San Carlos College Research Journal - 2019 Issue, Vol. 1
ISSN 2704-4599

MULTIMEDIA INTEGRATED APPROACH IN TEACHING GEOMETRY 9

Geraldine C. Obero
Master of Arts in Education major in Educational Administration

Abstract. This study aimed to determine the effectiveness of multimedia integration in teaching geometry in Grade 9 at Catalino D. Cerezo National High School during the school year 2018-2019. Based on the result, the learners in the control group obtained "low mastery" in pretest and "average mastery" in post-test while the experimental group obtained a "low mastery" in pretest and "closely approximating mastery" in the post-test. The experimental group performed better than the control group, thus, multimedia integration in teaching geometry to Grade 9 learners is an effective approach.

Keywords. Multimedia integrated approach, geometry, mathematics 9, curriculum planner

1 Introduction

Utilizing multimedia in the classroom during the process of teaching and learning is one of the techniques to meet the students' academic needs and help them develop language skills (de Sousa, et. al, 2017). Multimedia classroom provide the students chances for interacting with diverse texts that give them a solid background in the tasks and content of mainstream school courses. Through the media the teacher could give more opportunity to students to express their opinions and enjoy during the course. The high presence of motivation also brings positive aspects to students so that they can improve their skills not only in the natural and social sciences but also in mathematics.

There are several factors that affect students' learning such as the teacher, the student himself, infrastructure, tools, media, and environmental factors. (Sanjaya, 2010). Educators should not only try to teach the subject but help the individual learner to think and not only receive what is being given. It is the educator's responsibility to strengthen their knowledge and use various methods in teaching. Ahmad, et., al, (2008) assert that use of technology in teaching mathematics can transform a classroom from a boring place to an exciting learning environment. Therefore, educators should know how to incorporate technology to facilitate students learning through experience. Moreover, integrating technologies in mathematics education develops students' motivation, higher order thinking, research skills, and communication among the peers (Berna and Esra, 2010).

The researcher, a mathematics teacher at Catalino D. Cerezo National High School in Malasiqui, Pangasinan has observed that students find difficulty in geometry. One of the most common problems encountered by students is their ability to comprehend spatial objects like those areas in geometry. The researcher experienced teaching almost all the subjects offered in Junior High School. She found multimedia integration effective in teaching Science, Edukasyon sa Pagpapakatao, and Technology and Livelihood Education. It is in this light that the researcher came up with this proposed study to find out the effectiveness of integrating multimedia in teaching Geometry to Grade 9 learners.

2 Review of Related Literature

The reviewed studies are contributory to the present study in one way or another. These studies provide information and ideas that contribute to the flow of the study that served as a guide to the researcher.

The present study is different from other studies reviewed since it has different subjects, locale and research design. On the other hand, the studies of Bradley (2007), Gebreyohannes and Hasan (2016), Ahmad, et. al., (2008),

and Ogochukwu, (2010) have similarities with the present study because the studies mentioned the use of multimedia integration in teaching mathematics. The studies of Alday and Panaligan (2010), Marquez (2017), and Ramos, Abanto, and de Chavez (2018) have also similarities with the present study because the mentioned studies integrated technology in teaching that could improve learner's performance.

3 Research Methodology

3.1 Research Design

This study utilized quasi-experimental design of research and made use of pretest and post-test to compare the effectiveness of multimedia integration and traditional teaching in the performance of Grade 9 learner in geometry.

3.2 Population and Sample Size

The subjects of the study are Grade 9 students of Catalino D. Cerezo National High School during the school year 2018-2019. Upon enrolment, students were assigned heterogeneously to either Section Dove or Section Eagle. The former is composed of 40 students while the latter comprise of 35 students. By tossing a coin, Section Dove was assigned as the control group while Section Eagle was identified as the experimental group.

3.3 Statistical Treatment of Data

To answer sub-problem number 1 and 3, mean and mean percentage scores (MPS) were used to determine the performance of the control and experimental groups. To answer sub-problem number 1 and 3, mean and mean percentage scores (MPS) were used to determine the performance of the control and experimental groups. To answer sub-problem number 1 and 3, mean and mean percentage scores (MPS) were used to determine the performance of the control and experimental groups.

4 Presentation, Analysis and Interpretation of Data

4.1 Level of Performance in Geometry of Control and Experimental Group before the Multimedia Integration

Table 1 reveals that the performance of both control and experimental groups have a low mastery in geometry with 32.70 MPS and 32.46 MPS respectively. This implies that learners in both groups had low level of fundamental knowledge and understanding in geometry prior to the conduct of the experimental study.

Table 1. Level of Performance in Geometry of Control and Experimental Group as Revealed in the Pretest Results

Group	Mean	MPS	Level of Performance
Control	16.35	32.70	Low Mastery
Experimental	16.23	32.46	Low Mastery

4.2 Test of Significance of the Difference in the Pretest Performance in Geometry of the Control and Experimental Groups

Table 2 discloses that the pretest performance in Geometry of control group is not significantly different (.121) from the performance of the experimental group (p=0.898). These findings warrant the researcher to accept the null hypothesis, thus, there is no significant difference between the performance in geometry of the control and experimental group as revealed by the pretest results. This implies that both groups have the same level of initial performance prior to the experiment proper.

Table 2. Test of Significance of the Difference in the Pretest Performance in Geometry of the Control and Experimental Group

Group	Mean	Mean Difference	t	Sig. (2-tailed)	Significance	Decision
Control	16.35	0.121	0.129	0.898	Not Significant	Accept H_0
Experimental	16.23					

4.3 Level of Performance in Geometry of Control and Experimental Group after the Multimedia Integration

Table 3 shows the post-test performance of Grade 9 learners in Geometry. It reveals that the experimental group performed better having a "closely approximating mastery level" (MPS = 74.40) than the control group with "average mastery level" (MPS = 54.06). This implies that multimedia integration facilitates well in the learning process of the experimental group. This would entail that multimedia integration could be a potential to teaching approach be used in enhancing learner's performance in geometry.

Table 3. Level of Performance in Geometry of Control and Experimental Group as Revealed in the Post-test Results

Group	Mean	MPS	Level of Performance
Control	27.03	54.06	Average Mastery
Experimental	37.20	74.40	Closely Approximating Mastery

4.4 Test of Significance of the Difference in the Post-test Performance in Geometry of the Control and Experimental Group

The table reveals that the post-test performance in geometry of the experimental group is significantly higher than the control group with $p<.000$ ($t=7.722$). This finding warrants the researcher to reject the null hypothesis at .05 level of significance.

Table 4. Test of Significance of the Difference in the Post-test Performance in Geometry of the Control and Experimental Group

Group	Mean	Mean Difference	Computed T Value	Sig. (2-tailed)	Significance	Decision
Control	27.03	10.17	7.722	0.000	Significant	Reject H_0
Experimental	37.20					

4.5 Test of Significance of the Difference in the Pretest and Post-test Performance in Geometry of each of the Control and Experimental Group

Table 5 shows a mean difference of 10.68 in the pretest and post-test in geometry of the control group. Evidently, there was an increased in their posttest level of performance.

Table 5. Test of Significance of the Difference in the Pretest and Post-test Performance in Geometry of the Control Group

Group	Mean	Mean Difference	Computed T Value	Sig. (2-tailed)	Significance	Decision
Control	16.35	10.68	23.634	0.000	Significant	Reject H_0
Experimental	27.03					

After employing the t-test with p<.000 which supposed the .05 alpha level, the researcher came up with a decision to reject the null hypothesis. Thus, the post-test performance of the control group in geometry improved as compared to their pretest performance. However, the learners attained average mastery only as shown in Table 3. This implies that traditional teaching approach is not highly effective in enhancing the student's performance in Geometry.

Table 6. Test of Significance of the Difference in the Pretest and Post-test Performance in Geometry of the Experimental Group

Group	Mean	Mean Difference	Computed T Value	Significance	Decision
Control	16.23	20.97	54.077	Significant	H_0 is rejected
Experimental	37.20				

Table 6 reveals that the post-test performance in Geometry of the experimental group is significantly higher with p<.000 (t=54.077) than their pretest performance with a mean difference of 20.97. The null hypothesis is hereby rejected at .05 level of significance.

5 Conclusion and Recommendation

Based on their pretest results, Grade 9 learners have difficulties in understanding the fundamental knowledge in geometry. Prior to the utilization of multimedia integration in teaching geometry, the two groups of learners have comparable level of performance. Learners find it easier to understand geometry when taught through the use of multimedia. Learners taught by using multimedia integration approach perform better in geometry than those taught in the traditional approach. Multimedia integration in teaching is very effective in enhancing learner's performance in geometry.

The researcher recommends multimedia integration approach in teaching geometry among Grade 9 learners. School administrators should encourage teachers to utilize new strategies
of teaching that fit the interest of Grade 9 learners especially in mathematics. Further studies should be conducted to include other factors that affect the level of performance among learners.

References

Ahmad F.M.A, Tengku Mohd T.S., Wong S.L, (2008), Teaching and Learning Calculus Using Computer. The Thirteenth Asian Technology Conference in Mathematics.

Alday, R. & Panaligan, A. (2010). The Effects of E-learning in Mathematics to College Students: The Philippines Experience. In D. Gibson & B. Dodge (Eds.), Proceedings of SITE 2010--Society for Information Technology & Teacher Education International Conference (pp. 2629-2633). San Diego, CA, USA: Association for the Advancement of Computing in Education (AACE)

Bradley Randy V. 2007. A Study on the Impact of GPA on Perceived Improvement of Higher-Order Cognitive Skills

Gebreyohannes, Haftamu Menker & Hasan, Raza. (2016). Impact of Multimedia in Teaching Mathematics. International Journal of Mathematics Trends and Technology (IJMTT).