IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

TEACHERS' PEDAGOGICAL PRACTICES AND PROBLEMS ENCOUNTERED IN TEACHING SCIENCE

ERLIE F. JAVIER

Institution : Institute of Graduate and Professional Studies
Lyceum-Northwestern University
Dagupan City

Abstract : The study aimed to determine the teachers' pedagogical practices along with the common problems encountered by teachers and administrators, and the degree of seriousness of these problems. The respondents of the study were randomly selected public secondary schools in Mangatarem I and II Districts. From these randomly selected schools, nine (9) administrators, 36 teacher respondents were obtained and participated in the study. Following the CIPP (Content, Input, Process, and Product) evaluation model of Stufflebeam (1971), the study used quantitative and qualitative designs of research. Quantitative methods were used in generating numerical data through survey questionnaires. The survey questionnaires solicited for the extent of the implementation of teachers' pedagogical approaches and the degree of seriousness of problems encountered. Qualitative approach of research was used to uncover the common problems encountered by teachers, administrators, and learners in the implementation of K to 12 Science Program. Results of the study pointed out that generally, teachers of the district implement the prescribed pedagogical approaches of teaching K to 12 Science at a great extent. Pedagogical practices which are mostly implemented by teachers, include the use of 5E Instructional model, Inquiry-based learning, contextualization, integration of concepts in other subject areas and the linking of what learners already know with the lesson or concepts to be tackled. The survey questionnaire revealed major problems on lack of K to 12 training, lack of resources and facilities, and curriculum enhancement. Responses of teachers and administrators from interviews exposed two broad categories of causes of problems arising in their classroom Science instructions: teacher factor and learner factor. Learner factor includes lack of prerequisite knowledge on contents, poor comprehension in the English medium and some topics are too high for the level of the learners. While teacher factor includes lack of knowledge on the teaching approaches and techniques and contents in teaching Science, unavailability of teaching-learning resources and significant number of disrupted classes. The study suggests that the problems that teachers are facing particularly on the lack of training and learning materials should be addressed as soon as possible because these are the defining factors towards the successful implementation of the program and the attainment of its objectives.

Keywords: Teachers' Pedagogical Practices, Problems Encountered in Teaching Science

INTRODUCTION

The general vision statement of the implementation of the new curriculum reform of the Department of Education (DepEd) states that, "Every graduate of the Enhanced K12 Basic Education Program is an empowered individual who has learned through a program that is rooted on sound principles and geared towards excellence". DepEd considers that the enhanced curriculum would benefit Filipino learners and families, society and economy, in view of the fact that K-12 is affordable, conceived to produce more productive and responsible citizens equipped with the essential competencies and skills for both life-long learning and employment.

With its initial years of implementation, K to 12 has introduced significant reforms in curriculum and instruction and even series of changes of some aspects of its implementation. This is due to the aim of DepEd to ensure continuous improvement of its system to guarantee the attainment of the vision of the program. To achieve the goal of ensuring continuous improvement, sound information and data are required as bases for the improvement of programs for learner development, curriculum implementation and school effectiveness. This is where the essence of program evaluation and assessment comes in, which is to provide information and evidence to oversee the on-going implementation of the K to 12 Basic Education Program and to pin-point areas where improvements might be made.

Program evaluation is a valuable tool for both planners and implementers who are seeking to strengthen the quality of their programs and improve learning outcomes. It finds out "what works" and "what does not work." Knowing "what works" helps program implementers to focus and replicate inputs on the essential components of the program model that benefit participants and volunteers; knowing "what does not work" allows program implementers to improve and strengthen their service delivery models. Not knowing what is working may waste valuable time and resources, thus compromising the efficiency of the implementation of a program. Program evaluation answers basic questions about a program's effectiveness, and evaluation data can be used to improve program services (Metz, 2007).

Truly, the implementation of K to 12 Program of the Department of Education serves a noble purpose for every Filipino learner. Aimed at the successful implementation and realization of the program vision, DepEd has been very determined in pouring out its efforts in pushing open and consultative processes among stakeholders and major implementers, creation of task-forces for implementation monitoring and evaluation, regional consultations leading to national summits to solicit inputs and feedback, curriculum review and enhancement, massive teacher training and development of learning resources and infrastructures.

Monitoring and evaluation of a program is an essential activity and integral towards its successful implementation. Evaluation of K to 12 Basic Education Program particularly in its initial phase of implementation is necessary so as to draw feedback for its improvement. Through evaluation, a rich picture of the program will be learned, and doors will be opened for prospective learning. The success and failure of the on-going implementation of a program and the reasons behind these can be determined.

Science and technology are gaining increasing significance in the global competition among nations. People are increasingly expected to be so well educated that they are able to take proactively and innovatively part in scientific and technological development and, on that basis, being economically successful. They are also expected to develop appropriate powers of judgment concerning the fundamental principles and also the effects of technical products. This applies in particular to physics, being considered as the mother of all sciences due to its fundamental character not only in terms of the results and insight it provides but also with regard to its mindsets.

A modern industrial country must therefore aspire, on the one hand, to safeguarding a generally high standard of knowledge pertaining to physics and other sciences in the population at large in order to take up a leading role in the competing technology-related areas of economy. On the other hand, modern society needs cogitative and politically mature citizens with sound powers of judgment based on their education. In order to achieve all these, schools are of pivotal importance here.

A substantial understanding of science and technology across the widest
possible spectrum of society constitutes a resource whose value should not be underestimated in the competition of nations for cultural and economic success. This applies, in particular, to physics with its fundamental character as the "mother" of all sciences in terms of the supplied results and also with regard to its mindsets.

An education in science, and particularly physics, more often than not shapes young people their whole lifetime. It plays a major role in determining their basic knowledge that will accompany them through life and whether they will be motivated to continue learning or even pursue a science or technology degree.

Among school children physics is considered to be one of the least popular subjects. Frequently, those who start school with a natural interest in nature and technology tend to become discouraged or even disinclined to the subject upon finishing their school education.

In the educational context, science processes are mental skills used in handling, dealing with or transforming information and concepts (The Competency Inventory Revision team, 2011). Aside from describing scientific process as essentially processes of thinking, they are also described as perspective, associative, inductive, deductive, creative, imaginative, and critical and problem solving processes (Rivera and Sambrano, 2010).

Science teaching has changed significantly during the past forty years. At one time, much of science teaching is focused on the content of science. But after the launching of the Sputnik Satellite by the Soviet Union in 1957, the US took a new look of science education which eventually changed the whole world view on science teaching. The teaching of science has shifted from content towards process. Process approach in science teaching is a way of working on thinking about, and studying problems. The use of process approach in teaching science helps students develop the following skills: analyzing, classifying, collecting data, communicating, comparing, contrasting, controlling variables demonstrating, describing, drawing conclusions, estimating, evaluating, experimenting, forming theories, generalizing, graphing identifying, inferring, interpreting, measuring, observing, predicting outcomes, questioning, recording data, and verifying.

In the Third International Mathematics and Science Study (2000), the Philippines ranked 39th out of 42 participating nations. The study showed that the science syllabi of the countries with high achievements had fewer topics as compared to that of the Philippines. From the same study, the recommended measures to help raise the achievement level of the Filipino students, there is a need to refine the curriculum with components which had to be clustered into a) fewer learning areas, b) better integration of competencies an topics within and across the learning areas, and c) with more time allotment for the mastery of the essential competencies, for personal analysis and reflection on the major concepts. This would result to a restructured, upgraded, more integrated curriculum where each learning competency is useful.

There have been many studies over the years that examined teachers' science process skills. These studies have ranged from teachers' understanding to attitudes towards science process skills. Many studies have also emphasized the importance of teachers' understanding of the science process skills. These studies have established a strong argument for ensuring such understanding. For example, in the development of a tool to measure science process skill performance, Burns, Okey, and Wise (2005) make a strong argument on the importance of science process skills, claiming "the process skills represent the rational and logical thinking skills used in science". Further, they argue that teachers must exhibit competence in the process skills in order to effectively teach them to children.

Other research supports this claim. Ailello-Nicosia and ve Sperandeo-Mineo Valenza (2004) focused on middle school science teachers' understanding of the science process skills and tested their pupils at the end of the school year to determine the impact teachers' ability in the skills has on their students. Their results were not surprising, as they found that using the processes "is a more valuable teacher characteristic than the understanding of science processes for student outcomes". This is a significant

finding, asit indicates that teachers must not only have an understanding of the skills, but must be functionally literate in the skills in order to appropriately and effectively teach them to their students.

Despite a variety of studies that establish the importance of science process skills for teachers, there is evidence that teachers do not have sufficient knowledge and understanding of these skills. Pointing out that even though the science process skills are essential for student learning and beneficial because they are cross curricular, developed early in life, and are transferable thought processes, Sunal and Sunal (2003) contend that both children and adults lack the ability to use them appropriately. Other research that has focused on teachers, support this claim.

Within schools, one of the major deficiencies which sadly arises out of the teaching and studying of science is that students develop very limited understanding of scientific concepts. For example, they can write a definition for osmosis, but not associate any meaning with the definition. They can say and write the words, "An acid is a proton donor," but they attach no meaning to the words. For the teaching and studying of science to be of substantial value, the students must be able to apply scientific concepts, procedures and attitudes to their wider life. The value of learning science is greatly enhanced when the students are lead into an extensive understanding and a practical conception of how scientific concepts and principles apply to themselves personally, to their families, their communities and their nation.

Among the science process skills which should be engendered in the teaching and studying of science are those of measuring, observing, classifying, inferring, predicting, communicating, interpreting data, making operational definitions, posing questions, hypothesizing, experimenting and formulating models. School teachers need to be expert in these processes, and they also need to be expert in the teaching of these processes. From range of process skills associated with scientific inquiry, some of the skills can be rated as being the very basic ones. Students should be introduced to these skills early in their school experience because so much of their success in subsequent guided studies requires a sound understanding and appropriate use of these skills. This basic set includes the skills of observing, measuring, classifying, inferring and communicating.

Process skills of science are basic and critical components of the process of conducting study of science under the guidance of a teacher. For many years, now, Bloom's taxonomy of educational objectives has received wide recognition, and it has been used in many curriculum design and development projects. Bloom identified three major realms or domains of intended learning outcomes: the cognitive domain of knowledge, the affective domain or attitudes and the psychomotor domain of manipulative skills. These categories have stood the test of time and acceptance by experts, and they provide an excellent conceptual framework for revision of curriculum so that it incorporates the basic scientific process skills. The sure route to the attainment by school students of mastery of the basic skills of science is through having adequate teachers. The teachers must be experts in two areas. They must be masters of science process skills.

Statement of the Problem

The study aimed at conducting formative evaluation of the Teachers' Pedagogical Practices and Problems Encountered in Teaching Science in Mangatarem I and II Districts, Schools Division Office I Pangasinan during the school year 2023-2024.

Specifically, this study sought answers to the following sub-problems:

1. What are the Science pedagogical practices implemented by teachers?
2. What is the extent of implementation of these pedagogical practices?
3. What are the common problems encountered by teachers and administrators in the implementation of K to 12 Science Program?
4. What is the degree of seriousness of the common problems encountered by teachers and administrators in the implementation of K to 12 Science Program?

METHODOLOGY

Research Design

To address the problem statement, this study utilized both qualitative and quantitative designs. Qualitative approach of research was also used to uncover the common problems encountered by teachers and administrators in the implementation of K to 12 Science Program. The researchers made use of individual and focus groups interview as data collection method. This data collection method provided an opportunity for a systematic, in-depth evaluation of the research questions. Furthermore, this method added to the quantitative results through explanations and clarifications from the respondents.

Quantitative Research method was used to quantify the problem by way of generating numerical data that can be transformed into useable statistics. It is used to quantify variables and generalize results from it. It uses measurable data to formulate facts and uncover patterns in a research. With the use of survey questionnaire, this study generated numerical data to describe the extent of pedagogical practices in the implementation of K to 12 Science Program and the degree of seriousness of common problems encountered by teachers and administrators in the implementation of the program.

Sources of Data

This portion dealt with the locale of the study and population sampling. The study was conducted in public secondary schools in Mangatarem I and II Districts. The population of the study includes all Science teachers and administrators from public secondary schools in Mangatarem I and II Districts. Schools covered in the sampling were randomly selected by the researcher. All Science teachers and administrators from the randomly selected schools were part of the respondents of the study. The totality of the respondents of the study includes the 36 Science teachers and (nine) 9 administrators.

Instrumentation and Data Collection

The researchers made use of interview guide and survey questionnaire test in gathering and collecting data from the respondents.

A self-made interview guide was developed and used to determine the pedagogical practices and common problems encountered by teachers and administrators in the implementation of K to 12 Science Program. Interviews were also meant to validate data from the questionnaire answered by the respondents especially on the problems encountered in the program implementation. Due validation by experts of the interview guide was also taken into account.

A self-made survey questionnaire was developed by the researchers. It was used as the primary data gathering instrument in collecting information regarding the level of implementation of the identified areas of implementation of the K to 12 Science Program of teachers and administrators along with the problems encountered in the implementation of the program. Prior to the development of the researcher-made survey questionnaire, pre-interviews were done among target respondents. This was done to solicit all possible problems encountered by the teachers and administrators and such findings were included as predetermined problems or items in the questionnaire. Other items or problems added in the questionnaire were based from related literature and studies. The instrument underwent content validation by three experts in the field of thesis writing.

Primary data were gathered by means of interviews and floating survey questionnaires among Science teachers and administrators. The researchers personally floated the questionnaire to the respondents and subsequently validated answers of the respondent through follow-up interviews. While secondary data were obtained from related studies and literature.

The data gathering instrument of the study was a questionnaire for the science teachers and their school heads. The questionnaire for the teachers focused on the profile of the Science teachers in terms of highest educational attainment, number of years of experience in the teaching of science, and relevant in-service training attended; the extent of availability of science equipment/facilities needed in the teaching of Science as perceived by the elementary Science teachers; the level of competency of the elementary Science teachers in the use of the Science processes along observing, comparing, classifying, measuring, communicating, predicting, inferring, and experimenting as perceived by them and their school head; the problems being encountered by the Science teachers relative to the use of the Science processes.

The researcher conducted library research and consulted past studies relevant to the present study to crystallize his own concept of the study.

The researcher-made questionnaire was presented to the members of the Research Panel for initial evaluation. Then the instrument was submitted for final evaluation and validation by experts on questionnaire construction. A validation questionnaire was utilized in this regard. The product of this process was the questionnaire in its final form.

The approval and permission to conduct the study was obtained by the researcher from the Division Superintendent of Pangasinan I.

The questionnaire was personally administered by the researcher to the teachers to ensure fast and immediate response and 100% retrieval.

The data that were gathered were subjected to appropriate statistical treatment analysis and interpretation.

Tools for Data Analysis

The different problems were statistically treated, tabulated, and analyzed. For a clearer interpretation of the data gathered from the survey questionnaire and interviews, the researchers used the following statistical procedures:

Mean was used in measuring the extent of implementation of the Science pedagogical practices of teachers and in describing the degree of seriousness of common problems encountered by teachers and administrators.

The following intervals were used in interpreting the computed weighted mean for the extent of implementation of Science pedagogical practices:

Arbitratry Scale on Describing the Extent of Implementation of Pedagogical Practices

Weight	Scale/Range	Description	Code
5	4.50 – 5.0	Very Great Extent	VGE
4	3.50 – 4.49	Great Extent	GE
3	2.50 – 3.49	Moderate Extent	ME
2	1.50 – 2:49	Little Extent	LE
1	1.00 – 1.49	Very Little Extent	VLE

In describing the level of seriousness of problems, the following intervals were used:

Arbitrary Scale on Describing the Degree of Seriousness of Problems Encountered

Weight	Scale/Range	Description	Code
5	4.50 – 5.0	Very Serious	VS
4	3.50 – 4.49	Serious	S
3	2.50 – 3.49	Moderately Serious	MS
2	1.50 – 2:49	Slightly Serious	SS
1	1.00 – 1.49	Not a problem	NP

RESULTS AND DISCUSSION

This chapter deals in the presentation, analysis and interpretation of the data gathered relative to sub-problems in the study**.**

Pedagogical practices which are implemented and verbalized by the teachers and administrators during the interviews are listed on the Table 1 with corresponding frequencies.

Table 1 . Science Pedagogical Practices Implemented by Teachers

Common Pedagogical Practices	Frequency (f)	
	Teachers	Administrators
1. Uses Inquiry-Based Approach	18	8
2. Uses pupils' schema to encourage participation	24	3
3. Patterns instruction in the 5E Learning Cycle Model	26	6
4. Uses various teaching approaches in Science :	12	2
5. Uses Constructivist Approach	3	1
6. Employs contextualization in teaching the subject	24	8
7. Uses hands-on learning activities	20	7
8. Uses evidence in constructing explanation	7	2
9. Integrates Science lessons in other subjects	24	3

Based on the data table, it appears that pedagogical practices which are implemented by most of the teachers include the use of Inquiry-Based Approach, use of the 5^E Learning Model, employing contextualization, integrating Science lessons in other subjects and use of hands-on activities.

Table 2 shows the common major problems of teachers and administrators verbalized during the interviews. The table suggests that the most frequent problem encountered by teachers is the lack of Science facilities and equipment.

Science Pedagogical Approaches

Numerical data were gathered through the survey questionnaire distributed to teachers and administrators. The questionnaire solicited for their assessment on the extent of the implementation of Science pedagogical practices. Follow-up questions from the interviews served also as a way of validating numerical responses of the respondents in the questionnaire.

Table 2. Common Problems Encountered by Teachers and Administrators

Common Problems	Frequency (f)	
	Teachers	Administrators
1. Teacher's guides and learner's materials are insufficient and are not yet available	14	5
2. Lack of mastery on contents of Science	4	0
3. Lack of Science of K to 12 Science training	8	2
4. Lack of Science facilities and equipment	21	4
5. Lack of ICT equipment that could be used in Science instructions	16	4
6. Limited knowhow and skills on the different teaching approaches and techniques in Science teaching	11	0
7. My pupils poorly comprehend Science in English medium	18	2
8. Limited knowledge on enhancing Science Curriculum by means of contextualization and localization	14	1
9. Some Science topics are hard to teach for they are too high at the level of my pupils	8	1

Table 3 shows the extent of implementation of Science pedagogical practices by teachers and administrators. The over-all grand mean of 4.01 supports that teachers and administrators are implementing the identified Science pedagogical approaches to great extent.

An over-all grand mean of 4.01 was computed. It can be gleaned from this that in general, teachers and administrators are able to implement orders, policies and procedures related to the implementation of K to 12 Science program to a great extent.

It cannot be denied though from the findings that few aspects of the program are not implemented with considerable degree of extent. Confirmed by interviews conducted, some teachers admitted that they have not satisfactorily implemented the program in terms of achieving desired outcomes.

Table 3. Extent of Implementation of Pedagogical Practices of Teachers

Pedagogical Practices	Teachers		Administrators		Over-All	
	Mean	Description	Mean	Description	Grand Mean	Description
1. Makes connections to what students already know	4.25	GE	4.25	GE	4.25	GE
2. Use pupils' schema to encourage participation	4.22	GE	4.25	GE	4.23	GE
3. Patterns instruction in the 5E Learning Cycle Model	3.94	GE	3.88	GE	3.91	GE
4. Uses Multi-Disciplinary Approach	3.72	GE	3.88	GE	3.80	GE
5. Uses Inquiry-Based Approach	4.09	GE	4.25	GE	4.17	GE
6. Constructivist Approach	3.88	GE	4.00	GE	3.94	GE
7. Employs contextualization in teaching the subject	4.09	GE	4.38	GE	4.23	GE
8. Uses hands-on learning activities	3.91	GE	3.88	GE	3.89	GE
9. Uses evidence in constructing explanation	3.97	GE	3.88	GE	3.92	GE
10. Integrates Science lessons in other subjects	3.94	GE	3.63	GE	3.78	GE
Over-all Grand Mean					4.01	GE

TEACHER PREPARATION AND READINESS

Level of Seriousness of problems under the area Teacher Readiness/Preparedness is shown in Table 6. It reveals that problems under Teacher Readiness/Preparedness have an over-all grand mean of 2.65. This means that teachers and administrators encountered moderately serious problems regarding teacher's readiness and preparedness which have direct effects on their capacity to implement the Science Program.

Specifically, Table 4 shows that among the items under the area of Teacher Readiness and Preparedness, problem on Inadequate K to 12 Seminar/Training ranked first with mean rating of 3.55. This suggests that teachers and administrators met serious problems on the inadequacy of teachers' training on K to 12.

It can also be inferred that teachers in public elementary schools in Santo Tomas District are in need of training/seminars on teaching strategies and techniques related to K to 12. Training and seminars aim to equip every teacher with contemporary teaching strategies to be used in classroom instruction. In teaching to be able to give children quality learning, varied teaching strategies and techniques are necessary. These inspire pupils to learn more. This is based on the concept that education is a preparation for adult life, mental discipline, transfer training, acquire knowledge for its sake, seeking truth and perception, and habit formation.

Table 4. Problems encountered in terms of Teacher Preparation and Readiness

	Teacher	Administrator	Mean	Rank	Description
1. Inadequate seminars/ training related to K to 12.	3.57	3.53	3.55	1	S
2. Insufficient readings and study materials on K to 12	3.44	3.25	3.35	2	MS
3. Lack of knowledge, skills, attitudes, values, pertinent to to K to 12	3.07	2.25	2.90	3	MS
4. Poor awareness on the goals, purposes and objectives of K to 12	2.94	2.13	2.54	5	MS
5. Lack of confidence to appropriately teach K to 12	2.94	1.88	2.41	6	SS
6. Inadequate knowledge on varied teaching strategies and techniques	2.82	2.38	2.60	4	MS
7. Insufficient know-how on how to address the needs of learners	2.94	1.75	2.35	7.5	SS
8. Lacks mastery on teaching content and objectives	2.94	1.75	2.35	7.5	SS
9. Inadequate know-how on the use of varied assessment tools.	2.66	2	2.33	9	SS
10. Insufficient knowledge on educational technology	2.66	1.75	2.21	10	SS
Grand Mean Rating			**2.65**		**MS**

LEARNER PREPARATION/READINESS

Problems encountered in terms of Learner Preparation and Readiness and their level of seriousness are shown in Table 5.

Table 5. Problems encountered in terms of Learner Preparation and Readiness

	Teacher	Administrator	Mean	Rank	Description
1. Poor awareness on the goals, purposes and objectives of the K to12 curriculum	2.97	2.5	2.74	3	MS
2. Lacks orientation, symposium to broaden the knowledge in K to 12	2.91	2.75	2.83	2	MS
3. Lacks knowledge on the rationalewhy the enhanced basic education curriculum is implemented	2.50	2.38	2.44	6.5	SS
4. Lack of understanding on concepts and class activities	2.51	2	2.25	10	SS
5. Relating personal experiences for the long retention of observed	2.94	1.75	2.35	9	SS
6. Various materials needed for instruction are meager	3.10	2.13	2.61	5	MS
7. Shows passivity in class discussions and making projects	2.88	2	2.44	6.5	SS
8. Performance assessment tools are not clearly explained	2.94	1.88	2.41	8	SS
9. Lack of knowledge and poor understanding on underlying concepts and principles that can be applied to problems/ situations in new contexts	3.00	2.75	2.88	1	MS
10. No orientation about the new ways on how the lessons are presented	2.96	2.5	2.73	4	MS
Grand Mean Rating			**2.57**		**MS**

As a whole, items or problems under Learner Preparation/Readiness are moderately serious as encountered by teachers and administrators. This was justified by the grand mean of 2.57. It indicates that learners lack knowledge and have poor understanding on underlying concepts and principles that can be applied to problems/ situations in new contexts. Learners have poor awareness on the goals, purposes and objectives of the K+12 Science curriculum

The findings also reveal that schools through school heads and teachers failed to conduct regular symposia/proper orientations to learners, parents, stakeholders about the K+12 Science curriculum. According the interview among administrators, there has been no formal orientation of pupils regarding the K to 12 Curriculum.

TEACHING STRATEGIES AND TECHNIQUES

Table 6 presents the findings regarding the problems encountered by teachers and administrators in terms of teaching strategies and techniques. Generally, it reveals that teachers and administrators encounter moderately serious problem regarding in this area. This is supported by the computed over-all grand mean of 2.89.

Teachers' major problem under this area is the meager resources of the community for pupil exposure. Pupils are not given the opportunity to extend learning through out-of-school experiences due to meager resources in the community. It was also found out that schools do not use team teaching strategies and that teachers lack technology-assisted instructions, manifested by the mean ratings of 3.26 and 3.03 respectively. It is also revealed that teachers still have inadequate knowledge on contextualization as indicated by the item mean rating of 2.91 which means a moderately serious problem.

Based on these findings, it can be inferred that Science teachers are in need of seminars and training to improve their technical know-how on the pointed out weaknesses in terms of teaching techniques and strategies.

Table 6
Problems Encountered in terms of Teaching Strategies and Techniques

	Teacher	Administrator	Mean	Rank	Description
1. Team teaching to bring about effective teaching is not done	3.45	3.07	3.26	1	MS
2. Various assessment tools to rate students' performance are not used	2.85	1.75	2.30	7	SS
3. Lack of appropriate technology assisted instruction	3.08	2.97	3.03	3	MS
4. Insufficiency of varied teaching strategies and techniques	2.91	2.13	2.52	6	MS
5. Limited incorporation of students practical experiences with the lessons	2.83	1.75	2.29	8	SS
6. Resources of the community are meager for student exposure	3.27	3.13	3.20	2	MS
7. Inadequate knowledge in contextualization (localization and indigenization of instructional materials)	3.00	2.82	2.91	4	SS
8. Groupings in accomplishing projects are not employed	2.69	1.5	2.10	10	SS

9. Difficulty improvising instructional materials in Science	2.94	2.13	2.54	5	MS
10. Monotonous use of teaching strategy and approaches	2.62	1.88	2.25	9	SS
Grand Mean Rating			**2.59**		**MS**

Learning Resources

The degree of seriousness of problems encountered in terms learning resources and facilities is presented in the Table 7.

Among the four (4) areas on problems met by teachers and administrators in the implementation of K to12 Science Program, lack of learning resources appeared to be the major problem. Indicated by the computed over-all grand mean of 3.78, teachers encountered serious problems pertaining to Learning Resources.

Table 7

Problems encountered in terms of learning resources and facilities

	Teacher	Administrator	Mean	Rank	Description
1. Insufficient computers in school to be used in teaching	3.13	2.88	3.00	9	MS
2. No available projector and ICT related materials needed in teaching learning process.	3.10	2.88	2.99	10	MS
3. No available learner's materials in the subjects	3.88	3.75	3.82	7	S
4. Lack of textbooks needed in the lesson	3.82	4	3.91	5	S
5. Inadequate community resources as an aid of student learning	4.00	3.75	3.88	6	S
6. Few reference materials are found in the school library	4.07	4.25	4.16	2	S
7. No available laboratory rooms and laboratory equipment needed in laboratory activities or experiments	4.25	4	4.13	3	S
8. Limited numbers of books and references are found in the community	4.32	4.25	4.28	1	S
9. Few available materials for projects and research work	4.13	4	4.06	4	S
10. No available Teacher's guide in the subject	3.56	3.67	3.62	8	S
Grand Mean Rating			**3.78**		**S**

Problems ranked the highest include Limited Number of Books and References, Few available materials for projects and research work and No Available Laboratory Room and Equipment, with computed mean ratings of 4.28, 4.16 and 4.13 respectively. Other items under in this like no available learner's materials in the subjects, inadequate community resources as an aid of student learning an absence of library are all serious problems encountered by teachers and administrator in the implementation of the program.

Recommendations

1. The education department shall provide more training/seminars for K to 12 teachers so they will be equipped with adequate knowledge and skills to effectively implement K to 12 curriculum.
1. More intensive orientation should be done to increase the knowledge and eventually understanding of pupils on the underlying concepts and principles that can be applied to problems/ situations in new the contexts.
2. Teachers and administrators shall strengthen community linkages and seek more educational partners that can be of help to minimize the effects of inadequacy of budget.
3. The government shall increase the budget allotted in the education department to procure more learning materials and facilities which can eventually increase learning opportunities for learners.
4. The education department shall conduct additional training and seminars on contextualization and localization to assist teachers in developing materials and strategies to enhance learning.
5. Results of this study may be disseminated to the respondent schools for teachers and administrators to be informed on the extent of their implementation of the program and the problems encountered. By knowing the results, problems may be given constructive and immediate solutions.
6. Since the study was limited to public elementary schools and teachers who handle Science subject, it is recommended that such parallel research study should be conducted to determine the extent of the implementation of K to 12 Basic Education Program in other subjects and even in secondary level considering their vital role in the totality of the program.

REFERENCES

Adanza, J. and J. Resurreccion. (2015). Spiral Progression Approach in Teaching Science in Selected Private and Public Schools in Cavite. DLSU Research Congress 2015, De La Salle University, Manila, Philippines.

Alamillo, J. L. and L. D. Crisol. (2014). A Comparative Study of the Attitudes between the Students and Teachers of Two Public Elementary Schools in Northern Mindanao toward the K to 12 Curriculum Shift. DLSU Research Congress 2014 De La Salle University, Manila, Philippines.

An Evaluation of Curriculum Implementation in Primary Schools. Department of Education and Science, Stationery Office, Dublin, 2005.

Bowie, L. and J. B. Tinkew (2008). Process Evaluations: A Guide for Out-Of-School Time Practitioners. Research-to-Results, Child Trends.

Braza, M. and S. Supapo. (2014). Effective Solutions in the Implementation of the K to 12 Mathematics Curriculum

Cabansag, M. S. (2014). Impact Statements on the K-12 Science Program in the Enhanced Basic Education Curriculum in Provincial Schools

Combalicer, L. (2016). Best Practices and Problems in the Initial Implementation of the K+12 Curriculum among Teachers in Infanta, Quezon: Implications to an Effective Implementation of Senior High School. Journal of Education and Social Sciences, V. 4.

Corpuz, B. B. (2015). The Spiral Progression Approach in the K to 12 Curriculum Criminal Justice Evaluation Framework (CJEF): Evaluating process and implementation, Criminal Justice Research Department of Premier and Cabinet.

De Justo, H. (2012). Analysis of the Policy: K-12 Education Program. College of Governance Business and Economics, University of Southeastern Philippines.

DepEd Curriculum Guide, Science 3-10, May 2014

DepEd Order No. 8, s. 2015 "Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program"

DepEd Order No. 29, s. 2017 "Policy Guidelines on System Assessment in the K to 12 Basic Education Program"

DepEd Order No. 31, s. 2012 "Policy Guidelines on the Implementation of K to 12 Basic Education Program

DepEd Order No. 36, s. 2016 "Policy Guidelines on Awards and Recognition for the K to 12 Basic Education Program.

Diez, R. and K. H. Tseng. (2010). Using the Context, Input, Process and Product model to Assess an Engineering Curriculum. World Transactions on Engineering andTechnology Education, Meiho University, Pingtung, Taiwan.

Duerden, M. D. and P. A. Witt (2012). Assessing Program Implementation: What It Is, Why It's Important, and How to Do It. Agri-Life Extension Service, College Station, Texas.

Dylan, W. (2014). The Formative Evaluation of Teaching Performance: An Occasional Paper. Centre for Strategic Education.

Enhanced K to 12 Basic Education Program: opportunities and challenges, Economic Issue of the Day, Philippine Institute for Development Studies, 2012.

Frye, A. W. and P. A. Hemmer. (2012). Program evaluation models and related theories: AMEE Guide No. 67, AMEE Guide, Web Paper.

Herman J. (2013). Formative Assessment for Next Generation Science Standards: A Proposed Model. National Center for Research on Evaluation, Standards and Student Testing (CRESST) UCLA Graduate School of Education and Information Studies.

Implementing Rules and Regulations of the Enhanced Basic Education Act of 2013 (Republic Act No. 10533)

Kusek J. Z. and R. C. Rist (2004). Ten Steps to a Results-Based Monitoring and Evaluation System. The World Bank, Washington, D.C.

Lindblom, K. and F. Twerky. (2012). Evaluation Principles and Practices: An Internal Working Paper. The William and Flora Hewlett Foundation.

Luistro, A. A. (2015). K to 12 Basic Education Program Midterm Report. Department of Education

Metz, A. J. (2007). Why Conduct a Program Evaluation? Five Reasons Why Evaluation Can Help an Out-Of-School Time Program. Results-to Results Trends

Montebon, D. T. (2014). K12 Science Program in the Philippines: Student Perception on its Implementation. Institute of Teaching and Learning, Philippine Normal University.

OECD, Education and Training Policy. Evaluation and Assessment Frameworks for Improving School Outcomes.

Overview of Sampling Procedures, Fairfax County Department of Neighborhood And Community Services, 2012.

Pierson, D. R. (2013). Elementary teachers' assessment actions and elementary science education: formative assessment enactment in elementary Science. Iowa Research Online,University of Iowa.

Program-Based Review and Assessment: Tools and Techniques for Program
Improvement, Academic Planning & Assessment, University of Massachusetts
Amherst, 2001

Republic Act No. 10533 "Enhanced Basic Education Act of 2013"

Science Framework for Philippine Basic Education, Science Education Institute, Department of Science and Technology, 2011.

Sergio, M. S. (2012). K-12 Education Reform: Problems and Prospects. Ateneo de Naga University.

Sirhan, G. (2007). Learning Difficulties in Chemistry: An Overview. Journal of Turkish Science Education.

Study Designs for Program Evaluation, 2006, Aguirre Division, JBS International,
Inc., star@JBSinternational.com

Stufflebeam, D.L. (2000). The CIPP model for evaluation. In T.Kellaghan and D.L Stufflebeam (Eds). International handbook of educational evaluation, Part 1 (pp.3162). Dordrecht: Kluwer Academic Publishers.

Takbir, A. (2012). A Case Study of the Common Difficulties Experienced by High School Students in Chemistry Classroom in Gilgit-Baltistan (Pakistan). SAGE Open.

The K to 12 Basic Education Program, Baseline Report, 2012

Tunc, F. (2010). Evaluation of an English Language Teaching Program at a Public University Using CIPP Model. Middle East Technical University, Ankara.

Worthern, B. R. and S. R. James. (1987) Educational Evaluation: Alternative
Approaches and Practical Guidelines, p. 179

Zhang, G. (2011). Using the Context, Input, Process, and Product Evaluation Model
(CIPP) as a Comprehensive Framework to Guide the Planning, Implementation, and Assessment of Service-learning Programs. Journal of Higher Education Outreach and Engagement, University of Georgia.