are both senior high and elementary students, divided into two groups for a two month experiment. The result indicated significant difference between the senior high and the elementary students' learning methods for learning activities. In addition, the Self-Efficacy demonstrates conspicuous dissimilarity to learning achievement. Furthermore, diverse community roles reveal significant difference to learning activities as well.

Keywords: Web-Based Learning Community, Community Roles, Game-Based Learning, Self-Efficacy, English Vocabulary

Introduction

Language is the most fundamental tool for communication and as we know, English plays such an important role no matter around the global or even in the domestic. Most of the country considered English not only a language but an academic subject. When it comes to Learning, English Vocabulary plays such an important role. Some research indicated that vocabulary is the cornerstone for language learning (Sun, Huang, & Liu, 2011). Wilkins (1972), pointed out that "Without grammar very little can be conveyed, without vocabulary nothing can be conveyed". This means enough vocabularies are needed for effectively communicate or express our own thoughts (Huang, Huang, Huang, & Lin, 2012). However, with the ineffective or less effective vocabulary learning strategies, most students feel boring which lead lower learning motivation or higher dropout rate (Huang et al., 2012).
In order to enhance students learning motivation, Game-Based Learning approaches were applied, combining video games to learning which increases students' learning effect (Admiraal, Huizenga, Akkerman, & Dam, 2011; Coller & Scott, 2009; Ebner & Holzinger, 2007; Papastergiou, 2009; Robertson & Howells, 2008). Besides, most of the Game-based Learning methods relied on individual learning (Connolly, Stansfield, & Hainey, 2011; Liu & Chu, 2010), less interactions were performed between learners. Students could not understand each other's learning condition, not to mention to bring out interchange ideas to one another.

Hence, this research made good use of the Game-Based Learning on Social Network Service (SNS), enhancing the interaction between students to observe the incensement of learning motivation, learning activities and effectiveness. Although there are many recent studies concerned about Social Network Service (Chang & Lee, 2013; Lin, Hou, Wang, & Chang, 2013), very fewer of them compared the difference between Game-based Learning and Game-based Community, especially on disparity role play affected learning inside the community. Therefore, this research took the advantages of both GBL and SNS to provide students a flexible learning environment by influencing their learning effectiveness.

For the following reasons, the proposed study aimed to discuss whether the learning community was able to promote students' learning effect by using the characteristics that Social Network Service possessed, integrating the English Game-Based Learning system with Social Network to create the learning community. This combination was provided with the abilities to contrast the difference between Game-based Learning and Game-based Community in the meantime to probe into the distict Gaming Methods, Self- Efficacy, and the Community Roles influenced learning achievement and learning activities among students. Moreover, the proposed research also took different educational background and the age condition into consideration, so that the learning effect toward elementary and senior high learners could be observed as well.

1. Related research about GBL Community on English Vocabulary Learning

1.1 Game-Based Learning

Recent researches indicated that Game-Base Learning could promote learning motivation (Coller & Scott, 2009; Ebner & Holzinger, 2007; Jong et al., 2013; Liu & Chu, 2010; Papastergiou,2009; Sung & Hwang, 2012; Vos et al., 2011) as well as effectively enhancing learning efficiency (Coller & Scott, 2009; Ebner & Holzinger, 2007; Jong et al., 2013; Liu & Chu, 2010; Sung & Hwang, 2012). When it comes to learning attitude, the studies of both Connolly et al. (2012) and Sung, Hwang (2012) demonstrated positively effect. In addition, many of the learners believed they were willing to spend more time toward learning through GBL scenario (Coller & Scott, 2009; Connolly et al., 2011). Moreover, Sung and Hwang (2013) also implied that GBL was capable of enhancing self -Efficacy. With the comparison of traditional teaching methods, Game-Base Learning also revealed higher learning satisfaction (Liu & Chu, 2010).

1.2 Web-Based Learning Community

Ke and Hoadley (2009) considered that Web-Based Learning (WBL) Community held the power of not only emotional support, but a frontier of virtual learning. As we know, the characteristics of Social Network Service accomplished the existence of Web-Based Learning Community through interaction, communication and providing assistance as well as self-examinations. Those properties stimulate strongly to learning activity (Dabbagh & Kitsantas, 2012). Lin, Hou, Wang and Chang (2013) also indicated that Web-Based Learning Community created an environment for human interaction and information exchange and with the actual knowledge sharing as well as the experience interchange, both learning targets and learning effectiveness could be guaranteed (Chang & Lee, 2013; Holmes, 2013; Smithson et al., 2012; Sockett & Toffolia1, 2012). What's more, some studies showed that with the combination of classes and Web-Based Learning Community, learning motivation might also arise (Cai & Zhu, 2012; Lin et al., 2013).

1.3 Community Roles

The community roles represented that in order to achieve learning targets, members

tried to understand or express expectation to each other through interaction in the Web-Based Learning Community, realize the function of each and every one of them (Lin et al., 2008). Lin et al. (2008) also mentioned that those members place a great importance on emotional exchange towards different learners, so that might able to comprehend and create new knowledge via information or experience sharing. Different roles were notified as initiators, orienteers, encouragers, recorders, gatekeepers, information/opinion seekers or givers, coordinators, and clowns in (Lin, Lin, & Huang, 2008). Other than that, Yeh (2010), classified the community roles in to eight categories, including, supervisors, information providers, atmosphere constructor, group instructors, opinion providers, reminders, troublemakers, and problem solvers.

1.4 Self-Efficacy

Self-efficacy implicated the persuasion, determination, and judgment toward human when facing obstacles or accomplishing tasks, indicating certain kinds of self-manifestation of organizing and execution abilities (Bandura, 1986). Chang (2012) emphasized on target setting reflected on students' Self-efficacy and achievement, demonstrating effectively enhancement on learning motivation, accomplishment, and Self-efficacy for actual targets subjected senior high learners. Moreover, most previous researches proven that knowledge sharing and Self-efficacy obtained positive capability to anticipate.

This research adopt the Motivated Strategies for Learning Questionnaire (MSLQ), made by Pintrich et al. (1989), hoping to achieve the Self-efficacy in the expectancy component section.

2. Research Methods

2.1 Experimental design and hypotheses

This experiment applied the nonequivalent pretest-posttest designs, the experimental design models are as Table 1.

Table 1 Experimental Design Models

Groups	Pretest	Experiment	Posttest
Experimental	O_1	X_1	O_2
Control	O_3	X_2	O_4

O_1：The pretest of GBL community group, including English Self-efficacy test and achievement evaluation.

O_2：The posttest of GBL community group, including System Satisfaction and achievement evaluation.

O_3：The pretest of GBL group, including English Self-efficacy test and achievement evaluation.

O_4：The posttest of GBL group, including System Satisfaction and achievement evaluation.

X_1：The experiment of GBL community group, GBL system and WBL are applied

X_2：The experiment of GBL group, the proposed GBL system is applied

Accordance with the purpose of this research, the hypotheses are as follows,

Hypotheses 1: The students of different learning styles reveal apparently difference on learning effect.

Hypotheses 2: The students of different learning styles reveal apparently difference on learning activity.

Hypotheses 3: English Self-efficacy reveals apparently difference on learning effect.

Hypotheses 4: English Self-efficacy reveals apparently difference on learning activity.
Hypotheses 5: Different community roles reveal apparently difference on learning effect.
Hypotheses 6: Different community roles reveal apparently difference on learning activity.

2.2 Subjects

The experiment is subjected to both junior high and elementary students, including 70 senior students from two classes of National Hualien Commercial High School and 95 elementary ones selected in four different classes. All of them were in Heterogeneous Grouping scenarios. This research divided the students into two groups, the Web-Based Learning Community group and the Game-Based Learning group.

2.3 Experimental procedure

This experiment took place from March to May, 2013 in an eight-week period. The pretest questionnaires were performed for both experimental and control groups, containing learning styles, English self-efficacy tests, and achievement evaluation. The experiment depended on different learning styles individually, that is, the experimental group made use of GBL community after classes and the control groups used GBL only. After the experiment was over, two groups executed posttest questionnaires, respectively. Eventually, the SPSS software was applied for statistical analysis.

2.4 Research tools

2.4.1 System development

The proposed English Vocabulary Game-Base Learning system mainly developed through Html5 Canvas and JavaScript. The system accomplished the ideal of learning everywhere with the assistance of MySQL dataset as back-end operation. It's capable of adopt any kinds of platform including personal computers, tablet computers, and mobile phones…etc. The system configuration is shown in the Figure.1 below.

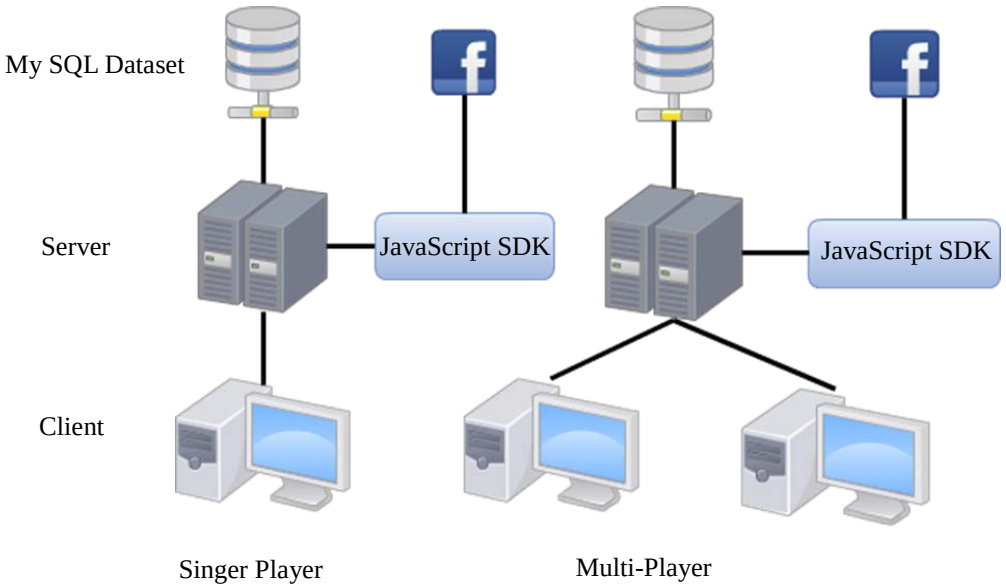

Figure 1: System Architecture Diagram

2.4.2 Analysis tool and the results of analysis

There are two questionnaires used in this study. The English Self-efficacy questionnaire came from the expectancy component of MSLQ to achieve the Self-efficacy. The community roles measurement relied on the amount of these movements known as “status update”, “Like”, and “reply” for group division. This research also classified those users as information providers, group instructors, and browsers, depending on ten times of each movement performed. The members carried out “status update” for more than ten times is called the information providers. The group instructors executed “Like”, or “reply” in total above ten times, and the browsers only observe with about action in the community.
After the experiment came to an end, we use SPSS 14.0 (Windows) as statistical software for Quantitative Analysis. The hypotheses 1 & 5 used ANCOVA, the hypotheses 2 with t-test, and the hypotheses 3 & 4 employed in simple regression analysis. Eventually, the hypotheses 6, the ANOVA was held for further analysis.

3. Results and Discussion

3.1 Learning Achievement

The questionnaires of this research were given both before and after the experiments performed. All 70 questionnaires were filled out and valid for senior high students. There is one invalid questionnaire among 96 questionnaires subjected to elementary students. In order to realize different learning effect on Game-Base Learning and Game-Base Learning Community, ANCOVA was held for analysis.
Table 3-1 presented the Learning Achievement for seniors using ANCOVA, indicating no significance difference occur (F (1, 67) =3.64, p>.05). Table 3-2 presented the Learning Achievement for elementary students using ANCOVA, revealing no significance difference as well (F (1, 92) =3.32, p>.05).

Table 3-1 The Learning Achievement for seniors using ANCOVA

Source	*SS*	*df*	*MS*	*F*	*p*
Covariance (Pretest)	1130.2	1	1130.2	85.42	
Between Groups	48.18	1	48.18	3.64	.061
Error	886.52	67	13.23		

Table 3-2 The Learning Achievement for elementary students using ANCOVA

Source	*SS*	*df*	*MS*	*F*	*p*
Covariance (Pretest)	1276.87	1	1276.87	46.65	
Between Groups	91.02	1	91.02	3.32	.071
Error	2517.99	92	27.37		

To synthesize the above results, both seniors and elementary students displayed no significant difference on Game-Base Learning Community as well as Game-Base Learning scenario. However, after two-tailed t-test, apparently Learning Effect improved for all methods. This outcome were similar to Chang & Lee (2013) concerned about college students made use of Web-Based Community for learning and Cai & Zhu (2012) related to study foreign language. The reasons are further discussed, believing that not only teachers’ or systems’ assistance were necessary, but self-efforts or hardworking were essential towards great learning efficiency.

3.2 Learning Activity

Independent-Sample t-test was held in this experiment. Table 3-3 indicated significant difference among different Learning Styles on Learning Activity for senior high students (t=3.1, p<.05). On the contrary, Table 3-4 revealed no significant difference among different Learning Styles on Learning Activity for elementary students (t=-3.61, p< .05).

Table 3-3 The T-test of different Learning Styles on Learning Activity for seniors

Groups	*M*	*SD*	*t*	*df*	*p(two-tailed)*
GBL Community	15.92	4.32	3.1	68	.03*
GBL	12.94	3.58			

*p< .05.

Table 3-4 The T-test of different Learning Styles on Learning Activity for elementary

Groups	*M*	*SD*	*t*	*df*	*p(two-tailed)*
GBL Community	17.21	4.71	-3.61	93	.000***
GBL	22.35	8.58			

***p< .001.

For both high schools and elementary students, GBL & GBL Community revealed apparently difference on Learning Activity. Seniors could enhance their system using times through GBL Community. This result was identical with Lin et al. (2013) and Sockett & Toffolial (2012). However, the control group participated in more learning activities compared to the experimental group. The reasons might have something to do with fewer use of social network for younglings. In addition, one of classes in the control group had shown stranger ability to compete, which encouraged colleges to learn. “The ability to compete” may be a crucial factor for the correlation studies.

3.3 Community Roles

Table 3-5 demonstrated the Community Roles on Learning Effect using ANCOVA towards seniors, indicating no significance difference occur (F (2, 35) =1, p>.05). Table 3-6 represented the Community Roles on Learning Effect towards elementary students using ANCOVA, also, no significance difference shown (F (2, 43) =.05, p>.05).

Table 3-5 Community Roles on Learning Effect using ANCOVA towards seniors

Source	*SS*	*df*	*MS*	*F*	*p*
Covariance (Pretest)	493.52	1	493.53	54.97	
Between Groups	17.95	2	8.98	1	.378
Error	314.21	35	8.98		

Table 3-7 implicated the Community Roles on Learning Activity using one way ANOVA towards seniors, indicating significance difference occur (F (2, 36) = 28.61, p<.05). Table 3-8 represented the Community Roles on Learning Activity using one way ANOVA towards elementary students, no significance difference shown (F (2, 43) = .05, p>.05).

Table 3-6 Community Roles on Learning Activity using one way ANOVA towards seniors

		SS	*df*	*MS*	*F*	*p*	Sheffe’s Compare
Learning	B.G	435.07	2	217.54	28.61	.000***	Info. > Browser

Activity	I.G	273.7	36	7.6	Info.> Atmosphere
	Total	708.77	38		

***p< .001.

Table 3-7 Community Roles on Learning Effect using ANCOVA towards elementary

Source	*SS*	*df*	*MS*	*F*	*p*
Covariance (Pretest)	539.79	1	539.79	23.24	
Between Groups	2.49	2	1.25	.05	.948
Error	998.59	43	23.22		

Table 3-8 Community Roles on Learning Activity using one way ANOVA towards elementary students

		SS	*df*	*MS*	*F*	*p*	Sheffe's Compare
Learning	B.G	271.8	2	135.9	7.99	.001**	Info. > Browser
Activity	I.G	748.07	44	17			
	Total	1019.87	46				

**p< .01.

To induce the foregoing result, that is senior high learners and elementary students demonstrated no apparently difference to distinct Community Roles on Learning Effect. Moreover, seniors showed significant difference to disparity Community Roles on Learning Activity. According to Sheffe's post hoc test, the Information Providers (Info.) surpassed better than the Atmosphere constructors (Atmosphere) and the Browsers. When it comes to elementary students, apparently difference appeared to distinct Community Roles on Learning Effect. Accordance with Sheffe's post hoc test, the Information Providers (Info.) won over than the Browsers. The above results shown that no matter seniors or elementary students, the Information Providers (Info.) used the Web-Based Learning Community more frequently than the Browsers and the Atmosphere constructors (Atmosphere).

4. Conclusions and Recommendations

The experiment indicated that different learning methods revealed remarkable difference between the senior high and the elementary students' on learning activities, implicating that distinct learning activities may influence students from dissimilar ages which affect English learning enentually. On the contrary, although the learning achievement demonstrated conspicuous improvement, there are no apparently differences between the two kinds of students. However, when it comes to learning factors, distinct Learning Styles implicated no significant difference on learning achievement and learning activities. In addition, Self-efficacy demonstrates conspicuous dissimilarity towards learning achievement but not for learning activities. In the community roles part, the learning achievement of elementary and senior high students' shared no influence among different roles. The other way round, diverse community roles reveal significant difference to learning activities.

As a result of time and manpower constraints, the system function still exist several limitations. For the future, we hope to extend the experimental areas and process to long terms' trace and observation for the bigger picture of the interaction among Web-Based Learning Community as well as the Social Network Service to its maximum potential.

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