

EFFECTIVENESS OF INSTRUCTIONAL VIDEO LESSONS ON THE PERFORMANCE OF GRADE 6 LEARNERS IN SCIENCE IN THE NEW NORMAL EDUCATION

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Abstract. This study aimed to determine the effectiveness of instructional video lessons on the performance of grade 6 learners in Science in the New Normal Education at Angatel Elementary School, Urbiztondo during the fourth quarter of the school year 2020-2021. The control and experimental groups marked an increase in their performance in the post-test, but the improvement was significantly greater in the Experimental Group having a mean difference of 4.03. The computed t-value of 3.837 is higher than the critical t-value of 1.993 at a .05 level of significance with 74 degrees of freedom. The null hypothesis that there is no significant difference in the level of performance of the two groups in the post-test is rejected. The pre-test and post-test of the control group indicate an improvement in their level of performance in Science 6. There is a significant difference in the performance based on the pre-test and post-test. The computed t-value is 14.126 which is higher than the critical t-value of 2.026 at a .05 level of significance with a degree of freedom of 37. There is a significant difference in the performance of the experimental group in the pre-test and post-test. The computed t-value of 31.220 is higher than the critical t-value of 2.026 at a .05 level of significance with a degree of freedom of 37. Thus, there was a significant improvement in the performance of the experimental group who were exposed to instructional video lessons. Elementary teachers should be encouraged to utilize instructional video lessons as an alternative teaching strategy to increase the level of performance of learners in Science.

Keywords. New Normal Education, Instructional Video Lessons, Science, Performance Level, Modular Distance Instruction

1 Introduction

The rapid change from largely in-person to fully remote instruction and learning brought on by the COVID-19 pandemic presented numerous challenges for teachers and professors in all subjects notably in the sciences, which often require in-person laboratory work. Moreover, the switch from in-person to remote instruction in the spring of 2020 meant that educators needed to quickly adjust their methods to fit an online environment with the use of video lessons.

The video has become an important part of education. It is integrated as part of traditional courses, serves as a cornerstone of many blended courses, and is often the main information-delivery mechanism in online courses. Several meta-analyses have shown that technology can enhance learning (Means et al., 2010; Schmid et al., 2014), and multiple studies have shown that video, specifically, can be a highly effective educational tool (Allen and Smith, 2012; Kay, 2012; Lloyd and Robertson, 2012; Rackaway, 2012; Hsin and Cigas, 2013; Stockwell et al., 2015). Video may have particular value for student preparation in biology classes, in part because students may find it more engaging (Stockwell et al., 2015) and because it can be well suited to illuminating the abstract or hard-to-visualize phenomena that are the focus of so many biology classes (Dash et al., 2016).

A non-government organization, Save the Children Philippines, supports the call for continuous learning amidst the pandemic. They believe that education should never stop even in these challenging times. In line with this, DepEd has explored different modes of learning such as modular-based and media-based interventions. The pandemic has drastically changed the education landscape and revealed old and new challenges such as the digital divide (Altbach and De Wit, 2020; HESB, 2020) — a term coined for lack of appropriate gadgets, internet inaccessibility, teachers' "learning-by-doing set-up," and other hybrid online opportunities.

The DepEd announced the initialization of educational classes through blended learning amid the COVID-19 pandemic in the Philippines. Among many options is to broadcast learning modules on television and radio. The department later

tapped the state media agency Presidential Communications Operations Office (PCOO) to assist in producing and airing lessons and modules.

Learners today are using educational videos as a tool for learning everything: from basic skills - like changing a tire - to the latest dance craze. Remarkably, millennials make up 92% of the digital video-viewing audience. Abstract topics that once seemed difficult to teach and learn are now more accessible and understandable thanks to the availability of effective educational video platforms for online learning.

Effective use of video as an educational tool is enhanced when instructors consider three elements: how to manage the cognitive load of the video; how to maximize student engagement with the video; and how to promote active learning from the video (Brame, 2017).

Further providing impel as to the need to conduct the study is the result of the National Achievement Test (NAT) obtained in the year 2017-2018 in Angatel Elementary School was very alarming because the Mean Percentage Score (MPS) did not meet the 75% standard. Science posted the lowest Mean Percentage Score of 68.28%. Based on the results of the Summative Test 2019-2020 gathered by the research, Angatel Elementary School's Mean Percentage Score in Grade 6 Science is below 75% mastery level.

The abovementioned has urged the researcher to conduct this study to know the effectiveness of instructional video lessons in the performance of the Grade 6 learners in Science especially in this time of pandemic brought about by COVID-19, to find out what method of teaching is more effective for the learners to actively engage in learning while easily processing information and creating a meaningful understanding of Science Concepts.

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 will contribute to the flow of the study and serve as a guide to the researcher.

The present study is different from other studies reviewed since it has different subjects and research designs. On the other hand, the studies of Fernandez (2019), Forelo (2019), Reyes (2017), and Nunez (2017) have similarities with the present study. They used the experimental method of research and employed a pre-test, before the use of multimedia instruction and a post-test after to gauge the effectiveness of multimedia instruction. The latter study differs in the use of instructional videos to test the effectiveness of teaching Science.

The studies of Resngit (2018) and Aquino (2019) emphasized the importance of teachers in developing and preparing proper and efficient instructional materials in the delivery of instruction. These studies are much related to the present study because the researcher carefully selected and prepared instructional video lessons in the delivery of instruction.

The studies of Kosterelioglu (2016), Abragan (2017), and Flores (2018) used video clips and educational videos to test the performance of the learners. This is similar to the present study because the researcher will use instructional video lessons to test the performance of the learners. The studies of Mendiguarin (2017), Kimmons (2017), and Maminta (2020) have similarities with the present study because of the integration of technology in teaching which could improve learners' performance.

3 Research Methodology

3.1 Research Design

The researcher made use of the experimental method of research. It employed the two-group pre-test/post-test design in which the control group was exposed to the modular distance instruction while the experimental group was exposed to the instructional video lessons. Comparisons of the pretest/post-test results are made before and after the interventions. The lessons using instructional video lessons were conducted during the fourth quarter of the school year 2020-2021.

According to Kendra (2019), the experimental method involves manipulating one variable to determine if changes in one variable cause changes in another variable. This method relies on controlled methods, random assignment, and the manipulation of variables to test a hypothesis. This study employed the experimental method of research because it provides a systematic and logical method of answering the questions. It is a true experiment because the sampling technique was employed in the selection of a control group and an experimental group (Calmorin, 2005).

3.2 Sources of Data

The primary sources of data are the Grade 6 learners of Angatel Elementary School. Their performance was tested along the topics in the fourth quarter following the Most Essential Learning Competencies (MELCs) in Science to determine the effectiveness of the use of instructional video lessons in teaching Science in the new normal education.

The researcher used the Self-Learning Modules (SLMs) prescribed by the Department of Education in line with teaching Grade 6 Science under DepEd Order No. 12 s. 2020 on Basic Education Learning Continuity Plan (BE-LCP). For the experimental group, the researcher downloaded instructional video lessons related to every topic used in this study in teaching Grade 6-Rizal learners.

The pre-test and post-test results were used to describe the level of performance of the control group and the experimental group before and after the experiment.

3.3 Statistical Treatment of Data

To answer sub-problem number 1 and sub-problem number 3, the Mean and Mean Percentage Scores were used. To answer sub-problem 2 and sub-problem number 4, t-tests for independent groups or uncorrelated means were used. To answer sub-problem number 5, a t-test for dependent groups or correlated means was used in determining the significance of the difference in the pre-test and post-test within each of the two groups namely, the control group and the experimental group.

4 Presentation, Analysis, and Interpretation of Data

4.1 Performance Level of the Grade 6 Learners in Science

The performance level of the grade 6 learners in Science was tested during this time of pandemic brought about by COVID-19 following the Basic Education Learning Continuity Plan (BE-LCP) of the school. The test of the performance level is based on the results of the pre-test and post-test composed of a 50-item test. The control and experimental groups answered the test before and after the employment of two teaching strategies in the new normal education.

4.2 Performance of the Grade 6 Learners in Science in the Pre-Test

The initial performance of the Grade 6 learners in Science was obtained through the administration of the Pre-test. The 50-item teacher-made test was administered to the control and experimental groups before the start of the fourth quarter of the school year 2020-2021 (May 17 to July 10, 2021). Table 2 presents the results of the pre-test.

Table 2. Pre-test Results of Control and Experimental Group in Science 6

Group	Mean	Mean Percentage Score (MPS)	Standard Deviation
Control	24.26	48.52	4.28
Experimental	23.13	46.26	3.79

The table shows the computed mean and mean percentage scores of the control and experimental groups in the pre-test. The table discloses that the control group obtained a mean score of 24.26 and a mean percentage score of 48.52. On the other hand, the experimental group obtained a mean of 23.13 and a mean percentage of 46.26. Based on the data obtained,

the control group obtained a higher mean score than the experimental group in the pre-test. Analysis of the data shows that the mean percentage score obtained by the two groups of respondents did not meet the 75% mastery level prescribed by the Department of Education in the new normal education using the most essential learning competencies (MELCs) in Science.

The findings of the study are similar to the findings of Maminta (2020) in her study on the effectiveness of multimedia material in teaching Grade 6 TLE, where the control and experimental got the same mean percentage score which is below 75% mastery level. This implies that teachers should find ways for learners can achieve the target mastery level set by the Department of Education in improving their academic performance in Science.

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

It could be seen from the same table that the control group obtained a mean of 24.26 higher than the experimental group with a mean score of 23.13. Looking intently at Table 3, it could be seen that the learners registered a mean difference of 1.13. The computed t-value, however, is 1.219 which is not significant.

Table 3. Test of Significance of the Difference in the Performance of the Control and Experimental Groups in the Pre-Test
N=76

Group	Mean	Mean Difference	Computed t-value	Significance	Decision
Control	24.26	1.13	1.219	Not Significant	Ho is Accepted
Experimental	23.13				

Critical t-value = 1.993 at .05, df = 74

It could be deduced that the null hypothesis that there is no significant difference in the performance of the two groups in the pre-test is accepted because the computed t-value is lesser than the critical t-value of 1.993 at a .05 level of significance. This would mean that the two groups were comparable before the experiment was conducted.

4.4 Performance of Grade 6 Learners in Science in the Post-Test

Table 4 discloses that the learners in the control group obtained a mean score of 35.57 in the post-test in Science 6. The Mean Percentage Score of this group exposed to modular distance instruction is 71.16. It can be gleaned from the table that, the Mean Percentage Score of 71.16 is below the mastery level (75%) set by the Department of Education. The learners in the experimental group on the other hand, obtained a mean score of 39.61 in the post-test in Science 6 and the computed Mean Percentage Score of this group exposed to instructional video lessons is 79.22 which is above 75% mastery level standard set by the Department of Education.

It can be deduced from the table that the experimental group has achieved a higher mean and Mean Percentage Score (MPS) in Science 6 using the instructional video lesson than those who are exposed to modular distance instruction.

Table 4. Pre-test Results of Control and Experimental Group in Science 6

Group	Mean	Mean Percentage Score (MPS)	Standard Deviation
Control	35.57	71.16	4.42
Experimental	39.60	79.22	4.72

4.5 Test of Significance of the Difference in the Performance of the Control and Experimental Group in the Post-Test

Table 5 reveals the significant difference in the performance of the control and experimental groups in Science. It could be gleaned from the table that the control group obtained a mean score of 35.57. On the other hand, the experimental group obtained a mean score of 39.60. The mean difference between the two groups is 4.03. The computed t-value is 3.837 which is higher than the critical value of 1.993 at a .05 level of significance with 74 degrees of freedom. Since the computed t-value is higher than the critical t-value, the null hypothesis which states that there is no significant difference in the performance of the grade 6 learners of the two groups in the post-test is rejected. The level of performance is significantly greater in the Experimental Group.

Table 5. Test of Significance of the Difference in the Performance of the Control and Experimental Group in the Post-Test
N=76

Group	Mean	Mean Difference	Computed t-value	Significance	Decision
Control	35.57	4.03	3.837	*Significant	Ho is Rejected
Experimental	39.60				

Critical t-value = 1.993 at .05, df = 74

The findings of the study are also similar to the findings of Forelo (2019) that both groups improved in their performances but the performance of the experimental group was much higher after the exposure to instructional video lessons than that of the control group. This supports the statement of Nawzad & Said (2018) that teaching science subjects with technology increases the learner's interest in the learning process improves the student's achievement scores and also helps the students to do their homework more easily compared to the traditional teaching methods.

4.6 Test of Significance of the Difference in the Performance of the Control Group in the Pre-test and Post-Test

Table 6. Test of Significance of the Difference in the Performance of the Control Group in the Pre-test and Post-Test
N= 38

Group	Mean	Mean Difference	Computed t-value	Significance	Decision
Control	35.57	4.03	3.837	*Significant	Ho is Rejected
Experimental	39.60				

Critical t-value = 1.993 at .05, df = 74

Table 6 discloses that the pre-test and post-test of the control group indicated an improvement in their level of performance in Science. It can be observed that there is an increase in the mean score of the control group with a mean difference of 11.31. Hence, it can be inferred that there is a significant difference in their performance in the pre-test and post-test. The computed t-value of 14.126 is greater than the critical t-value of 2.026 at a .05 level of significance with a degree of freedom of 37. Thus, the null hypothesis is rejected.

This implies that modular distance instruction can still be effective in teaching but as the mean percentage score of the control group in the post-test, it has not met the prescribed mastery level of 75% prescribed by the Department of Education.

4.7 Test of Significance of the Difference in the Performance of the Experimental Group in the Pre-Test and Post-Test

Table 7 shows the data on the pre-test and post-test of the experimental group exposed to instructional video lessons. It has a mean difference of 16.47 and computed t-value of 1.220 which is higher than the critical value of 2.026 at a .05 level of significance with degrees of freedom.

It can be deduced that the null hypothesis which states that there is no significant difference in the performance of the grade 6 learners in Science as exposed to instructional video lessons in the pre-test and post-test is hereby rejected. The rejection of the null hypothesis is based on the difference between the computed value from the critical value.

This reflects that there was a significant improvement in the performance of this group in Science after they were exposed to instructional video lessons. The group's mean percentage score of 79.22 is also above the prescribed 75% mastery level standard set by the Department of Education.

The finding of the study corroborates the statement of A.D. Greenberg et al. (2012) that video-based material boosts student creativity and cooperation and can motivate and create a distinctive context for their learning experience. It also supports the study conducted by Aquino (2019) on the effect of digitized instructional materials on the performance of grade 3 learners in Science. She found out that there was a significant difference in the performance of the experimental group in the pre-test and post-test. Teachers are therefore encouraged to use instructional video lessons to help increase the level of performance of learners.

Table 7. Test of Significance of the Difference in the Performance of the Experimental Group in the Pre-Test and Post-Test
N= 38

	Mean	Mean Difference	Computed t-value	Significance	Decision
Pre-test	23.13	16.47	31.220	*Significant	Ho is Rejected
Post-test	39.60				

Critical t-value = 2.026 at 0.05, df = 37

5 Conclusion and Recommendation

The performance of the control and experimental groups in the pre-test is very low. Based on their performance in the pre-test, the two groups are comparable before instruction during the fourth quarter. The level of performance of the experimental group is higher than the control group based on the post-test results. The experimental group performed better than the control group after using the instructional video lessons in Science 6. There is a significant improvement in the performance of each of the two groups in the pre-test and post-test results.

Instructional video lessons should be used as a teaching strategy in teaching Science to Grade 6 learners in the New Normal Education. Elementary teachers should be encouraged to utilize instructional video lessons as an alternative teaching strategy to increase the level of performance of learners in Science. Instructional video lessons should be developed for use by teachers in other subject areas. Teachers should explore and use a variety of approaches that can lead to improvement of learners' performance. Similar studies should be conducted in other learning areas to determine the effectiveness of video lessons on the performance of learners in other grade levels.

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