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IMPROVING THE PERFORMANCE OF GRADE 8 STUDENTS OF BINAN SECONDARY SCHOOL OF APPLIED ACADEMICS USING SCIENCE TEACHING KIT (STK)



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ABSTRACT

The New Normal Education greatly affects the learners' study habits. Since Biñan Secondary School of Applied Academics has blended learning (face-to-face and modular) the Grade 8 science teachers encountered problems within a particular educational context, wherein students demonstrate challenges including continuously low performance on quizzes, struggles with reading comprehension, lack of interest during class discussions, and increased rates of absenteeism. According to the PISA results of 2018, the spotty quality of Philippine basic education is something we knew anecdotally but did not have objective evidence to bring into a national discourse on education quality. The headline news is that the Philippines scored lowest in Reading and second lowest in Mathematics and Science among the 79 participating countries.

This research examines the effects of incorporating the Science Teaching Kit (STK) as an additional instructional resource for Grade 8 students during the first quarter of the academic year 2023-2024 at BSSAA. The study aims to assess the efficacy of the STK in promoting a solution-oriented approach by comparing its effectiveness in two groups: an experimental group utilizing the Science Teaching Kit (STK) and a control group following traditional methods of Grade-8 Science PIVOT. The mean, and performance level on the actual lesson and the utilization of STK were computed. The result shows that giving STK helps significantly improve their academic achievement. Thus the researchers highly recommend the giving of STK as an additional learning material for the students that can be utilized in their home or in classroom-based learning.

Keywords: *New Normal Education Teachers, Science Teaching Kit, Traditional method, Academic achievement, additional learning material*

INTRODUCTION

Since the new normal education was implemented, the start of the school year is eagerly awaited. Binan Secondary School Applied Academics (BSSAA) monitored Grade 8 pupils' academic progress in the weeks few weeks after the school started. Since the school offered blended learning (face-to-face and modular), the researcher as a Grade 8 science teacher encountered issues including low exam scores, reading comprehension, discussion interest, and absenteeism. Science, one of the most difficult but exciting subjects, becomes harder with each level. Teachers must also make Science lesson entertaining and engaging because they are tough. In 2018, the Programme for International Student Assessment (PISA) found that Filipino students scored lower than the OECD average in reading, mathematics, and science with mean scores of 340, 353, and 357. According to PISA 2018, almost 80% of Filipino students did not exceed the minimal reading proficiency level.

According to Apperson, Law, and Scepansky in 2006, intervention materials excite students to understand science and concepts and teachers engage them, resulting in active class involvement and lifelong skills. The researchers observed that students are enthused about basic tasks and are engaged not only by what they read but also by images and hands-on activities. The Science Teaching Kit (STK) consists of a learning booklet with attached simple activity sheets (cut-outs) for the students to engage in week 7 of quarter 1 in Science 8 focusing on the topic of the relationship between voltage and current for the SY. 2023-2024. In this study, the researchers determined if STK would help improve the performance of Grade 8 Science students at BSSAA.

METHODOLOGY

The researcher will employ quasi-experimental methods. Grade 8 Garnet and Ruby sections as the participants. Both control and experimental groups have 30 pupils. Experimental group gets pretest, treatment, and posttest whereas comparison group gets only pretest and posttest.

The procedure for data collection were summarized below:

Phase I. Creating the STK materials.

The timetable for the research team includes preparation activities and consultation meetings, which are aligned with the study's objectives. The development of the STK booklet, as well as the selection and preparation of activities and tools for use in the research. The evaluators from the BSSAA conducted the checking and validation of the instruments.

Phase II. Validation, revision, and reproduction.

The researchers employed validated materials and equipment, which included the Science Teaching Kit (STK), pre-test and post-test. The materials and instruments underwent revision in accordance with the recommendations provided by the evaluators. Subsequently, the process of reproduction was carried out.

Phase III. Administration and Implementation.

The researchers administered the pre-test before the presentation of the lesson. Then, STK was utilized as additional learning material in the classroom discussion and as a material for home-based learning during week 7 and 8 of the first quarter. The participants were given post-tests to determine if there is a mean difference between the student's performance with the use of STK compared to those without using STK.

Phase IV. Analysis and reporting

Pre-test and post-test results were tabulated and analyzed using paired and unpaired T-test to determine if there is a significant difference in the performance level in learning science using STK.

RESULTS

This study's primary goal was to determine whether or not to use STK in the 4th quarter of Grade 8 students of BSSAA for the academic year 2022-2023 performance would be improved.

Specifically, it found answers to the following questions:

1. What is their performance percentage in Science after the conduct of the study using the two strategies?

1.1 Traditional Method (using Grade-8 Science LEAP)

1.2 Science Tool Kit (STK)

2. Is there a mean difference between the student's performance with the use of STK compared to those without using STK?

3. Is Grade 8 academic performance in Science improved by the use of STK?

The statistical analysis conducted on the data shown in Tables 1 and 2 reveals a significant difference between the pre-test and post-test scores seen among the chosen participants. The calculation of performance percentage of a group involves determining the difference between the average scores of the post-test and the pre-test. Class A (control group) experienced a 12% increase in average scores on the post-test when the traditional style of training was employed. In contrast, Class B (experimental group) demonstrated a 37% increase in performance percentage after the implementation of the STK approach.

Table 2 further demonstrated that the average scores of the experimental groups in both the pre-test and post-test exceeded those of the control group. This suggests that there is an improvement in the experimental group. Upon examination of the mean scores, it is evident that Group B exhibits a higher mean score of 10.13 in their post-test, in comparison to the control group which obtains a mean score of 7.27.

Table 1. Pre and post test scores of Grade 8 students under control group.

	Pre-test	Post-test
Mean	6.43	7.20
Variance	2.65	2.38
Observations	30	30
df	29	
t-calculated	5.7687	
p-value	Less than 0.0001	
t-critical	2.045	
performance %		12%

There is a mean difference of 2.93 in student performance on post-test scores between Class B with 10.13 mean scores who use STK and Class A with 7.20 mean scores who do not use STK. This suggests that the academic achievement of the two groups differs by 41%.

From the post-test results of both Class A and Class B, it is shown in Table 3 that there is a significant difference between the scores in the post-test of A and B with a p-value of 0.0012 at 95% confidence interval of this difference: from -4.66 to -1.21. From the table, it is interpreted that the performance of Class B has a greater improvement than Class A. Thus, it means that giving STK as an additional learning material helped in the academic performance of the students.

Table 2. Pre and post-test scores of Grade 8 students under experimental group.

	Pre-test	Post-test
Mean	7.27	10.13
Variance	2.42	4.07
Observations	30	30
df	29	
t-calculated	8.5646	
p-value	Less than 0.0001	
t-critical	2.045	
performance %		39%

Table 3. Comparison of post-test scores of Grade 8 students with and without giving STK

	Pre-test	Post-test
Mean	7.20	10.13
Variance	2.38	4.07
Observations	30	30
df	58	
t-calculated	3.4034	
p-value	0.0012	
t-critical	2.002	
Mean difference		2.93
performance %		41%

DISCUSSION

According to the study's findings, students who used the Science Teaching Kit (STK) as additional instructional material in the post-test performed significantly better than those who did not use the STK. The data analysis results show that providing STK to

students at home and during class lessons has a positive effect on their Science performance.

This study was successful in gathering data to answer the research questions. For research question number one, it was demonstrated that there was only a 12% performance percentage increase in average scores on the post-test of students who experienced traditional methods of learning science, whereas there was a 39% performance percentage increase in average scores on the post-test of students who used STK.

For question number 2, there is a 2.93 mean difference in student performance when using STK versus when not using STK, indicating a 41% performance percentage difference between the groups.

For question number 3, this study demonstrates that the application of STK improves academic performance in Science, specifically in learning the first quarter focusing on the topic about the relationship between voltage and current during the school year 2023-2024.

The study found that creating self-made and simplified activities and giving additional learning materials can help the students better understand the lesson and get their interest in doing the activity even at home. The findings present a compelling case for the positive impact of incorporating the Science Teaching Kit (STK) as an additional instructional tool in science education. The observed improvement in post-test performance among students who utilized the STK underscores its efficacy in enhancing learning outcomes. The curriculum has been revised, and only the most important learning competencies will be discussed. A variety of methodologies were utilized: the student-centered approach, inquiry-based learning, feedback, and creativity. Science teachers should put in extra effort to develop an easy and simple activity worksheet to assist students in progressing academically and reduce learning problems.

These results emphasize the potential of innovative teaching materials to not only supplement classroom instruction but also to bridge gaps in understanding and application of scientific concepts.

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