

## The Use of Strategic Intervention Materials in Science (SIM-S) in Improving the Academic Performance of the Learners

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**ABSTRACT:** When COVID-19 pandemic hit our country, the learning landscape rapidly changed. To adhere to the health safety protocol and standards, we opt to choose distance learning to still continue education amidst the adversity that we face. The distance learning using print modules as the new learning landscape is a challenge to the teachers, parents and most especially to the learners. The plight of the public-school teachers and learners in the academe has been an alarming issue in our educational system. As part of the much-needed effort to have quality education in the new learning landscape, this quantitative-qualitative research aims to describe the effectiveness of the intervention made by the teacher to improve the learning performance of the learners. Specifically, it seeks to identify and describe the use of strategic intervention material in Science to improve the performance of the learners.

*This study was guided by an interventional approach where the practical action research design was used.*

*The result of the study reveals that there was improvement after the intervention made to pupils with learning competencies needed as reflected during the diagnostic tests. Majority of the pupils who need the intervention find the strategic intervention material in Science to be effective in improving their academic performance.*

*The conduct of this action research on improving the least mastered learning competencies of the pupils in Science that one strategy, intervention or innovation would not fit all pupils because of their individual differences. Teachers must be creative and patient enough to find ways to lessen the problems experienced by the pupils in the new learning landscape where majority is into the modular learning approach.*

**KEYWORDS:** academic performance, modular learning, strategic intervention material

### I. INTRODUCTION

Latest science curriculum policy proposals indicate that science education should be structured on the basis of current science activities, including the creation and use of different interventions Sung (2018). Science learning competencies must be developed among grade six pupils. Upon my quest for information on improving the academic performance of the pupils in Science, revelations will surface and enumerate: a.) the diagnostic test result and assessment results in the module during the dry run show that seventy-three percent (73%) of the pupils got below average result; b.) base on my reflection with the learning modules, 65% of the pupils did not answer the assessment and c.) the pre-evaluation found out that 50% of the strategic intervention material will

be created and not yet fully utilize by the pupils. Variation of student learning in the new normal makes a teacher innovative Contreras (2020).

After gathering the information, I will perform further investigation and the following will reveal through survey and focus group discussion: a.) 73% of the pupils find the diagnostic test difficult; b.) during the return of the modules, parents should be informed well on the assessment process of the learning module; c.) pupils who have potentials and even the slow ones are eager to utilize a 100% complete strategic intervention material and d.) pupils find the strategic intervention material to be useful and meaningful rather than just answering the entire learning module.

In the new learning landscape, educators are facing learners' new adjustment to distance learning in print modules. According to Penaflor (2019) teachers should think of some teaching materials that are suited to individual needs. One of them is the use of strategic intervention materials or SIM for teaching Science Six subjects. SIM is an activity learning kit that includes a guidance card, activity card, appraisal card, enrichment card, answer card and reference card. This content will stimulate the imagination and ingenuity of the teacher. This creative teaching material can also be used as learning resources for the remediation of slow-performing learners on the basis of the least mastered skills when conducting a pre-test or diagnostic test in Science 6 and the result of the assessment during 2-week module dry-run.

Based on the diagnostic test result that was conducted to identify and determine the least mastered learning competencies in Science of the grade six pupils based on the most essential learning competencies (MELC). Only twenty-seven percent (27%) or sixteen (16) out of sixty (60) pass the Science diagnostic test while seventy-three percent (73%) or the forty-four (44) out of sixty (60) failed the diagnostic test. However, during the dry run of the learning modules, the assessment result showed an increase of which forty percent (40%) or the twenty-four (24) out of sixty (60) pupils passed and sixty percent (60%) or the thirty-six (36) pupils out of sixty (60) failed.

This study aimed to answer the following questions:

What are the feedbacks of the learners in the use of Science learning material?

What is the academic performance of the pupils in Science before and after the use of Strategic Intervention Materials (SIM)?

Is there a significant difference on the academic performance of the pupils before and after the use of Strategic Intervention Materials (SIM)?

## **II. METHODOLOGY**

This action research was guided by an interventional approach where the practical action research design was used.

This study was done in a school in the Division of Bukidnon. Sixty (60) pupils who identified their least mastered learning competencies from MELC or the Most Essential Learning Competencies in Science VI, were purposely selected to take part in the investigation. The diagnostic test result will serve as the baseline of the study.

Interviews in the vernacular were done, audiotaped, transcribed and analyzed. All interviews were voluntary in nature as evidenced by a consent form and the information gathered in the interview was dealt with the utmost confidentiality. Minimum health standards were also followed during the conduct of the interview which was done through home visits. The result of the interview regarding the learning module from the participants will serve as the anchorage in crafting and/or adopting Strategic Intervention Material in Science (SIM-S).

Analysis of the transcribed interview was done in the manner developed by Braun and Clarke (2006) which involves the following six steps: (1) familiarizing yourself with your data; (2) generating initial codes; (3) searching for themes; (4) reviewing themes; (5) defining and naming themes; and (6) producing the report.

Strategic Intervention Material in Science (SIM-S) would be utilized by the learners and they would answer the assessment to check if the SIM-S used would help improve their academic performance compared to their diagnostic test result.

### III. RESULTS AND DISCUSSION

The table below showed the major themes of the learners' feedback on the learning materials they used.

**Table 1. Major Themes on the Feedbacks of Learning Materials**

Themes	Quotations
Understanding on the learning material	<p><i>"I know how to read in English but I cannot understand all especially in Science because there are difficult words to understand."</i></p> <p>It implies that participants' reading comprehension is a big factor that affects the understanding of the learning material especially it is written in English and there are terms in Science that they find it difficult to understand also.</p>
Instructions on the learning module easily followed	<p><i>"Modules are easy to answer if it is in multiple choice test. It's difficult to answer non-multiple-choice test. There are lengthy instructions that we cannot understand".</i></p> <p>Few numbers of the participants find the instructions on the learning module easily followed while majority of them find it difficult especially when it is not in a multiple-choice assessment. They also find the instructions difficult since it is written in English and some are lengthy.</p>
Accomplish the activity without any help	<p><i>"It's okay if we are all smart, it's difficult to understand the activities because it is Science. We ask help from our parents and/or siblings sometimes."</i></p> <p>The participants admitted that they really needed help from adults who are able to understand in accomplishing their learning module when they don't know on how they are going to do on the activities in the module.</p>
Accomplish activity for required period of time	<p><i>"There are plenty of activities that we cannot answer all with the required period of time. It is okay if not all assessments in the module will be answered or we will be given ample time to answer everything in the module."</i></p>

	<p>Majority of the participants admitted that they cannot accomplish the activity required for a period of time in their Science learning module because there are plenty of activities to be done and they find that the given period of time to accomplish is not enough. They suggested that maybe they can accomplish the activities if they were given ample time and not all activities in the learning module will be accomplished. The activities to be accomplished will be according to their intellectual capacities.</p>
<p>Illustrations and pictures are interesting</p>	<p><i>“Illustrations and pictures are not colorful; some are small in size and not clear.”</i></p> <p>The participants find the illustrations and pictures not interesting because it was reproduced in black and white print, some were photocopied thus pictures are not colorful and others are not clear.</p>
<p>Illustrations and pictures help understand lessons and activities</p>	<p><i>“Lessons are not that understandable even provided with pictures because some of the pictures are not clear and it doesn’t have colors. There are some pictures which are small in size and not that clearly visible.”</i></p> <p>The participants find the illustrations and pictures not helpful in understanding the lessons and activities since some are not clear and not colorful. They even don’t understand the lesson even pictures are indicated because there are pictures that are small in size and not clear (learning module reproduction problem).</p>
<p>Illustrations and pictures clear</p>	<p><i>“There are drawings in the module that are clear, there are some that are not clearly visible. It not good to look at because it doesn’t have colors, you cannot understand what the picture is all about.”</i></p> <p>The participants admitted that illustrations and pictures are clear but not all. They find it not interesting to look at because they do not have colors and some pictures are not clear. Sometimes, they don’t understand what the picture is all about.</p>

The participants’ challenges in accomplishing the learning module in Science are characterized by: their understanding on the learning material, following the instructions easily, accomplishing the activity with the required period of time, doing the activity with the required period of time, find the illustrations/pictures interesting, helping them to understand the lessons and activities through illustrations/pictures, and finding the illustrations/pictures clear in the learning material.

A. Understanding on the learning material

The participants admitted that the language in the LM is not easily understood for the reason that some of them have difficulty in reading comprehension.

*"I know how to read in English but I cannot understand everything especially words in Science."*

Westbrook, et. al. (2018) noted that reading comprehension is one of the factors that directly impact academic performance of the students.

B. Instructions on the learning module easily followed

The participants admitted that there are instructions in the module that they can easily follow however, most of the time they find it difficult especially the Science subject.

*"It's easy to answer if it is multiple choice but questions are difficult without options. There are lengthy instructions that we cannot understand what is all about."*

The participants find it easy to answer questions with options but cannot answer questions without options specially if given long instructions. This is consistent with the findings of Butler (2018) stating that multiple-choice assessments are the most common form of testing in education, and a great deal study has been undertaken to define best practice for using them to measure learning. It contributes improvement and boost long-term memory and enhance comprehension.

C. Accomplish the activity without any help

The participants of this study revealed that not all activities they knew. They also need help from the adult or those who know their lesson to help them.

*"It's okay if we are all smart, it's difficult to understand the activities because it is Science. We ask help from our parents and/or siblings sometimes."*

Schertz (2018) agreed that the importance of parent intervention encourages constructive involvement in the learning process of the children.

D. Accomplish activity for required period of time

Majority of the participants admitted that they cannot accomplish all the activity with the required period of time.

*"There are plenty of activities that we cannot answer all with the required period of time. It is okay if not all assessments in the module will be answered or we will be given ample time to answer everything in the module."*

The participants admitted that they need an ample time to answer all the assessments in the module or will be given specific assessments to answer in the module.

E. Illustrations and pictures are interesting

The participants shared that pictures in the learning module are not interesting and pictures are small in size.

*"Illustrations and pictures are not colorful; some are small in size and not clear."*

The study of Aggleton (2017) supported that children (4-12 years old) with an illustrated edition became more actively and objectively interested in the text than the others. Color and clarity of the illustrations and pictures are vital in learning.

F. Illustrations and pictures help understand lessons and activities

A remarkable amount of evidences show that participants find it difficult to understand the lesson or activities especially the way the illustrations and pictures presented in the learning module.

*“Lessons are not that understandable even provided with pictures because some of the pictures are not clear and it doesn’t have colors. There are some pictures which are small in size and not that clearly visible.”*

The participants find it difficult to understand the lesson or the activities because of the way the pictures or illustrations presented in the learning module. Aggleton (2017) added that children were more inclined to relate the concept with the illustrations or pictures to their own lives, too. The diagrams were found to work alongside the participants’ own visualizations rather than replacing them, and opened up more potential meanings rather than reducing them.

G. Illustrations and pictures clear

The participants stated that not all the illustrations and pictures presented in the learning module are clear.

*“There are drawings in the module that are clear, there are some that are not clearly visible. It not good to look at because it doesn’t have colors, you cannot understand what the picture is all about.”*

Redha (2018) agreed that good use of pictures enhance motivation and a good fit to support learning. Pictures plays essential part in learning.

The responses of the participants during the interview serves as the baseline or anchorage of the teacher in formulating or adopting a strategic intervention material in Science specifically the least mastered competencies.

The use of Strategic Intervention Material in Science (SIM-S) for grade six pupils refers to utilizing the individual SIM created for the pupils based on the learning competencies that they need to improve and to increase their academic performance in Science. The intervention encouraged the pupils to read and learn from the different learning competencies that they need to improve based on the diagnostic test result. It helped them to learn to be actively involved and monitor their academic performance based from the result of the activities provided in the SIM.

**Table 2. Comparative Result Before and After the Intervention**

Grade Level	No. of Pupils	Test Results		Percentage of Increase after Intervention
		Diagnostic Test (Passed)	Quarterly Test (Passed)	
6	50	32 (27%)	48 (80%)	53%
<b>Total</b>		<b>27%</b>	<b>80%</b>	<b>53%</b>

Thirty-two (32) out of sixty (60) Grade Six Pupils passed during the diagnostic test in Science as shown in the table. The primary target of this action research is to increase the number of pupils who passed the Science test from twenty-seven percent (27%) to eighty percent (80%)

The data on the table above showed the percentage of increase after intervention particularly in the Science test. The researcher expected that after the implementation of the intervention – the use of Strategic Intervention Material in Science, there would be fifty percent (50%) and above significant increase of pupils to pass the Science test. There was a significant pupils’ improvement in their Science academic performance based on their least mastered learning competencies from MELC after the utilization of the SIM in Science. The academic performance of the pupils in Science increased by fifty-three percent (53%) from the result during the diagnostic test, which means that the utilization of the Strategic Intervention Material in Science (SIM-S) is an effective strategy in improving the least mastered learning competencies in Science.

Below is the paired sample test of the intervention used which is the strategic intervention material in Science (SIM-S) to pretest and post test result. Pretest refers to the diagnostic test which was conducted before the beginning of the distance learning using print modules or the modular learning. Posttest refers to the quarterly test conducted after the use of the strategic intervention in Science.

**Table 3. Paired Sample Test of the Pre-test and Post-test Result Using the SIM**

Pair 1	Paired Differences			95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Mean Error	Lower	Upper			
Pretest-Posttest	-.267	.482	.062	-.391	-.142	-4.281	59	.000

The posttest or the quarterly test was significantly higher after the use of strategic intervention material in Science (SIM-S) than the pretest or the diagnostic test  $t(4.28)$ ,  $p$  is lesser than .001. Therefore, there is a significant difference on the academic performance of the pupils using the Strategic Intervention Material in Science (SIM-S) to the learners’ pretest versus the posttest result.

#### IV. CONCLUSIONS

It can be concluded that the conduct of this action research on improving the least mastered learning competencies of the pupils in Science that one strategy, intervention or innovation would not fit all pupils because of their individual differences. Teachers must be creative and patient enough to find ways to lessen the problems experienced by the pupils in the new learning landscape where majority is into the modular learning approach.

Through the utilization of the Strategic Intervention Material, pupils learned to monitor their own learning. The term Strategic Intervention Material itself gave opportunities for the pupils to be more actively engaged or involved in the progress of their own learning.

The researcher generously implements the Strategic Intervention Material in Science (SIM-S) to her pupils with the identified least mastered learning competencies in Science, she observed that a good number of pupils have shown significant improvement in their academic performance. Thus, the application on the utilization of Strategic Intervention Material in Science (SIM-S) was a success.

The researcher must continuously seek for appropriate intervention techniques that would lessen and address the least mastered learning competencies of the pupils based from the Most Essential Learning Competencies (MELC). She would not take for granted the problem, particularly on the least mastered learning competencies in Science encountered by the pupils. Appropriate action or remediation must be done to help pupils improve their academic performance based from their individual least mastered learning competencies in the new learning landscape.

## V. RECOMMENDATIONS

The following actions are recommended:

- 1.) Curriculum implementers need to review the content of the learning module to ensure its effectiveness for the benefit of the learners.
- 2.) The Department of Education needs to conduct workshop to teachers on writing learning modules based from the most essential learning competencies (MELC) to modify easily errors found in the module and will create supplemental modules or strategic intervention material based from the needs of their learners.
- 3.) School heads or the instructional supervisors need to monitor and evaluate the individual monitoring plan and the interventions made by the teachers to address insignificant result of the learners.
- 4.) Further research employing qualitative methodology can be done to determine the effectiveness of the interventions made by the teachers to address the learning gaps of the learners using the modular learning.

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