



Study on Pedagogical Implications of Game Based on Activity Theory

Sahoon Kim

College of Education, Hankuk University of Foreign Studies, 130-791 Seoul, South Korea

Key words: Game learning, English as a second language learning, ESL, activity theory, virtual environment

Abstract: This study employed game under ESL-based environment for foreign language education. A number of previous researches demonstrated that game is similar to ESL environment. This research examined what problems the game involves by utilizing practical data. Participants including elementary, middle and high school students were asked to perform English learning through games. Their conversation and activities as well as information from interviews which had been conducted for one semester were analyzed. Activity theory was adopted for analysis framework by which relationship and conflict factors were interpreted. There were several shortcomings on language education through game which can be summarized as follows. The first one is conflict between users. A number of game users are different from people we meet in real life. Since, there is no obligation for emotion, common goal and dedication on the online, natural conversation like in foreign countries is almost impossible. Secondly, educational goals of every single student were collided even if an appropriate objective was established regarding this possibility. Normal performance was difficult due to this fact. It is basically not easy to meet an objective all the participant's desire in the game, given that smooth conversation can be available, if students who hope to improve communication should attain tasks including reading and analysis. Thirdly, game activity is difficult to ensure level and association with content contrary to systematically designed activity in textbooks or classes in terms of tool utility. It is necessary to induce students gradually to study through specific design. In addition, it is significant to present how to share emotion more than expressing clues of conversation verbally.

Corresponding Author:

Sahoon Kim

College of Education, Hankuk University of Foreign Studies, 130-791 Seoul, South Korea

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INTRODUCTION

The interest in game has started in terms of device for intriguing education over the last years. Nowadays, it gains attention as an educational medium for leading critical thinking, problem-focus learning and cooperative learning. Many studies concentrate on this point. Trends reinforce pedagogical utility as a game by verifying and complementing claimed hypotheses as well as arguments proposed by previous studies.

For instances foreign EFL countries, there is a growing number of trials to solve problems of English education by utilizing games (Deesri, 2002; Kim *et al.*, 2012; Ranalli, 2008; Barab *et al.*, 2001; Ge, 2011). In reality, previous studies on foreign language education by using games promoted the opportunity of communication (Zheng *et al.*, 2009; Kim, 2015). This can be explained by the following reasons. First, English education with game offers language learning environment in a more equal relationship a traditional course. Secondly, the use of

avatar helps learners organize their own online identity and contributes to authentic communication and interaction while experiencing game. Thirdly, game facilitates many to many communication contrary to previous e-learning communication tools that focus on text and man-to-man talk. Moreover, online game provide environment where learners can share talk with randomly selected native speakers without limits of time.

However, there is relatively little research on intervention for solving conflicts occurring in the game than research trends that concentrate on pedagogical effects. Empirical studies on how game education is different from reality and the possibility and limits of technological accomplishment. Thus, this study will present actual examples that use game in educational context and analyze how game education can function in school education.

MATERIALS AND METHODS

Study tool: Quest Atlantis (QA) was adopted for educational game in this study (Barab *et al.*, 2005). This is designed to carry out pedagogical duty by which learner can explore game based on avatar (Fig. 1). QA interface consists of two windows. Webpage can be seen by 2D windows and learners are presented as avatars on the 3D screen. They can participate in live chat equipped with function as diverse interaction (Thomas *et al.*, 2009). They can review what they learned on the 2D webpage. In this way, QA webpage serves as their portfolios.

In addition, there is an additional function to share talks with online friends in QA that organized various channels of interaction such as whispering talk and e-mails. Learners can participate in numerous social activities including self-introduction in the game. QA has

various educational missions including elevating social responsibility contrary to other games. Particularly it includes multiple contents designed and produced for student education in American I university supported by non-profit organizations. If students get into game, for instance, educational themes associated with QA is presented in English. If they pass an introductory mission, they can keep up communication with foreign students in the game without teachers. In other words, it is programmed that they can naturally talk in English while solving educational mission in the game. Previous studies using QA include stimulating motivations of students, utility as a tool for communication with foreigners and study on the design and introduction as a curriculum to apply in class (Zheng *et al.*, 2012).

Study subjects: This study observed students who participated as subjects and conducted interviews (Table 1). Interview included asking semi-structured questions, recording responses and transcription.

Researcher conducted interview and transcription. Open coding that keywords and categorizes noteworthy statements among theoretical methods based applied in collected data from in-depth interview was primarily conducted. Then categories were analyzed into multidimensional aspects including organization and relation. Axis coding was excluded (Glaser and Strauss, 1967; Glaser, 1978). Analyzed categories were applied into the activity theory and conducted study on the difference from the previous instruction. This underwent analysis into two or three phases for multiple interpretations by expressing concepts in a diagram and giving meanings.

Analysis framework: In this study, I adopted activity theory for analysis framework (Engestrom, 2000, 2001).



Fig. 1: Screenshot of quest atlantis (<http://www.questatlantis.org/>)

Table 1: Study subjects

Case	Case 1: elementary school	Case 2: junior high school	Case 3: high school
Grade	4th, 5th, 6th	1st	2nd
Class size	12 students	10 students	10 students
Time	16 h (8 weeks, 4 h every other week)	30 h (15 weeks, 2 h a week)	15 h (15 weeks, 1 h a week)

Table 2: Description on components of activity theory

Subject	Subjects play central roles in this activity. Person or group can be a central part
Object	Fundamental field that activity pursues
Instruments/tools	It is an artificially utilized instrument or cognitive structure in order to achieve objective and tools
Communities	It is a group of individuals sharing a common objective. They share information, value and responsibility
Rules	Various criteria or customs that defines activities between principals are included in this category
Division of labor	This refers to systematic structure of vertical or horizontal power relationship

Activity is determined by connecting it with social level instead of private one. In other words, this theory analyzed human activities including noteworthy context instead of human actions. This unit of analysis refers to activity system. According to this theory, this system consists of six factors: subject, object, tools, rules, community and division of labor. In addition, this system is classified into production system, consumption system, exchange system and sub-system of distribution system. Table 2 presents abbreviated description on each factor (Engestrom, 2005).

RESULTS AND DISCUSSION

Conflict between principals; Lack of emotion in game, common goal and obligation of dedication: Exposure to foreign language environment in the game is considerably different from staying in a country where a targeted language is spoken. For instance, there are works including buying foods and driving a car in addition to the goal of staying in real life. However, there is no particular work except for standard works. Thus, a common goal cannot be naturally form.

In addition, it is almost impossible to get a chance to convert into the second language when someone handles a challenging situation or cannot communicate with foreigners. According to an activity theory, subject should share rule and division of labor within a community. It is possible to form a natural community in real life (real world). However, it was impossible to organize a natural community in addition to a fixed standard in the game. Although, students stayed in the same space, they and native English speakers did not stay in the identical community. They used the same tool but served different roles. In addition, a rule for goal achievement was different.

Objective conflict: Educational content and methods vary according to educational objectives. Natural talk in the game cannot present specific and clear guidelines on what the goal is. According to the activity theory, it can be described as outcome conflict. Although, the improvement in communication ability is what users

intend to attain through game, works in the game were independent of this ability. For instance, there were sentences to interpret for completing tasks in addition to talks with other users. This method failed to stimulate students' interests and obtain clues from conversation with other users. In other words, the exposure to the conversation without presented with a clear educational objective led to the failure of obtaining clues and ultimately resulted in the failure of creating abundant conversation.

Tool conflict: The exposure to English in the game is sharply contrasted to task-based learning in the class. There is necessarily the difference from tools because it is difficult to consider game level and connection with content in terms of its characteristics. Curriculum design considers strict level and connection, students can naturally achieve content, yet, difficult in a natural conversation. Although, level and connection cannot be ensured in a task-based learning, it can be solved by cooperation with peers and teachers. Yet, these two factors do not have conversation in the game. Game can provide environment. However, this cannot enable students to adapt into the environment because it is difficult to design pedagogically and to assist immediately in terms of level and connection. Table 3 presents a summary of discussion above.

Education in game can be utilized in various ways. This study particularly utilized game under ESL environment for foreign language education. Numerous previous studies mentioned that game is similar to ESL environment. This study investigated problems by using practical data.

In this study, elementary, middle and high school students were asked to perform English learning through online game. Their conversation and activities as well as information from interviews which had been conducted for one semester were analyzed. Activity theory was adopted for analysis framework by which relationship and conflict factors were interpreted.

There were several shortcomings on language education through game which can be summarized as follows. The first one is conflict between users. A number

Table 3: Result summary

Division	Major content
Conflict between users	Game utilized the same tool, yet, role was different and rule for goal accomplishment varied according to principals. In addition, there had been rare chance to convert into another language if someone handles a challenging situation or cannot communicate with foreigners
Objective conflict	Exposure to circumstance where educational object was not clearly presented led to the failure in obtaining clues from conversation. This results in a failure of creating abundant conversation
Tool conflict	Game can provide educational environment, yet cannot be designed pedagogically in terms of level and connection Contrary to task-based learning, students can feel daunting because peers and teachers cannot help them immediately

of game users are different from people we meet in real life. Since, there is no obligation for emotion, common goal and dedication on the online, natural conversation like in foreign countries is almost impossible. Secondly, educational goals of every single student were collided even if an appropriate objective was established regarding this possibility. It is basically not easy to meet a common objective all participants desire in the game, given that smooth conversation can be available, if students who hope to improve communication should attain tasks including reading and analysis. Third, game activity is difficult to ensure level and association with content contrary to systematically designed activity in textbooks or classes in terms of tool utility.

Proposals for education with game based on these problems above are as follows. First, it is necessary to gradually induce students to study through specific design instead of dangerous premise. This can be explained by connecting with setting educational objectives. It is significant to design game to achieve goals by considering connection with content as well as level based on achievement standards rather than granting unclear goals for communication. Secondly, it is important to present methods to share emotion more than expressing clues from conversation verbally. Giving clues is limited since game characters are unfamiliar with expressing emotion. It would be a better way to scaffold conversation including diversifying movement of characters and chatting with emoticons in order to overcome this limit.

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