

MULTIMEDIA-BASED APPROACH ON THE ACADEMIC PERFORMANCE OF GRADE 3 LEARNERS IN SCIENCE

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Abstract. This study aimed to determine the effects of multimedia-based approach on the academic performance of the Grade 3 learners in Science subject. It investigated the academic performances of the learners before and after the application of interventions: traditional approach (control group) and multimedia-based approach (experimental group). Findings show that there is a significant difference in the level of performance of the learners exposed to multimedia-based approach and those exposed to traditional approach as revealed by the pre-test and post-test results. In the pre-test administered, the experimental group obtained a higher mean score than the control group with Mean Percentage Score of 31 % and 41.43 % respectively. While in the post-test, the learners in the control group obtained a Mean Percentage Score of 39.36 % and the experimental group had 54.23 %. Both groups improved in their performances but the performance of the experimental group is much higher after the exposure to the multimedia-based approach than that of the control group.

Keywords. Multimedia-based approach, academic performance, grade 3 learners, science

1 Introduction

The use of Information and Communications Technology in classroom instruction has dramatically increased for the past decades. This is because multimedia has been recognized as powerful tool in promoting a comprehensive learning experience (Ogochukwu, 2010).

Multimedia-based instruction is described as the integration of the combination of various digital media types, such as text, images, sound, and video, into an integrated multisensory interactive application or presentation to convey a message or information to the learners. It may also refer to computer-based systems and/or links that allow users to navigate and retrieve information from other media (Ogochukwu, 2010).

For the past two years of teaching Science, the teacher had struggled with finding an effective method for learners to engage and actively participate in learning science subject. Another problem encountered by the teacher and other elementary Science teachers is the lack of interest of learners in paying attention in class due to the traditional approach of teaching which leads to boredom and inattentiveness. These learners prefer to talk with their seatmates and play around. As a 21st century teacher, multimedia-based approach is an innovative strategy that enhances motivation, active participation, interest, and comprehension of learners in learning Science. Being a Grade 3 Science teacher, the researcher looked for an effective way of teaching using multimedia-based approach in Grade 3 Science, to finally cater and help the needs of learners to enhance their abilities, comprehension and develop their minds through science concepts and ideas.

With the abovementioned, there is indeed a need to conduct this study in order to identify the effectiveness of multimedia-based approach on the academic performance of Grade 3 learners in Science.

2 Review of Related Literature

The present study has similarities and differences with the previous investigations conducted by several researchers. The related studies discussed in this chapter served as a guide and help for the researcher to formulate her ideas regarding the present study.

The present study is similar to the study of Nuzir, et.al (2012) which investigated the impact of utilizing multimedia technologies on enhancing, or not, the effectiveness of teaching students at early stages in Jordanian primary schools. Two groups are selected from a local school based on their own class distribution where one group was taught the subject in basic math using a program developed for this purpose. The second class was taught the same subject using traditional methods of teaching (i.e. direct student to child instruction, board, etc.).

The present study is very much similar to the study of Nuñez (2017) which made use of downloaded interactive animations and images. They differ in terms of topic. The study of Nuñez (2017) also administered pre-test prior to use of the interactive animation and post-test after to gauge the effectivity of the interactive animations. The other studies such as those of Williamson (2013), Hermogeno (2018), Anderson and Barnett's (2013) are related to the present study because they all compared the use of multimedia strategy versus the traditional strategy in teaching.

3 Research Methodology

3.1 Research Design

The study employed the quasi-experimental two-group pre-test post-test design. Quasi-experimental design is used to evaluate interventions but do not use randomization because it is quite hard to separate the pupils from their usual class. Similar to randomized trials, quasi-experiments aim to demonstrate causality between an intervention and an outcome. The control groups chosen are comparison groups.

3.2 Population and Sample Size

A total of 70 Grade 3 learners from two class sections served as the participants of this study having 35 learners in each group. The Grade 3- St. Jude served as the experimental group and Grade 3- St. Simeon as the control group. This present study was conducted at Malasiqui Catholic School. Malasiqui Catholic School (MCS) is a private school under the Archdiocese of Lingayen-Dagupan Catholic Schools

3.3 Statistical Treatment of Data

To determine the level of performance in Science of Grade 3 learners before the experiment, the mean score was obtained from the pre-test that was used. The Mean Percentage Score was employed to determine and further describe the learner's performance. Likewise, mean score and mean percentage were used to determine the learner's performance in the post-test. To compare the performance of the two groups in the pre-test as well as in the post-test, t-test for independent samples was employed. The t-test for correlated data was used in determining the significant difference in the pre-test and post-test within each of the two groups namely; control group and experimental group.

4 Presentation, Analysis and Interpretation of Data

4.1 Performance of the Grade 3 Learners in Science as Revealed by the Pre- Test Results

It could be gleaned from Table 1 that the control group obtained a mean score of 12.40 while the experimental group obtained a mean score of 16.57. These mean scores translate to a mean percentage score of 31% and 41.43%, respectively. It should be noted that both groups obtained way below DepEd's prescribed mastery level of 75%. It could be deduced that there is really a need to improve the performance of the Grade 3 learners in Science.

Table 1. Pre-test Result

Group	Mean	Mean Percentage Score (MPS)
Control	12.40	31%
Experimental	16.57	41.43%

4.2 Test for the Significance of the Difference in the Performance of the Control and Experimental Group in the Pre-Test

Table 3 shows that there is significant difference in the pretest performance of the control and experimental groups having a mean difference of 4.17 and the computed t- value of 2.493. The experimental group has a mean score of 16.57, a bit higher than the control group that has a mean score of 12.40.

Table 2. Test for the Significance of the Difference in the Pre-Test Performance of the Two Groups

Group	Mean	Mean Difference	Computed T Value	Significance	Decision
Control	12.40	4.17	2.493	Significant	Reject H ₀
Experimental	16.57				

Critical t- value = 1.668, at $\alpha = .05$ with $df = 68$

4.3 Performance of the Grade 3 Learners after the Exposure to Multimedia-Based Approach as Revealed by the Post-Test

The Experimental Group obtained a higher mean than the Control Group. When it comes to the mean percentage scores, accordingly the Experimental Group also has a higher MPS than the Control Group. Although the MPS of the Experimental Group is high still it did not reach the prescribed mastery level by the DepEd which is 75 %. But the results show that there is an improvement in the performance of the Grade 3 learners exposed to multimedia as well those

exposed to traditional instruction; only that the improvement in the former is higher than that of the latter.

Table 3. Post-test Result

Group	Mean	Mean Percentage Score (MPS)
Control	15.74	39.35%
Experimental	21.69	54.23%

4.4 Performance of the Grade 3 Learners after the Exposure to Multimedia-Based Approach as Revealed by the Post-Test

Table 4. Test for the Significance of the Difference in the Post-Test Performance of the Two Groups

Group	Mean	Mean Difference	Computed T Value	Significance	Decision
Control	15.74	5.95	3.495	Significant	Reject H ₀
Experimental	21.69				

Critical t- value = 1.668, at $\alpha = .05$ with $df = 68$

Looking intently at Table 4, it could be deduced that when the post- test results of the Control and Experimental Groups were compared, results show that the Experimental Group performance is better than the Control Group.

Having a mean difference of 5.95 and the computed t- value is 3.495 which is higher than the critical value of 1.67, it could be decided that the null hypothesis which states that there is a significant difference in the performance of the 2 groups of Grade 3 Learners is hereby rejected.

4.5 Difference in the Performance of Grade 3 Learners in Science Before and After the Exposure to the Multimedia-Based Approach

Table 5. Test for the Significance of the Difference of the Performance in the Pre-Test and Post-Test of the Control Group

Group	Mean	Mean Difference	Computed T Value	Significance	Decision
Control	12.40	3.34	1.823	Significant	H ₀ is rejected
Experimental	15.74				

Critical t- value = 1.668, at $\alpha = .05$ with $df = 68$

Table 5 shows the results of the pre-test and post-test administered to the Control Group. It shows that there is a significant difference in the performance of the members of the said group. It can be gleaned from the table that there is an increase in the post test mean of 3.34. It means that the pre-test and post- test results show that there was indeed improvement in learning acquired.

Table 6. Test for the Significance of the Difference of the Performance in the Pre-Test and Post-Test of the Experimental Group

Group	Mean	Mean Difference	Computed T Value	Significance	Decision
Control	16.57	5.12	7.89	Significant	H ₀ is rejected
Experimental	21.69				

Critical t- value = 1.668, at $\alpha = .05$ with $df = 68$

Table 6 shows that the pre-test and post-test results of the Experimental Group also showed the improvement of the learner's performance in the group. It can be gleaned from the same table that there is an increase in the mean scores of the experimental group with 5.12 mean difference. Hence, it may be inferred that there is significant difference between the pre-test and post-test mean score of the experimental group after the implementation of the multimedia-based approach to the Experimental group.

5 Conclusion and Recommendation

The level of performance of the learners to be exposed to multimedia-based approach is a little bit higher than those to be exposed in traditional approach as revealed by the pre-test results. However, the corresponding mean percentage scores are way below the 75% mastery level prescribed by the DepEd. There is a significant difference in the level of performance of the two groups in the pre-test with the experimental group demonstrating a higher mean performance. The level of performance of the Experimental Group is higher than the Control Group based on the post-test results. There is a significant difference in the level of performance of the two groups with the experimental group having an edge over that of the control group. There is a significant difference in the performance of each groups in the pre-test and post-test results. Although the multimedia-based approach as well as the traditional approach are effective in enhancing the performances of the learners in Science, the multimedia-based approach is more effective than the traditional approach.

Science teachers should find out interesting and effective teaching approaches in Science. Multimedia should be used as instructional approach in teaching Science to Grade 3 Learners.

Other teachers should use multimedia now a days as an instructional approach which could be effectively used in their subject areas. School administrators should design training programs focused on the use of multimedia-based approach in teaching.

References

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