

USE OF MODIFIED STRATEGIC INTERVENTION MATERIALS (MSIM) IN ENHANCING THE PERFORMANCE OF THE GRADE FIVE PUPILS IN SCIENCE

SHERWIN B. PARAS, Ed.D.
Mangin-Tebeng Elementary School
SDO Dagupan City

Abstract

The success of learning aims to help learners to gain functional understanding of scientific concepts and principles linked with real-life situation. The study focused on the usefulness of Modified Strategic Intervention Materials (MSIM) in enhancing the Science learning skills of the Grade V Pupils in Mangin-Tebeng Elementary. The researcher developed a teacher-made test for the pretest and posttest research design. The test administered was validated by five teachers and the result is effective in its utilization. The respondents were classified under control group (23 pupils) and experimental group (23 pupils). The study applied one-shot experimental design. All data gathered were used for the enhancement of instructional materials in teaching Science. The statistical tool utilized is t-test for independent sample comparing means the two independent groups. The findings indicated a tremendous increase from the result of pretest to the posttest. Therefore, the modified Strategic Intervention Materials (MSIM) were effective in mastering the competency based–skills in Science based on the mean scores in the posttest of the experimental and control groups. Seminars and in-service training should be conducted in the division for the development and implementation of MSIM in the classroom. This should be made to address the least mastered skills.

Key Words: performance, MSIM, intervention, action research, science education, teacher-made test

I. Introduction

Teaching effectiveness has always been the aim of every teacher in the academe. Whether a teacher is a fresh graduate or an experienced one, there will always be a need to adopt, improve and improvise teaching strategies to adapt to the ever-changing world of the learners. Administrators keep encouraging the teachers to devise strategies and techniques to address the unlimited needs of the pupils and the changing trends with the context of the pupil's lives. It was stated in A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas (2012) that Science is included as a core element in elementary and secondary levels. The inclusion of science in the curricula aims to achieve a degree of “scientific literacy” among the citizens to enable them to participate effectively as citizens in modern societies. Science aims to help every Filipino learner to gain a functional understanding of scientific concepts and principles linked with real-life situations, and acquire scientific skills, attitudes and values necessary to analyze and solve day-to-day problems.

The researcher came to realize that in achieving literacy in Science, the universal goal is to educate learners to challenge many countries including the Philippines through Science Education. In fact, one of the big challenges that most educators in the Philippines encounter is to improve the students' performance in Science. Unfortunately, a test administered to elementary grade pupils especially in Science show that there are competencies that fall below the mastery level of 75 percent, even the result of diagnostic and other administered test in Science resulted in a low result. This scenario is no different from Mangin-Tebeng Elementary School. The result of the achievement rate in the second periodic test for the grade five pupils school year 2016-2017 is 10 percent and below the 75 percent level of mastery. This translates to a low performance in Science. This also proves that the regular remedial lessons, other materials used in teaching, some teaching strategies such as peer grouping are not enough to address the low performance level in certain competencies. Notwithstanding, Science teaching is more productive when there are available and sufficient instructional materials. Funds are not enough to cater to the needs on instructional materials needed in every three science classroom. The science teacher, therefore, is responsible to devise and provide the necessary materials for use in science classes (Dy, 2011).

The researcher recognized Modified Strategic Intervention Materials (MSIM) as vital instructional material to improve the performance levels in various learning areas in schools. Various studies had proven this claim and various SIMs have been prepared for different areas and competencies. Some of these materials however are not fitted for the type of learners in the locality. All pupils learn at different speed and react differently. With the different learning pace, teaching has to be focused on giving every learner an equal chance to learn and teaching with innovative instructional materials that need to be adopted. Instructional materials are needed to improve the motivational and enthusiasm of students in learning. Hence, it is the premise of this study to use the developed and validated MSIMs as a possible means in improving the pupils' performance in Science for the delivery of instruction.

2. Method

2.1 Research Design

The design adopted was a classroom based research where pretest and posttest experimental design utilized. It emphasized the MSIM utilization to remediate learner's need specifically the least learned mastered skills in Science Education. It tried to find out whether the teacher-made MSIM is an effective strategy to enhance the performance of Grade V pupils in Science. Moreover, MSIM is interactive and a complete learning package.

2.2 Participants

Forty six (46) pupils were the participants of the study, 23 pupils in the control group and another 23 pupils in experimental group. The researcher developed a teacher made test administered to learners for their pretest and posttest. The pupils who got scores below the passing level (less than 75%) were selected. All the pupils were given remedial lessons. The teacher-made test science MSIM was used by half of the pupils during the remediation while the other half did not use the MSIM. To specify how random selection was done.

2.3 Instrumentation

The researcher utilized the teacher-made test under quantitative data collection technique. It aimed to assess the use of Modified Strategic Intervention Materials (MSIM) to enhance the performance of the Grade V pupils in Science. Pretest and posttest were administered among the respondents. A 40-item assessment was given after the remediation and two weeks after the test was conducted to the same group of Grade V pupils. The scores were subjected to statistical treatment to determine if there is an increase performance level of the pupils in Science. The test was validated and revised based from the suggestions of teachers. Result shows that the instrument and the MSIM was very highly useful (WM=4.90) as assessed by the teachers during the validation. The teacher-made MSIM focused on Polly reproduction having forty test items. The 40-test items served as basis of the researcher in evaluating the effectiveness of MSIM as evidenced by the result of the pretest and posttest conducted among grade five pupils.

2.4 Data Analysis

The use of MSIM to enhance the performance level of Grade V pupils was determined using the frequency counts, percentages and average weighted mean. A 40-test items pretest and posttest were administered. The mean ratings of teachers who assess the validity of the SIM and test items were computed separately and their average was obtained. Only the averages are presented in this paper. The items were assigned the following points: Very Highly Useful (VHU)/ Excellent (4.21 – 5.00); Highly Useful (HU)/ Very Good (3.41 - 4.20); Moderately Useful (MU)/ Good (2.61 - 3.40); Slightly Useful (SU)/ Fair (1.81 - 2.60); Not Useful (NU)/ Needs Improvement (1.00 - 1.80).

The results were tabulated and determined as the significant improvement noted on the performance of the Grade V pupils before and after using the proposed Science Modified Strategic Intervention Material. It is evidently observed that their pretest and posttest results, made used the T-test as statistical tool for determining the difference between two sample means from two normally distributed respondents with unknown variance.

3. Results

3.1. Performance Level of the Grade V pupils of Mangin-Tebeng Elementary School Using Strategic Intervention Materials (Pretest and Posttest Result)

Table 1 shows that the two sections in Grade V pupils has Mean Percentage Score (MPS) increase between the pretest and posttest results. However, only the Experimental group got the Mastery Level of 82.61% MPS as their performance under posttest result. It also shows that controlled group computed the MPS of 56.52% that signifies the nearing mastery level of performance. Most of them got nearing mastery level using the MSIM for experimental group and traditional method for the controlled group.

Table 1. Performance Level of the Grade V pupils of Mangin-Tebeng Elementary School Using Strategic Intervention Materials (Pretest and Posttest Result)

	40-Test Items			Difference	Performance Level
	N	Pretest	Posttest		
Using S.I.M. (Experimental Group)	23	17.39%	82.61%	65.22%	Nearing Mastery Level
Traditional Method (Control Group)	23	13.04%	56.52%	43.48%	Nearing Mastery Level

3.2. Percentage Increase in the Performance Level of the Two Group of Grade V Pupils after Implementation of Strategic Intervention Material

Table 2 shows the percentage in the performance level of the two groups of Grade V pupils after the implementation of MSIM. It pointed out that the result of posttests got a remarkable improvement 81.96% among the experimental group in their PLM while the control group achieved the result of 69.02%. Posttest indicated that Grade V pupils who were taught with the proposed MSIM employing the causal style of discourse had significantly better retention of facts and concepts and were superior in applying this knowledge in problem-solving exercises. They gained mastery level of the lesson presented.

Table 2. Percentage Increase in the Performance Level of the Two Group of Grade V Pupils after Implementation of Strategic Intervention Material

Experimental Group	Pretest	Posttest	Percentage of Increase	Control Group	Pretest	Posttest	Percentage of Increase
Student 1	7	26	48%	Student 1	5	31	65%
Student 2	12	13	3%	Student 2	10	15	13%
Student 3	15	34	48%	Student 3	30	34	10%
Student 4	12	23	28%	Student 4	10	26	40%
Student 5	31	35	10%	Student 5	20	23	8%
Student 6	19	28	23%	Student 6	15	33	45%
Student 7	15	25	25%	Student 7	13	21	20%
Student 8	30	32	5%	Student 8	23	30	18%

Student 9	30	33	8%	Student 9	21	33	30%
Student 10	18	36	45%	Student 10	9	20	28%
Student 11	9	38	73%	Student 11	7	15	20%
Student 12	13	38	63%	Student 12	30	32	5%
Student 13	21	38	43%	Student 13	32	34	5%
Student 14	16	37	53%	Student 14	12	33	53%
Student 15	18	32	35%	Student 15	15	33	45%
Student 16	13	38	63%	Student 16	8	23	38%
Student 17	12	35	58%	Student 17	8	23	38%
Student 18	30	37	18%	Student 18	22	24	5%
Student 19	13	38	63%	Student 19	9	34	63%
Student 20	11	32	53%	Student 20	9	34	63%
Student 21	14	30	40%	Student 21	11	23	30%
Student 22	12	38	65%	Student 22	9	31	55%
Student 23	13	38	63%	Student 23	9	32	58%
TOTAL	384	754		TOTAL	339	635	
No. of Pupils who took the Test	23	23		No. of Pupils who took the Test	23	23	
No. of Test Items	40	40		No. of Test Items	40	40	
Highest Score Obtained	31	38		Highest Score Obtained	23	34	
Lowest Score Obtained	7	12		Lowest Score Obtained	5	15	
No. of Pupils who achieved 75% level of Mastery	4	19		No. of Pupils who achieved 75% level of Mastery	3	13	
CLASS MEAN			5.17	CLASS MEAN			5.17
	16.70	32.78	(Post test difference)		14.74	27.61	(Post test difference)
CLASS PLM	41.74	81.96		CLASS PLM	36.85	69.02	

CLASS
ACHIEVEMENT 17.39% 82.61%
RATE

CLASS
ACHIEVEM 13.04% 56.52%
ENT RATE

3.3.t-test on the Significant Difference between the Posttest Results that shows Significant Improvements on the performance of the Grade V pupils before and after using the proposed Science Strategic Intervention Material

Table 3 shows the significant improvements noted on the performance of the grade five pupils before and after using the proposed Science Intervention Materials as evidence by their pretest and posttest results.

Table 3. t-test on the Significant Difference between the Posttest Results that shows Significant Improvements on the performance of the Grade V pupils before and after using the proposed Science Strategic Intervention Material

Variable	df	T-Value	P-Value	T-Critical	Interpretation	Decision
Pretest	44	0.91	0.37	2.02	NS	Accept H0
Posttest	44	2.74	0.009	2.01	S	Reject H0

4. Discussion

4.1 Performance Level of the Grade V pupils of Mangin-Tebeng Elementary School Using Strategic Intervention Materials (Pretest and Posttest Result)

Posttests results got a remarkable improvement (65.22% and 43.48% difference respectively) post tests indicated that grade V pupils who were taught about Science with Strategic Intervention Materials (SIMs) employing the causal style of discourse had significantly better retention of facts and concepts and were superior in applying this knowledge in problem-solving exercises. They gained mastery level of the lesson presented.

4.2 Percentage Increase in the Performance Level of the Two Group of Grade V Pupils after Implementation of Strategic Intervention Material

Table 2 shows the posttests results got a remarkable improvement having an increase of a minimum of 5 percent and a maximum increase in their performance by 68 percent wherein most of the improved pupils are from the experimental group wherein 13 of the pupils achieved 75% level of mastery as evidence shown in the posttest results with a PLM of 69.02. Posttest indicated that grade V pupils who were taught with the proposed SIM materials employing the causal style of discourse had significantly better retention of facts and concepts and were superior in applying this knowledge in problem-solving exercises. They gained mastery level of the lesson presented.

4.3 t-test on the Significant Difference between the Posttest Results that shows Significant Improvements on the performance of the Grade V pupils before and after using the proposed Science Strategic Intervention Material

Table 3 shows the P-Value is equal to 0.37 is greater than the level of significance of 0.05. This means that pupils from both groups had the same understanding of the lesson before it was taught. But during the Post-test periods after the lesson was taught, it showed significant difference. The computed value for post test result was higher than the p-value, therefore the null hypothesis is rejected, this means that the use of the Modified Science Strategic Intervention Material (MSIM) improved the performance level of the Grade V pupils, the experimental group significantly had better retention of facts and concepts and were superior in applying this knowledge in problem-solving exercises after the MSIM was used to them. Therefore, the performance of the two groups based from the posttest results significantly vary on the type of teaching methods and strategies they received, hence, result suggests that the proposed Modified SIM was effective in improving the performance of the Grade V pupils in Mangin-Tebeng Elementary School. The researcher's findings agreed with the findings of Plenos (2014) and Barredo (2014), who found out that intervention materials contributed to better learning of the concepts among students. Posttests and maintenance tests indicated that students who were taught with material employing the causal style of discourse had significantly better retention of facts and concepts and were superior in applying this knowledge in problem-solving exercises. Furthermore, students learn best when they can build on past experience, relate what they are learning to things that

are relevant to them, have direct "Hands-on" experience, construct their own knowledge in collaboration with other students and faculty, and communicate their results effectively.

5. Conclusions

The modified strategic intervention materials were effective in mastering the competency based–skills in Science based on the mean gain scores in the posttests of the experimental and control groups. Good SIMs enable students to gain mastery of the lessons presented to them.

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