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**Research Article**

# The Effects of Science Intervention Material in the Academic Performance of Junior High School Students

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**ABSTRACT**

The researcher being a science teacher identified problems encountered by the students namely; low mean proficiency scores in science grade 10 during the first quarter examination, lack of interest during discussion and frequent absenteeism among students. The Division mean proficiency score target is 68 but the grade 10 students only obtained a score of 60 which is behind the target of the department. Science intervention material was conceptualized and created by the researcher based on the least mastered competencies. This material was utilized as intervention to address the problem of poor academic performance. The 15 respondents who received the science intervention material obtained *M=27.9, SD=3.13* compared to the 15 respondents in the control group who obtained *M=14.37, SD=9* demonstrated significantly better scores, *t = - 21.29, p = <.00001.* Intervention material based on least mastered competencies is an effective method of improving the academic performance of students.

*Keywords:* Academic Performance, Junior High School Students, Science Intervention Material

## Introduction

Learners create knowledge through engaging themselves with instructional materials (Dienes, 1973). To be able to create and gain knowledge, the use of strategic intervention materials becomes essential in education. Teachers are encouraged to choose, create and use educational materials to use in their teaching of science in relation to almost every activity (Kablan, 2010). Study shows that using instructional or learning materials in science surfaced numerous benefits for the students (Bozkurt & Akalın, 2010 cited by Kontas, 2016).

Using science intervention materials the remediation process helps students to gain mastery of the concepts, develop skills and attitudes. Teachers are encouraged to use science intervention materials as a form of remedial instruction (Gürbüz, 2010). With the use of science intervention material in remedial instruction has helped students to gain understanding least mastered concepts. Utilization of science intervention materials as a mean of improving

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academic performance is proven as an effective strategy in ensuring the success of students in science (Sherman & Bisanz, 2009). By using science intervention materials, students become motivated towards learning science concepts and teachers stimulate their interest, leading to active class participation and development of lifelong skills. (Apperson, Laws & Scepansky, 2006). Using various learning materials in science of helps the students to learn scientific concepts from simple to more difficult.

The researcher being a science teacher identified problems encountered by the students namely; low mean proficiency score in science 10 during the first quarter, lack of interest during discussion and absenteeism among the students. The researcher decided to prioritize low mean proficiency scores in science 10 because the researcher believes improving the academic performance of grade 10 science students will lead to the attainment of the Division target of 68 in terms of mean proficiency scores. The researcher was able to identify three major opportunities to address the problem. First, adequate numbers of instructional materials such as science intervention materials and these can be achieved with the creation of science intervention materials. Second, the conduct of remedial instruction and this can be accomplished by identifying learners at risk of failing. Third, motivating the students to engage themselves in the science intervention materials in times they are not able to come to school to help their parents. In order to decide which solution to use, the researcher made a decision making model wherein the use of teacher made science intervention material has the potential in the teaching-learning process, can be implemented and accomplished on time. Given all these, the researcher now would like to determine if the academic performance of selected grade 10 science students can be improved by utilizing science intervention material.

## Methods

The researcher utilized quasi experimental research. 30 students who did not master the expected competencies in the first quarter were included as the respondents of the study. The respondents were equally divided in to two, control and experimental group. Each group consist of 15 students. The experimental group were exposed to intervention material as a mean on remediation. Each group were given pretest and posttest. The result of pretest and posttest were subjected to statistical treatment the *t* test to determine if there is a significant difference in the academic performance of the group.

## Result and Discussion

The table shows the difference scores calculations in the pretest and posttest.

*Table 1. Difference Scores Calculations*

*Treatment 1*
$N_1$ : 30
$df_1 = N - 1 = 30 - 1 = 29$
$M_1$ : 14.37
$SS_1$: 260.97
$s^2_1 = SS_1/(N - 1) = 260.97/(30-1) = 9$

*Treatment 2*
$N_2$: 30
$df_2 = N - 1 = 30 - 1 = 29$
$M_2$ : 27.9
$SS_2$: 90.7
$s^2_2 = SS_2/(N - 1) = 90.7/(30-1) = 3.13$

T-value Calculation
$s^2_p = ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_2 + df_2)) * s^2_2) = ((29/58) * 9) + ((29/58) * 3.13) = 6.06$

$s^2_{M1} = s^2_p/N_1 = 6.06/30 = 0.2$
$s^2_{M2} = s^2_p/N_2 = 6.06/30 = 0.2$

$t = (M_1 - M_2)/\sqrt{(s^2_{M1} + s^2_{M2})}$
$= -13.53/\sqrt{0.4} = -21.29$

15 respondents who received the science intervention material obtained *M=27.9, SD=3.13* compared to the 15 respondents in the control group who obtained *M=14.37, SD=9* demonstrated significantly better scores, *t = - 21.29, p = <.00001.*

As clearly stated by Abdu-Raheem (2016) leaning materials are vital and essential tool

needed to and improve students' academic performance. As supported by Ikerionwu (2016) learning materials as can help teachers in addressing poor academic achievement and help improve students' academic performance. Ajayi and Ayodele (2001) emphasized that science intervention materials should be readily available and be utilized as remedial intervention to improve students' academic performance.

## Conclusion

Students who were exposed to teacher made science intervention material have better academic achievement compared to those students who were not exposed to intervention material. Science intervention material based on least mastered competencies is an effective method of improving the academic performance of students.

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