THE STATE OF SCIENCE TEACHING IN THE GRADE SCHOOL: DIAGNOSING ISSUES AND PROBLEMS

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ABSTRACT

This study dealt with the teaching of Science and the problems encountered by the grade four pupils of Mexico Elementary School as a basis for science remediation program. It described the teaching of Science along the areas of curriculum, support to learning and the problems encountered by the teachers and pupils in teaching and learning the core area. Moreover, it also presented the assessment of the teachers and pupils in the different dimensions of the curriculum in terms of learning objectives, learning content, teaching strategies and methodologies, medium of instruction, and evaluation/assessment tools. Likewise, it presented the assessment of teachers and pupils in the different dimensions of support to learning in terms of facilities, laboratories, instructional materials, and capability of the teacher. The data gathered were treated with the use of frequency distribution, weighted mean, and Pearson r coefficient of correlation. Based from the results, the present curriculum in Science is effective. Support to learning the subject is likewise effective. Similarly, there was no significant difference in the assessment of the respondents on the curriculum and support to learning. In addition to the findings, there were problems and challenges encountered by the respondents which were given recommendations. Finally, a Proposed Science Remediation Program was suggested.

KEYWORDS: Teaching, Science Problems, Science Remediation Program

INTRODUCTION

Science holds one of the dominating places in the elementary curriculum. This is so because every sector recognizes an increasing contribution of it to the progress of the modern world as well as its traditional standing as an element of humanistic and scientific education. Its importance, as one of the core learning areas is common knowledge. Science, likewise, has been recognized as a patent means of sharpening our competitive edge.

As mandated in the Philippine Constitution, it is the duty of the schools to develop scientific and technological efficiency among pupils and students. Thus, it becomes necessary to evolve a strong science program in all levels, beginning from the grade school which is the foundation towards higher learning. It is tested that the effective teaching of Science should start at the elementary level, so that by the time that students step up towards the next level, they are already fully equipped with scientific knowledge and hands-on experiences. Concepts must be taught to them in the easiest possible way so that they could easily remember and apply them in life situations.
Science curriculum is learner-centered and inquiry-based, emphasizing the use of evidence in constructing explanations. Concepts and skills in Life Sciences, Physics, Chemistry, and Earth Sciences are presented with increasing levels of complexity from one grade level to another in spiral progression, thus paving the way to a deeper understanding of core concepts. The integration across science topics and other disciplines will lead to a meaningful understanding of concepts and its application to real life situations (K to 12 Science Curriculum Guide, 2013).

Science content and science processes are intertwined in the K to 12 Curriculum. Without the content, learners will have difficulty utilizing science process skills since these processes are best learned in context. Organizing the curriculum around situations and problems that challenge and arouse learners’ curiosity motivates them to learn and appreciate science as relevant and useful. Rather than relying solely on textbooks, varied hands-on, minds-on, and hearts-on activities will be used to develop learners’ interest and let them become active learners.

Varied instructional materials and manipulative activities must be used by the science teacher. According to Albarico, et al. (2014), instructional materials are the tools teachers use to teach their pupils. Excellent instructional materials have a big impact on the pupils learning since students learn most by doing. Engaging in hands-on activities gives the pupils idea on how this experience can be applied in a real life situation. These instructional materials serve as aid for instruction. Through this, the teacher will be able to make his strategies in teaching more effective and meaningful. It is much easier also for pupils to learn and understand their lesson as well as acquire the skills necessary in the field. Further, the adequacies of instructional materials that will support the pupils’ effective learning also have its own demand in the educational system.

On the other hand, there had been existing problems that caused the low achievement of pupils. Problems of learners can be attributed to the learning environment (Baines, et. al., 2008). This may include the teacher’s competencies, curriculum, availability of instructional materials, facilities and other contributing factors in the school. Learning materials such as books and Science equipment are either unavailable or inadequate in many schools. Also, very few schools have Science laboratories. Concern also has been expressed that teachers’ manuals and guides, intended to help teachers teach more effectively, are inadequate. It is in this light that the proponent of this study intended to explore the existing conditions in the teaching of Science and the contributing factors that instigate the problems in the pedagogy and learning of the subject. This is to create an effective support plan, which she thought could be a remedial program. The Proposed Science Remediation Program (PSRP) of the researcher would be beneficial to the grade four pupils and teachers of Mexico Elementary School who seemed to have problems in learning and teaching the subject. Contents of this program would be based on the findings of the study.

FRAMEWORK

The study was focused on the teaching of Science and the problems encountered by the Grade 4 pupils of Mexico Elementary School as a basis for a Proposed Science Remediation Program (PSRP). The schematic diagram in Figure 1 shows the hypothesized relationships among key variables: independent variables (presumed cause), intervening variables (other variables that influence the effect of the independent variable), and dependent variables (presumed effect). INPUT (presumed cause) comprised the assessment of the respondents on the teaching of Science along the areas of curriculum which include learning objectives, learning content, teaching strategies and methodologies, medium of instruction, and evaluation tools. Added to these are the support to learning which are facilities, laboratories, instructional materials, and capability of the teacher/facilitator. Problems and challenges encountered by the respondents completed the input. PROCESS (intervening variables) included the intervening key which is the development of a proposed remediation program, which will be achieved through data gathering in the form of survey questionnaire, unstructured interview, observation and documentary materials. OUTPUT (presumed effect) referred to the Proposed Science Remediation Program (PSRP).
STATEMENT OF THE PROBLEM

This study aimed to describe on the teaching of Science and the problems encountered by the Grade 4 pupils of Mexico Elementary School as a basis for the conceptualization of a Science Remediation Program. Specifically, the study sought to answer the following questions:

1. How may the respondents assess the teaching of Science along the following areas:
   
   I. Curriculum
      a. Learning Objectives
      b. Learning Content;
      c. Teaching Strategies and Methodologies;
      d. Medium of Instruction; and
      e. Evaluation/Assessment Tools?
   
   II. Support to Learning
      a. Facilities;
      b. Laboratories;
      c. Instructional Materials; and
      d. Capability of the Teacher/Facilitator?

2. Is there a significant difference between the assessment of teachers and pupils on the teaching of Science along the above mentioned areas?

3. How may the respondents assess the problems and challenges they encounter relative to the pedagogy and learning of Science? Based from the findings, what suggestions may be drawn?

MATERIALS AND METHODS

Research Design

This study utilized the descriptive survey type of research. Ariola (2006) pointed out that descriptive survey of research is usually used by graduate and undergraduate students when they attempt to analyze, interpret, and report the present state of their subject matter or problem. It deals with the cross-section of the present time and uses the questionnaire or other instruments to gather data. This method also relies on observation for the acquisition of data, which must be organized and presented systematically so that valid and accurate solutions may be drawn from them. Garcia and Reganit (2010) confirmed that descriptive research seeks to describe systematically, factually, accurately, and objectively a situation, problem, or phenomenon. It seeks to describe “what is.” Calmorin (2010) pointed out that descriptive method of study focuses at the present situation (what is) the purpose to find new truth. Descriptive research is valuable in: (1) providing facts in which scientific judgment may be based; (2) provide essential knowledge about the nature of objects and persons; and (3) for closer observation into three
practices, behaviour, methods, and procedures. The study aimed to identify the teaching of Science and the problems encountered by the Grade 4 pupils of Mexico Elementary School as a basis for the conceptualization of a Science Remediation Program of the institution. The assessment of the respondents on the areas on curriculum and support to learning were the focal points of exploration; furthermore, the problems and challenges encountered by the respondents with the corresponding solutions were given due account.

Locale of the study

Population is a group of experimental data, persons, etc. A population may be studied using one of two approaches: taking a census or selecting a sample. According to the Australian Bureau of Statistics (2013), a census is a study of every unit, everyone or everything, in a population. It is known as a complete enumeration, which means a complete count. When the universe is under 300, consider census in selecting the respondents. Since the universal count of Grade 4 pupils in Mexico Elementary School is below 300, and the teachers were only five (5) then census was utilized in the selection of the respondents of this study. The respondents of the study were the 289 Grade 4 pupils and five (5) Grade Four Science teachers of Mexico Elementary School during the School Year 2014-2015.

Table 1, as reflected below contains the distribution of the respondents according to class sections with the assigned teachers.

Instrumental Analysis

In order to yield pertinent accurate data and information needed to answer the specific problems presented in Chapter 1, the researcher utilized the following data gathering instruments: (1) questionnaire (2) unstructured interview; (3) observation; and (4) documentary materials.

Questionnaire

Likert-type questionnaire was utilized in the study. It was constructed following these parts:
Part I showed the assessment of the respondents to the teaching of Science along these areas: (1) learning objectives, (2) learning content (3) teaching strategies and methodologies, (4) medium of instruction, and (5) evaluation/assessment tools. Part II included the support to learning: (1) facilities, (2) laboratories, (3) instructional materials, and (4) capability of the teacher/facilitator. Part III comprised the problems and challenges encountered by the respondents relative to the pedagogy and learning of Science.

Unstructured Interview

It was conducted in the form of casual conversation with the respondents. No fixed questions were asked. Questions relevant to the suggestion of a remediation program that will enhance the teaching of Science among the pupils were asked. Moreover, the questions asked depended on the actual observation of the researcher and answers of the respondents.

Observation

The researcher observed classes during Science period. She recorded the actual class scenario to get the salient points needed to supplement her study.

Documentary Materials

The researcher availed some of the school records such as: (1) results of the 1st and 2nd Periodic Test Results, (2) Form 138 (Report Card), and (3) the Curriculum Guide in Science Grade 4 to authenticate and substantiate the findings of the study.

Data Analysis

The data gathered through the questionnaire were organized, classified, tallied, and tabulated. These were treated with the use of frequency distribution, weighted mean, and Pearson r coefficient of correlation. Data to answer specific problems were treated as follows: The assessment of the respondents on the teaching of Science along the areas in Curriculum and Support to Learning, was treated with the use of the following rating scale with the corresponding point values:

<table>
<thead>
<tr>
<th>5</th>
<th>Very Much Effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Much Effective</td>
</tr>
<tr>
<td>3</td>
<td>Effective</td>
</tr>
<tr>
<td>2</td>
<td>Ineffective</td>
</tr>
<tr>
<td>1</td>
<td>Very Much Ineffective</td>
</tr>
</tbody>
</table>

The assessment of the respondents on problems and challenges they encounter relative to the pedagogy and learning of Science was treated with the use of the following rating scale with the corresponding point values:
To get the overall rating, the weighted mean was computed with the use of the following formula:

\[
\bar{X}_w = \frac{\sum wx}{\sum w}
\]

Where:
- \( \bar{X}_w \) = weighted arithmetic mean.
- \( x \) = values of the items
- \( w \) = weight of the item
- \( \sum \) = summation of
- \( \sum wx \) = sum of the product of values and weight of items
- \( \sum w \) = sum of the weight of the item

To convert the quantified weighted mean of the areas in the curriculum and support to learning into a descriptive rating, the following conversion table was used:

<table>
<thead>
<tr>
<th>Weighted Mean</th>
<th>Descriptive Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.21 – 5.00</td>
<td>Very Much Effective</td>
</tr>
<tr>
<td>3.41 – 4.20</td>
<td>Much Effective</td>
</tr>
<tr>
<td>2.61 – 3.40</td>
<td>Effective</td>
</tr>
<tr>
<td>1.81 – 2.60</td>
<td>Ineffective</td>
</tr>
<tr>
<td>1.00 – 1.80</td>
<td>Very Much Ineffective</td>
</tr>
</tbody>
</table>

To test significant relationship between the assessment of respondents on the curriculum and support to learning, the Pearson r coefficient of correlation (Siegle, 2009) was used. The formula is as follows:
\[ r = \frac{(\Sigma X)(\Sigma Y)}{\sqrt{(N(\Sigma X^2) - (\Sigma X)^2)(N(\Sigma Y)^2) - (\Sigma Y)^2)}} \]

Where:
- \( r \) = symbol for Pearson r coefficient of correlation
- \( X \) = first set of scores
- \( Y \) = second set of scores
- \( X^2 \) = square of each \( X \) scores
- \( Y^2 \) = square of each \( Y \) scores
- \((\Sigma X)^2\) = square of the sums of \( X \) scores
- \((\Sigma Y)^2\) = square of the sums of \( Y \) scores
- \( XY \) = \( X \) multiplied by \( Y \)
- \( N \) = number of cases
- \( \Sigma \) = summation of

The level of significance was tested at 0.05.

To convert the quantified weighted mean on the problems and challenges encountered by the respondents into a descriptive rating, the following conversion table was used:

<table>
<thead>
<tr>
<th>Weighted Mean</th>
<th>Descriptive Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.21 – 5.00</td>
<td>Very Serious</td>
</tr>
<tr>
<td>3.41 – 4.20</td>
<td>Much Serious</td>
</tr>
<tr>
<td>2.61 – 3.40</td>
<td>Serious</td>
</tr>
<tr>
<td>1.81 – 2.60</td>
<td>Somewhat Serious</td>
</tr>
<tr>
<td>1.00 – 1.80</td>
<td>Not Serious</td>
</tr>
</tbody>
</table>

**RESULTS AND DISCUSSION**

Based on the assessment of the respondents, the curriculum was “Much Effective” with 3.65 grand weighted mean. The area in the curriculum that got the highest rating was learning objectives, having a weighted mean of 4.09 and described as “Much Effective.” The least rating on their assessment was learning content with 3.30 receiving a descriptive rating of “Effective.” The respondents’ assessment on support to learning was “Effective” with 2.71 grand weighted mean. Capability of the teacher obtained the highest weighted mean of 4.42 described as “Very Much Effective.” The least weighted mean of 1.51 described as “Ineffective” was gained by instructional materials.

There is no significant difference in the assessment of the respondents on the curriculum and support to learning as far as teaching of Science is concerned.

In the assessment of the respondents on the problems and challenges they encounter relative to the pedagogy and learning of Science, availability of materials was found to be “Somewhat Serious.” It acquired the highest weighted
mean of 2.33. On the other hand, the least problem assessed by the respondents was writing lecture notes which received a weighted mean of 1.00 and a descriptive rating of “Not Serious.”

CONCLUSIONS

The researcher was able to arrive at these conclusions based on the findings of the study:

- The effectiveness of the learning objectives and capability of the teacher were the highest contributing factors that make the teaching of Science in the 4th Grade at Mexico Elementary School effective. Learning content still needs to be enhanced. As observed from the Curriculum Guide of teachers, the learning contents in all the grading periods were enriched, yet too many to accomplish in a given period of two and a half months.

- The teaching of Science at Mexico Elementary School is still effective both to the teachers and pupils in so far as the proficiency level of pupils is increasing though it is not as high as the other core areas due to aforementioned problems.

- Problems and challenges in the teaching and learning of Science 4 in Mexico Elementary School exist but are manageable to resolve. Instructional materials and equipment in the Science laboratory are the foremost problems of pupils and teachers as far as teaching and learning Science 4 is concerned. Teachers experience difficulties in instruction because all children do not have textbooks as teachers. Available textbooks are very few and old. Most of them are already destroyed and have missing pages. It is always the teacher who carries the burden of doing research to be able to get information on the lessons taught on a day to day basis.

RECOMMENDATIONS

Based on the foregoing conclusions of the study, the following are hereby recommended:

- The prevailing curriculum in Science IV should remain in its current status of implementation. Curriculum implementers in the Division of Pampanga may enhance the learning objectives and content to meet the essential needs of the pupils in learning Science. Curriculum developers should limit the learning contents per grading period and consider abilities of the slow learners. Teachers should continue to attend trainings and seminar-workshops pertaining to strategies and approaches intended to Science to further improve the quality of their instruction.

- Teachers and pupils may as well keep up their performance; however, they may also find better means to make the teaching-learning process more progressive by battling the problems emerging along the process.

- There is also a need to produce more and appropriate instructional materials for the subject.

It was noticed in the actual observation that teachers teach the subject with less or even without instructional materials. Based on interviews to teachers, lack of time in the preparation of instructional materials was one of the causes. School reports take the time of preparing instructional materials. The problem on unavailability of instructional materials may be addressed to the school administrator. The School head should request the procurement of Science laboratory equipment from their Maintenance and Other Operating Expenses (MOOE) funds to facilitate the teaching-learning process. Additionally, textbooks should be requested to prevent the inconvenience of writing lecture notes. Teachers, on the other hand should initiate on improvising instructional materials, utilize the E-room. Materials for the improvisation can be requested from the school administrator. Damaged computers and whiteboard in the E-room should be repaired.

- Based from the findings, the teaching of Science, though effective, has still problems to resolve to make it further effective to pupils and teachers. A designed proposed remediation program is hereby suggested to remedy the problems on instructional materials and writing lecture notes.

REFERENCES


