



**Research Article**

**CRITICAL REVIEW OF “IMPACTS OF MOBILE-GAME-BASED COLLABORATIVE PREWRITING ON EFL STUDENTS’ INDIVIDUAL WRITING IN STUDENT-CENTERED CLASS CONTEXT”**

**WANG Junhui**

School of Foreign Studies, Northwestern Polytechnical University, No. 1, Dongxiang Road, Chang’an District, Xi’an City, Shaanxi province, P.R.China

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**ABSTRACT**

In order to investigate the effects of the mobile-game-based collaborative prewriting approach on individual writings and the research design of improving students’ writing performance, this research reviewed the published paper conducted by Wang and Song (2022), and proposed self - reflections from the perspectives of strengths, limitations, suggestions for improvements and applications. The research caught the popular topic, and the research design was also controlled with the arrangement of variables. There are still some limitations from the aspects of gender differences, the selection of mobile games, and the consistency of the design of the research questions. Suggestions for improvement are raised according to the limitations including gender, educational apps, and the research question.

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**INTRODUCTION**

**Analysis of the Research Design**

The study “Impacts of Mobile-Game-Based Collaborative Prewriting on EFL Students’ individual Writing in Student-Centered Class Context”, written by Jing Wang and Baomei Song from Northeast Agriculture University, was published in *Asia-Pacific Edu Res* at 2022. It tries to investigate the effects of the mobile-game-based collaborative prewriting approach towards students’ individual writing performance, and the mind-map of this research has been presented in the figure one.

Three research questions were raised in the research including (1) “Do students in the mobile-game-based collaborative prewriting approach have better writing performance than those in the conventional teacher-centered approach”; (2) “Is there any correlation between the content of discussions in collaborative prewriting activities and writing characteristics of students’ individual writing”; and (3) “What are students’ perceptions of the proposed approach.” Therefore, according to these research questions, the learning results guided by the mobile-game-based collaborative prewriting approach and the teacher-centered lectures should be compared. In the comparison, the effects of the proposed discussions between classes should also be considered. The third question is related

to the individual’s perceptions about the learning approach, and it should be investigated in a cognitive way.

As the figure one indicates, two classes of sixty students have participated in the research, and they are separated into experimental and control group. Class one was the experimental group, and adopted mobile-game-based approach in the students -centered class context. While the class two was the control group, and used lecture-based approach in the teacher-centered class context. Prewriting and postwriting tasks were used to test the improvement of students’ writing competence caused by the proposed approach. The collaborative prewriting discussions were recorded for identifying the correlation among the discussions and the contents of compositions, and the questionnaire with open questions was also used to test the students’ perceptions towards the mobile-game-based collaborative prewriting approach.

In the research scheme, the classes including the experimental group and the control group are considered as the independent variable, and the scores of the pose-test are regarded as the dependent variable. The scores of the pre-test are considered as the covariate in the research. The tests of the homogeneity of regression slopes were adopted in order to ensure that the dependent variable is partially affected by the independent variable, and to verify if the covariate and dependent variables

\*Corresponding author: **WANG Junhui**

School of Foreign Studies, Northwestern Polytechnical University, No. 1, Dongxiang Road, Chang’an District, Xi’an City, Shaanxi province, P.R.China

within each class show the consistent linear relationship. After testing the homogeneity of regression slopes, the One-way analysis of covariance (ANCOVA) was also employed to analyze the English writing performance in different approaches, and the efficiency of the mobile-game-based approach in improving the learners' writing ability.

Based on the analysis of the research procedures, the research results from three aspects of English writing performance, the content of collaborative prewriting discussions, and the summary of questionnaire feedback have been discussed in the result and discussion sections. As for the English writing performance, the students in the experimental group have achieved more than those in the control class from the perspective of the organization of content ( $t=2.619, p<.05$ , Cohen's  $d=0.678$ ), originality ( $B=.642, P<.05$ ), fluency ( $B=1.024, P<.05$ ), and elaboration ( $B=.915, P<.05$ ). What is more, there shows significant correlation between the idea units in collaborative prewriting discussions and the features in individual writings, which has been proved by the evidence that the higher incidence of content ( $Sum=1732, Mean=143.58, SD=24.12$ ) and organization talks ( $Sum=138, Mean=11.50, SD=4.57$ ) might lead to significant improvement. Most volunteers also held the positive attitudes towards the mobile-game-based collaborative prewriting approach, and they believed that it is an innovative and effective method of improving the writing performance.

### **Reflection**

Based on the discussions of the research arrangement, the research procedure and the relationships among variables have been analyzed. Therefore, this section mainly concentrates on the following four aspects including strengths of the design, limitations of the design, suggestions for improvement, and the application for the research.

### **Strengths of the research design**

This research tries to investigate the functions of the mobile-game-based collaborative prewriting approach towards the individual writings in the student-centered class context. Therefore, there are two main strengths for this research design including the main focus "the mobile-game-based approach", the well-controlled variables "independent variable", "dependent variable" and "covariate", and the theoretical foundations of the rubric and discussions' structure.

For one thing, increasing attention on the mobile-game-based approaches have been aroused. The digital-game-based learning refers to "the design and the use of a diverse array of digital games for the purpose of learning or teaching a second or foreign language" (Hung *et al.*, 2016). The use of mobile game in the educational process has also been discussed for many years, and it is suggested that the application of the mobile-game-based teaching method can facilitate the language acquisition (Acquah and Katz, 2020; Chen and Hsu, 2020). For more detailed information, the mobile-game-based approach can improve the individual language acquisition from many perspectives including vocabularies, and communication (Yang *et al.*, 2020; Hwang *et al.*, 2017). Therefore, the use of mobile-game-based teaching and learning approach has been one of the trends in the educational field with the rapid development of internet (Chen *et al.*, 2020), and the effective application of the mobile-game-based approach has been analyzed from the aspect of individual writings

including collaborative prewriting (Wang and Song, 2022). It is necessary for scholars especially the teachers and students to identify and analyze effective educational strategies such as the mobile-game-based collaborative prewriting approach which has been popular for recent years.

For another thing, the proper selection of variables also contributes to the research results. As for Wang and Song's research (2020), it tries to figure out the impacts of mobile-game-based collaborative prewriting approach, and the groups including the experimental and control group are the dependent variables. The general results of post-test are the independent variables. The research needs to identify the differences of general results caused by the covariate the mobile-game-based collaborative prewriting approach between two groups. The research design uses the experiment to make the covariate the influential factor contributing to the general results through the test of the homogeneity of regression slopes and ANCOVA, which shows the differences between two groups from the perspectives of teaching methods consisting of the mobile-game-based collaborative prewriting approach in the students -centered class context and the lecture-based method in the teacher-centered class context. This research design has figured out the effective functions of the proposed approach through comparing the general results from the experimental group and the control group according to the research questions aforementioned in the introduction section.

Lastly, the categories of the recordings and the rubric of English compositions are analyzed with theoretical foundation. The tested tasks were selected in the CET6, and the rubric of the English writing performance has been analyzed for many years. The five dimensions of English writing evaluation have also been adopted according to the researches (Lin *et al.*, 2018; Fu *et al.*, 2019). As for the oral context of discussions, the evaluation has also been analyzed and developed by scholars such as McDonough *et al.* (2019) and Li *et al.* (2020). In order to maintain the validity and reliability of the research, class assistant and the instructor have been invited to do the transcription, which also proves the trustworthiness of the research.

### **Limitations of the research design**

Compared with the strengths aforementioned, there are still some limitations in this research from the perspectives of gender, selection of the games, research questions, and the questionnaire design.

First, the gender in the group has been mentioned in the conclusion section. There were 60 students (32 males and 28 females) participating in the experiment, and the proportion of the genders in each group has not been mentioned in the paper. If the experimental group and control group have different genders, the experimental results can be affected by the gender difference in the comparison. According to the previous studies, gender differences can cause the differences from the perspective of writing characteristics in individual writing activities (Regis-Onuoha and Chukwu, 2022). Gender differences affect the verbal and language abilities, and it contains eight perspectives of "differential rates of maturation", "lateralization of brain function", "effects of sex hormones on language development", "gender stereotyping of reading and language arts as feminine traits", "gender differences in reading interest, motivation, and self-efficacy", "gender differences in externalizing behavior and attention

disorders", "higher educational aspirations of girls", and "availability of role-models for boys in education" (Reilly, 2020). Writing strategies and the motivation of writing activities can also be influenced by the gender differences (Bandara, 2018). The Bandara's research indicates that male students who are not good at individual writing activities made less progress, and more writing stages of individuals should be explained in details for improving their individual writing strategies. What is more, the male students with higher motivation can achieve more in the individuals' writing activities. Various writing strategies should be shared to students according to gender needs (Bandara, 2018). Therefore, with the discussions of the gender differences in individual writing, gender differences can lead to the effects on the experiment of writing activities, and it is better for scholars to explore the influence of gender differences in the experiment of the mobile-game-based collaborative prewriting approach.

Second, the selection of the mobile games should be more considered. This research selected "Honor of Kings" as the mobile-game approach, and listed three reasons for the selection: (1) students can easily be motivated to engage in the writing experiments due to its popularity; (2) the scheme of problem-solving in the game can enlighten students' writing strategies; and (3) the collaboration can be practiced in the game (Wang and Song, 2022). However, the selection of the games in the mobile-game-based collaborative prewriting approach should be considered more because of the learning motivation, gender influences, self-efficacy, time limitation, and language ability (Yong, 2012; Chenglu *et al.*, 2014; Yinghua and Wanling, 2015; Wang and Song, 2022). The utilization of mobile devices in the educational process can also make the m-learning a great opportunity (Kacetyl and Klímová, 2019). According to the research with questionnaire, 112 teachers from primary and high school were investigated and nearly 85 percent of teachers deems that it is difficult to adopt the mobile-game-based approach in high school because of the contents of the English class and the participation (Yong, 2012). Nevertheless, the students' competence of writing and listening can be improved according to the results of the questionnaire (Yong, 2012). The prominent concern of the proposed approach is that students may concentrate on the mobile game itself instead of the teaching contents (Yong, 2012), which may also appear in the teaching of university students. Digital game-based learning game with two-tier testing has also been conducted to investigate the proper conditions of the selection of the mobile games in Yang and Lu's research (2021). the use of target language, the learning context of the target language, and the increase of participation should be considered when selecting the mobile games (Acquah and Katz, 2020). What is more, the four features of the mobile games have been mentioned in the research, and it includes the goal orientation, competitions, rewards, and cooperation (Acquah and Katz, 2020). It is important to conclude the player control, challenge, instant feedback, mystery, collaboration, goal orientation, clear rules, and competition into the game design (Acquah and Katz, 2020). Therefore, there are many influential factors of choosing the proper mobile games. In this research, the game was chosen according to the researchers' cognition, and was not proved by measurements, which lacked enough evidence to support the mobile-game-based proposed approach. It is uncertain that

most students from the experimental group are interested in the "Honor of Kings", but the interest will affect students' learning motivation and learning outcomes. If the students lack enough learning motivation and learning interest, it is difficult for researchers to investigate the functions of the proposed approach with the students' self-motivation, which makes the experiment lack enough validity and reliability. Thus, the selection of the mobile games in the experiment of mobile-game-based collaborative prewriting approach should be more determined with the concerns of influential factors not only based on individual cognition.

Third, the research questions are not consistent in the research design. As for the research questions aforementioned, the first one discusses the functions of the mobile-game-based collaborative prewriting approach in both the students - centered and teacher-centered class context. In the experiment, collaborative prewriting discussions have been recorded, and the correlation between the content of the discussions and the writing features of the students' individual writings, which has been analyzed based on the second research question. However, the third question refers to the the students' perceptions of the proposed approach, which does not contain relation with the previous two research questions. Therefore, the mobile-game-based collaborative prewriting approach in the student-centered class context and each stage of the experiment should be shared with students in order to make the participants interested in the experiment and willing to cooperate with the researchers especially in the process of collaborative prewriting discussions. It is necessary for researches to illustrate the proposed approach before the experiment instead of regarding as an independent research question. The measurement of questionnaire should also be redesigned and moved before the experiment.

### **Suggestions for Improvement**

Based on the limitations of the research design aforementioned, there are some suggestions for improvement in this section including "the size of samples", "the selection of educational applications in the pedagogy", and "the investigation of the students' perceptions of the mobile-game-based collaborative prewriting approach".

Firstly, the size and proportion of the samples in the experiment should be controlled. In order to investigate the impacts of the mobile-game-based collaborative prewriting approach on individual writing activities, it is necessary for researchers to make a comparison between the experimental group and the control group. However, there are only two classes involved in this research, and the gender differences may cause some differences in the individual writing activities. Therefore, the gender proportion in the experimental and control group should be handled in the future studies. The size of samples should also be enlarged.

Secondly, educational applications for language acquisition should be further considered. The selection of mobile games is quite important in the mobile-game-based collaborative prewriting learning approach. The researcher should also pay attention to the students' focus in the class. Students should concentrate on the contents of English class with the foundation of the mobile-game-based discussions instead of the mobile game itself. The motivation and self - efficacy caused by the mobile-game-based collaborative prewriting

approach should also be considered in the selection. In this research, Honor of Kings was selected as the experimental tool to measure the effectiveness of the proposed approach. However, students in the experimental group were not tested for the usage of the mobile game and their well operation. Their interests and operations of the mobile game can cause effects on the general results of the proposed approach. Educational applications for language acquisition should be designed with the learning purpose.

Thirdly, the third research question can be rechecked before the experiment. The third research question focuses on the students' perception of the proposed approach. Therefore, it is important for researchers to define the proposed approach before the experiment. Beside the questionnaire with three open questions, the questionnaire can be redesigned and added before the experiment for the students' perception of the researchers' statement about the proposed approach.

**Applications**

According to the statements aforementioned, it is proved that the mobile-game-based collaborative prewriting approach functions positively in the students -centered class context. The content and organization talks play a prominent role in the collaborative prewriting discussion. Therefore, in the pedagogical practice, the mobile-game-based collaborative prewriting approach can be applied to the individual writing trains. During collaborative prewriting discussions, researchers should also monitor the contents of discussions, and make sure that the discussions should keep close relation with the contents of the English writing strategies.

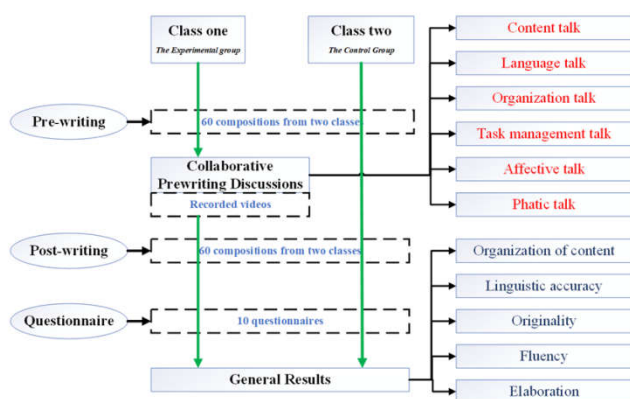


Figure 1 the mind-map of the study

**CONCLUSION**

The critical review has illustrated the research arrangement guided with three research questions, and analyzed the research design with the correlation of variables. Although the research has achieved from three aspects of English writing performance, collaborative prewriting discussions, and the questionnaire feedback, there are still some limitations for research investigating from three perspectives of gender differences, the selection of the mobile games, and the consistency of the design of the research questions. This review has also proposed suggestions for improving the research in terms of gender differences and educational applications.

For further studies, there are still three special items to deal with. Firstly, the size of the samples and its gender proportion in the experimental and control group should be balanced. Secondly, the time limit of the experiment should be

considered. Because the research was conducted within nine weeks, it is a bit difficult for researchers to identify the effects of the proposed approach towards the individual writings. The long-term period and short-term period can be regarded as the control variables to investigate the effects of the proposed approach. Thirdly, the contents of the collaborative prewriting approach should be monitored and further analyzed with the more detailed theoretical foundation. Students should only use the target language for communication during the discussions, and the contents of discussions should also be referred to the contents and organization of the individual writing strategies.

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