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SCIENCE TEXT FOR GRADE 6 LEARNERS TO ENHANCE SCIENCE LITERACY

A THESIS
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In Partial Fulfillment
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MASTER OF ARTS IN EDUCATION

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CHAPTER 1
THE PROBLEM

Rationale

With the advent of a science revolution in Asia science teaching was ushered to an environment characterized by new creation and ingenious systems of doing things. Our present educational set-up has to set the right direction and suitable teaching and learning conditions in order for us to be ready and capable in meeting consequent challenges as well as opportunities for urgent reforms.

In this light, science teaching should be revisited with regard to some contributory factors or elements that can be enriched, reprogrammed or instantly energized. This needs a strong determination and a careful inducement of the revisions and changes that the new tasks entail in terms of efforts, resources and teaching expertise. A purposeful review of the roles and capacity to the three components of teaching- the teacher, learner and the learning environment, will have to be undertaken soon enough.

To start with, science teachers must be knowledgeable, skilled in a variety of teaching methodologies and imbued with worthwhile values and attitudes. The learners must possess mental maturity, positive personal traits, coupled with interests, special talents and aspirations. The learning environment must be orderly, comfortable and conducive to learning. A harmonious mixture of the three can guarantee a successful attainment of the pervading goals of science teaching. Science lessons and activities that are well-planned as to objectives, strategies and teaching devices will be productive and enjoyable. Genuine curiosity, eagerness to learn and

inquisitiveness will be sustained and satisfied. The right mold of a scientific mind among the young will be cultivated and nurtured by competent, inspiring and compassionate science teachers. Then, science teaching will definitely be worth of all the rich human, material and emotional resources that will be generously poured into teaching.

A nationwide survey among learners /learners from the elementary to the tertiary level, across age, sex and regional groups gathered one answer to the question. "What is the most interesting subject in the school curriculum"? ... "Science", is the spontaneous answer. Science teachers' observations during their daily lesson adequately support this strong and natural preference. Information conversations with parents carried on at home point to the same conclusions.

"Why is it so? "asked by future teachers. "Why do the learners eagerly await the science period during the day?" There are many attempts to explain such deep feelings for the subject. Some originate from science enthusiasts, science experts, others from simple-minded believers and the rest from professionals.

Some of the explanations point to the nature of science as a subject.

Science is defined as organized knowledge, sometimes referred to as empirical knowledge. Everything it deals with a universally acclaimed as true, tested and in accordance with facts and evidences. It is devoid of barangays, blessed judgments and unfounded beliefs. Science is field of systematic inquiry.

Questions and surprise come naturally and are honestly pursued. Children are curious about everything they are around them. They instinctively explore, probe and look deeper. Answers are systematically arrived at through a scientific procedure. It is in itself a method, a technique and a system. It includes 3 way of doing things, following a procedure and searching for information. A science lesson is activity based and discovery-oriented. Anything discovered by learners assumes meaningful and lasting mementos. It is about nature and natural phenomena. Interest and appreciation for the "beautiful and the wonderful" are genuinely felt. It deals with real objects and events. Authentic experiences are gained and learning is achieved through life-like learning exposures. It demands perseverance, diligence and sacrifice. The science-inclined look up to scientists as the epitome of perseverance diligence, and sacrifice lifetime pursuits and as models in their lifetime pursuit. Their humility and simple ways are worth emulating. These learners fully appreciate and express their gratefulness for the world of science they have created.

The Department of Education prescribes science as a required subject for 2002 basic education and as a specialization in higher education. The content and coverage are specified in their respective curricula. Teacher educators in pre-service training and teachers in the field are directly responsible for providing the knowledge and experiences needed for successful curricular implementation.

Science content of the basic education curriculum prescribed for the elementary level is drawn from Physical Science and Biological Science. In line with the goals of science teaching, the content is selected and organized in a way that highlights the interrelationships among the sciences. Ideally, the lessons are presented to the lessons as the concepts are encountered and experienced in nature. The ideas to be taught are investigated and discussed in an integrated manner, that is, similar to the natural events and occurrence in their environment.

Briefly, a general grouping of the content under six big divisions will be presented. In developing a unit, be it a lesson, a chapter or a syllabus, the above emphasis on integration with other subjects including those I the social science must be considered.

Science and Health curriculum for Grade 6 to 6 are presented by the Department of Education and are implemented in elementary schools under the K to 1 Curriculum. The Science subject for Grade 1 and 2 are integrated in English. The goal of the science curriculum "to demonstrate the understanding of how science, technology and health relate to the comprehension of the environment and application of skills, attitudes and values in solving varied life situation.

With the above cited thoughts, the researcher was motivated to conduct this study to propose a Science Text for Grade 6 learners Science Literacy in Calasiao II District.

Theoretical Framework

This study is anchored on the Theory of Education that encompasses key assumption about what learners should learn and how the learners should they learn; by Ornstein (2007).

This theory guides the researcher in coming up with proposed science text in science.

Strengthening Science teacher's competence is the key to improve the student's achievement level in the critical subjects, like science. Science teachers have the responsibility to develop interest among their learners and instill in them the significance of science and technology in their own lives. The techniques to use familiarly and proximity factors, meaning to explain scientific lessons in relation to their immediate experience. This require capable, creative and innovative science teacher, who do not only teach what is in the textbook, but also about text regarding their own experiences and the matters in science and technology. The effective teaching as well as learning science, depends greatly on the intellectual capability of science teachers to simplify what seems to be technical science for tertiary learners without, of course, lessening the context of the lessons. It is inadequate to define scientific terms and identify this and that without familiarizing learners with what is being discussed, its implications, and its relation to our lives. Moreover, the teacher himself must be interested in what he is teaching so that the student will also catch such attitudes. Disposition is very contagious.

Regardless of the type of instructional strategy used, the teacher must consider it in the right purpose of the learning activity, the instructional aid must be suited to that objectives purpose. Although materials and media can stimulate and maintain student interest, they are not meant merely to entertain learners , learners need to understand these facts.

Ornstein(2011) suggested the following factors about instructional aid that can affect learners in many ways, such as: a) motivating student; b)constructing to understand; c) providing varied learning experiences; d) reinforcing learning; e) allowing for different interests; f) encouraging participation; g) providing experiences that might not otherwise he had; h) changing attitudes and feelings. The experienced science teacher will be able to use a variety of science text in any subjects to improve the learning experiences. Learners have different interest and abilities that determine what they attend to and learn. But what they learn also depends on the ability of the teacher to capture their attention and spark their interest through the use of appropriate instructional materials such as the science text.

Conceptual Framework

The philosophy of the K to 12 Curriculum states the Filipino learner in our rapid changing world is one who empowered for lifelong learning and is an active maker of meaning whenever he/she is. Such an empowered learner is competent in learning how

to learn and how life skills so that he/she become a self-developed person who is makabayan, makakalikasan, and maka-Diyos. This is the vision of Philippine basic education, both formal and non-formal.

The K to 12 Curriculum also developed the scientifically literate and concerned individual/citizen should possess traits which should be taught of as describing in continuum along which he can progress.

Therefore, it is imperative to assess the science program to enhance the science literacy of the Grade 6 learners in Calasiao II District, Schools Division Office I Pangasinan. The conceptual paradigm is presented in Figure I using the Input-Process-Output model.

The assessment included as input the level of science literacy of the Grade 6 learners in Calasiao II District, in terms of being able to read science text/context and form valid conclusions and the effectiveness of the proposed science text based on the evaluation of Science teachers. The output of this study is a proposed science text to enhance literacy by way of having learners manifestation being able to read, write and discuss science content.

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Science Text for Grade 6 learners
To Enhance Science Literacy in Calasiao District

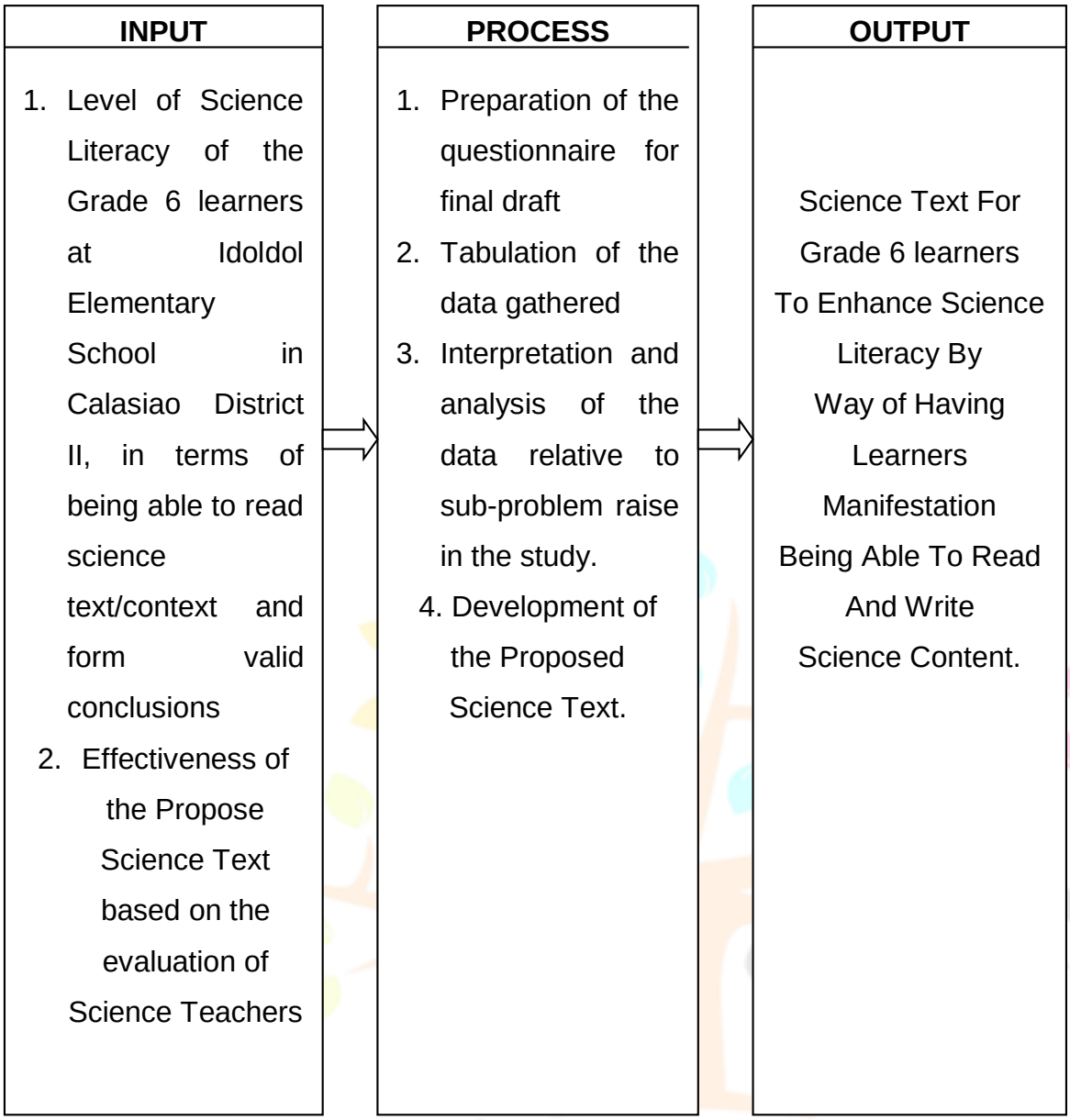

Figure I
The Paradigm of the Conceptual Framework of the Study

Statement of the Problem

This study developed a proposed Science Text for Grade 6 learners to enhance Science Literacy at Idoldol Elementary School in Calasiao II District, Schools Division Office I Pangasinan during the school 2024-2025.

1. What is the level of Science literacy of the Grade 6 learners at Idoldol Elementary School in Calasiao II District, Schools Division Office I Pangasinan in terms of being able to read science text/content and form valid conclusions?

2. Based on the findings, what science text can be developed to enhance science literacy by way of having the learners manifestation being able to read, write and discuss science text?

3. How effective are the proposed Science Text based on the evaluation of Science teachers?

Basic Assumptions

This study is anchored with the following assumptions:

1. The level of science literacy of the Grade 6 learners at Idoldol Elementary School can be improved and that the Grade 6 learners can read science text and form valid conclusions.

2. The proposed science text can enhance science literacy among Grade 6 learners and improve the teaching skills of the Grade 6 Science teachers.

3. The proposed Science text was found effective based on the evaluation of the Science teachers.

Scope and Delimitation of the Study

This study was limited in the development of Science text for Grade 6 learners to enhance science literacy during the School Year 2024-2025.The study included the level of science literacy of the Grade 6 learners at Idoldol Elementary School in Calasiao II District, Schools Division Office I Pangasinan in terms of being able to read science text/content and form valid conclusions; the effectiveness of the proposed science text based on the evaluation of Science teachers.

The output of the study is a proposed science text to enhance science literacy by way of having the learners manifestation being able to read, write and discuss science context. The implementation of the proposed science text is beyond the limit of the study due to constraints.

Significance of the Study

This study will benefit the following:

The Administrator. The proposed instructional intervention strategies will help the school administrators improve the implementation of experiments in Grade 6 as a component of Science instruction.

The Grade 6 Science Teachers. Hopefully, the results of this study will provide/ enhance their teaching skills and competencies in science as learning area in the K to 12 Curriculum.

The Grade 6 learners. The result of this study will encourage the Grade 6 learners with the implementation of the proposed science text.

The Researcher Herself. Hopefully, the results of this will help improve her teaching skills, competencies in the teaching of science working thru proposed science text.

Other Researchers. Results of this study will serve as frame of reference to conduct another study in a wider scope.

Definition of Terms

The following terms used in this study are hereby operationally defined for better understanding of this study.

Implementation. This refers to the way or mode of carrying out, providing or fulfilling means to improve conditions or situation as a case of school program.

Public Elementary Schools. As used in this study, it is the locale where the Science teachers served as respondents of the study.

Science. This is a learning area in the K to 12 Curriculum offered to the Grade 6 to Grade 6 learners.

Science Grade 6 Teachers. They are the respondents during the conduct of the study, teaching Science in Calasiao II District, Schools Division Office I Pangasinan.

Literacy. It refers to the ability of the Grade 6 learners to read, write and form final conclusion in Science.

LITERATURE

Science in the K to 12 Curriculum

Science has been defined in a plethora of ways since the scientific revolution, dating back to the 17th century. In fact, the Merriam-Webster Dictionary (2018) hosts a multitude of its conceived definitions, including "the state of knowing which distinguishes from ignorance," "a departmentalized and systematized knowledge as an object of study," and "a system of knowledge covering general truths or the operation of general laws as obtained from the scientific method." It is worth noting that most of these definitions all emphasize the notion that science is merely equivalent to knowledge, which for a six-year-old kid can just mean a huge depot of facts and trivia.

How is science education in the Philippines? If you are a part of the majority of the population that went through their elementary education in a public school like me, you would easily recall the atmosphere of such an environment. Forty to fifty students clustered in a classroom, staying in school from 8 am to 4 pm, patiently going through all their subjects in one day. I belonged to the special science class, the top section of the batch as perceived by most teachers. Unlike most of my batch mates who endured the agony of staying in bland classrooms, my section's classrooms through the years were actually good. They had science quotes posted on the walls, a solar system model attached to the ceiling, diorama projects on different ecosystems, a life-size human skeletal model, shelves of science textbooks, and even laboratory glass wares donated by alumni.

All of these things in our classroom created the impression that our science classes were good and fun, but that's not how it works. For one, our section *NEVER* used the glass wares placed in our classrooms. As a child, I really wondered why we never used them. Would it be any better if we just let such resources collect dust on the shelves? Our teacher always explained that these items were 'fragile' and not suitable for children's use. I always thought that even the simple lesson of introducing such glass wares and a demonstration of how they are used would be really exciting; unfortunately, that never happened.

A large chunk of our science classes were not necessarily 'classes' – most of them revolved around being the fastest pupil to copy all the words on the board. We did this two to three times a week, alongside the signature "shh" sounds that the monitor makes in order to prevent the class from being too noisy. Most of our classes involved group presentations with our ever-reliable Manila paper and black markers. We were given tasks, and we were obligated to present our answers to the class. Experiments were indeed sporadic, and most of the time, we only had one per quarter. Up to this point, I feel bothered by the fact that I can't specifically remember any of the experiments we did.

Science education in our country cannot be considered as a strength. Based on results from 2014, the passing rate for the national achievement test (NAT) for grade six pupils is only 69.21%. The passing rate for high school seems far worse, with a passing rate of only 46.38% from 2010 statistics. Aside from the aforementioned national examination, the Philippines has exhibited a consistently abysmal performance in international surveys such as Trends in International Mathematics and Science Study (TIMSS). In 2003, for high school, the country ranked only 34th out of 38 countries in HS II Math, and 43rd out of the 46 participating

countries in HS II Science. For elementary, fourth grade participants ranked 23rd out of the 25 countries in both math and science. Our country stopped participating in the survey in 2008, perhaps after getting such lackluster scores.

Science at its core

Many would say that science is something that normal people don't actively engage in. However, in reality, science is a crucial part of our everyday lives. One of the most well-known promoters of science, Carl Sagan, once said:

"Science is more than a body of knowledge. It's a way of thinking; a way of skeptically interrogating the universe."

Notice that in his quote, there is no emphasis on memorizing all the bones in the body, or being adept at solving all the kinematic equations. It simply boils down to questioning everything around us.

Over the centuries, innumerable discoveries and advances in science came as a result of the scientific method. It is a framework followed by most scientists and researchers in conducting their investigations and scientific work. Note that I used the term 'framework' instead of procedure or steps. This is due to the fact that there many fields in science, each with their own variation of the method in order to cater their respective needs. Thus, when one hears the term 'scientific method', what should come to mind are only the following: asking questions to explore cause and effect relationships, proper gathering and examining of acquired evidence, and synthesizing all available information to come up with an answer to the initial question. This is how science worked before, and how it will continue to work in the foreseeable future. We should erase the notion that treats science just as a body of knowledge, expecting students to only cough up concepts and fancy terms such as photosynthesis or glycolysis. As Sagan said, it is a way of thinking — and that is how it serves its purpose in nation-building.

Teacher Competencies in Science Teaching

Teaching is a science and the teachers who possess certain standard needed competencies is one who has mastered the "science" of teaching. Creating conditions for effective teaching-learning, possessing essential teacher competencies, and developing positive teacher-pupil and pupil-teacher interactions can result in human, rational, and inquiring individual-our learners.

The teacher competencies that a teacher should possess for effective teaching-learning situations/according to Cruz are the following: assessing intellectual development stages of children; aware of the stage of intellectual development of your learners , based on Piagetian developmental stages. Have you taken into account the types of conservation which your learners can demonstrate?

Are you using this information in a conscious attempt to match your learners ' level of understanding with the topics in science for the particular grade level that you are teaching? Formulating behavioral objectives such as:

The learner who will demonstrate the expected behavior, the verb that states the action or performance, the situation that states the condition in which the action or performance, occurs and the standards that gives the level of performance that the learner is expected to perform; develop skills in asking questions: Do your questions follow a sequence according to Bloom's taxonomy? Do your

questions challenge, yet guide learners? Is there interaction between your learners and yourself as inquiry takes place during instruction? Acquiring skills sequencing instruction?

Do you take an objective look at how you learners were guided from their entry behavior to the terminal goal? Do you organize and sequence specific components of the science teaching-learning continuum? Are these components sequenced according to levels of difficulty? Do you have test items (particularly a pretest to verify key entry behavior assumptions? Are your behavioral objectives sequenced to corresponds to the sequence of the specific components of the science teaching-learning continuum?

Have you also considered the threefold make-up of your learners: that is, can he participate fully when the combines his head, hands and heart? Do you involve your learners in a variety of learning experiences? Do you evaluate your instructional strategies?

Acquiring skills in evaluating educational progress. Are you strongly convinced that evaluation must be a continuous activity that should be used as a basis for making decisions in the classroom? Do you construct test items which best measures learner's performance? Do you use the results of the tests to modify, revise, and alter your instruction for the benefit of the learner's? Do you use the type of test which best measures learner's performance? Do you use the test before, during, and after instruction? Do you use the results neither to rank learners nor to give grades, but to collect information that can be used in making instructional decisions?

Developing these teacher competencies is essential if effective instruction to materialize. In addition, the teacher must also learn to acquire positive behavioral skills. Such skills will enable to interact better with learners. With these competencies, the teacher will be able to look upon teaching as a science, and at the same time become a person who is sensitive to and concerned about learners.

What Teachers Should Know About Science

The teacher should know that science is both a product and a process. Science as a product is an organized and rapidly changing body of knowledge and a process; it is a dynamic way of acquiring, using and refining that body of knowledge. Science as a process makes teaching never dull, never static, and never uninviting. It is ongoing process of inquiring that leads to discovery and the use of the body of knowledge in science.

Being both a product and a process, there are implications for science teaching-learning activities. Science as a product is an ever changing of knowledge. Science as a process is an on going process of investigator and thinking, as such young learners should be made to expect change and to have a positive attitude towards this change. Teachers in the classrooms should reflect Science both product and process, in the teaching-learning activities. The teachers should know that there is no simple and best method in teaching Science. Different science topics call for different methods of teaching. Regardless of the methods used, the processes of Science should be emphasized (Ulit, p. 117).

And so Cruz, et.al, (1976) said that the acquisition of scientific concepts and understanding should go hand in hand with the development skills in inquiry. Emphasis should then be on science teaching as process oriented using discovery approach.

Thus, it is believed that the inductive method of guiding children to discover something is very effective, by going through the processes of observation, comparison, inference, and prediction, the children discover patterns, ideas, relationships, concepts, and participle. This is often referred to as the discovery approach.

The following are the major aspects of the discovery approach as cited by Cruz et al. (1) When the topic is introduced the primary concern is with developing pattern of thinking instead of merely obtaining an answer. Learners need to develop techniques of discovery and the processes of logical thinking which will stand them in good stead throughout their science studies; (2) The teacher's role means guidance when necessary and to allow learners to go ahead on their own when they can;(3) The learners assume the role of explorers. They search for patterns, describe relationship and form tentative generalizations, they either accept, retest or reject some discoveries; and (4) Textbooks should provide guide questions leading to discovery. They should take into account the need for pupil participation in discovering facts and principles.

Cruz, et al. also mentioned that beside the process unit and discovery approach, modern trends in science stress the ecological and conceptual approaches. The child uses materials and objects found in their environment. The science concepts learned help them realize and understand that there are similarities, differences, and relationships among these objects and phenomena in their natural environment. Simultaneously, they develop scientific skills through personal experiences with materials and phenomena. Science content that learners learn are organized around basic concepts which serve as unifying threads in a more realistic science instructional program.

In many science activities observation alone plays a great role. Children develop the scientific attitude when they use all their sense and make inferences interpret consciously what they have observed. Inferences are statement that can be made only after many observations of observable facts. Such observations should be accurate and precise. They should be supported by valid reasoning and associated with recall of past experiences. Great caution must be made in drawing conclusions.

Every time the child can observe, they should be asked to identify the particular sense used in observations. They should be taught the word inference, a substitute for guess.

Closely related to inference is the use of hypothesis. A hypothesis is a statement that suggests a way of an observation and a way to test explanation.

On Supplementary Materials in Science

Teachers can modify available materials or design their own materials. In designing materials, Ellington (2005) gave some conditions. These are: (1) when materials of the type one wants to use do not exist, (2) when suitable materials are not available from an external source, (3) when alternative materials do not serve one's purposes equally well, and (4) whet it would be practical for one to produce his/her own materials.

Eisner (2000) said that in the selection of instructional materials, the teacher still needs to make professional judgments about the appropriateness and worth of the materials, since he or she is closest to the learners and should know their needs, interests, and abilities. The following considerations should guide the teacher.

1. The materials should fit the objectives of the course. Given the general nature of published materials, some may fit only partially; or it may not be possible to find materials to cover all the objectives. In such cases teachers need to create all or some of their own materials. On the other hand, there may be times when the teacher expands the objectives or activities to include an outstanding set of instructional materials.

2. The materials should be well-organized. Good instructional materials will relate facts to a few basic ideas or concepts in a logical manner.

3. The materials should prepare the learners for the presentation. They should include instructional objectives or advance organizers.

4. The materials should be well-designed. They should be attractive and presented in a technically appropriate manner. Visual presentations, side notes in margins, appropriate headings, graphics, and color should be incorporated into the materials.

5. The material should be suitable to the reading level of the learners . Many teachers can make this type of judgment intuitively by reading through the material, and others can make the judgment after learners experience the materials.

Reading experiences in Science should not be limited to the basic text according to Barnard (2001). Demonstrations have shown that planned programs of extensive reading contribute to achievement in various outcomes of science teaching, even to growth in scientific attitudes. There is a wealth of non-graded material that can be used to provide extensive reading experiences in science. It is on line with these concepts that this study sought to propose a teacher's guide in science teaching.

STUDIES

Foreign Studies

On Teaching Strategies

Grant et al. (2015) made a research on the different innovative strategies such as those which caters to student learning and knowledge acquisition. They found out that for one lesson a teacher might simultaneously be introducing new content experimenting with each application discussing issues and at the same time developing group work skills. Furthermore, they stressed that some strategies are more useful than others in achieving specific objectives.

Another study was conducted by Morey (2015) on the status of science education in Illinois public elementary schools. The study showed that science instruction in elementary level remains dependent on the textbooks in spite of research which indicated the efficacy of hands-on science. The reason behind this was that the science instruction in her school is not yet a priority. Her findings showed that the dominant teaching procedure was lecturing. The teacher did not use small group activities or any attempts at alternative approaches.

Chang and Lederman (2016) investigated the effect of group cooperation on student's achievement during a series of physical science laboratory activities. Based on the findings, no significant differences on the student's final achievement were found with respect to the three instructional approaches used. However, the effect was more significant than either instructional approach on managing manipulating, observing, reading and writing behaviors. No significant teacher effect was found for the other behaviors. Overall, the teacher effect was more influential than instructional approach on student's behavior.

Richmond and Striley (2014) analyzed student talk in working groups in four laboratory investigations. It aimed to understand the process by which the learners solved scientific problems, difficulties in articulating with their peers. It was determined at the end of the study that learners become much better at using the scientific method to construct convincing arguments, and specific social roles and leadership styles developed scientific understanding.

Alexopoulo and Driver (2015) focused on investigating how the Greek secondary school interacted in pairs and fours while discussing and attempting to explain simple physical phenomena. The study showed that learners progressed more in their physics

reasoning after participation in fours than pairs. Moreover, the analysis of discourse in the different groupings suggested that the differences in progress were related to the more constrained modes of interaction of pairs.

In Wong, Young and Fraser's (2016) study involving science in Singapore, associations were investigated between student attitudes and achievement. Most of the significant results provided further evidence supporting the link between achievement and study behavior.

Local

Adtoon (2016) determine the needs of Grade 6 Science learners and teachers to improve the performance of Grade 6 learners . His study used the descriptive survey supplemented with contents and documentary analysis. The instrument used was validated self-constructed questionnaire. Adtoon concluded that teachers lack the necessary instrument to be able to implement the present innovation in the teaching of Science in Grade 6.

Alimpia (2015) conducted a study on the performance of public elementary school learners in Science at the Bauang South District, Division of La Union. Through the use of the District Achievement Test in Science as the data-gathering instrument, the following findings were relevant: (1) the grade five learners performed better than the grade six learners in the summative test in Science; (2) there was a negative relationship between the performance of the grade five and six learners in the achievement test and the grades they obtained in Science as a subject, (3) the performance in the achievement test of the grade five learners deferred when classified according to the economic status(4) the performance of the grade six learners did not vary analyzed according to the variables.

Ampong (2015) sought to determine the academic performance level in Science of the Grade 6 learners at the East District I, Cagayan de Oro City during the second semester of the school year 2016-2017.

Based on the findings, Ampong concluded that the overall performance level of the Grade 6 learners in Science is very much below the minimum. It is very low based on the standards set in Science education. From among the topics evaluated, the learners perform least in this following topics the Stars, the Galaxies and the Universe. Beyond the Solar System, and the Changing Earth. These are the topics among others, which need to be properly addressed and examined as far as enhancing the performance of learners in the elementary level is concerned.

Calachan's (2014) study pointed out several factors such as sex and mental ability that can contribute to achievement. She asserted that performance of the learners in Science and Technology II is enhanced when they are exposed to the technique of defining objectives in the teaching of Science. The study tested the hypothesis that there are no significant learning objectives before the lesson suited with the use of the traditional method. The experimental research method of investigation with the Achievement Test in the form of multiple choices in the main data gathering instrument was used in this study. The following statistical tools were employed in the analysis and interpretation of the data gathering mean, standard deviation, skewness, kurtosis and one-factor analysis of convenience.

In the light of the study, she came up with the following findings:

1. In the terns of 1.0 level, majority of the learners in the experimental group ranged from normal average to mentally defective. However, employing ANOVA with the I.Q. serving as the covariate statistically the respondents achievements.

2. Performance of the student in the achievement test in Science III who were expected to the techniques of defining the learning objectives before the lesson started was higher than those student exposed in the traditional method.

3. The two treatments differed significantly in terms of achievement in selected in Science and Technology.

In 2013, Castillo conducted a study on the effects of Teacher Resources Materials (TRM) on the leaning skills of learners in selected Zamboanga City National High School. A total of 290 learners were taken as samples for this study. A pretest and posttest design was used to determine the effects of TRM on learners learning skills, science interest and attitudes/values and teachers performance. The instrument used consisted of an assessment test in learning cognitive skills which the researcher developed and validated.

The findings of Castillo were as follows: (1) The practical skills of learners under the TRM-oriented teacher significantly higher than those of learners under the non-TRN oriented, (2) Cognitive skills did not differ significantly between the two groups, (3) Attitudes/Values and achievement scores were not significantly affected, (4) Teacher performance and teachers interest and attitudes/values toward science and science teaching did not differ significantly, and (5) Student achievement scores and teacher interest.

Castro (2016) revealed that facilities, instructional materials, teachers teaching experience, methods of strategies used, and teacher's educational qualifications play a vital role in a effective Science instruction, student performance in the school is dependent on the teachers and the type of school the learners is in.

Castro involved all the Science in the sixteen public secondary schools during the school year 2016-2017.

In the light of the study, she offered the following recommendations:

1. School administrations should determine of their science teacher in so far as science equipment, facilities and instructional materials are concerned in order to promote and enhance quality education.

2. There should be a close supervision in planning and formulating policies for science teacher's advancement and improvement in developing the curriculum and using new strategies and procedures in the teaching of Science.

Coloma (2015) determine the relationship between the

NAT Mathematics, Science and Health and English sub-test scores and teaching methodologies use and quality of assignments given in the four subjects.

The descriptive-correlation method of research was employed. Two hundred forty six (246) out of six hundred forty two (642) learners drawn randomly from Rosales District I, Pangasinan II, were utilized to determine the data on the teaching methodologies they used.

Division and school records were the resources of data in the NAT scores, Division Achievement Test and Grade Point Average (GPA). A checklist was administered to determine the teaching methodologies.

Coloma offers the following recommendations:

1. Although the respondents meet the proficiency level set by the DepEd in the NAT and the Division Test, there is still a need to improve and enhance further their achievement level;

2. Teachers should identify other factors that may affect the academic performance of the pupil;

3. Teachers should constantly use varied and appropriate teaching devices and methodologies to carry out lessons effectively.

Ganaden (2015) studies the science, performance of

high school freshmen of selected national schools in the Schools Division Office I PangasinanI during the school year 2016-2017.

Involved in this study were 370 high school freshmen randomly selected from among 4,736 enrollees from selected national public high schools in the Schools Division Office I Pangasinan.

An achievement test in Science and Technology was content validated by evaluators from different school this was used as the main instrument in gathering the data accompanied by an information sheet included in the first part of the answer sheet. The descriptive-correlation method of investigation was used. The data collated were the personal information about the respondents and the raw scores in the sub-test of the Science and Technology test.

The findings indicated that the level of performance of high school freshmen from the different National Public Schools in the Schools Division Office I PangasinanI during the school 2016-2017.

Junio (2013) states that the learners ' school performance should gave serve as basis for determining appropriate materials for recommendation to upgrade academic instruction. It should also be the basis for identifying the least learned subject areas and skill deficiency of learners .

The descriptive survey method was used in the study. There were one hundred eighty (180) Grade 6 learners from 9 Barangay Schools in Bayambang I and 20 teacher-respondents teaching English, Mathematics and Science and Health who were involved in the study. Form 18-E2 and the Grade Point Average (GPA) served as indicators of learners ' performance.

In the light if her study, Junio concluded that:

1. Instructional materials are necessary in upgrading academic instruction of learners ;
2. The Grade Point Average (GPA) of the learners can be used as basis for curriculum enrichment.

Lucas (2023) attempted to propose supplementary materials in the teaching of Science to third year high schools learners in the nine (9) newly nationalized high schools in the fourth congressional district of the Schools Division Office I Pangasinan I during the school year 2016-2017 based on a needs assessment. The needs assessments consisted of determining the performance level of the third year high school level learners in the nine high schools cited in Science and Technology during the school year 2000-2001 and 1999-2000 based on the results of the Division Summative Test. It may also involved the determination of their skills areas/competencies in which the third year learners manifested weaknesses and strengths in Science and Technology based on the analysis of their summative test results during the school year 2015-2016.

Thus, this study used the descriptive method with the Division Summative Test as the data gathering instrument. The descriptive method with the questionnaire as the data gathering instrument was also used to determine the acceptability of the proposed supplementary materials in terms of certain criteria based on the evaluation of the Science and Technology III teachers and department heads. This study also used the developmental method of research as it developed supplementary materials in Science and Technology that address the weaknesses of the learners .

Involved in the study as the research subjects were the 118 third year high school learners in the cited newly nationalized high schools whose Division Summative Test results in Science and Technology during the school year 2015-2016 were item analyzed to determine their strengths and weaknesses. They comprised 20 percent of the population of 592 third year learners enrolled during the same school year. Also involved as research subjects were 9 Science and Technology III teachers and 9 Department Heads of

the 9 high schools. They represent 100 percent of the total population of the teachers and department heads in Science and Technology.

For the statistical treatment of the data, this study used the main percentage score formula, frequency count and the percentage and the average point value.

The following conclusions were drawn by Lucas based on the findings made.

1. Generally, the performance of the third year high school learners in Science and Technology during the two-year period needs improvement.
2. Majority of the third year high school learners manifested more weaknesses than strengths along the skills areas competencies in Science and Technology that involved higher order thinking.

Melendez (2014) conducted a study on the assessment of Science and Technology II instruction. Employed in the study were 8 teachers respondents from the 8 secondary schools with Special Science Classes in the Division of Pangasinan during the school year 2016-2017.

The descriptive survey method was used in the study with the questionnaire checklist as the main tool for data-gathering.

In the light of the findings and conclusion, Melendez recommended that the Special Science School classes be given extra attention by providing enough exercise and facilities to be utilized by the learners.

Nerona's (2014) study was concerned with the development of support instructional materials in Science for Grade 6 based on the identified weakness of Grade 6 learners as revealed by their district achievement test results during the school year 2015-2016.

The descriptive-developmental method of research was utilized in this study with the district achievement test results in Science for Grade 6 and the questionnaire as the data-gathering instruments. On the basis of the item analysis if this researcher's Grade 6 learners test results it identified their weaknesses in terms of skills in Science. These identified skills considered as weaknesses served as the basis for development of proposed instructional materials in Science with the researcher following the scientific steps in instructional materials' preparation. This study also sought to describe the adequacy of the proposed instructional materials based on the perception of the Grade 6 Science teachers who reviewed the materials with the use of a set of criteria.

The research subjects in this study consisted of 42 Grade VI Science class whose achievement test results were analyzed and 25 Science teachers, all of the District of Sta. Cruz, Zambales Division.

This researcher used frequency count and percentage to answer the sub-problems.

Based on the findings of the study, the following conclusions were drawn:

1. Majority of the Grade VI learners were found to be generally weak in the basic process skills in Science particularly in identifying, observation, describing, explaining and inferring.
2. Support instructional materials leading to the development of the basic process skills identified as weaknesses can be developed in Science by following the scientific steps in instructional materials preparation.
3. The results of an item analysis of an achievement test can be used by teachers as basis for the preparation of support instructional materials to meet learners ' needs.

4. The proposed support instructional materials can lead the learners to overcome their weaknesses along the process skills in science they meet the criteria for adequacy.

Role (2000) aimed to find out the determinants that are related to the achievement in Science of Grade VI learners in the District of Moncada South. The respondents involved were Grade VI learners randomly selected and teachers teaching Science VI.

1. There is a strong relationship between the education qualification and training/seminars attended by the teachers to the Science achievement of their learners . Teachers should be encouraged to pursue their graduate studies and to attend seminars and trainings to enable them to keep abreast with newer trends in teaching.

2. There is a significant relationship between the parent's occupation, parent's monthly income, parent's educational qualification and sibling size to the achievement of the learners in Science. Parents should be encouraged to increase their family income and come up with normal size of children in a family so that they can meet the educational needs of their children.

3. There is significant relationship between the location of the school, teaching force, and Science facilities and the Science achievement of the learners . School should do something to improve their science facilities and the science achievement of the learners . School should do something to improve their science facilities for an efficient and effective teaching.

Vivencio (2004) used a creative teaching model to determine the effects on creativity and achievement in Science and Health of Grade IV learners to measure the learners ' performance. A creativity test and a teacher-made achievement test in Science and Health were used as data gathering instruments involved as research subjects were 89 learners from three comparable public schools in a district of Metro Manila, 27 learners in pilot group, 28 learners in experimental group, and 34 learners in the control group, most of whom were 10 years old, bilingual, in the control group, most of whom were 10 years old, bilingual coming from low income bracket families, and belonging to the highest section in their grade level. Vivencio used the experimental method to gather the data needed.

Prior to the conduct of the experiment, Vivencio conducted a pilot study for the try-out of the instructional materials to validate the achievement test and to determine the time element needed in the study.

Random assignment was used to determine the experimental and control groups. The control groups was taught using the textbook and the lesson plans based on the Teacher Manual in Science and Health prescribed by the Department of Education, Culture and Sports. The experimental group was taught following the operational model of creative teaching developed by the researcher. Both groups were taught for 5 weeks during the regular Science and Health periods by two comparable teachers from the control and experimental schools. The Torrance Test for Creative Thinking, Figural Forms A and B and a teacher-made achievement test, Forms A and B used as pre and post test instruments.

To determine the main difference in creativity between the control and experimental groups, the analysis of co-variance was made after determining that there was a significant difference in the pretest results. Other mean differences between the two groups, as well as between the genders, were subjected to a two-tailed test of significance for correlated means to compare the pre and post test mean score of the experimental groups. The level of significance was set at .05.

The following are the findings of the study:

1. Creative teaching enhanced learners creativity in the dimensions of originality, abstractness, and elaboration. It did not enhance significantly fluency and resistance to premature closure.

2. Gender had no effect on the learners creativity after creative teaching.

3. Creative teaching enhance the learners ' achievement in Science and Health.

4. Gender had no effect on the learners ' achievement after creative teaching.

The Contribution of the Reviewed Literature to the Present Study

The reviewed literature and studies provide direction to the present study. The books, articles, handouts and other sources provide a rich background on the teaching of science which enriched the researcher's knowledge in content-based instruction, the concept advanced in these sources laid the foundation in the development by this researcher of the proposed intervention measures to address the identified needs in the implementation of science program.

CHAPTER 2

METHODOLOGY

This chapter presents the methodology which includes the research design, sources of data, instrumentation and data collection and tools for data analysis to answer the different sub-problems raised in the study.

Research Design

This study used the descriptive method of research to assess the science text for Grade 6 learners to enhance Science Literacy during the School Year 2024-2025, using the questionnaire as the data gathering instrument. The assessment included the level of science literacy of the Grade 6 learners in Calasiao II District, Schools Division Office I Pangasinan in terms of being able to read science text/context and form valid conclusions; the validity and effectiveness of the proposed science texts based on a try-out. The output of the study is a proposed science text for Grade 6 learners to enhance science literacy by way of having the learners' manifestation being able to read, write and discuss science context.

Sources of Data

The fifty-two (52) Science teachers teaching in the different public elementary schools in Calasiao II District served as respondents of the study. Table I presents the distribution of respondents.

Table I

Distribution of the Respondents

N- 52

School	Number of Science Teacher
1. Ambuetel Elementary School	3
2. Buenlag Central School	7
3. Dinalaoan Elementary School	4
4. Doyong Centro Elementary School	3
5. Doyong-Malabago Elementary School	3
6. Idoldol Elementary School	3
7. Longos Elementary School	4
8. Lumbang Elementary School	3
9. Macabito Elementary School	4
10. Malabago Elementary School	3
11. Mancup Elementary School	3
12. Nagsaing Elementary School	4
13. Songkoy Elementary School	4
14. Talibaew Elementary School	4
TOTAL	**52**

Instrumentation and Data Collection

This study used a questionnaire as data gathering instrument in the analysis of the different sub-problems raised in the study. They are two parts of the questionnaire. Part I- deals on the level of science literacy of the Grade 6 learners at the Idoldol Elementary School, Calasiao II District, Schools Division Office I Pangasinan in terms of being able to read science text/context and form valid conclusions. Part II- focus on the effectiveness of the proposed science texts based on the evaluation of science teachers. The output of the study is a proposed science texts for Grade 6 learners to enhance science literacy by way of having the learners ' manifestation to write and discuss science content.

To gather the data needed, permission from the Schools Division Superintendent of Pangasinan I was obtained. After getting permission, the researcher asked permission from the school heads of the different schools to float/administer the questionnaire. Prior to the distribution of the questionnaire, the researcher show it to her thesis adviser for some suggestions to improve the questionnaire. Her suggestions were incorporated in the final draft. The researcher personally distribute and retrieve the questionnaire

Tools for Data Analysis

The following statistical tools will be used to treat the data.

1. Frequency and Percentage. To answer sub-problem 1 on the level of science literacy of the Grade 6 learners at the Idoldol Elementary School, Calasiao II District. The formula is:

$$P = \frac{f}{N} \times 100$$

Where:

P= percentage

f= frequencies

N= number of percentage

2. Average Weighted Mean. To answer sub-problem 3 on the effectiveness of the proposed science texts based on evaluation of science teachers. The formula is:

$$AWM=\frac{\sum Fx}{N}$$

Where:

AWM = Average Weighted Mean

$\sum Fx$ = the sum of the products of the frequencies

N = total number of respondents

CHAPTER 3

PRESENTATION, ANAYSIS AND INTERPRETATION OF DATA

This chapter presents the analysis and interpretation of data gathered relative to the sub-problems raised in the study.

Level of Science Literacy of The Grade 6

Learners In Calasiao II District,

Schools Division Office I Pangasinan

This section presents the level of Science Literacy of the Grade 6 learners at the Idoldol Elementary School, Calasiao II District, Schools Division Office I Pangasinan. The data is presented in Table 2 in answer to sub-problem 1

Table 2

Level of Science Literacy of The

Grade 6 learners at the Idoldol Elementary School

in Calasiao II District

N = 63

Level of Science Literacy	F	percent
Good	12	19.05%
Fair	24	38.09%
Poor	27	42.86%

Total	**63**	**100%**

Table 2 presents the level of Science Literacy of the Grade 6 learners at the Idoldol Elementary School Calasiao II District, Schools Division Office I Pangasinan during the school year 2024-2025. It must be noted that 27 or 42.86 percent belonged to "Poor" level of Science Literacy and this was followed by "Fair" 24 or 38.09 percent. This means that the Grade 6 learners must be given more exercises or Science activities that will increase this performance in Science as well as for the teachers to update their teaching strategies to improve their teaching studies and competencies.

Developed Science Text For Grade 6 To Enhance

Science Literacy

This section presents the developed Science Text for Grade 6 learners to enhance Science Literacy by way of having learners manifestation of being able to read, write and discuss science context.

Rationale

This Science text designed to produce creative and critical thinkers among Grade 6 learners- the Grade 6 learners immersed in the "process of science" and they are challenged to solve problems in the same way others do.

The learners will do hands-on activity to construct and discover principles and theories n science. They can also present logical discussion of topic to enhanced and enriched the scope and sequence of DepEd basic education set of competencies.

Each set of activities is preceded by a briefly introduction providing the learners a clear understanding on what they are supposed to do in every activity.

Effectiveness of the Proposed

Science Text Based On The

Evaluation of Science Teachers

This section presents the effectiveness of the proposed science text based on the evaluation of Science teacher on a set of criteria. The data is presented in Table 3 in answer to sub-problem 3.

Table 3

Effectiveness of the Proposed Science

Text Based On The Evaluation

of Science Teachers

Legend:

Criteria For Effectiveness	AWM	D.E
A. Objectives 1. The materials can lead to the attainment of the objectives relative to Science subject in the K to 12 Curriculum	4.40	E

Scale

B. Context 1. The materials develop the learners 'competence and skills in Science Literacy. 2. The materials endure better understanding through proper presentation. 3. The materials were made interesting and meaningful for the learners . 4. The learning activities provide the learners with opportunity to learn more Science activities	3.60 3.80 4.40 4.20	E E E E
C. Evaluation Activities 1. The materials used varied and appropriate ways of assessing learners' level of performance in Science. 2. Evaluation exercises can help the learners develop higher thinking skills.	4.40 3.80	E E
AWM	**4.08**	**E**

Statistical Range	**Descriptive Equivalent (D.E)**
5 4.50 – 5.00	Very Effective (VE)
4 3.50 – 4.49	Effective (E)
3 2.50 – 3.49	Moderately Effective (ME)

2	1.50 – 2.49	Slightly Effective (SE)
1	1.00 – 1.49	Not Effective (NE)

CHAPTER 4

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of findings, the conclusions drawn and the recommendations offered relative to the sub-problems raised in the study.

SUMMARY

This study used the descriptive and developmental method of research, in developing a science text for Grade 6 learners to enhance science literacy during the school year 2024-2025. The study included the level of Science Literacy of the Grade 6 learners in Calasiao II District as basis for proposing a science text by way of loving the learner's manifestation being able to read, write and discuss science text and the effectiveness of the proposed science text based on the evaluation of science teachers. Frequency, percentage and average weighted mean was used and the fifty-two (52) science teachers served as respondents of the study.

Findings

1.0. Level of Science Literacy of The Grade 6 learners in Calasiao II District, Schools Division Office I Pangasinan

1.1 Generally the level of Science Literacy of the Grade V learners was rated "Fair" 24 to 38.09 percent.

2.0. Proposed Science text for Grade 6 learners, enhance science literacy by way of having the learners ' manifestation to being able to read and write.

2.1 Along the proposed science text can enhance the science literacy of the Grade 6 learners at the Idoldol Elementary School, Malasiqui District II .

3.0 Effectiveness Of The Proposed Science Text For Grade 6 learners Based on The Evaluation of Science Teachers.

3.1 Generally, the Science Teachers evaluated the proposed Science Text having "Effective".

CONCLUSION

Based on the findings made, the following conclusions were made:

1. The proposed Science text can improve the teaching skills of science Grade 6 teachers.
2. The level of science literacy of the Grade 6 learners can be improved.
3. The proposal science text can enhance science literacy of the Grade 6 learners.

RECOMMENDATIONS

Based on the conclusions draw in the following recommendations are hereby offered:

1. The proposal science text should be presented to the DepEd. Higher authorities for reproduction.
2. The proposed science text should be recommended for use by the Grade 6 Science teachers.
3. Similar studies can be conducted in wider scope and in other learning areas in the education curriculum.

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A P P E N D I C E S

APPENDIX A

LETTER OF REQUEST FOR PERMISSION TO CONDUCT THE STUDY

Republic of the Philippines
DEPARTMENT OF EDUCATION
REGION I
SCHOOLS DIVISION OFFICE I PANGASINAN
Lingayen, Pangasinan

FATIMA R. BOADO, Ed. D.
Schools Division Superintendent
Schools Division Office I Pangasinan
Lingayen

Madam:

The undersigned is presently conducting a research study entitled "**SCIENCE TEXT FOR GRADE 6 LEARNERS TO ENHANCE SCIENCE LITERACY**"" in partial fulfillment of the requirements for the degree Master of Arts in Education at Lyceum North-western University, Institute of Graduate and Professional Studies, Dagupan City.

In line with this, the researcher I would like to request permission from your good office to administers a questionnaire duly approved by the Dean of Institute of Graduate and Professional Studies of the Lyceum-Northwestern University, Dagupan City and the panel members during the proposal defense. The intended respondents of the study are the Grade 6 Science teachers in Calasiao II District, Schools Division Office I Pangasinan.

Your kind consideration and approval of the above cited request is very much appreciated.

Very truly yours,

(Sgd.) **KATHERINE D. DE VERA**
Researcher

Noted:
(Sgd) **CHRISTOPHER A. DE VERA, Ed.D.**
Thesis Adviser

APPROVED:

(Sgd) **FATIMA R. BOADO, Ed.D**
Schools Division Superintendent

APPENDIX B

LETTER TO THE RESPONDENTS

Dear Respondents,

The undersigned is presently conducting a research work entitled "**SCIENCE TEXT FOR GRADE 6 LEARNERS TO ENHANCE SCIENCE LITERACY"** in partial fulfillment of the requirements for the degree MASTER OF ARTS IN EDUCATION at the Lyceum-Northwestern University, Dagupan City for the school year 2024-2025.

In this connection, kindly help the researcher by way of accomplishing the questionnaire as her data gathering instrument. Rest assured that your responses will be kept with strict confidentially.

Thank you very much.

Very truly yours,

(Sgd.) KATHERINE D. DE VERA
Researcher

International Research Journal
IJNRD
Research Through Innovation

APPENDIX C

Questionnaire For Grade 6 Science Teacher

The undersigned is presently completing the final stage of his post graduate studies at the Lyceum University. As part of the requirements, he is conducting the study entitled **"SCIENCE TEXT FOR GRADE 6 LEARNERS TO ENHANCE SCIENCE LITERACY".**

Kindly help the researcher accomplished the questionnaire as my data gathering instruments. Rest assure that your responses will be kept with strict confidence.

Thank you Very much.

Very truly yours,

(Sgd.) KATHERINE D. DE VERA
Researcher

International Research Journal
IJNRD
Research Through Innovation

Part I – Effectiveness of the Support Science Text to enhance Science Literacy

Direction: Kindly provide the necessary column by way of putting a (√) make on the space provided for each blank. Kindly use the legend below.

Legend:

Scale	**Statistical Range**	**Descriptive Equivalent (D.E)**
5	4.50 – 5.00	Very Effective (VE)
4	3.50 – 4.49	Effective (E)
3	2.50 – 3.49	Moderately Effective (ME)
2	1.50 – 2.49	Slightly Effective (SE)
1	1.00 – 1.49	Not Effective (NE)

Criteria For Effectiveness	**VE 5**	**E 4**	**ME 3**	**SE 2**	**NE 1**
A. Objectives 1. The materials can lead to the attainment of the objectives relative to Science subject in the K to 12 Curriculum					
B. Context 1. The materials develop the learners ' competence and skills in Science Literacy. 2. The materials endures better understanding through proper presentation. 3. The materials were made interesting and meaningful for the learners . 4. The learning activities provide the learners with opportunity to learn more Science activities					
C. Evaluation Activities 1. The materials used varied and appropriate ways of assessing learners' level of performance in Science. 2. Evaluation exercises can help the learners develop higher thinking skills.					

(Sgd.) KATHERINE D. DE VERA
Researcher