

# Improving Academic Performance in Science of Grade 7 Learners Using Strategic Intervention Material

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**Abstract:** *This action research employed a quantitative method to quantify the improvement of the academic performance in science of grade 7 learners using strategic intervention material or SIM. In order to determine the results, this research utilized a quasi – experimental design which compared the average mean and level of improvement on science through pre – test and post – test. The latter results marked significant improvements in the average quarterly means: 12.92, 12.68, and 15.54 respectively. Using the Pearson correlation coefficient, the quarterly means marked high correlation as posted 0.739 and 0.755 while 0.491 interpreted as moderate correlation. Based on the results of the study, the use of SIM in teaching science is great tool to address the least learned/mastered competencies in quarterly assessments. Lastly, teachers must undergo trainings and seminars to craft creative SIMs that cater learners with varied learning capabilities and styles.*

**Keywords:** Strategic Intervention Material, instructional materials, module, teacher – aid, student performance on science, strategies in teaching science.

**Improving Academic Performance in Science of Grade 7 Learners  
Using Strategic Intervention Material**

An Action Research is presented  
to the Research Department  
of the Division of Zamboanga Sibugay

Submitted by

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## ABSTRACT

Institution : Camanga National High School  
Location : Camanga, Siay, Zamboanga Sibugay  
Title of the Study : IMPROVING ACADEMIC PERFORMANCE IN SCIENCE  
OF GRADE 7 LEARNERS USING STRATEGIC  
INTERVENTION MATERIAL  
  
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Keywords: Strategic Intervention Material, instructional materials, module, teacher – aid, student performance on science, strategies in teaching science.

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**REY M. DALUMPINES, MA.Ed.**  
Researcher

## I. CONTEXT AND RATIONALE

Science provides ways of making sense of the world systematically. It develops learners' scientific inquiry skills, values and attitudes, such as objectivity, curiosity, and honesty and habits of mind including critical thinking. All these are useful to the individual learner for his own personal development, future career, and life in general. These skills, values, attitudes, and dispositions are likewise useful to the community that an individual learner belongs to, and are further useful to the country that he lives in (SEI-DOST & UP NISMED, 2011).

Moreover, science aims to help the Filipino child gain a functional understanding of science concepts and principles linked with real life situations, acquire science skills as well as scientific attitudes and values needed in solving everyday problems (Basic Education Curriculum Primer, 2002).

In this technological age, science subdues and even drives societies with its ideas and products and it is very likely that the impact of science and technology on people's lives will persist to exist and increase in the coming years. Through science, the way people think shifts to a more critical approach. Frequently, science has been recognized to be of great significance because of its connection to technology, which, in a government perspective, is a priority area for economic development (Elkington, 2015).

In fact, according to Ogena, L. & Sasota (2010), the major factor in a nation's development is the emphasis on science and mathematics education which brings the nation to integrate science and technology in their national agenda.

However, learners perceive science as a difficult subject regardless of its importance. It is a common observation that learning science creates more negative feedback for many learners than seeing its economic value. Four major science subjects, Biology, Chemistry, Physics, Earth and Space, have been viewed as the hated subjects in the curriculum,

which would likely fail completing the necessary requirements and get low performances in both academic and conceptual reasoning skills. One of the indicators in a school context which can justify this claim may be very evident every after each quarterly assessment having a computed MPS leaving below par among other disciplines. To a multitude of students, science education was never an enjoyable avenue for them to learn important concepts that are relevant to societal situations; thus, academic achievement in this field is relatively low.

Furthermore, the accomplishments of few students are overshadowed by the consistently poor performance of Filipino students in international assessment studies and national assessment studies. Studies reveal that Filipino students have low retention of concepts, have limited reasoning and analytical skills, and poor communication skills and they cannot express ideas or explanations of events and phenomena in their own words (UP NISMED, 2004).

Two international sources of information and analysis on science education, such as Programme for International Student Assessment (PISA) and Trends in Mathematics and Science Study (TIMSS), aim to assess the extent of student's achievement in science and other fields. TIMSS, specifically, is an international study on student's ability to solve scientific as well as mathematical problems participated by many countries around the world. In this assessment, the Philippines was among the bottom five of poor performers in Math and Science. Dela Cruz (2012) reported that the Philippines placed 36th in science out of the 38 countries who participated in the said assessment. Similarly, results in the 2003 TIMSS showed that the country ranked 23rd of the 25 countries in grade four science and 42nd out of the 45 participating countries in second year science.

Dios (2013), reported a similar trend in the student's achievement in the annually conducted National Achievement Test (NAT) for the fourth years. The assessment showed similar unsatisfactory achievement in the overall performance of the students

across the country. In the 2005 NAT, performance of the students in science got the lowest mean percentage score (MPS) with 39.49 among the five (5) subjects assessed. Performances in the 2006 and 2012 TIMSS yielded the same dismaying performance with MPS of 37.98 and 40.53, respectively.

Henceforth, the average MPS of science in grade 7 of Camanga National High School during the school year 2016-2017 was noted to be very alarming yielding to have 54.10%, and is 20.9% away from the standard MPS of 75%. This evidently shows that learners have performed very low in this subject.

Many educators and graduate student researchers have identified several factors behind the low performance in science of Filipino students. These are: quality of teachers, the teaching-learning process, the school curriculum, instructional materials, and administrative support (DOST-SEI, 2006).

The Department of Education (DepEd) had employed a solution for the deteriorating academic performance of learners in the field of science and technology. As stipulated in the DepEd Order No. 39, s. 2012, interventions have to be made in order to address learning gaps. The use of Strategic Intervention Material (SIM), is identified as one of the suggested various intervention form that can bridge learning gaps. SIM is a remediation aid for the learners at the level of their understanding and thereby increasing their academic achievement.

SIM increases and deepens learners' skills in manipulation, knowledge or thinking, understanding, and observing the microscopic into macroscopic representation of matter like atoms, molecules, and ions which students believe as a vague symbolism of what they know about matter and other related concepts in science. SIM is an instructional material that is prescribed by the Department of Education (DepEd) to increase the level of proficiency of learners in science subjects.

Every learner has the potential to learn and become a responsible citizen if given a conducive environment for teaching and learning. Therefore, it is worth mentioning that provision of intervention at the earliest stages, can lead to learners' success. Intervention can be defined as the systematic and explicit instruction provided to accelerate growth in an area of identified need (Kaggwa, 2003). Interventions can be provided by both special and general teachers and they are designed to improve performance relative to a specific, measurable goal. Interventions are generally based on valid information about current performance, whereby realistic implementation and ongoing learner progress monitoring are essential. Therefore, for any intervention to be effective, the programs designed should be based on clearly defined objectives, and the program should be monitored and evaluated (Kaggwa, 2003).

Of more importance is that intervention strategies should not be implemented because they are popular or interesting. Rather, they should be able to address the needs of the learners in their institution, given that schools operate in different contexts; hence, no one size fits all. Approaches will vary according to the school context. Learners support programs, behavior modification, life skills programs, parental involvement and capacity building are some intervention strategies to enhance learners' performance (Kaggwa, 2003).

Teachers and Curriculum Planners should focus on how to amplify learners' interests in Science, because as observed by many of the teachers, they tend to have lack of interest during classes in core subjects of Science and Mathematics, this can be shown by rampant accounts of absences that even resulted to dropping out. Learners at risk of dropping out should eventually be reached out up to the extent of bringing the classroom to them and for them to be functionally literate as aligned through our Department's Vision.



With the problems persisting today in Philippine education system, our stand for functional literacy to empower learners is at stake. The scarcity of teachers, poor classrooms and dearth of instructional materials, low learner achievement and increasing number of out-of-school children hamper our learners to be active makers of meaningful life.

Deficiency of educational facilities (Alamarat, 2011) and instructional materials (Ogbu, 2015), large class size (Eison, 2010), poor instruction (Eison, 2010), and non-differentiated instructional methodologies and curriculum (Weselby, 2014) are problems that threaten education process. The current educational system of the Philippines is filled with problems on classrooms shortage and scarce funding to provide for instructional materials required in each science classroom. These problems impede teaching and learning to succeed. Due to these predicaments, successful teaching process is encumbered and, in turn, achievement in learning is not met. Many learners are not able to cope with these problems hence can result to their poor performance. The ultimate goal of teaching is to provide appropriate and effective instruction to students and, in turn, promoting effective learning. Thus, teachers, themselves, become the agents in combating these predicaments to achieve successful education process by devising and providing necessary materials that are suitable to students need.

As stipulated in the DepEd Memorandum No. 30, s. 2011, the teachers should also be inspired in applying innovative management practices in teaching and learning science; sustain school-community support in managing efficiently and effectively the varied digital and non-digital learning resource environment; and share collaboratively with the school and community the use of best practices in teaching and learning science in public and private secondary schools with large and extra-large classes.

It is for these very reasons that the researcher embarks on developing strategic intervention materials in science for Grade 7 learners that will enhance learning and remedy the least mastered competencies of the learners, thus attain growth in their academic performance.

## II. INNOVATION, INTERVENTION, AND STRATEGY

This action research was conducted to determine the improvement of the academic performance of the grade 7 learners from the second to fourth quarter assessments of the school year 2017-2018 in science competencies which was found to be least mastered thereby in dire need for additional activities for remediation through the strategic intervention materials for the grade 7 learners of Camanga National High School.

Moreover, the respondents was limited to the purposively selected grade 7 learners of Camanga National High School who, after the conduct of the Pre-Test and Post-Test with 20 assessment questions, were given interventions vis-à-vis the use of the strategic intervention material.

The strategic intervention material was about the lessons on Science which are the following:

1. Living things and their environment;
2. Force, motion and energy; and
3. Earth and Space.

The researcher also followed the protocol/guidelines as established by the Department of Education. First, the researcher submitted an action research proposal to the School Principal I of Camanga National High School for endorsement to the District Research Committee through the chair, Lilia C. Unito, Ed. D.

The research adhered to DepEd Order No. 16, 2017 otherwise known as the Adoption of the Basic Education Research Fund which stipulates the annexes attached in

this research. Annex 1 indicates the proponent's personal description and information, Annex 3 reflects the Anti – Plagiarism Oath and Absence of Personal Conflict, while Annex 2 A was the guiding format of this research. Approval of this research from the District and the Division Research Committees was sought prior to implementation.

All the test instruments were researcher – made test so not to commit issues on plagiarism. These were then validated by the science and language experts across different districts of the Division of Zamboanga Sibugay.

On the other hand, the SIMs used in this research are modified by the researcher. In terms of contents, the lessons from the Learner's Materials were used. The same citation method was properly given. On the designs and layouts, the researcher employed his own creativity.

No data from this research was fabricated and protocols of research was observed.

Furthermore, the data gathered in this research were from September 5 to April 6, 2018 (see Workplan for details).

### III. ACTION RESEARCH QUESTIONS

Despite the on – going trends of the multimedia, contextualized learning materials, and support to learners, performance on science still gets relatively low Mean Percentage Scores. This is due to the fact that learners tend to have less interest on studying the lessons discussed in class and the lack of attractive instructional materials.

This, action research determined the effects of the Strategic Intervention Material (SIM) which contains the creative, localized, and simplified discussion of the crucial or least – learned skills on Science among the Grade 7 learners of Camanga National High School.

Specifically, this action research sought to answer the following fields of queries:

1. What is the average mean on a Science test of the Grade 7 learners when data are grouped into:
  - 1.1 Pre-test (before the application of SIM); and
  - 1.2 Post-Test (after the application of SIM)?
  
2. What is the level of improvement of the performance on Science of the grade 7 learners after the use of strategic intervention material?
  
3. How did the strategic intervention material improve the academic performance on Science of the grade 7 learners?
  
4. What significant relationship exists between the science academic performance of the Grade 7 students and the use of strategic intervention material?
  
5. What significant difference exists between the pre – test and post – test scores on science of the Grade 7 students?

#### IV. ACTION RESEARCH METHODS

This part contains the research method, research design, sampling procedure, data gathering method, research instrument, and statistical tool.

##### A. Participants and/or other Sources of Data and Information:

The researcher identified grade 7 learners who have poor performance on the learning competencies identified least mastered based on the data scores gathered from the second to fourth quarter examinations after a thorough conduct of item analysis on test items.

Moreover, the respondents underwent pretest and posttest to measure the level of their academic performance in science and the significant difference that existed in their scores before and after the application of the SIM.

##### B. Data Gathering Methods

The researcher employed judgment sampling in the data gathering. The research design was quasi – experimental since not elements in experimental phase were strictly observed such that the respondents were selected based on academic performance and not on randomization. Respondents were selected based on their performance on the Second, Third and Fourth Quarters Examination.

In generating results from this study, the following procedures were observed. To answer question number one, the pre – test was administered to the identified Grade 7 learners who fair poorly on the learning competencies identified least mastered. Then the intervention which is the use of SIM was done during Individual and Cooperative Learning time that is, 11:30 – 12:00 noontime. This was employed from September 5 to April 6,

2018. The intervention materials were validated by three experts in Science and one English expert to ensure quality of content.

Moreover, the interventions were given based on the least learned skills, exercises were given to the students using the Strategic Intervention Material. The SIMs were printed and distributed to the respondents. Then, the post test was employed to the identified learners to obtain the MPS and conducted analysis on the difference between the MPS.

To answer question number three, a questionnaire was given to the students to describe their perceptions and satisfactions on the use of the SIM. The questionnaire adopted from a behavioral research instrument. The questionnaire was modified to suit to the nature of the study. Then, it was validated by three experts in Science and one expert in English.

When the data gathering phase of the study was done, data gathered from the assessments were tallied, tabulated, analyzed, and interpreted.

### C. Data Analysis

This action research employed quantitative research. The researcher employed a self – made test and checklist in obtaining the results. Relative differences in the MPS from the second quarter to the fourth quarterly assessments were identified and interpreted as to their implications on the effectiveness of the SIM.

Moreover, the instruments were subjected into a reliability test with 0.80 level of Cronbach Alpha. This was determined through the Special Package for Social Sciences or SPSS. The research instruments were pilot tested to the Grade 7 learners who were not selected.

## 1. Mean.

This was used to get the average of the Grade 7 learners' percentage scores on 1) pretest; and (2) post-test. The formula used follows below.

$$\bar{X} = \frac{\sum X_i}{n}$$

Where  $\sum X_i$  is the summation of scores; n is the number of cases

## 2. Frequency Distribution

Table 1

The Scale of Science Academic Performance of Grade 7 Learners Using SIM

Score Range (30 item test)	Scale of SIM
24 – 30	Very Good
17 – 23	Good
10 – 16	Average
9 below	Poor
Mean	

Table 2

The Scale of Mean Percentage Scores of Grade 7 Learners Using SIM

MPS Range	Levels of Performance
75% and above	Mastered
51% - 74%	Nearly Mastered
Below 50%	Not Mastered

Table 3

The Scale of Response Category of Grade 7 Learners with their perception and satisfaction in the use of SIM

Mean Range	Levels of Performance
1.0 – 1.7	Strongly Disagree
1.8 – 2.5	Disagree
2.6 – 3.3	Neutral
3.4 – 4.1	Agree
4.2 – 5.0	Strongly Agree

The results during the SIM activities to address learning needs were interpreted through frequency distribution.

The significant effects of the SIM and science academic performance were determined based on the results of the teacher – made tests, and if there is any significant difference among the levels of sub – variables: 1) pretest; and (2) post - test; of the learners, and the interventions: SIMs.

The researcher gave the Strategic Intervention Material based on the least mastered competency that was found after each quarterly assessment. The data that were gathered undergone statistical treatment through the utilization of Microsoft Excel 2016 and the SPSS and the results were analyzed and interpreted.



## V. DISCUSSION OF RESULTS AND REFLECTIONS

This part presents the results of the application of Strategic Intervention Materials given from the second to fourth quarters. The pretest and posttest scores which were taken before and after the application of SIM were carefully tabulated and analyzed. Mean Scores were carefully interpreted and levels of learning were identified by generating the Mean Percentage Scores from the Pretest and the Posttest.

Table 4. Average Mean on Science tests of the Grade 7 learners.

<b>2<sup>nd</sup> Quarter</b>		<b>3<sup>rd</sup> Quarter</b>		<b>4<sup>th</sup> Quarter</b>	
<b>Mean</b>		<b>Mean</b>		<b>Mean</b>	
<b>Pretest</b>	<b>Posttest</b>	<b>Pretest</b>	<b>Posttest</b>	<b>Pretest</b>	<b>Posttest</b>
<b>5.9</b>	<b>12.92</b>	<b>5.14</b>	<b>12.68</b>	<b>6.16</b>	<b>15.54</b>

Table 4 presents the average mean on science tests of the Grade 7 learners from the 2<sup>nd</sup> to 4<sup>th</sup> quarters. The data above show that the mean scores of the posttest have noticeable differences from the pretest mean scores. In the 2<sup>nd</sup> quarter, pretest mean is 5.9 and it increases to 12.92 in the posttest. The 3<sup>rd</sup> quarter yielded 5.14 and 12.68 respectively while 4<sup>th</sup> quarter recorded 6.16 and 15.54 respectively. This means that interventions applied through the use of SIM provided significant improvement to the academic performance of grade 7 learners in science.

Furthermore, the mean differences between comparative scores denote that SIM can help students with least performance on some competencies.

Table 5. Levels of improvement of the performance in Science of the Grade 7 learners after the use of strategic intervention material.

<b>2<sup>nd</sup> Quarter</b>		<b>3<sup>rd</sup> Quarter</b>		<b>4<sup>th</sup> Quarter</b>	
<b>MPS</b>	<b>Level of Performance</b>	<b>MPS</b>	<b>Level of Performance</b>	<b>MPS</b>	<b>Level of Performance</b>
<b>65%</b>	<b>Nearly Mastered</b>	<b>63%</b>	<b>Nearly Mastered</b>	<b>78%</b>	<b>Mastered</b>

Table 5 shows the levels of improvement of the performance in Science of the Grade 7 learners after the use of strategic intervention materials from the 2<sup>nd</sup> to the 4<sup>th</sup> quarters. The Mean Percentage Scores (MPS) are taken from the posttest just right after the use of SIM. It is very evident that the SIM provided significant effects on the academic performance of the grade 7 learners in science since it moves a level higher from a level below mastery. In the 2<sup>nd</sup> quarter the grade 7 learners have an MPS of 65% which can be interpreted as Nearly Mastered, 63% of MPS in the 3<sup>rd</sup> quarter also Nearly Mastered and in the 4<sup>th</sup> quarter yielding an MPS of 78% which can be interpreted as Mastered. This simply means that the grade 7 learners can easily grasp the given competency in a given time frame and that they can yield into a better performance if given enough strategic intervention material to reinforce their learning.

Table 6. Learners' Perception on the use of Strategic Intervention Materials (SIM) in the 2nd Quarter.

Statement	SD (1)	D (2)	N (3)	A (4)	SA (5)	Total Respondents	Total Weighted Points	Mean	RC
1	1	5	30	28	140	50	204	4.1	A
2	0	14	33	64	80	50	127	2.5	D
3	6	20	36	56	40	50	158	3.2	N
4	9	12	27	56	60	50	164	3.3	N
5	2	12	21	60	100	50	195	3.9	A
6	2	12	24	72	90	50	200	4.0	A
7	2	12	18	40	130	50	202	4.0	A
8	5	10	30	40	100	50	185	3.7	A
9	4	16	18	52	95	50	185	3.7	A
10	6	14	18	44	100	50	182	3.6	A
<b>OVERALL MEAN</b>								<b>3.6</b>	<b>Agree</b>

Table 6 shows the learners' perception on the use of Strategic Intervention Materials (SIM) in the 2<sup>nd</sup> quarter. All of the statements except the statements 2 to 4 provided dissatisfactory and neutral responses. In statement 2 the computed mean is 2.5. This means that majority of the grade 7 learners tend to disagree that the presentation of the concepts in the SIM is clear and fitted to their needs while statements 3 and 4 yielded to have a neutral mean. This means that they somewhat undecided if they could easily understand the explanations provided by the SIM. However, majority of the learners agreed that the SIM can help them better understand the concepts and that they are more inspired and motivated to learn concepts in science using the SIM as shown in the overall mean which is computed to have 3.6.

Table 7. Learners' Perception on the use of Strategic Intervention Materials (SIM) in the 3rd Quarter.

Statement	SD (1)	D (2)	N (3)	A (4)	SA (5)	Total Respondents	Total Weighted Points	Mean	RC
1	2	10	54	80	25	50	171	3.4	A
2	0	2	48	124	10	50	184	3.7	A
3	0	4	78	72	20	50	174	3.5	A
4	1	0	81	64	30	50	176	3.5	A
5	1	2	39	36	130	50	208	4.2	SA
6	0	0	12	60	155	50	227	4.5	SA
7	0	0	0	60	175	50	235	4.7	SA
8	1	0	33	112	50	50	196	3.9	A
9	0	0	84	56	40	50	180	3.6	N
10	0	0	6	80	140	50	226	4.5	SA
<b>OVERALL MEAN</b>								<b>4.0</b>	<b>Agree</b>

Table 7 shows the learners' perception on the use of Strategic Intervention Materials (SIM) in the 3<sup>rd</sup> quarter. The grade 7 learners strongly agree that the activities and tasks given in the SIM were very easy and that they enjoyed reading and doing all the activities in the SIM. Only statement 9 obtain a neutral response. The grade 7 learners were undecided if the SIM had inspired and encouraged them to learn using the SIM, however, majority of the grade 7 learners agree that SIM is an essential tool to reinforce their learning in a given competency

Table 8. Learners' Perception on the use of Strategic Intervention Materials (SIM) in the 4th Quarter.

Statement	SD (1)	D (2)	N (3)	A (4)	SA (5)	Total Respondents	Total Weighted Points	Mean	RC
1	0	4	48	104	30	50	186	3.7	A
2	0	0	30	148	15	50	193	3.9	A
3	2	12	36	84	45	50	179	3.6	A
4	0	2	42	112	35	50	191	3.8	A
5	0	0	9	116	90	50	215	4.3	SA
6	6	6	48	80	25	50	165	3.3	A
7	0	6	42	132	0	50	180	3.6	A
8	3	10	39	88	35	50	175	3.5	A
9	0	12	45	84	40	50	181	3.6	A
10	0	6	24	104	65	50	199	4.0	A
<b>OVERALL MEAN</b>								<b>3.7</b>	<b>Agree</b>

Table 9 presents the learners' perception on the use of Strategic Intervention Materials (SIM) in the 4th Quarter. Statement 5 yielded to have a mean of 4.3 which means that majority of the grade 7 learners strongly agree that the time allotment is adequate for each lesson integrated in the SIM. They also provided a positive response when it comes to the presentation of concepts in the SIM since they agree that concepts in the SIM are clear and fitted to their needs, and that they believe that the SIM help them to master the concepts in science which they tend to perform unsatisfactorily below mastery. Moreover, the grade 7 learners agree that the strategic intervention material (SIM) is an essential tool to reinforce their learning in a given competency satisfactorily yielding an average mean of 3.7.

Table 9. Test of significant relationship between the science academic performance of the Grade 7 learners and the use of strategic intervention material in the 2nd quarter.

<b>Correlations</b>		Posttest (2 <sup>nd</sup> Quarter)	Response Category	Decision
Posttest (2 <sup>nd</sup> Quarter)	Pearson Correlation	1	.739**	High Relationship
	Sig. (2-tailed)		.000	
	N	50	50	
Response Category	Pearson Correlation	.739**	1	
	Sig. (2-tailed)	.000		
	N	50	50	

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 9 shows the test of significant relationship between the science academic performance of the Grade 7 learners and the use of strategic intervention material in the 2nd quarter. Data are taken from the posttest scores in the 2<sup>nd</sup> quarter which would mean after the application of the SIM as against the response category of the grade 7 learners base on their perception and satisfaction in the use of SIM. The table shows that the computed  $r$  using the Pearson correlation coefficient is 0.739. Correlation then is significant at 0.01 level. Moreover, an  $r$  from  $\pm 0.71$  to  $\pm 0.90$  denotes high relationship.

Table 10. Test of significant relationship between the science academic performance of the Grade 7 learners and the use of strategic intervention material in the 3rd quarter.

<b>Correlations</b>		Posttest (3 <sup>rd</sup> Quarter)	Response Category	Decision
Posttest (3 <sup>rd</sup> Quarter)	Pearson Correlation	1	.755**	High Relationship
	Sig. (2-tailed)		.000	
	N	50	50	
Response Category	Pearson Correlation	.755**	1	
	Sig. (2-tailed)	.000		
	N	50	50	

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 10 shows the test of significant relationship between the science academic performance of the Grade 7 learners and the use of strategic intervention material in the 3rd quarter. Data are taken from the posttest scores in the 3<sup>rd</sup> quarter which would mean after the application of the SIM set against the response category of the grade 7 learners base on their perception and satisfaction in the use of SIM. The table shows that the computed  $r$  using the Pearson correlation coefficient is 0.755. Correlation then is significant at 0.01 level. Moreover, an  $r$  from  $\pm 0.71$  to  $\pm 0.90$  denotes high relationship.

Table 11. Test of significant relationship between the science academic performance of the Grade 7 learners and the use of strategic intervention material in the 4<sup>th</sup> quarter.

<b>Correlations</b>		Posttest (4 <sup>th</sup> Quarter)	Response Category	Decision
Posttest (4 <sup>th</sup> Quarter)	Pearson Correlation	1	.491**	Moderate Relationship
	Sig. (2-tailed)		.000	
	N	50	50	
Response Category	Pearson Correlation	.491**	1	
	Sig. (2-tailed)	.000		
	N	50	50	

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 11 shows the test of significant relationship between the science academic performance of the Grade 7 learners and the use of strategic intervention material in the 4<sup>th</sup> quarter. Data are taken from the posttest scores in the 4<sup>th</sup> quarter which would mean after the application of the SIM as against the response category of the grade 7 learners base on their perception and satisfaction in the use of SIM. The table shows that the computed  $r$  using the Pearson correlation coefficient is 0.491. Correlation then is significant at 0.01 level. Moreover, an  $r$  from  $\pm 0.41$  to  $\pm 0.70$  denotes marked or moderate correlation.



Table 12. Test of Significant Difference between the Pretest and Posttest Scores on Science of the Grade 7 Learners in the 2nd Quarter.

Computed $t$	Tabular $t$ (5% significance)	Interpretation
13.30	1.68	With Significant Difference

Table 12 presents the test of significant difference between the Pretest and Posttest Scores on Science of the Grade 7 Learners in the 2nd Quarter. Computed  $t$  of 13.30 is greater than the tabular  $t$  at 5% level of significance which is 1.68. This means that there is significant difference between the Pretest and Posttest Scores on Science of the Grade 7 Learners in the 2nd Quarter.

Table 13. Test of Significant Difference between the Pretest and Posttest Scores on Science of the Grade 7 Learners in the 3rd Quarter.

Computed $t$	Tabular $t$ (5% significance)	Interpretation
17.28	1.68	With Significant Difference

Table 13 shows the test of significant difference between the Pretest and Posttest Scores on Science of the Grade 7 Learners in the 2nd Quarter. Computed  $t$  of 17.28 is greater than the tabular  $t$  at 5% level of significance which is 1.68. This means that there is significant difference between the Pretest and Posttest Scores on Science of the Grade 7 Learners in the 3rd Quarter.

Table 14. Test of Significant Difference between the Pretest and Posttest Scores on Science of the Grade 7 Learners in the 4th Quarter.

Computed $t$	Tabular $t$ (5% significance)	Interpretation
19.69	1.68	With Significant Difference

Table 14 presents the test of significant difference between the Pretest and Posttest Scores on Science of the Grade 7 Learners in the 4th Quarter. Computed  $t$  of 19.69 is greater than the tabular  $t$  at 5% level of significance which is 1.68. This means that there is significant difference between the Pretest and Posttest Scores on Science of the Grade 7 Learners in the 4th Quarter.

#### Summary of Findings

The following are the findings on the improvement of academic performance in Science of Grade 7 Learners using Strategic Intervention Material. The following would serve answers to the specific problems of the study:

1. What is the average mean on a Science test of the Grade 7 learners when data are grouped into: 1.1. Pre-test (before the application of SIM) and 1.2. Post-Test (after the application of SIM)?

It is very evident that the mean scores significantly differ satisfactorily from the pretest mean scores. In the 2<sup>nd</sup> quarter, pretest mean is 5.9 and it grows 12.92 in the posttest. In the 3<sup>rd</sup> quarter, pretest mean is 5.14 and it yields 12.68 in the posttest. And in the 4<sup>th</sup> quarter pretest mean marks from 6.16 and it grows 15.54 in the posttest. This means that interventions applied through the use of SIM provided significant effects in the academic performance of grade 7 learners in science.

2. What is the level of improvement of the performance on Science of the grade 7 learners after the use of strategic intervention material?

As concisely presented in Table 5, it was presented that in the 2<sup>nd</sup> quarter the grade 7 learners have an MPS of 65% which can be interpreted as Nearly Mastered, 63% of MPS in the 3<sup>rd</sup> quarter also Nearly Mastered and in the 4<sup>th</sup> quarter yielding an MPS of 78% which can be interpreted as Mastered. This simply means that the grade 7 learners can easily grasp the given competency in a given time frame and that they can yield into a better performance if given enough strategic intervention material to reinforce their learning.

3. How did the strategic intervention material improve the academic performance on Science of the grade 7 learners?

As presented in tables 6, 7, and 8 about the grade 7 learners perception and satisfaction in the use of SIM, they all agreed that the SIM significantly improve their science academic performance since according to their responses, the SIM help them to be encouraged and motivated in learning science. They can have as always an easy grasp of the competencies which they tend to perform below mastery. Aside from that they have expressed that they are actually enjoying while answering all the activities included in the SIM for concepts laid were simple, easy and interesting. These had helped be stirred, motivated and even inspired in science learning.

4. What significant relationship exists between the science academic performance of the Grade 7 students and the use of strategic intervention material?

The computed  $r$  using the Pearson correlation coefficient in the second quarter is 0.739. Correlation then is significant at 0.01 level. This denotes high relationship.

In the third quarter, the computed  $r$  using the Pearson correlation coefficient is 0.755. Correlation then is significant at 0.01 level. This denotes high relationship.

And lastly, in the fourth quarter, the computed  $r$  using the Pearson correlation coefficient is 0.491. Correlation then is significant at 0.01 level. Moreover, an  $r$  from  $\pm 0.41$  to  $\pm 0.70$  denotes marked or moderate correlation.

5. What significant difference exists between the pre – test and post – test scores on science of the Grade 7 students?

In the second quarter, computed  $t$  of 13.30 is greater than the tabular  $t$  at 5% level of significance which is 1.68. This means that there is significant difference between the Pretest and Posttest Scores on Science of the Grade 7 Learners in the 2nd Quarter.

The third quarter on the other hand shows that the computed  $t$  of 17.28 is greater than the tabular  $t$  at 5% level of significance which is 1.68. This means that there is significant difference between the Pretest and Posttest Scores on Science of the Grade 7 Learners in the 3rd Quarter.

And finally, in the fourth quarter, computed  $t$  of 19.69 is greater than the tabular  $t$  at 5% level of significance which is 1.68. This means that there is

significant difference between the Pretest and Posttest Scores on Science of the Grade 7 Learners in the 4th Quarter.

Reflections/Recommendations:

Based on the findings and conclusions of the study, the following reflections/recommendations were formulated:

1. Teachers are in dire need to maximize teaching-learning process by extending and focusing more on the enhancement of their classroom strategies and approaches by developing contextualized and localized SIMs. Eventually, this can be a great tool to address the least learned/mastered competencies in quarterly assessments.

2. Teachers must undergo trainings and seminars not only to improve their perceptive competencies in teaching but also for the development and further enhancement of their skills in crafting creative SIMs that cater learners with varied learning capabilities and styles.

3. The conduct of this study can be extensively conducted to all grade levels in the elementary and secondary with a long span of time, to at least, bridge the gap of answering common doubts that hamper the successful execution of activities relevant to teaching and learning.

4. The scope of this research may also be widened in different aspects in deeper technical dimensions of education.

## ACTION RESEARCH WORK PLAN AND TIMELINESS

Goal: To improve the academic performance of Grade 7 learners in Science.

Objective: To implement the use of Strategic Intervention Materials in improving Science Academic Performance of Grade 7 students in Camanga National High School.

Activity	Date Started	Date Finished	Strategies	Resources	Expected Output
Identifying Respondents	09/5/17 01/12/18 03/20/18	09/5/17 01/12/18 03/20/18	Selection of Respondents	None	Identified Respondents
Identifying the least mastered competencies	10/21/17 01/12/18 03/20/18	10/22/17 01/12/18 03/20/18	Item Analysis and Interpretation	Bondpaper	Identified least mastered competency
Crafting of SIMs relative to identified least mastered skills/competencies	10/23/17 01/13/18 03/21/18	10/27/17 01/14/18 03/21/18	TOS Preparation	Bondpaper Printer	Crafted the SIM / Bound for quality assurance
Reliability and Validity Testing on the crafted SIMs	11/2/17 01/15/18 03/22/18	11/7/17 01/17/18 03/24/18	Checking for Quality Assurance / Pilot Testing	BERF	SIMs were quality assured and Pilot Testing conducted
Employing Pretest to identified respondents	11/8/17 01/18/18 03/26/18	11/8/17 01/18/18 03/26/18	Giving of Pretest to identified respondents	MOOE Prepared Tests	Respondents answered the pretest and researcher computed the MPS
Employing the Strategic Intervention Material	11/9/17 01/19/18 03/27/18	11/10/17 01/19/18 03/27/18	Strategic Intervention Material	MOOE SIM	Answered/ Utilized the SIM
Employing Posttest to identified respondents	11/13/17 01/22/18 03/28/18	11/13/17 01/22/18 03/28/18	Giving Posttest	MOOE Prepared Tests	Respondents answered the posttest and researcher computed the MPS
Interpreting Results	03/31/18	04/2/18	Interpreting Results	Bondpaper Printer	Researcher has interpreted the results
Submitting Findings / Advocating for dissemination / LRMDS uploading of SIM	04/3/18	04/6/18	Preparing SIM for LRMDS uploading	Pocket WiFi / Internet Connectivity	Researcher has submitted findings to the School Principal

## **PLANS FOR DISSEMINATION AND ADVOCACY**

This study was conducted to assess the efficiency of the use of the strategic intervention material in improving the academic performance of grade 7 learners in Camanga National High School. The researcher assumed that the problem treated in this study may be true to other schools. In this regard, the researcher aimed to reinforce the same problem by integrating the use of strategic intervention material in science classes.

The strategic intervention materials that was crafted through this research may be uploaded to the LRMS after which will be quality assured for immediate dissemination of the materials.

Further, the researcher aims to present the results during the Learning Action Cell of the Science and other subject teachers and events through higher level research congress.

Moreover, the following mechanisms shall also be observed. INSETs, SGC, eSIP/AIP, and SRC.

In order to strengthen the science performance of the school, the results of SIM study shall be integrated to the Annual Improvement Plan following the PREXc and EDDP.

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**COST ESTIMATES**

The researcher used Personal/MOOE/BERF and local funds in the conduct of the research.

Item Number	Particulars	Unit	Quantity	Unit Cost	Total Cost
1	Bond paper	Ream	10	200.00	2,000.00
2	Quality Assurance for test Questionnaires and SIMs / PFs				5,000.00
3	Inkjet Printer Inks	Bottle	8	300.00	2,400.00
4	Gun Tucker	Piece	1	350.00	350.00
5	Duct Tape	Piece	5	185.00	925.00
6	Board Paper	Ream	30	42.00	1,260.00
7	Staple Wire	Box	4	16.25	65.00
8	Assorted Colors Cartolina	Piece	50	10.00	500.00
9	Folders	Ream	1	500.00	500.00
10	Expenses for IMs and other related costs				4,000.00
11	Transportation Expenses / Ethical Clearance				5,000.00
12	Snacks of Respondents				3,000.00
13	Research dissemination advocacies / Internet Connectivity / Pocket Wifi Load				5,000.00
<b>TOTAL</b>					<b>P 30,000.00</b>

Appendix A.

The Researcher with the Grade 7 Learner-Respondents in Camanga National High School



## Appendix B

Learners' Perception research questionnaire in the use of SIM for the 2<sup>nd</sup> Quarter**LEARNERS' PERCEPTION IN THE USE OF SIM**

Adopted and Modified from Salviejo, et.al. (2014). Strategic Intervention Material-Based Instruction, Learning Approach and Students' Performance in Chemistry

Learner's Name (Optional): \_\_\_\_\_

Gender:  Male  Female Grade Level & Section: \_\_\_\_\_

STATEMENTS	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
1. The SIM helps me understand more about the Plant and Animal Cell including all the organelles present in a Eukaryotic Cell.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. The presentation of the concepts in the SIM is clear and fitted to my needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I could easily understand the explanations provided by the SIM.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I learn some useful information not mentioned in the regular teaching after using SIM.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. The time allotment is adequate for each lesson.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Activities and tasks given in the SIM were very easy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I enjoyed reading and doing all the activities provided in the SIM.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. SIM use words and terms suited to my reading comprehension.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. SIM inspired and encouraged me to learn more topics in Biology.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I want to use SIM in a regular classroom teaching next time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\_\_\_\_\_  
Learner's Signature

## Appendix C

Learners' Perception research questionnaire in the use of SIM for the 3<sup>rd</sup> Quarter**LEARNERS' PERCEPTION IN THE USE OF SIM**

Adopted and Modified from Salviejo, et.al. (2014). Strategic Intervention Material-Based Instruction, Learning Approach and Students' Performance in Chemistry

Learner's Name (Optional): \_\_\_\_\_

Gender:  Male  Female Grade Level & Section: \_\_\_\_\_

STATEMENTS	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
1. The SIM helps me differentiate transverse from longitudinal waves and mechanical from electromagnetic waves.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. The presentation of the concepts in the SIM is clear and fitted to my needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I could easily understand the explanations provided by the SIM.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I learn some useful information not mentioned in the regular teaching after using SIM.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. The time allotment is adequate for each lesson.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Activities and tasks given in the SIM were very easy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I enjoyed reading and doing all the activities provided in the SIM.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. SIM use words and terms suited to my reading comprehension.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. SIM inspired and encouraged me to learn more topics in Physics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I want to use SIM in a regular classroom teaching next time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\_\_\_\_\_  
Learner's Signature



## Appendix D

Learners' Perception research questionnaire in the use of SIM for the 4<sup>th</sup> Quarter**LEARNERS' PERCEPTION IN THE USE OF SIM**

Adopted and Modified from Salviejo, et.al. (2014). Strategic Intervention Material-Based Instruction, Learning Approach and Students' Performance in Chemistry

Learner's Name (Optional): \_\_\_\_\_

Gender:  Male  Female Grade Level & Section: \_\_\_\_\_

STATEMENTS	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
1. The SIM helps me account the occurrence of land and sea breezes, monsoons, and Intertropical Convergence Zone (ITCZ).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. The presentation of the concepts in the SIM is clear and fitted to my needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I could easily understand the explanations provided by the SIM.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I learn some useful information not mentioned in the regular teaching after using SIM.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. The time allotment is adequate for each lesson.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Activities and tasks given in the SIM were very easy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I enjoyed reading and doing all the activities provided in the SIM.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. SIM use words and terms suited to my reading comprehension.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. SIM inspired and encouraged me to learn more topics in Earth and Space.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I want to use SIM in a regular classroom teaching next time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\_\_\_\_\_  
Learner's Signature