



Effectiveness of Interactive Educational Applications in Improving the Content Mastery of Selected Grade 9 AP Students

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ABSTRACT

Preserving students' engagement and drive in a digital setting poses a formidable obstacle for instructors, particularly amidst the pandemic. Due to the COVID-19 pandemic, teachers have been required to modify their instructional approaches and devise novel tactics to promote academic involvement. This study conducted action research to assess the efficacy of Interactive Educational Applications, such as Kahoot!, Quizizz, and Jamboard, in enhancing topic comprehension in Araling Panlipunan (AP) 9. It additionally investigated student contentment and the challenges faced during the integration of these technologies. The study utilized a mixed-method approach, incorporating both quantitative and qualitative methods. The sample consisted of 30 9th-grade students selected through convenience sampling. The results indicated a substantial statistical difference between the pre-test and post-test scores in AP 9 when Interactive Educational Applications were utilized. With 29 degrees of freedom and a significance level of 0.05, the computed t-value of +17.013 was higher than the critical value of +2.0457. Furthermore, the p-value of 0.0000 was below the significance level of 0.05, suggesting a substantial disparity between the two paired samples. The 95% confidence interval, which extends from -8.588 to -6.745, excludes zero. This provides more evidence that the utilization of Interactive Educational Applications greatly improved students' comprehension of Araling Panlipunan 9. An Interactive Educational Applications satisfaction assessment was undertaken through a Focus Group Discussion (FGD) to gauge student satisfaction. The majority of participants indicated that these applications had a good influence on their ability to master the topic in AP. Nevertheless, children encountered various obstacles throughout the intervention, including inadequate internet connectivity, distractions within their households, and subpar cell phones.

1. INTRODUCTION

1.1. Research Background

Many schools and other educational institutions around the country have closed because of the Coronavirus (COVID-19) pandemic, which significantly impacted how teaching and learning is conducted. To maintain social distance and prevent the virus from spreading, the form of instruction has quickly shifted to remote education. [1].

Within these short timeframes and new learning modalities, teachers experienced challenges and have been forced to learn and make remote, digital tools and materials that will increase

student's motivation and engagement [2]. Student interaction boosts student pleasure, promotes motivation to learn, lowers feelings of isolation, and improves online course achievement [3]. However, one of the most difficult tasks for instructors is to assist students in focusing their attention during online classes so that they can benefit from the learning possibilities [4].

According to certain research, students who have difficulty following the teacher's instructions are more likely to lose interest in the course and abandon their learning activities [5][6][7]. As a result, it is vital to offer efficient techniques for assisting learners in their skill development in the context of online learning. Many technologically based learning breakthroughs have emerged, and an interactive game using interactive educational applications is one of them. According to research, learning is more likely to



occur when a person is joyful and not anxious [8]. Learning through interactive games encourages students to take chances, and current pedagogy recognizes this ability as a normative value [9]. With the given premise stated herein, the researchers believe that it is necessary, beneficial, and advantageous to conduct this study to determine the effectiveness of interactive educational applications in improving the content mastery of selected grade 9 students of Mataas na Paaralang Neptali A. Gonzales

1.2. Literature Review

Interactive games have been used in a variety of educational settings at all levels of education, demonstrating their ability to increase learning results [10]. Students' interests, competitiveness, and creative behaviors are sparked by game-based learning, allowing them to develop concepts [11]. There are different ways to gamify a class to increase the student's engagement and collaboration. Educators can adapt old-school games for use in the classroom so that learners can participate or utilize different interactive educational applications like Kahoot, Quizziz, Quizlet, Mentimeter, Google Jamboard, and many more [12]. Meanwhile, they used Kahoot! as a review game which resulted to be helpful for many students in recalling the concepts learned from the previous classes [13].

Online interactive games are one of the strategies in the online teaching process, and teachers and students benefit from them by improving the efficiency of teaching and learning. This technological medium not only boosts productivity, but it also improves the quality of life. It also allows learners to self-assess based on their motivation and autonomy or independence. After a quick assessment, feedback is given [14].

The concept of gamification was investigated, and it resulted in a huge increase in the number of high school students [15]. However, it is indicated for motivation and achievement in science. Future researchers will be able to gain a better knowledge of the subject, particularly on the factors that may lead to a great outcome. Also, the study came to the same conclusion: gamification was an effective teaching technique in increasing the performance of grade 8 students in Mathematics [16]. Moreover, based on the responses in the Students' Survey, 'KAHOOT!' can be used as a gamified assessment tool to help students learn the topic of 'Transcription and Translation' by actively engaging them in a fun and exciting manner [17].

1.3. Research Objective

The action research aims to determine the effectiveness of interactive educational applications in content mastery in Araling Panlipunan among grade 9 students of MPNAG. Specifically, it seeks to answer the following research questions:

(1) What is the level of content mastery of selected Grade 9 Araling Panlipunan students based on the results of:

a. Pretest?

b. Post-test

(2) Is there a significant difference between the level of content mastery of the respondents based on the results of their Pre-test and Post-test?

(3) What is the level of satisfaction of the respondents with the use of Interactive educational apps as a factor in improving content mastery in AP?

(4) What problems do the respondents encounter when using interactive educational applications?

2. MATERIALS AND METHODS

2.1. Participants and/or Sources of data

The participants of the study are the convenient samples from the grade 9 students section Hooke of Mataas na Paaralang Neptali A. Gonzales A.Y. 2021-2022 since they could provide the needed information and the connectivity at the time of the conduct of this study.

2.2. Data Gathering Procedures

Pretest and posttest were administered to measure the performance of the learners. The researchers adapted the pre-test and post-test provided by the Schools Division of Mandaluyong. The Data for this study was collected via an online test and survey tool (Google Forms) posted on their FB Messenger Group.

Focal Group Discussion (FGD) was conducted after the utilization of the interactive educational application. The FGD protocol contained the satisfaction level and problems encountered by the learners.

After securing all necessary permissions and instruments, a pre-test, and post-test was administered to the participants. Mean scores of the pre-test and post-test of the respondents were compared since the study is a One-Group Pre-test and Post-test. Mean scores of both the pre-test and post-test were interpreted to describe the learners' content mastery in Araling Panlipunan (AP) 9.

3. RESULT AND DISCUSSION

3.1. The Mean Percentage Scores results

Table 1 shows that the overall mean of the pretest was 11.57, with a standard deviation of 2.66, which falls within the 9-12 bracket and can be interpreted as "Good." This indicates that before the intervention, the respondents were performing well, as their mastery of Grade 9 Araling Panlipunan (AP) was at a good level, and their scores were not widely spread.

Table 1. Pre-test (Level of Content Mastery BEFORE using Interactive Educational Applications)

Descriptor	C.I.	f	%	RANK
Excellent	17- 20	0	0	3.3
Very Good	13-16	12	40%	2
Good	9-12	18	60%	1
Fair	5-8	0	0	3.3
Need Improvement	0-4	0	0	3.3
n		30	100%	
Mean		11.57		
% Mean		57.83		
SD		2.66		

Upon further analysis, it was found that the majority of respondents (18 or 60%) scored between 9 and 12, which corresponds to the "Good" level. This was followed by 12 respondents (40%) who scored between 13 and 16, classifying them as "Very Good." Notably, none of the respondents scored in the "Excellent" (17-20), "Fair" (5-8), or "Poor" (0-4) ranges. This distribution underscores the overall competence of the students in the subject before the intervention. The same table also revealed

that the percentage mean of the respondents (57.83%) does not meet the minimum 75% standard percentage mean in the Department of Education ruling in pass and fail.

Table 2. Posttest (Level of Content Mastery AFTER the utilization of Interactive Educational Applications in the Content Mastery in Ap 9)

Descriptor	C.I.	f	%	RANK
Excellent	17- 20	28	93.33%	1
Very Good	13-16	1	3.33%	2.5
Good	9-12	1	3.33%	2.5
Fair	5-8	0	0	4.5
Need Improvement	0-4	0	0	4.5
n		30	100%	
Mean		19.23		
% Mean		96.17		
SD		1.68		

Table 2 shows that the overall mean of the posttest was 19.23, with a standard deviation of 1.68, placing it in the "Excellent" range (17-20). This indicates that the use of interactive educational applications significantly improved the respondents' performance, demonstrating excellent mastery of Grade 9 Araling Panlipunan. The scores were tightly clustered, indicating consistency in high performance.

Further analysis reveals that the majority of respondents (28 or 93.33%) scored between 17 and 20, classified as "Excellent." This was followed by scores in the 13-16 range and 9-12 range, with 1 respondent (3.33%) in each, classified as "Very Good" and "Good," respectively. Notably, no respondents scored below 8, which would fall into the "Fair" or "Poor" categories. This distribution highlights the effectiveness of interactive educational applications in enhancing student performance.

Table 3. Difference between the Content mastery level of the respondents on the results of pre-test and post-test in AP 9

	Paired Differences					t	df	Sig. (2-tailed)	Interpretation
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
				Lower	Upper				
PreTest	11.567	2.661	.486	-8.588	-6.745	±17.013	29	.0000	Significant
Posttest	19.233	1.675	.306						

Table 3 shows that there is a significant difference between the level of content mastery of Grade 9 students in AP 9 based on the results of their pre-test and post-test, considering the computed t-value of ± 17.013 is greater than the critical value of ± 2.0457 , at 29 degrees of freedom and 0.05 level of significance. Furthermore, the p-value of 0.0000 is less than 0.05, which indicates that the two paired samples have a significant difference. Lastly, the 95% confidence interval does not cross or include zero (0) because both the lower and upper values are negative (-8.588 and -6.745), which means they are on both sides of zero. Therefore, based on these three findings, there is a statistically significant difference between the results of the pre-test and post-test in AP 9 when Interactive Educational Applications were applied.

3.2. Satisfaction of the respondents with the use of Interactive Educational Apps as a factor in improving content mastery in AP 9

In response to the statement of problem number 3, the researcher conducted a focal group discussion (FGD) and interviewed the respondents. Most of them stated that they are VERY SATISFIED in using Interactive Educational Applications. Respondents A stated,

"Very Satisfied po ako sa mga applications po, masaya at maganda na nakakapressure dahil may allotted time lamang na nakalaan kaya mag iisip ka talaga."

Another, respondent C mentioned that

"Mas naiintindihan ko po ang diskusyon kapag gumagamit po ng Kahoot, Quizziz at Jamboard."

While, respondent D expressed that,

"Nakakaenjoy at nakaka encourage pong mag-aral kasi may musics tapos may time limit."

This supports earlier findings that game-based learning or interactive educational apps like KAHOOT can be used in the classroom as a supplement to enhance student-centered learning and inspire students to be passionate about the content even if they are concerned about the material or the class [17].

3.3. Problems encountered by the respondents in using Interactive Educational Applications

In addressing the statement of problem number 4, the researcher also conducted FGD. The respondents were interviewed about the challenges they encountered in the utilization of interactive educational applications. All the respondents said that poor internet connection was the biggest problem they experienced.

One student pointed out that another problem that they encountered is the distractions in household chores, *"Medyo mahina po iyong internet tapos syempre po nasa bahay kahit klase po nauutusan po kami dito."*

Another student pointed out that, one of the biggest challenges encountered is having a low-quality smartphone. *"Minsan, nawawala po ako sa klase kahit may mobile data ako kasi ung cellphone ko medyo sira na at hindi kinakaya iyong iba't ibang online platform."* This enabled the respondent to undertake some of the lessons during the intervention period. Based on the data gathered, interactive educational applications significantly increased the content mastery level of the students in AP 9.

4. CONCLUSION

Interactive Educational Applications have greatly increased the content mastery level of the students in AP 9, as revealed by the significant difference between the pre-test and post-test mean percentage scores. Students were “Very satisfied” with the different interactive educational applications since they helped them to engage more in learning, were fun, and motivated them. However, students encountered different problems during the intervention, like poor internet connection, distraction from household chores, and low-quality cell phones. Meanwhile, his research suggests that teachers should carefully integrate various educational applications and use a variety of platforms or learning activities with proper lesson plans. Also, since the findings showed different problems encountered during the integration, schools should strengthen the partnership with the community partners or stakeholders, especially in conducting projects that will raise in distribution of Wi-Fi modems, cellphone loads or data, and gadgets to help students in their online classes. Lastly, some areas were not explored in this study, so future studies should be conducted.

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