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Effectiveness of Strategic Intervention Materials (SIM) in Biology for Grade 8 Students

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Abstract: ***The study aimed to determine the effectiveness of Strategic Intervention Materials (SIM) in Biology for Grade 8 students in the K to 12 Basic Education Curriculum in Hagonoy National High School. The researcher used the experimental research design in order to attain such objectives specifically the randomized pretest - posttest control group design. The respondents of this study were the selected 50 Grade 8 students, 25 students were put in the experimental group (exposed with the Strategic Intervention Materials) while the other 25 was in the controlled group (treated using the traditional method of teaching). Data were gathered, collated and analyzed using mean, standard deviation and paired sample t - test. The level of performance in the pretest evaluation of the Grade 8 students in Biology using the traditional method of teaching and the Strategic Intervention Materials was at the Beginning Level. The level of performance in the posttest evaluation of the Grade 8 students in Biology using the traditional method of teaching was at the Approaching Proficiency Level while using the Strategic Intervention Materials was at the Proficient Level. There was no significant difference on the pretest performance of Grade 8 students in Biology using the Strategic Intervention Materials and traditional method of teaching. However, there was a significant difference on the posttest performance of Grade 8 students in Biology using the Strategic Intervention Materials and traditional method of teaching. There was a significant difference on the mean gain score results of using the Strategic Intervention Materials and the traditional method of teaching based on the performance of Grade 8 students in Biology. This Strategic Intervention Materials was recommended to be used in the class.***

Keywords: Strategic Intervention Materials, Teaching Strategy, Learning Materials, Biology, Students, Philippines

1. Introduction

Educational institutions have literally accepted Science as a basic and rudimentary ingredient for a society to function. The need for a scientifically literate populace is increasingly recognized as critical in many countries, as they face the consequences of increasing population pressures, limited resources and environmental degradation. Basic science literacy, coupled with scientific "ways of knowing" – namely drawing conclusions based on observation, experiment and analysis – provides citizens with the tools needed for rational debate and sound decision - making based on scientific knowledge.

There is a consensus that in many places around the world, science education is facing serious challenges. Those seeking to improve science education face numerous, and sometimes coupled, problems. In many places, the lack of resources – both educational and financial – is linked with a dearth of adequately trained teachers and the growing popularity of non - scientifically - based belief systems. As countries face the demands of expanding populations under economic constraints and political realities, education as a whole is frequently one of the first areas in which funding is cut to free up resources for other, apparently more pressing, demands. This trend is amplified in the area of sciences, since often those in the political decision - making sector have limited appreciation of scientific disciplines and their importance to the vitality of their country's economy and future well - being. It is clear that developing countries face greater challenges in science education than economically developed countries due to lack of teaching materials including books, computing and communications technologies, community - based science centers, laboratory facilities and equipment, as well as shortage of skilled teachers (International Council for Science, 2011; Office of Science and Technology Policy, 2010; Organization for Economic Cooperation and Development, 2006).

The results of the Second International Science Study (SISS) and the Third International Mathematics and Science Study (TIMSS) placed the Philippines in disadvantaged positions among participating nations. In the SISS, the Philippines ranked almost at the bottom of the list of seventeen (17) nations which took part in this large - scale evaluation of educational achievement. Similar outcomes were revealed in the 1995, 1999 and 2003 TIMSS (Arora, *et. al.*, 2009; Gonzales, *et. al.*, 2009; Mullis, *et. al.*, 2009; Tan, 2006; Manila Times, 2004). The Philippines did not participate in the 2011 Trends for International Mathematics and Science Study due to some unknown reasons.

This poor student achievement has prompted educational researchers worldwide to continuously identify factors that can account for academic outcomes in the classroom. Some research suggests that factors inside and outside the classroom affect student achievement, however, experts claim that the key factor in what comes out at the end of schooling is what goes on in the classroom (Orleans, 2007). This means that poor instructional inputs would produce poor quality of graduates.

In the present situation of the Philippine Educational System, wherein there are shortage in the classrooms throughout the country and scarce funds, not enough to cater instructional materials needed in every science classroom. The primary goal of teaching is to provide appropriate and effective instruction to students. Thus, a Science teacher is responsible to devise and provide the necessary materials for use in Science classes (Salviejo, Aranes& Espinosa, 2014; Dy, 2011). There is an urgent need to improve the preparation of the scientists of tomorrow, not only through

widespread access to quality instruction, facilities and research opportunities for all students, but also to improve the motivation and interest of students so that the best of them move toward scientific careers. In its outset, schools are therefore encouraged to offer the best possible quality instruction and responsive education to students. Learning experiences have to be geared towards developing the full potentialities of the students; and teachers have to look upon varied learning strategies and techniques to master learning. Learning interventions have to be conducted and hence, this study investigates the effectiveness of Strategic Intervention Materials (SIM) in Biology for the Grade 8 students in the K to 12 Basic Education Curriculum. Moreover, this will open possibilities in identifying competencies which are considered least mastered and least learned in a given period of time, and consequently developing intervention plans and materials that will enhance students' mastery of skills and competencies.

Statement of the Problem

This study investigated the effectiveness of Strategic Intervention Materials (SIM) in Biology for Grade 8 students in the K to 12 Basic Education Curriculum in Hagonoy National High School.

Specifically, it sought to answer the following questions:

1) What is the pretest mean scores of the Grade 8 students in Biology using the Strategic Intervention Materials (SIMs) and traditional method of teaching?
2) What is the posttest mean scores of the Grade 8 students in Biology using the traditional method of teaching and Strategic Intervention Materials (SIMs) ?
3) Is there a significant difference on the pretest mean scores of Grade 8 students in Biology using the Strategic Intervention Materials (SIMs) and traditional method of teaching?
4) Is there a significant difference on the posttest mean scores of Grade 8 students in Biology using the Strategic Intervention Materials (SIMs) and traditional method of teaching?
5) Is there a significant difference on the mean gain score in using the Strategic Intervention Materials (SIMs) and the traditional method of teaching based on the performance of Grade 8 students in Biology?

2. Conceptual Framework

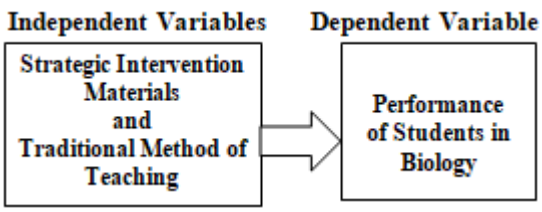

Figure 1: Conceptual Framework on the Effectiveness of Strategic Intervention Materials (SIM) in Science for Grade 8 Students in the K to 12 Basic Education Curriculum

3. Methodology

Research Locale

This study was conducted in Hagonoy National High School located at Gilda Subdivision, Guihing, Hagonoy, Davao del Sur, Philippines. The school belongs to the 1st Congressional District of the Davao del Sur. The institution is considered an implementing unit.

Research Respondents

There were 50 Grade 8 students that formed as respondents of this study. These students were divided into two groups; therefore, 25 students were in the experimental and 25 were in the controlled group.

Research Design

The researcher employed the experimental research design in this study. As mentioned by Fraenkel and Wallen (1994), at least one independent variable was manipulated and treated, the other relevant variables were controlled, and the effect on one or more dependent variables was carefully observed. A focus observation was done in order to gather reliable and valid results. Bautista (1998) added that experimental research design is best to show causal relationships between variables underplay.

Specifically, this study utilizes the randomized pretest - posttest control group design in assigning groups and in applying the treatments. According to Bautista (1998) and Fraenkel and Wallen (1994), the pretest - posttest control group design uses two groups of subjects with both groups being observed or measured twice. The first measurement serves as the pretest, the second as the posttest. Random assignment is used to form the groups. The measurements or observations are collected at the same time for both groups. This experimental research design is good and desirable if the number in each group is small (less than or equal to 30). Sevilla (1996) cited Gay that for experimental studies, 30 students make a good sample. Thus, there were 50 students involved in the whole study, that is, 25 for the experimental and another 25 for the controlled and this makes it a good sample for this research. A diagram of this design is as follows:

Treatment Group	R	O	X_1	O
Control Group	R	O	X_2	O

In the diagram, R stands for random assignment of subjects to conditions. This was done in order to show that the researcher does not exercise any personal preference in distributing the subjects to ensure that there is objective basis for grouping participants in the experiments. The X_1 represents the treatment to be introduced (with the use of the Strategic Intervention Materials developed by the researcher) while X_2 is the usual way of doing things (using the traditional approach of teaching). Moreover, the O stands for the observation or measurement to be undertaken by the researcher. All observations that were done were through the results of the pretest and posttest in the two groups.

Sampling Design and Technique

In this study, the researcher used the purposive technique in determining the number of students who served as respondents for this study. For the purpose of this study, the researcher asked the school principal to shuffle the students' names in two sections in order for them to have equal chances to be selected as respondents of the study. This was done by using the lottery or fishbowl method. The names of the students were drawn from the lottery box or fishbowl.

First draw was for the experimental group, second draw for the control group, third draw for the experimental; fourth draw for the control and so on. Experimental group was assigned one room after the control group.

Research Instrument

This study used two types of research instruments which formed basis of this study – the Strategic Intervention Materials (SIMs) and the 25 - item teacher - made test.

The Strategic Intervention Materials (SIMs) were designed to help teachers provide the students needed support to make progress. It tried to increase and deepen their skills, knowledge and understanding from concrete science to what is more abstract and gave the students the opportunity to explore their understanding and make sense of these new scientific ideas.

Each intervention material had five parts such as the guide card, activity card, assessment card, enrichment card and reference card. The guide card stimulated the students' interest on the topic discussed and gave a preview of what they would learn. It presented the skill focus that mentioned the learning competency, the three subtasks or activities and the concrete outcome or product students are expected to demonstrate or produce. This cited the activities and challenged the learner in performing the tasks which were competency - oriented and can be done individually or per group.

The activity card followed the guide card where it translated the focus skills in at least three activities. It provided activities that were organized based on the sequence of the focus skills written in the guide card and included examples to concretize the concepts, particularly those drawn from real life experience. The activities included in the activity allowed students to make discoveries and formulate ideas on their own, guide and challenge their thinking and learning and use local data and situations like interacting with people in the community. It also provided transition statements that reorganized students' accomplishments. Likewise, the intervention materials provided questions that guided students to develop concepts and focus skills, elicited the message or meaning that a student can take away from an activity and established the relationship between the topic/ lesson and what students already know or are familiar to them.

The assessment card provided exercises, drills or activities that allowed students to assess their understanding of what they have learned correct errors when appropriate and monitor their learning and use feedback about their progress. This card was formulated in standard test formats to give students practice in test taking techniques. It therefore has a separate card that includes the answer key.

The enrichment card provided activities that reinforced the content of the lesson and provided opportunities for students to apply what they have learned to other subject areas or in new contexts. It also encouraged students to work independently or in a group to explore answers to their own questions.

The reference card provided reading to students. It related the content with the students' life experiences. It included a carefully and well - researched list of resources that helped students reinforce concepts and skills that they learned. It also included additional useful content not found in the books.

The Strategic Intervention Materials (SIMs) were evaluated and validated by selected panel of experts in the field using the checklist for evaluating Strategic Intervention Materials (SIMs) in Science found in Enclosure No.2 DepEd Memorandum No.225, s.2009. The checklist was modified and revised in order to suit with the need for this study. The corrections, comments and suggestions given by the different experts were incorporated in the final revision of the material. The panel of experts signed the certification of validity as a proof that validation had conducted.

The 25 - item teacher - made test was designed to measure the mastery level of the students on the three lessons chosen by the researcher. The validity of the test items was determined by its construct and content validity. This was done by subjecting the teacher - made test into evaluation by several experts in the field. Questions which were determined by experts as not valid for the content identified were discarded and replaced by another questions. This was done until all teacher - made test items were declared by the panel of experts as construct and content valid. The pretest was done before the start of the experimentation; and posttest after the treatments had been given to the respondents.

The performance of Grade 8 students during the pre - test and posttest in both groups (controlled and experimental groups) were interpreted using the following scale given by the Department of Education as per mandate in DepEd Order No.73, s.2012 and DepEd Order No.31, s.2012:

Mean Score	*Descriptive Rating*	*Descriptive Interpretation*
22.60 - 25.00	Advanced	This means that the performance level of the learner exceeds the core requirements in terms of knowledge and understandings, and can transfer them automatically and flexibly. Learner has reached an average of 90.40% and above. The method used is Very Highly Effective.
20.00 - 22.59	Proficient	This means that the performance level of the learner at this level has developed the fundamental knowledge and core understandings. Learner has reached an average of 80.00% to 90.36%. The method used is Very Effective.
15.01 - 19.99	Approaching Proficiency	This means that the performance level of the learner at this level has developed the fundamental knowledge and core understandings and, with little guidance from the teacher and/or with some assistance from peers. Learner has reached an average of 60.04% to 79.96%. The method used is Moderately Effective.
12.50 - 15.00	Developing	This means that the performance level of the learner at this level possesses the minimum knowledge and skills and core understandings, but needs help throughout the performances. Learner has reached an average

		of 50.00% to 60.00%. The method used is Less Effective.
0.00 - 12.49	Beginning	This means that the performance level of the learner at this level struggles with his/her understanding; prerequisite and fundamental knowledge have not been acquired or developed adequately to aid understanding. More concepts are not learned. Learner has an average of 49.96% and below. The method used is Not Effective.

Data Gathered

The data that were gathered in this investigation were the following: (1) the performance of Grade 8 students using Strategic Intervention Materials (SIMs) in Biology and the traditional method in teaching which were based on pretest, posttest and gain score results; (2) the effectiveness of using Strategic Intervention Materials (SIMs) in Biology and the traditional method in teaching; and (3) the significant differences of the Strategic Intervention Materials (SIMs) in Biology and the traditional method in teaching based on pretest, posttest and gain score results of the Grade 8 students. All the data that were gathered and retrieved from this study had undergone intensive screening, evaluation and interpretation to arrive at the most valid and reliable results as possible.

Data Gathering Procedures

The following steps served as guidelines in gathering the data for this study:

1) A formal letter that was addressed to the Schools Division Superintendent was written to ask permission for the conduct of the study and to seek for his approval. A letter was also written addressed to the school principal of Hagonoy National High School.
2) Then, the researcher collated the partial performance of Grade 8 students in order to determine the least mastered and least learned competencies.
3) After determining the least mastered and least learned competencies by the Science Department Head in coordination with the Grade 8 Science teachers and the coordinator of the Science, Technology and Engineering Program (STEP), students were grouped into experimental and control groups according to the described process under the sampling design and technique. After the students had been grouped, they were given pretest examination with the presence of the class adviser and guidance counselor. The data were collected, collated and tabulated to get the result of the pretest for both groups.
4) Subsequently, the experimental group was exposed to the use of SIM while the control group used the conventional way of teaching. The exposure of both groups was done in three periods that is one period at one lesson per day.
5) Lastly, the posttest was administered and conducted according to the schedule that was given by the Guidance Counselor. The subject teacher, who was the researcher at the same time, handled the test administration in the presence of the Guidance Counselor or its representative. The data were collected, collated and tabulated to get the result of the posttest for both groups. Statistical analysis using Statistical Package for Social Science (SPSS) was used as statistical software.

Statistical Tools

Statistical tools that were used in the interpretation of data and in testing the null hypothesis were as follows:

1) The mean and standard deviation were used to answer sub - problems 1 to 3.
2) The paired sample t - test was used to determine the significant difference between the pretest and posttest performance using the different teaching approach (SIMs and traditional approach) as well as the gain score during posttest in both treatments as being provided in sub - problems 4 to 6.

4. Results and Discussion

Pretest Mean Scores in Biology of the Control and Experimental Groups

Table 1 highlighted the pretest mean scores in Biology of the control and experimental groups. As disclosed in the table, the control group has a mean score of 8.68 and a standard deviation of 1.406. The result indicates that the performance of Grade 8 students in Biology using the traditional method of teaching is in the beginning level of performance. This implies that the performance level of the learner at this level struggles with his/her understanding; prerequisite and fundamental knowledge have not been acquired or developed adequately to aid understanding. More concepts are not learned. Learner has an average of 49.96% and below.

Moreover, the mean score of Grade 8 students in Biology in the experimental group that is using the Strategic Intervention Materials was found to be 8.72 with a standard deviation of 1.671. The result still indicates that the level of performance of Grade 8 students in Biology in the experimental group is in the beginning level. The result also implies that the performance level of the learner at this level struggles with his/her understanding; prerequisite and fundamental knowledge have not been acquired or developed adequately to aid understanding. More concepts are not learned. Learner has an average of 49.96% and below.

Table 1: Pretest Mean Scores of Grade 8 Students Using the Traditional Method and Strategic Intervention Materials in Biology

Treatments	Mean	SD	Descriptive Rating
1. Experimental	8.72	1.671	Beginning
2. Control	8.68	1.406	Beginning

As can be seen, both the pretest mean scores of the control and experimental groups were in the beginning level of performance. The result in the pretest, according to Carag and Carag (2004) is purposely to determine the current status of students in terms of a lesson or group of lessons to be undergone. Pretest, by nature diagnoses the prior knowledge of the learners and eventually gives the teacher

clearer perspectives and views on what is to be taught and to what degree the teaching will focus. Calderon (2004) averred that the pretest serves as the guide for teachers on how much and on what are they going to teach.

Posttest Mean Scores in Biology of the Control and Experimental Groups

Table 2 highlighted the posttest mean scores of Grade 8 students in Biology using the traditional method of teaching and Strategic Intervention Materials. As disclosed in the table, the controlled group (using the traditional method of teaching) has a mean of 19.08 and a standard deviation of 2.235. The posttest mean score suggests that the group, after exposure to the traditional method of teaching attained an approaching level of proficiency. This means that the performance level of the learner at this level has developed the fundamental knowledge and core understandings and, with little guidance from the teacher and/or with some assistance from peers. Learner has reached an average of 60.04% to 79.96%. This implies that the method used is Moderately Effective.

Table 2: Posttest Mean Scores of Grade 8 Students Using the Traditional Method and Strategic Intervention Materials in Biology

Treatments	Mean	SD	Descriptive Rating
1. Experimental	21.56	1.895	Proficient
2. Control	19.08	2.235	Approaching Proficiency

Moreover, the experimental group (using the SIM) has a mean of 21.56 and a standard deviation of 1.895. The result indicates that the students in the group are in the proficient level. This means that the performance level of the learner at this level has developed the fundamental knowledge and core understandings. Learner has reached an average of 80.00% to 90.36%. The result further implies that the method used is Very Effective.

The result of this study was found to be consistent with the study of Dy (2011) that Experimental Group (using the SIM) has performed much better compared to the Control Group (traditional method) in Science IV (Physics) as revealed in the scores obtained by the two groups in the Post - Test. She argued that with the use of SIM in teaching Physics, students will be more active and participative because of the interesting nature of the SIM.

Soberano (2009) also found out that the strategic intervention materials significantly contributed to the mastery of chemistry concepts. The Strategic Intervention Materials were effective in teaching competency - based skills. He recommended that chemistry teachers should develop more strategic intervention materials for the remaining lessons which were not included in researcher's SIMs.

Significant Difference on the Pretest Mean Scores of Grade 8 Students in Biology using the Strategic Intervention Materials and Traditional Method of Teaching

The significant difference on the pretest mean scores of Grade 8 students in Biology using the Strategic Intervention Materials (experimental group) and traditional method of teaching (controlled group) is reflected in Table 3. As shown in the table, the computed t - value is 0.103 with the p - value of 0.919 which is greater than the level of significance (α=0.05). The result denotes that a strong evidence to accept the null hypothesis had been found. Thus, there is no significant difference on the pretest mean scores of Grade 8 students in Biology using the Strategic Intervention Materials and traditional method of teaching. This implies that the pretest mean scores in two groups are comparable to each other.

Table 3: Difference on the Pretest Mean Scores of Grade 8 students in Biology using the Strategic Intervention Materials and Traditional Method of Teaching

Variables	Mean	t_{value} (α=0.05)	df	p - value	Decision
Experimental	8.72	0.103^{ns}	24	.919	Accept H_0
Control	8.68				

ns – not significant

As mentioned by Concepcion (2005), the performance of students does not vary according to the results of the pretest but on the posttest when certain treatments and factor correlates act on them.

Significant Difference on the Posttest Mean Scores of Grade 8 Students in Biology using the Strategic Intervention Materials and Traditional Method of Teaching

The significant difference on the posttest mean scores of Grade 8 students in Biology using the Strategic Intervention Materials (Experimental) and traditional method of teaching (controlled) is shown in Table 4.

Table 4: Difference on the Posttest Mean Scores of Grade 8 students in Biology using the Strategic Intervention Materials and Traditional Method of Teaching

Variables	Mean	t_{value} (α=0.05)	df	p - value	Decision
Experimental	21.56	4.272*	24	.000	Reject H_0
Control	19.08				

* - significant

As shown in the table, the computed t - value is 4.272 with a p - value of 0.000 which is lesser than the level of significance (α=0.05) denoting a significant difference at 5% level of significance. Hence, the decision to reject the null hypothesis and accept the alternative hypothesis seems to be valid and practical. Thus, there is a significant difference on the posttest mean scores of Grade 8 students in Biology using the Strategic Intervention Materials and traditional method of teaching. The result implies that the scores of Grade 8 students in the posttest in the experimental and controlled groups are different with each other. This can be traced back on their mean scores – the experimental group has a mean of 21.56 while the controlled group has a mean of 19.08. The mean scores show enough evidence of difference between the two groups.

According to Togonon (2011), Strategic Intervention Materials (SIMs) increases and deepens students' 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 discrete representation of the existing matter and other related components of Science. She argued that with the use of SIMs in teaching Science, more and more learning will be captured and more and more students will actively participate in the class discussion. SIMs activates students and enables them to understand concepts in Science from basic to a more complex one.

Furthermore, a significant difference on the posttest results can be observed when treatment or factor correlates will be introduced to the group (Cabardo, 2014; Concepcion, 2005). In other words, the introduction of new approaches, methods and strategies in the field of education will definitely affect the performance of students.

Finally, the study of Salviejo, Aranes& Espinosa (2014) showed that the use of Strategic Intervention Material - Based Instruction (SIM - BI) is effective in terms of improving students' performance Chemistry regardless of learning approach adopted.

Significant Difference on the Mean Gain Scores of Students in Biology using the Traditional Method of Teaching and Strategic Intervention Materials

Table 5 shows the test of significant difference on the mean gain scores of Grade 8 students in Biology using the Strategic Intervention Materials and the traditional method of teaching. As reflected in the table, the experimental group has a mean gain score of 12.84 (pretest mean score of 8.72 and posttest mean score of 21.56) while the controlled group a mean gain score of 10.40 (pretest mean score of 8.68 and posttest mean score of 19.08). The mean gain score in the experimental group is greater than the mean gain score in the controlled group which implies that the use of SIMs in teaching Biology can enhance more than the traditional method of teaching.

Table 5: Difference on the Mean Gain Scores of Grade 8 Students in Biology using the Strategic Intervention Materials and Traditional Method of Teaching

Variables	Mean Gain Score	t - value (α=0.05)	df	p – value	Decision
Experimental	12.84	52.891	24	.000	Reject H_0
Controlled	10.40	34.667	24	.000	Reject H_0

* - significant

Moreover, the table also reflects the test of difference between the two groups in terms of the gain scores. As shown in the table, the experimental and controlled groups have t - values of 52.891 and 34.667 with p - value of both 0.000, respectively. The results indicate that there is a strong evidence to reject the claim that there is no significant difference on the level of effectiveness of using the Strategic Intervention Materials and the traditional method of teaching based on the performance of Grade 8 students in Biology. Hence, it is practical and valid to claim that there is a significant difference on the level of effectiveness of using the Strategic Intervention Materials and the traditional method of teaching based on the performance of Grade 8 students in Biology. The result implies that the mean scores of both groups in pretest and posttest are significantly different from each other.

Soberano (2009) was able to found that there was significant difference on the performance of the experimental and controlled groups in the posttest in favor of the experimental group. The findings attested that although the experimental and control groups have the same intelligence and mastery prior to the experiment, it is not an assurance that both groups would perform the same in the classroom setting. The use of strategic intervention materials significantly contributed to the mastery of chemistry concepts.

Furthermore, Escoreal (2012) was able to find that the use of Strategic Intervention Material in Grade 4 Science was able to uplift the performance of the pupils in their least learned skills. The result purported that with SIM, teachers were able to activate the interest of the pupils in learning the subject. The material itself captures the attention of the pupils. This finding also confirmed the findings of the studies done by Miguel (2012), Estacio (2008), and Soberano (2009) that intervention materials especially developed and focused on increasing the performance of the learners was able to defend their claims. The results of their studies confirmed that at some point, intervention materials enhance mastery of the least mastered and least learned skills and competencies and eventually increases academic performance.

Similarly, according to the study of Togonon (2011), on the development and evaluation of project - based strategic intervention materials (PB - SIMs), PB - SIM is a valid instructional material in teaching high school chemistry. Results showed a significant difference between the achievement of the students before and after being exposed to PB - SIMs. The students exposed to SIM performed better in the posttest than the pretest.

5. Conclusion

Based on the statistical results of the study, the following conclusions were drawn:

1) The level of performance in using both the traditional method of teaching and the Strategic Intervention Materials in the pretest signifies a beginning level of performance.
2) The level of performance in using the traditional method of teaching in the posttest signifies an approaching proficiency level of performance while the group using the Strategic Intervention Materials signifies a proficient level of performance.
3) Using the traditional method of teaching indicates a moderate level of effectiveness while the use of Strategic Intervention Materials indicates high level of effectiveness.
4) There was no significant difference on the pretest performance of Grade 8 students in Biology using the Strategic Intervention Materials and traditional method of teaching.
5) There was a significant difference on the posttest performance of Grade 8 students in Biology using the Strategic Intervention Materials and traditional method of teaching.
6) A significant difference was found on the mean gain score results of using both the Strategic Intervention

Materials and the traditional method of teaching based on the pretest and posttest results in Grade 8 Biology

6. Recommendations

In the light of the foregoing findings and conclusions, the following are recommended:

1) Mass trainings, seminars and workshops on developing SIMs may be conducted by the DepEd Officials within the school, district, division or regional levels in order to allow wider access and strong knowledge in SIM development.
2) School heads may regularly check the instructional readiness and usage of teachers in teaching Science in order to emphasize the significant importance of enabling student to perform in the said field of study.
3) Since the use of Strategic Intervention Materials was found to be effective in enhancing students' performance, teachers may identify the least learned and least mastered competencies and skills in order to develop SIMs for those identified competencies and skills. Institutionalizing the use of SIM should be pushed by teachers.
4) Pretest may be given to students before the start of the class to assess the degree to which the student has in the present and other posttest to assess and evaluate how far the student has gone with the subject. Performance of students may be based through the comparison of the results of the pretest and posttest.
5) Benchmarking on the best practices on SIM development and implementation may be conducted to exchange ideas with other institutions that use SIM in enhancing the performance of students especially in Sciences.
6) The Strategic Intervention Materials made by the researcher may be used by Grade 8 Science teachers to reteach the concepts and skills for students to master the competency - based skills. Likewise, Strategic Intervention Materials for other subjects may be devised and developed to address the least learned and least mastered competencies and skills.
7) Similar studies should be conducted with a wider scope and subjects to support or contradict the results of this study.

7. Acknowledgment

The researcher would like to extend her greatest form of gratitude to our Almighty God, the living and one true God, for the gift of life, unwavering wisdom, healthful time, more patience, incomparable perseverance and good health; Special thanks is also due to her husband, Roberto Mojar, Jr., for providing her the necessary assistance for finishing this study. His financial, moral, spiritual and emotional supports really give her thorough strength, and enough courage to continue this tedious and tiresome work; To my daughter, Rein Louie, for the inspirations and smiles that encouraged the researcher; To my brothers, sister, aunties and my uncles, for the moral and spiritual supports extended to her and for the encouragements; And to all, whose names are not written yet supported the researcher all throughout, for the prayers and for strengthening her to continue this investigation.

8. Conflict of Interest

When it comes to conflict of interest (COI) wherein no trace of COI, there will be no set of conditions in which a professional judgment concerning primary interest such as participants' welfare or the validity of the research tends to be influenced by a secondary interest such a financial or academic gains or recognitions. Deceit will be also avoided in which evidence that the benefit of misleading the respondents outweigh any possible harm to them.

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