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Article

Effects of Gamified Learning Activities in Enhancing Junior High School Students' English Vocabulary Retention

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Abstract

The Gamified Learning Activities (GLA) is a modification of different word games adherence to the theories of second language acquisition, second language learning, cooperative learning, and collaborative learning. The purpose of this experimental study is to assess the effects of gamified learning activities in enhancing the English vocabulary retention of junior high school students using T-test. The vocabulary pre-test results of both groups obtained a poor performance in which the control group had a higher score than the experimental group. However, in the post-test, the experimental group scored above average while the control group scored below average. Thus, the findings indicated the success of the vocabulary intervention program.

Keywords

Gamified Learning Activities, Junior High School, vocabulary, vocabulary retention

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Introduction

English is one of the international languages. Many countries use English in educational and non-educational domains. In the Philippines, the English language is taught in basic education, starting from third grade to grade twelve. English is also one of the major subjects in junior high school wherein students start to engage in a deeper understanding of vocabulary and grammar; students at this level start to learn more complex vocabulary. Vocabulary is core to every language (Akdogan, 2017).

Having a wide range of vocabulary knowledge helps the learners understand the meaning of new words and analyze the set of ideas they may encounter (Keshta & Al-Faleet, 2013; Kusrini, 2012). Likewise, it leads them to construct and express ideas based on their understanding. Moreover, vocabulary is described by Darfidal (2015) as the essential part but the most challenging skill in language learning; that is, vocabulary is essential in second language acquisition to develop proficiency, express oneself, and comprehend the meaning of ideas (Kavvadia, 2016). In addition, long-term retrieval of words is essential; hence, creative techniques on vocabulary learning are helpful to retain new words in students' memory (Akdogan, 2017).

The learner's first language (L1) helps them understand a second language (L2), especially its vocabulary. Thus, L1 has created an implication on learning the target language, especially on the stage of acquisition (BaSheed, 2013). It is also the foundation in learning English as L2 (Nie & Zhou, 2017). Because of this, students tend to code-switch to learn L2. Gaerlan (2016) recommended using code-switching in teaching English to facilitate learning from L1 to L2 in junior high school.

Mostly, the students prefer to use the mother tongue rather than the English language; because the Philippines is a multilingual country (Sumalinog, 2019). Vocabulary is the problem of a second language learner to understand (Akdogan, 2017; Nie & Zhou, 2017; Umasugi, Bugis, & Handayani, 2018) the major components of languages such as phonemes, morphemes, lexemes, syntax, semantics, and pragmatics (Yule, 2010). The results of the PISA 2018 National Report of the Philippines revealed that Filipino students obtained an average score, and one out of five Filipino students achieved at least the minimum proficiency level in overall reading literacy, implying that they have poor vocabulary skills (PISA 2018, 2019). What might be then the best way to help students learn English, especially its vocabulary?

Game is one of the creative techniques to introduce new vocabulary in learning activities to the students (Al Masri & Al Najar, 2014) and is often used in English classes (Sevi-Biloon, 2017). When teachers want to have long-term learning about the meaning of words, the context should be learned, practiced, and constantly applied to retain the vocabulary (Sultanova, 2011). Therefore, teachers should seek creative strategies, such as vocabulary games, to engage learners in English (Derakhshan & Khatir, 2015). Teaching the English language, especially vocabulary, should cover the four basic skills such as "listening, speaking, reading, and writing" (Kusrini, 2012, p. 2).

Taheri (2014) confirmed that language games are effective and suitable for long- and short-term vocabulary retention. Keshta and Al-Faleet (2013) and Njoroge, Ndung'u, and Gathigia (2013) show that the puzzle is an effective teaching strategy to develop students' vocabulary achievement and retention. Furthermore, Shabaneh and Farrah (2019) claimed that the efficiency of

utilizing games helps students retain unfamiliar vocabulary, associate new information with their surroundings, and develop their language and communicative skills.

Communicative language teaching engages students in various tasks using the target language. Using games in the communicative language teaching approach helps students develop positive social behavior. They can do a specific task and develop communicative skills in groups or pairs (Wang, 2010).

Games can improve students' basic English knowledge and communicative skills. Raybourn and Waern (2004) believe that playing games are essential in socialization since social behaviors are learned through games. Researchers (Al Masri & Al Najar, 2014; Wang, 2010) recommend that teachers employ a game-based approach to learn vocabulary. However, teachers should plan and choose appropriate teaching strategies to suit students' levels and consider the availability of the materials. Furthermore, using games with or without digital technology has been proven effective in different aspects of the English language.

The current study aims to improve the students' vocabulary retention and determine whether there is a significant effect of using gamified learning activities in enhancing students' English vocabulary retention. Gamified learning is usually described as a teaching approach when games are integrated into teaching. Gamification can be applied in many ways with or without using digital technology. The primary purpose of games is to motivate the students to learn and solve problems using creative thinking (Ketola, 2019).

In the Philippines, the play-based approach is common in basic education; however, there are no studies on enhancing vocabulary skills using games categorically. Therefore, the researcher used Gamified Learning Activities (GLA), such as puzzleology, fun games, and memory games, to enhance students' English vocabulary retention. The researcher believes that using GLA in enhancing junior high school students' English vocabulary retention will improve through task-based language instruction and communicative language teaching approaches.

GLA is a modification of various educational word games. The researcher categorized the games into three kinds of Puzzleology, crossword puzzle, anagram, word search. Games reinforce the students' vocabulary using puzzles. The students can answer the vocabulary games in crossword puzzles by filling out the squares provided with clues. Then in an anagram, the students rearrange the letters of the word to produce a new word. While in the word search, the students find the hidden words in the template aided with statements or questions. The fun games (i.e., charades, pictionary, hot potatoes/taboo game) and the memory games (i.e., word association, scramble word, parrot game) engage the students using bodily-kinesthetic through task-based learning instruction. As a result, the students can help each other learn new vocabulary, experience

Further, this study has anchored on the theories of second language acquisition (SLA), second language learning (SLL), cooperative learning, and collaborative learning. SLA is a process of learning any language after the first language, whether it is the second, third, or fourth language (Stefánson, 2013). There are three characteristics of language which a person can use, such as monolingual, bilingual, and multilingual. Monolingual is the ability to speak

and understand only one language. Bilingual is the ability to speak and understand two languages. Then, multilingual is the ability to speak and understand two or more languages (Saville -Troike, 2006). Language acquisition requires meaningful interaction using the target language to acquiring the L2 and understanding the meaning of the message (Krashen, 1981). The statement means that second language acquisition occurs "in which the language to be learned is the language of the community" (De Bot, Lowie, & Vespoor, 2005, p. 7) addition to a persons' first language acquired through his or her environment or in the classroom (Wang & Yang, 2013).

On the other hand, the idea of theorizing SLL came about in the 1950s and early 1960s. Later, the language teaching experts considered and recommended it as one of the learning theories from 1964 to 1968. It has been documented that this perspective constantly developed on Chomsky's Universal Grammar by several language philosophers and continuously contributing to SLL's view and other mechanics and aspects of language (Mitchell & Myles, 2004). SLL refers to "the learning of any languages, to any level, provided that the learning of the second language takes place sometime later than the acquisition of the first language" (Mitchell & Myles, 2004, p. 5). The second language is the language other than the student's first language or mother tongue and the community or region to communicate with other people.

Concerning the present study, junior high school students have already acquired English since it was introduced at the fourth-grade level. Nel and Müller's 2010 study stated that one of the essential ingredients for Krashen's second language acquisition is a comprehensive explanation of teachers. It means that the teacher should talk according to the level of students for them to understand what he or she wanted to say. Besides, the main task of SLA theory is to aid the second language learners in acquiring vocabulary to develop their basic skills in language (Umasugi et al., 2018). Further, the SLL perspective emphasizes the interaction between and among learners to achieve the learning goals for grammar and vocabulary. Tuan and Minh Doan (2010) explained that SLL encourages learners to exercise and use the language more frequently. Specifically, communication activities such as vocabulary learning using various games can change the conventional way of teaching from the teacher-centered approach to a student-centered approach.

Moreover, the cooperative learning theory came from philosophers and psychologists like Dewey, Lewin, and Deutch. They believed that the students become actively participate in the discussion of specific ideas to build their knowledge. The students engage in learning activities and establish a strong relationship between group members. Johnson and Johnson's 2008 study posited five elements of cooperative learning theory such as positive interdependence, face-to-face interaction, individual accountability, interpersonal and social skills, and group processing to facilitate cooperative learning. In this case, the teacher imparts knowledge to the students and facilitates them in group activities (Saha & Singh, 2016).

Additionally, collaborative learning theory originates in Vygotsky's sociocultural theory acknowledging that the social interaction among and between students and teachers are the product of learning. The students can quickly solve the problem through collaboration with the supervision and guidance of teachers. Sharing knowledge and authenticity among students and teachers through heterogeneous groupings is a collaborative classroom's general characteristics. It also emphasized game-based language learning where learners can work in groups to develop social skills and the four

language skills (Saha & Singh, 2016). Teaching techniques and approaches of the teachers may need variation to sustain the vocabulary knowledge and its retention among students.

There are three objectives of the study: (1) to improve the vocabulary retention of the students using GLA; (2) to find out if there is a significant effect of using GLA in enhancing students' English vocabulary retention and, (3) to determine the significant differences among and between the pre-test and post-test scores of the students. Specifically, it sought to answer the following questions: What are the learning gains before and after implementing the vocabulary intervention using GLA of the control and experimental groups? Is there a significant difference between the pre-test and post-test results in the vocabulary test of the students in the control group and students in the experimental group? Finally, is there a significant difference between the pre-test and post-test results in the vocabulary test of the students in the control group and students in the experimental group?

Method

Research Design

The study aimed to investigate how GLA can promote students' vocabulary retention using games through a quantitative experimental design. The researcher used the experimental research method to determine the possible effects of the independent variable, the GLA, on the dependent variable, which is the students' vocabulary retention. Thus, true experimentation with the pre-test-post-test control-group design was adopted (Christensen, Johnson, & Turner; 2014; Creswell, 2008; 2014; Nunan & Bailey, 2009). The randomization of participants into two groups is equated before the experiment, thus ruling out selection as a problem. After collecting the data, determining the difference between the groups is z – test or t-test.

Respondents of the Study

The study was conducted in a private catholic institution in Northern Cagayan. The institution had a small population in junior high school, which consists of one section in each grade level. The total population of junior high school students from grade seven to grade 10 is 133, with the age range from 12 to 16 years old enrolled for 2019-2020. The respondents were selected heterogeneously in a cluster random sampling technique.

Research Instruments

There were three research instruments: pre-test, post-test, and vocabulary games. Each vocabulary test contained 50 items composed of different tests such as multiple choices, sentence completion test (fill-in-the-blank), matching type test, scrambled words test, and crossword puzzle test. On the other hand, the vocabulary games have three categories of games, such as puzzleology (crossword puzzle, anagram, word search), fun games (charades, pictionary, hot potatoes/taboo game), and memory games (word association, scramble word, parrot game).

Data Gathering Procedure

The researcher had chosen the target location and respondents of the study, then wrote communication letters and let the authorized person sign them. After the validation of instruments, the vocabulary test was piloted in a public school, and the results were analyzed using the Pearson R Moment of Correlation and Split-Half method aided with the Statistical Package for Social Sciences (SPSS) (Nunan & Bailey, 2009) for the reliability of the instrument. Upon returning the respondents' consent form, the research

instruments were immediately administered to the students, wherein the results of vocabulary tests were analyzed using a t-test through SPSS.

Statistical Treatment

After collecting the data, the responses were quantified, and the data were tabulated through Microsoft Excel and Statistical Packages for the Social Sciences (SPSS) (Nunan & Bailey, 2009). Hence the following statistical tools were used for data analysis. First, mean for learning gain and Standard Deviation for the disparity of scores. Second, the T-Test of Dependent Means determines the difference between two groups of correlated scores (within groups). Third, the T-Test of Independent Means would determine if a significant difference between two different or independent groups in terms of means exists.

Results and Discussions

Results

Pre-test performance of the groups

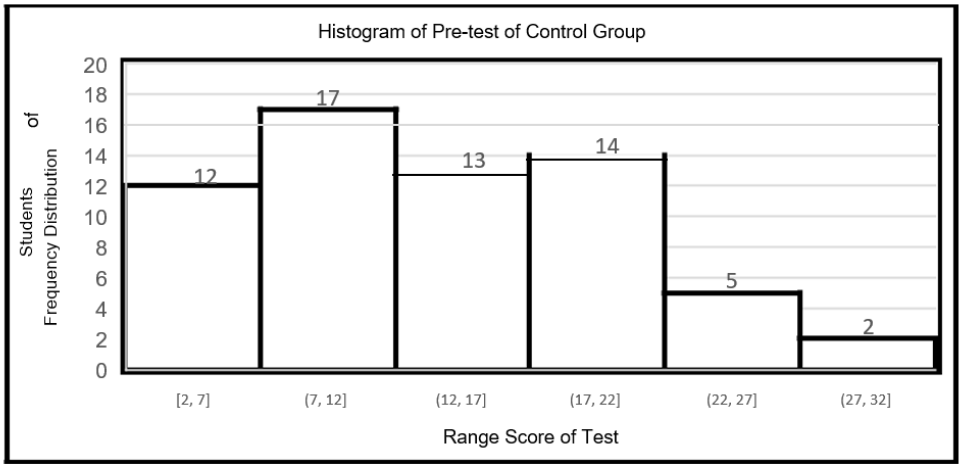


Figure 1. *The histogram of pre-test of the control group*

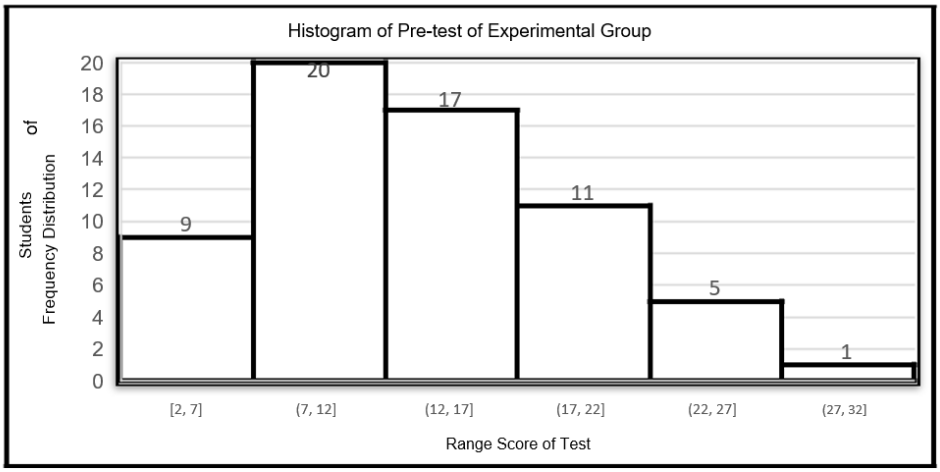


Figure 2. The histogram of pre-test of the experimental group

The two figures compare histograms in the frequency distribution of students and the range score of test during the pre-test of control and experimental groups. The minimum score of the students is two, and the maximum score is 32, with a range score of five. Thus, each group has 63 respondents which the control has 12 students higher than the experimental which has nine students with a range score of two to seven. However, there are 17 students in control

lower than the 20 students in experimental with the range score of seven to 12. Likewise, there are 13 students in control lower than the 17 students in experimental with the range score of 12 to 17. On the other hand, 14 students in the control group scored higher than the 11 students in the experimental group, 17 to 22. Meanwhile, there are five students in both groups whose range score of 22 to 27, and there are two students in the control group while one student is in the experimental group with a range score of 27 to 32.

Based on the histograms of pre-test performances of both groups, the frequency distribution of students in the control group is higher than the experimental group according to the range of scores. Therefore, it implies that the control group performs better than the experimental group in the pre-test. Thus, the verbal interpretations of the pretest scores are in the succeeding tables shown through the mean and standard deviation.

Groups	Mean	SD	Verbal Interpretation
Control Group	13.89	0.865	Poor
Experimental Group	13.76	0.293	Poor
Total	**13.83**	**0.579**	**Poor**

Table 1. Mean, Standard Deviation, and Verbal Interpretation of the Pre-test of the Groups

The table shows the performances of the control and experimental group in the pre-test. The data imply that both groups of control and experimental obtain a poor performance (`X= 13.83, SD = 6.579) in the vocabulary test. Furthermore, the control group obtained poor performance (`X= 13.89, SD = 6.865) higher than the poor performance of the experimental group (`X= 13.76, SD = 6.293). The finding implies that the purpose of the pre-test has been achieved, and the initial assessment of students' prior knowledge of vocabulary has been presented.

The pre-test measures student growth over time through a comprehensive assessment. It can show a student's level of understanding before and after instruction, even while instruction is still happening (Kelly, 2019). This finding means that the assessment of students' level of understanding should be done frequently to monitor improvement.

Usually, the initial knowledge of the students in vocabulary was determined through the pre-tests. At this point, the vocabulary words used for the pre-assessment were quite familiar and served as a guide and motivation for the students to improve their vocabulary skills (Berry, 2018). These statements explained that some of the vocabulary words in the pre-test are unfamiliar to the students; however, it motivates them to activate their minds to think critically.

Post-test performance of the groups

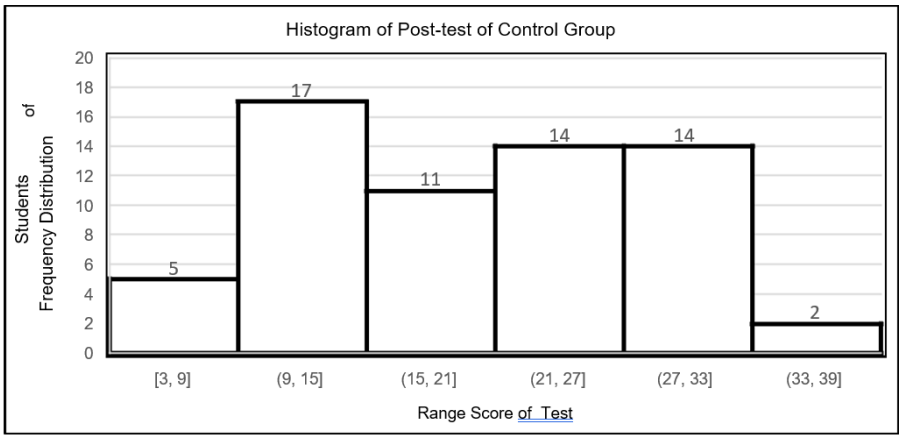


Figure 3. The histogram of post-test of the students in the control group

The figure presents the minimum score of the students, which is three, and the maximum score is 39 with the range score of six during the post-test of the control group. Thus, 17 students with the range score of nine to 15 as the highest frequency distribution, while two students with the range score of 33 to 39 as the lowest frequency distribution. Furthermore, five students scored from three to nine; 11 students from 15 to 21; 14 students from 21 to 27 and 27 to 33. Moreover, it implies that the vocabulary skills of the control group have a slight improvement from the pre-test to the post-test provided that they underwent a conventional approach in learning new vocabulary.

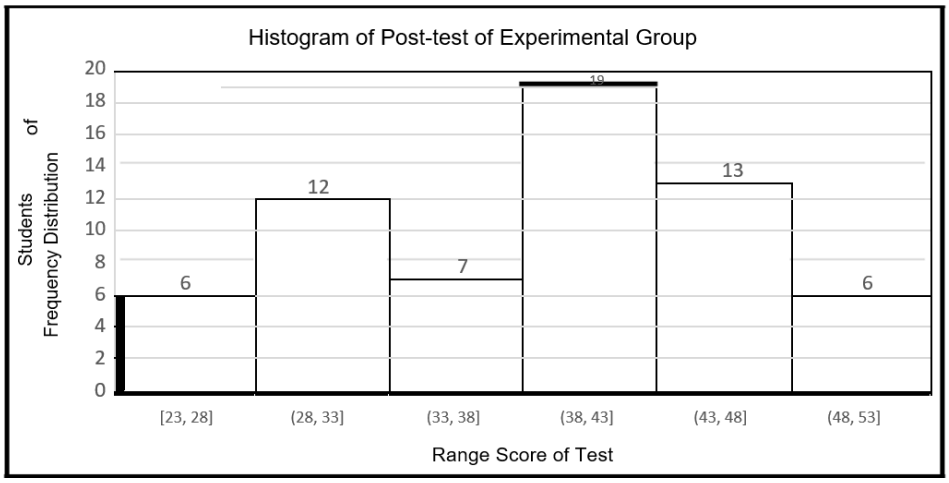


Figure 4. The histogram of post-test of the students in the experimental group

The figure above presents the minimum score of the students, which is 23, and the maximum score is 53 with the range score of five during the post-test of the experimental group. Thus, 19 students have scores ranging from 38 to 43, the highest frequency, and both six students with the range scores of 23 to 28 and 48 to 53 have equal distribution as the lowest frequency. Further, 12 students scored from 28 to 33, seven students from 33 to 38, and 13 from 43 to 48. Moreover, the figure implies that the experimental group obtained higher scores and students in the frequency distribution than the control group. Thus, it reflects that the vocabulary intervention enhances the students' vocabulary skills in the experimental group.

Groups	**Mean**	**SD**	**Verbal Interpretation**
Control			

Group	20.21	8.499	Below Average
Experimental Group	39.03	7.457	Above Average
Total	**29.62**	**7.978**	**Average**

Table 2. Mean, Standard Deviation, and Verbal Interpretation of the Post-test of the Groups

Table two shows the performances of the control and experimental groups in the post-test. The data imply that most respondents obtain an average performance ($\bar{X}$= 29.62, SD = 7.978) in the vocabulary test. On the other hand, the experimental group obtains above-average performance ($\bar{X}$ = 39.03, SD = 7.457) in the vocabulary test compared to the below-average performance of the control group ($\bar{X}$= 20.21, SD = 8.499). Thus, it shows that the experimental group's vocabulary test performance has improved after the intervention program compared to the control group. This finding also implies that the post-test measures learning and the required skills (Kuehn, 2019). Moreover, the objectives of the intervention program are successful and effective.

The findings and results addressed the first question of the study, which is about students' learning gains before and after the vocabulary intervention. It implied that the vocabulary skills of students increased using vocabulary intervention. Furthermore, the students' learning gains have been seen vividly before and after implementing the intervention using the t-test, as reflected in Hanafia (2015). Hence, the score gained in the experimental group is higher than the score gained in the control group.

Groups	T-value	T-critical	df	P-value	Verbal Interpretation
Control Group	8.156	1.67	62	0.000	There is a significant difference.
Experimental Group	32.673	1.67	62	0.000	There is a significant difference.

Table 3. The T - value, T – critical, df, P-value, and Verbal Interpretation of the test of difference among the test performances of control and experimental groups

The table shows the difference between the pre-tests and the post-tests of both groups. The data shows a significant difference between the pre-test and post-test performance of the control group, with a T value = 8.156 higher than the T critical = 1.67, df = 62 at 0.00 level of significance. Therefore, the null hypothesis is rejected, implying a slight improvement in the students' vocabulary skills belonging to the control group.

On the other hand, the data also show a significant difference between the pre-test and post-test performance of the experimental group, with a T value = 32.673 higher than the T critical = 1.67, df = 62 at 0.00 level of significance. Therefore, the null hypothesis is rejected, showing a significant improvement in the students' vocabulary skills belonging to the experimental group. This result implies that the intervention program is highly effective. Furthermore, the vocabulary intervention using games brought the students into a higher

level of knowledge in recalling vocabulary words. As a result, the vocabulary retention of the experimental group is enhanced.

Moreover, comparing the results of the vocabulary test performances of the students in the control and experimental groups, the performances of both groups have a big difference implying that the vocabulary intervention program used in the experimental group highly affected the experimental group's vocabulary skills compared to the control group. Additionally, it emphasizes that if the pre-test and post-test results were high, it reveals the strength of the approaches used in delivering the instructions (Kuehn, 2019). The result means that the vocabulary treatment for the experimental group was adequate. Also, the memory of the students was activated using the different vocabulary games.

Furthermore, the results addressed the second research question. It shows that the control group's vocabulary skills had improved somehow through the conventional approach. It also implies a significant difference among the control group's pre-test and post-test results, thus rejecting the null hypothesis. The findings also revealed that the experimental group's pre-test and post-test results also significantly differ, thus rejecting the null hypothesis. Finally, it shows that the intervention program is highly effective in enhancing the students' vocabulary retention.

Groups	T-value	T-critical	df	P-value	Verbal Interpretation
Pre-test	0.108	1.66	124	0.914	There is no significant difference.
Post-test	13.215	1.66	124	0.000	There is a significant difference.

Table 4. The T-value, T-critical, df, P-value, and Verbal Interpretation of the test of the difference between the test performances of control and experimental groups

The table above shows the difference between the pre-test and the post-test of the groups. The data shows no significant difference between the pre-tests of the control and experimental group with a T value = .108 less than the T critical = 1.66, df = 124 at 0.914 level of significance. Therefore the null hypothesis is accepted. Previously, the first table revealed that the pre-test performances of both groups were poor. Therefore, the existing vocabulary pedagogy is reflected as ineffective and might not motivate the students learning interests. Probably, this is the reason why the pre-test results have no significant difference between the two groups.

Furthermore, there is a significant difference between the post-test scores of both groups with a T value = 13.215 higher than the T critical = 1.66, df = 124 at 0.00 level of significance. Thus, the result leads to accepting the null hypothesis is rejected, implying that the experimental group has excelled in the vocabulary test after receiving the intervention program. Hence, it also implies that the intervention program is said to be effective.

Discussions, Conclusion, Future Research

The GLA is more effective than the conventional approach in introducing new words based on the results. The students in the experimental group enjoyed the vocabulary learning activities in creative techniques, while the students in the control group immersed themselves individually in learning new vocabulary. Furthermore, the results addressed the third question and revealed no significant difference between the pre-test results of both groups; thus, the null hypothesis is accepted. It emphasized that the students' vocabulary knowledge in the pre-test revealed that they have poor vocabulary skills. It was reflected in the 2018 PISA National Report of the Philippines that the reading proficiency level of Filipino students was categorized as level 1a and 1b. The result means that the students can only evaluate the literal meaning of simple sentences, understand the literal meaning and the main idea of short passages, and connect simple information through their ideas (PISA, 2018, 2019). With these findings, it indicated that the existing pedagogical practices are less effective and need to find a creative teaching strategy that might be helpful to address the problem. Filipino learners can improve their vocabulary skills in the collaborative learning process through communicative learning strategies. Therefore, teachers should give attention to communicative learning to develop students' skills in communication and enhance vocabulary knowledge.

On the other hand, there is a significant difference between the post-test results of both groups; therefore, the alternative hypothesis is accepted. The post-test result of the experimental group revealed that learning new words through games is set to be effective, and the students' learning interest motivated with the newly employed teaching technique, hence, attaining the third objective of the study. At this juncture, the Filipino learners achieved successful vocabulary learning aided with the GLA approach. The findings reflected in the study of Shen (2003) that learning new vocabulary should be in the form of the communicative process. As a result, the students acquired, learned, and developed the second language.

Additionally, motivation is one of the essential factors to hook the students' interest in learning vocabulary. It reflected that motivation could manipulate the students' behavior in learning new words. The students have a goal and desire to win in every vocabulary game and learn (Deci et al., 1991; Deckers, 2014; Orujlou & Vahedi, 2011). In the cooperative and collaborative learning strategies, Filipino learners are encouraged and motivated to participate in the vocabulary learning activities because they can communicate, share their knowledge, and develop positive social behavior.

Furthermore, the first objective reflected in the study of Keshta and Al-Faleet (2013) and Taheri (2014) that vocabulary and language games applied to the students were successful and effective in improving vocabulary retention. On the other hand, Kusrini's (2012) and Perveen et al.'s (2016) studies reflected in the second objective to find out if the vocabulary games (GLA) are effective. Both studies have found out that the vocabulary intervention is effective and valuable in helping teachers to become creative in teaching. However, other teaching techniques should be considered, such as conventional methods. With these claims, every Filipino learner has his/her learning style to expand the basic language skills. Therefore, teachers should be resourceful enough to support and facilitate the learning styles of the students. Furthermore, teachers must ensure that all students participate in the learning process to build positive social behavior among and between them.

Moreover, the findings manifested that the theories support the assumption of the researcher. Cooperative learning and collaborative learning were emphasized in the implementation of GLA to motivate and enhance the students' vocabulary skills. Also, the social behavior of the students developed as perceived in the findings and results of the study.

The result of the initial assessment of the students was poor, caused by limited exposure to vocabulary-learning activities. There are alternative ways to deliver a lesson and impart knowledge to the students, such as modular and online classes that could help both the students and the teachers accomplish the lesson's target objectives. As such, the GLA approach is one of the options to help develop the students' vocabulary skills even at home. This pedagogical approach serves as an alternative vocabulary learning technique in this new normal situation. The students exercise their minds to memorize, recall, and analyze the meaning of words in a different context. Also, the communicative strategy should employ using the target language.

Furthermore, the family members can participate in the vocabulary games, in which they can enjoy the learning activities. The findings made the researcher conclude that GLA is effective and successful, and it is highly recommended to use because it is manageable and doable. Moreover, parents should help monitor their children's performances using a creative yet straightforward technique to enhance their vocabulary knowledge. Future researchers are encouraged to conduct a similar study or a qualitative and mixed-method study in a bigger population using GLA to develop the vocabulary learning approach further.

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