

AN EXPERIMENTAL STUDY ON THE EFFECTIVENESS OF INTERACTIVE GAMES TO THE ACADEMIC ACHIEVEMENT OF STUDENTS IN ARALING PANLIPUNAN

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ABSTRACT

This article determines the effectiveness of interactive games to the academic achievement of students in learning Araling Panlipunan and how interactive games acts as a supplemental tool for learning History. The participant where two heterogeneous sections were selected to serve as control and experimental groups in Mapawa Central Elementary School at Mapawa, Maragusan, Davao de Oro. The Quasi-experimental method of research was measured by professional commitment using a 40-item validated modified questionnaire on both variables. Descriptive statistics revealed that the effectiveness of interactive games to the academic achievement of students in Araling Panlipunan were manifested with an overall mean of 20.1 (control) and 20.8 (experimental) respectively. The results of this study deemed not significant on the academic achievement of the students in both control and experimental group showing that the P-value is 0.883 which is greater than 0.05 level of significance. Thus, the sole use of interactive games in teaching students to increase their performance is insufficient. Hence, the study conforms to the idea of using interactive games, but not solely, rather than blending it with traditional instructional learning aids. Thus, it paves awareness and opportunity to ensure that teachers are equipped with the skills of the 21st century tool and programs to capacitate the skills of teachers to use both technology assisted and traditional instructional materials to foster better learning and friendly work environments.

Keyword: *teaching strategy, interactive games, academic performance, quasi-experimental method.*

1. INTRODUCTION

“Digital games are becoming commonplace in the classroom”. With the hasty advancement of technology today, there is a transition from conventional instruction to game-based learning (Press Reader 2017). Interactive games are used everyday and relevant in today’s educational setup in making education relevant for K–12 students (Luterbach, 2011). Interactive games act as a supplemental tool in education and as we connect to the era where technology is widespread it is also now a console to education in teaching and learning Kasaysayan or History (Press Reader, 2017; Yen, Wang & Chen, 2011).

Furthermore, using interactive games in a gamified platform using PowerPoint presentation for students’ participation that provides a relatively elements to make a classroom entertaining, dynamic, and engaging. It can be employed to carry out assessments and evaluations, assign homework, and a fun way to have interactions with learners of all ages (Alam, 2022; Adiyana, Dewi & Wiguna, 2018).

In this sense, games must encompass in the curricula as an entertainment and educational tool (Malta, 2010). In this century, it is essential to update the core curriculum in order to incorporate the old three Rs with the four Cs: critical thinking, creativity, communication, and cooperation. So that students can shape their own learning experiences, teachers have to constantly change and support the application of technology. In light of this, students can develop solving problems, making decisions, and innovative abilities through the addition of these additional components, independent of the technological instrument they use. Moreover, it is about mercilessly removing what is broken, what does not fit, no matter how challenging the transfer of learning could be. It is about accepting that teaching is a channel that can do some things extraordinarily. (Blair, 2012; McCall, 2012).

Globally, Adiyana, Dewi & Wiguna (2018) investigates the transferring of learning to students in Indonesia is a struggle. Their findings revealed that teachers find it difficult to maintain the interest and also remove students' boredom which often happens, and it is seen because of the unfitting strategies being incorporated that causing the problem in learning. The study recommended incorporating gamified instruction in teaching history to engage the students in active learning rather than passive learning. Using interactive games, one of the strategies that can be applied (before, during, and after) instruction to increase student's academic performance.

In the Philippines, where technology is widely used in education, and other areas. However, there have been concerns and an exploration found out the reason why student's scuffle learning history because of the subject's nature that leads to mere memorization that only focuses on conventional teaching (Guillen, Miguel, Nisperos & Salvador 2015).

The researcher interviewed Araling Panlipunan (History) teachers at Mapawa Central Elementary School with regard to the students' interest and academic performance in learning the subject. According to their feedback, students eventually grow bored and put stress on the chalk and talk teaching style, chalk for illustration and talk for teacher's instruction and emphasis. This is the reason why the researcher conducts a study about the integration of interactive games in learning Araling Panlipunan (History) Grade 6 Students of Mapawa Central Elementary School.

According to research on game simulations, "A simulation is a simplified operational model of one or more real-world aspects, most notably systems and processes." He described a simulation game as a synthetic dispute or competition with guidelines that dynamically depicts one or more real-world systems. (Jenkins, 2012). Interactive games can help teachers deliver quality education to learners. The topic becomes relevant and meaningful to the learners because their experiences are integrated into the lesson. The fundamental purpose of using instructional methodologies such as integrating technology in the classroom, particularly the game-based strategy, is to raise mastery level. The researcher conducted this investigation in order to find a solution to the aforementioned causes of the students' limited participation and inability to comprehend, which led to their poor performance. Furthermore, Orheruata, Abubakar & Aminu (2014) explained that technology or digital devices are recognized because of their enormous impact on teaching and learning.

1.1 Research Questions

1. What is the competency level of the student's pretest scores of the control and experimental Group?
2. What is the competency level of the students in the posttest scores Control and Experimental Group?
3. Is there a significant difference between the pretest and posttest scores of the control group?
4. Is there a significant difference between the pretest and posttest scores of the experimental group?
5. Is there a significant difference between posttest scores of the students in control and experimental group?

2. METHODOLOGY

2.1 Research Design

The researcher utilizes the quantitative-quasi experimental using Two-Group, Pretest - Posttest research design in gathering data. With this design, the researcher would determine the effectiveness of the interactive games by giving the experimental group an intervention after the pretest, while the control group would have the conventional method of teaching. According to Campbell (2002), a quasi-experimental study approach includes manipulating independent variables without randomly assigning subjects to conditions or ordering of conditions.

Further, the control and experimental groups may or may not initially equivalent in the pretest, but the posttest scores can be compared after the intervention that will be given to the experimental group

2.2 Research Subjects

The subjects of the study are the students in Grade 6 sections Mercury and Mars of Mapawa Central Elementary School, Maragusan, Davao de Oro, Philippines. These students were heterogeneously grouped at the start of classes. There are 30 total students in section Mercury for the control group and 30 students in section Mars for the experimental group.

2.3 Research Instrument

A validated test questionnaire was utilized for the quantitative analysis.

Quantitative Analysis

Only the standard descriptive equivalents of the ratings based on School Form 5 Report on Promotion and Learning Progress and Achievement under DepEd Order 8, s. 2015. were used to facilitate the proficiency level of the Grade 6 students. On both variables, a 40-item test employing a validated questionnaire was used in the quantitative study. The grading scale scores and descriptive ratings are as follows: 90 - 100 for Outstanding, 85 - 89 for Very Satisfactory, 80 - 84 for Satisfactory, 75 - 79 for Fairly Satisfactory, and Below 75 for Did Not Meet Expectation.

2.4 Research Procedure

First, the researcher asked permission from the Division of Davao de Oro through a letter. Once approved by the division superintendent, the researcher will prepare another letter for the school principal for the conduct of the study.

The researcher administered the pre-test to both control and experimental groups, after administering, intervention follows using the interactive games to the experimental group. After four weeks of the intervention, the researcher administered the posttest. During the intervention, the researcher keeps a record activity conducted in the classroom and analyzed the gathered data and discussion will follow.

2.5 Statistical Treatment/Data Analysis

The data collected was forwarded to the statistician utilizing the Statistical Package for Social Sciences (SPSS).

Mean. This was used to determine the level of competence level of grade 6 students.

Class Proficiency. This was used to know the level of competence or mastery that a student has achieved in a particular subject or course. Class proficiency refers to how well a student understands and performs in class, as assessed by assessments, tests, projects, or other means of evaluation.

3. RESULTS

The result presented from the collected and the subsequent analysis in a sequence corresponding to the problem presented. Data and preliminary information were also provided as basis for the computation and interpretations of the results. These results were computed through SPSS software.

3.1 Competency level of the students in Pretest Scores of the Groups

Figure 1 shows the result of the competency level of the students in pretest scores of controlled and experimental groups. The standard descriptive equivalents of the ratings based on the school form 5 report on promotion and learning progress and accomplishment under DepEd order 8, s. 2015.

Pretest	No. of Students	Mean	Class Proficiency	Competency Level
Group A (Control)	30	18.4	46%	Did not meet expectation
Group B (Experimental)	30	17.3	43.25 %	Did not meet expectation

Figure -1: Competency level of the Pretest Scores of Control and Experimental Group

The table 1 presented the data of the performance level of the students before the intervention of two groups conducted. The class proficiency shows that the experimental group got 43.25%, and the control group has 46%, hence both groups did not meet expectation for competency level.

The result only implies that it recognized what the students already know prior to the intervention. It also shown that the students did not perform well in the conventional teaching. Learning shouldn't be an exhausting task, and it shouldn't only be mental tasks where students memorize information or study for tests (Houghton, 2013).

3.2 Competency level of the students in Posttest Scores of the Groups

Figure 2 shows the result of the competency level of the students in posttest scores of controlled and experimental groups. The standard descriptive equivalents of the ratings based on the school form 5 report on promotion and learning progress and accomplishment under DepEd order 8, s. 2015.

Posttest	No. of Students	Mean	Class Proficiency	Competency Level
Group A (Control)	30	20.1	50.25%	Did not meet expectation
Group B (Experimental)	30	20.8	52%	Did not meet expectation

Table -2: Competency level of the Posttest Scores of Control and Experimental Group

Table 2 presents the competency level performance of the students after the study and the intervention of two groups conducted. Data shown above the impression of the students to the lesson after the intervention. The competency level shown that the experimental group has a class proficiency of 52%, and the control group has 50.25%, hence both groups did not meet expectation for competency level.

Accordingly, Handoko (2021) the development of interactive games has followed several technical paths. Interactive games usually have an unfavorable record because they put pressure on organizations and academics and caused moral panics over them. In addition, despite how interesting the exercises are, the students' poor performance was a result of their poor comprehension and retention (Saputri, Rukayah, & Indriaya, 2018).

3.3 Significant difference between the mean scores of the pretest and posttest scores of the control Group

Figure 3 shows the result of the paired t-test use to compare the achievement of the students in the control group.

	Mean	T-Value	P-Value	Decision
PRETEST	18.4	-2.390	0.024	Significant
POSTTEST	20.1			

Figure -3: Comparison of the Achievement of Students in the Group A (Control)

Table 3 shows the contrast of the achievements of the students belonging in the Group A (control). The mean indicates that pretest got 18.4 and posttest got 20.1. As a result, the P-value is 0.024 less than 0.05, indicating that the decision was significant. Therefore, the null hypothesis was rejected and it proves that there was a significant difference academic achievement of the students when using the conventional teaching in the subject Araling Panlipunan

The usage of conventional techniques has been discovered to be extremely successful. Information retention in interactive games is at least on par with that shown when using traditional teaching methods, and may even be increased (Castronova, 2022).

3.4 Significant difference between the mean scores of the pretest and posttest scores of the experimental group

Figure 4 shows the result of the paired t-test use to compare the achievement of the students in the experimental group.

	Mean	T-Value	P-Value	Decision
PRETEST	17.3	-5.127	0.000	Significant
POSTTEST	20.8			

Table -4: Comparison of the Achievement of Students in the Group B (Experimental)

Table shows the comparison of the achievements of the students belonging in the Group B (Experimental). The mean indicates that the pretest got 17.3 and posttest got 20.8. As a result, the P-value is 0.000 less than 0.05, indicating the decision was significant. Therefore, the null hypothesis was rejected and there was a significant difference academic achievement of the students on the use the interactive games in the subject Araling Panlipunan to the experimental group.

Interactive games and instructional materials boost self-reliance by allowing educators to create their own educational content, giving them more control over course content than is feasible in traditional educational settings and perhaps enhancing exam scores.

3.5 Significant difference between the posttest means scores of the control group and the experimental group

Figure 5 shows the result of the computation to compare performance of the students between the control and experimental groups reflected on their posttest scores.

	Mean	T-Value	P-Value	Decision
Group A (Control)	20.1	-.150	0.883	Not Significant
Group B (Experimental)	20.8			

Table -5: Comparison of the Achievement of students between the Control and Experimental Group

Table 5 shows the level of performance of the students after the study of the two groups. An independent t-test was carried out to test whether there is a significant difference in the Posttest of the Control and Experimental group. The mean indicates that Group A (Control) got 20.1 and Group B (Experimental) got 20.8. The P-value is 0.883 which is greater than 0.05. Therefore, the null hypothesis was rejected and there was no significant difference on the effectiveness of interactive games of the students in the control and experimental group as reflected on the posttest scores.

The use of interactive games alone to educate students how to perform better is insufficient, it is promptly discovered. Accordingly, students benefit from lectures by learning new material. Therefore, lecturing continues to be an essential component of all teaching-learning concepts, including problem-based learning (Dutta & Mia, 2010).

4. CONCLUSIONS

Overall, the study of the interactive game competency level of both the controlled and experimental groups at the beginning of the experiment were equivalent as shown in the computation of their class proficiency in their pretest scores. Despite with result having high mean scores, the t- value is lower than the P-value. Therefore, there is no significant difference in the scores of the students on their academic achievement in testing the effectiveness of interactive games to the academic achievement of students in learning Araling Panlipunan before and after the intervention. It is duly found out that sole used of interactive games in educating students to increase their performance is insufficient. Thus, the study conforms to the idea of using technology, but not solely, rather blending it with traditional instructional learning aids.

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