Challenges Encountered by Pediatric Clinicians in Teaching Basic Numeracy Skills to Children Using Native Language: Basis for a Clinical Education Plan

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CHAPTER I

THE PROBLEM AND ITS SCOPE

Introduction

Mathematics is one subject that pervades life at any age. Thus, its value goes beyond the classroom and the school. Mathematics as a school subject, therefore, must be learned comprehensively and with much depth. (K to 12 Curriculum Guide)

Teaching Mathematics in the primary level like any other school subject must be done using a language best understood by the recipients if the basic concepts, principles and laws of mathematics are to be meaningful to the children. This is so because language has always been vital in the effective transfer of learning. Thus, the medium of instruction often plays a fundamental role in the success of the teaching –learning process (Charanchi).

With the implementation of the K-12 Basic Education Curriculum, mother tongue is used as the medium of instruction in teaching Mathematics from Kindergarten to Grade III. Researchers believed that the level of development of

children's mother tongue is a strong predictor of their second language development (Cummins). Abiri stated that Mathematics taught in a child's mother tongue has a lot of advantages, such as overcoming limited knowledge of foreign mathematical vocabulary. Teaching in the mother tongue also bring children closer to mathematics example and concepts, it helps the children to develop a mathematical vocabulary in the mother tongue. It equally helps adults who are not literate in English to understand and appreciate Mathematics.

Mathematical language is the collection of signs or symbols, abbreviations, axioms, method, formulae, and units that are necessary in mathematics teaching and learning. Understanding of its usage is imperative and cannot be underestimated. Obodo affirmed that failure of the learner to master the mathematical language lead to poor performance in the subject. The uniqueness of mathematics language has distinguished mathematics from other subjects. Anyone that cannot cope with imperial and native language which is based on verbal reasoning may likely get lost in quantitative reasoning where the use of mathematical language is necessary. Spatial and mathematical reasoning will help pupils to generate, retain, retrieve and transform well-structured visual images into mathematical appreciation with the aid of mathematical language (Lohman).

In the same vein, the teacher is the key factor in the success of any educational endeavour at all levels and in the realization of the objectives of the

K-12 Basic Education curriculum. The world is becoming more complex with increase in mathematical advancement. This complex knowledge creates new expectations in teaching. To help learners master more challenging contents, teachers must go far beyond dispensing information, giving test and giving a grade. They must themselves know their subject areas deeply and they must understand how pupils think if they are to create experiences that actually work to produce (Darling-Hammond).

Several researches have been made about the perceived effectiveness of the use of mother tongue in the performance of pupils in any subject area but no study has been made on the translation of mathematics vocabulary or concepts in mother tongue and teachers effective questioning and reacting technique. It is on this premise that the researcher would like to know the problems encountered by the Grade 1 teachers in the Division of Dumaguete City in their third year of implementation in teaching mathematics using the mother tongue which is SinugbuanongBinisaya in terms of mathematics vocabulary in mother tongue, and the academic performance of pupils so that proper intervention will be given and problems encountered will be addressed.

Theoretical Background of the Study

This study is anchored on the Tree-Step Change Theory of Kurt Lewin.

Kurt Lewin developed a change model involving three steps: **unfreezing**, **changing** and **refreezing**. The model represents a very simple and practical model for understanding the change process. For Lewin, the process of change entails creating the perception that a change is needed , then moving toward the

new, desired level of behaviour and finally, solidifying that new behaviour as the norm. As a social scientist, he views views behavior as a dynamic balance of forces working in opposite directions. Driving Forces facilitate change because they push pupils in the desired direction. Restraining forces hinder change because they push pupils in the opposite direction. Thus, these forces must be analyzed.

According to Lewin, the **first step** in the process of changing behavior is to unfreeze the existing situation or status quo. The status quo is considered the equilibrium state. Unfreezing is necessary to overcome the strains of individual resistance and group conformity in implementing change. (Robbins). Because many people will naturally resist change, the goal during the unfreezing stage is to create an awareness of how the status quo, or current level of acceptability, is hindering the organization in some way. Old behaviors, ways of thinking, processes, people and organizational structures must all be carefully examined to show stakeholders how necessary a change is for the organization to create or maintain a competitive advantage in the marketplace.

Petrescu, in her research “Organizational Change Process- Steps to a Successful Change” said that unfreezing is about getting ready to change. It involves getting to a point of understanding that change is necessary and getting ready to move away from one’s comfort zone.

The **second step** is changing. Lewin recognized that change is a process where the organization must transition or move into this new state of being. This changing step also referred to as the “transitioning “or “moving,” is marked by the

implementation of the change. This is when the change becomes real and the time when most people struggle with new reality. During the changing step people learn to begin the new behaviors, processes and ways of thinking. Furthermore, it is necessary to move the target system to a new level of equilibrium. The three actions that can support in the movement step include: persuading pupils and teachers to agree that the status quo is not beneficial to them, encouraging them to view the problem from the fresh perspective, working together on a quest for new and relevant information, and connecting the views of the group to well- respected superiors that also support the change (Robbins).

The **third step** of Lewin's model is freezing, but many refer to it as **refreezing** to symbolize the act of reinforcing, stabilizing and solidifying the new state after the change .The changes made to organizational processes, goals, structure, offerings or people are accepted and refrozen as the new norm or status quo. Lewin found the refreezing step to be especially important to ensure that people do not revert back to their old ways of thinking prior to the implementation of the change. It is the actual integration of new values into the community. The purpose of this step is to stabilize the new equilibrium resulting from the change by balancing both the driving and the restraining forces. One move that can be used to implement Lewin's third step is to reinforce new patterns and institutionalize them through formal and informal mechanisms including policies and procedures.(Petrescu)

In the light of this study, the status quo is the Basic Education Curriculum. The unfreezing of status quo, movement to a new level, and refreezing to

stabilize new equilibrium interplay in the process of changing the learning situation in the K to 12 Basic Education Curriculum where mother tongue is used as the medium of instruction in teaching mathematics from Kindergarten to Grade III. The problems encountered in the process will serve as basis for determining the proper interventions for the success implementation and realization of the objectives of the K- 12 Basic Education Curriculum.

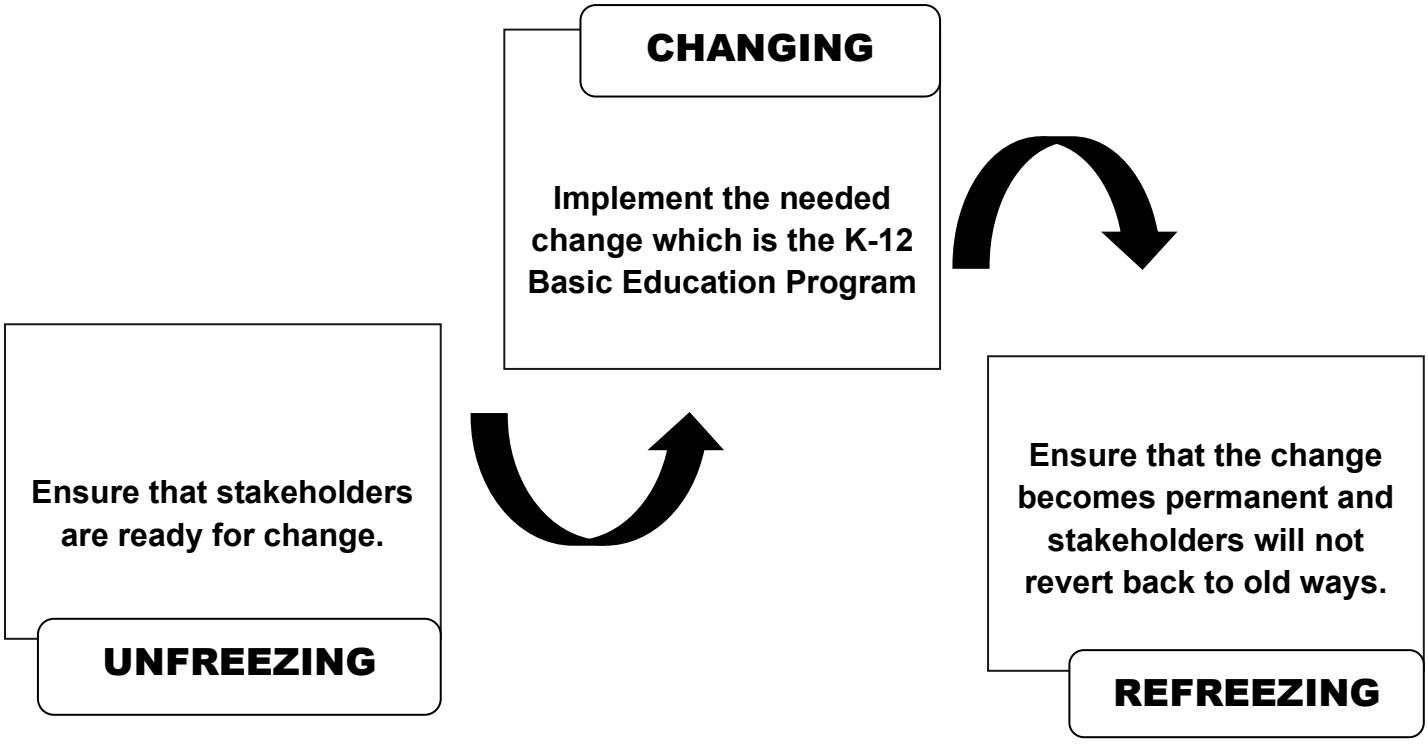


Figure 1: Schematic Diagram of the Theoretical Framework of the Study Based onLewin's Three- Step Change Theory

Review of Related Literature and Studies

This section of the study presents works of literature that have bearing on the problem being investigated.

Related Literature

Role of Language in Mathematics Teaching and Learning

Language is an important factor in the learning and teaching of mathematics. While for most pupils a mathematics lesson is generally a language lesson within the mathematics part, the sequence seems more complicated for second-language learners. According to a research by Nenty on the influence of language on pupils' performance in science and mathematics, classroom use of a language which is not the language already spoken by the child results in cognitive and pedagogical difficulties. The language of instruction contributes significantly to the quality of contributions and overall academic performance of pupils. The difficulties pupils face in terms of language in the classroom are articulated by two points raised by Bird and Welford that; a) pupils are hindered if they are unable to articulate clearly in their second language and b) language problems may interfere in pupils' understanding of questions. The

two are core classroom activities that help restore difficulties inherent in pupils' learning (Nenty).

The effect of language in teaching any subject has been a significant issue to psychologists and teachers over the years. The language used to convey mathematical ideas to students has become a topic of increasing concern to mathematics educators. Language influences all aspects of human endeavor even though not all languages are equally well developed for such use. One finds that some languages are more frequently and extensively used than other in a particular area or location (Ali.)

Moreover, a recent Australian review of numeracy teaching noted the significant role of language in mathematics learning. The National Numeracy Review Report, commissioned by the Council of Australian Governments (CoAG), synthesized evidence on effective numeracy teaching to support the goal of improving numeracy outcomes for Australian students. The report of the review acknowledged the significance of language in mathematics learning, and recommended: that the language and literacies of mathematics be explicitly taught by all teachers of mathematics in recognition that language can provide a formidable barrier to both the understanding of mathematics concepts and to providing students access to assessment items aimed at eliciting mathematical understandings ("The Digest: Language in Mathematics Classroom").

Every language can represent concepts and knowledge in areas in mathematics in its own way best understood by its people (Buffer and Laugksh). The same sentiments are echoed by Gondo, Nyota and Mapara that translation

studies have been used throughout history to solve problems of coming up with registers in other languages. Language is capable of manufacturing and developing new words as long as it is in active use. What is needed is what Ball and Bass call “unpacking of mathematical language and content for pedagogical purposes.” Mathematical language can be made and accessible to all the pupils in their own mother tongue for effective teaching and learning. The skepticism has been whether mathematical vocabulary can well be represented in our own mother tongue without necessarily compromising the learning of basic mathematical concepts and facts.

David opined that language is undoubtedly one of the most important areas in the curriculum. They are both means to an end and an end in themselves. That is, they provide a child with the tools to communicate at the same time an integral part of the creative process that results from this communication when the language arts are taught with awareness as well as enjoyment , students gain competence of their language and confidence in themselves. They learn to integrate the components of language into all aspects of their lives.

Mother Tongue –Based Instruction

Mother Tongue – Based Instruction is one of the effective interventions of the Department of Education in improving the quality of Philippine education. With the issuance of DepEd Order No. 74 s, 2010 which institutionalizes Mother Tongue-Based Multilingual Education—that is, the use of more than two

languages for literacy and instruction—as a fundamental policy and program in the whole stretch of formal education, including preschool. This was based on the findings of various local initiatives and international studies in basic education that have validated the superiority of the use of the learner's mother tongue or first language in improving learning outcomes and promoting education for all.

Under this framework, the learner's first language (L1) will be used as the primary medium of instruction from preschool to at least Grade 3, and as the main vehicle to teach understanding and mastery of all subject areas like Math, Science, Makabayan, and language subjects like Filipino and English. Moreover, the mother tongue as a subject and as a language of teaching and learning will be introduced in Grade 1 for conceptual understanding, while additional languages such as Filipino, English, and other local or foreign languages are to be introduced as separate subjects no earlier than Grade 2.

Mother tongue is typically the first language of the child and the language known and used most of the time. It can also be construed as the language of primary socialization, the language developed by a child from an early childhood. Mother tongue education implies a linguistically homogenous community, a teacher who speaks the language, and the curriculum materials in the mother tongue. Several pilot projects relating to the Mother Tongue- Based Multilingual Education (MTB-MLE) disclose that the teachers observed a remarkable level of participation among the students because they could readily relate the lessons to their vast experiences, prior knowledge and other socio-cultural background.

Why Children Learn Better While Using Mother Tongue

Results of the 2003 Functional Literacy Education and Mass Media Survey revealed that out of 57.59million Filipinos aged 10 to 64 years old, there were 5.24 million Filipinos who could not read and write; 7.83 million who could not read, write and compute and 18.37 million could not read, write, compute and comprehend. What an alarming situation.The foregoing revelation brings us to the bare truth that there's a prevalence of high functional illiteracy among Filipinos. This has been attributed mainly to the language of literacy and medium of instruction used in schools.

Why use the mother tongue as the first language (L1) in school? Mother Tongue is typically the first language of the child and the language of the home. It can also be construed as the language of primary socialization, the language developed by a child from an early childhood. Mother Tongue education implies a linguistically homogeneous community, a teacher who speaks the language, and the curriculum materials in the mother tongue.Thus, the school or classroom is not an alien place for them anymore. Since children were much adept in their mother tongue, they learned faster and better. More so, they learned to read quickly and fluently.(Silva)

As learners develop a strong foundation in their L1, they are gradually introduced to their second language(s) or L2s (Filipino and English), first orally, then in the written form. With adequate L2 instruction, cognitive skills and subject content acquired in the L1 can now transfer to the L2.

Apart from programming the use of several languages, MTBMLE also involves: (a) the development of cognitively demanding curricula; (b) the training

of good teachers in the required languages for content and methodology; (c) the production of error-free and culturally relevant teaching materials; (d) the empowerment of the community (i.e., school-based management).

The own language of the learners enablesthem to immediately construct and explain their world without fear of making mistakes, articulate their thoughts and add new concepts to what they already know. In turn, their teachers can more accurately assess what has been learned and identify the areas where they need help(Nolasco).

Furthermore,Mother Tongue-Based instructionprovides an opportunity for our children to exercise their right to learn in their first language. Therefore, it promotes literacy, as it hastens the learning process. They are able to: a) understand what the teacher is saying, b) think well c) argue well and d) question properly and critically. (Silva)

Effective Questioning Techniques in the Classroom

The questioning process in an essential part of instruction for it allows teachers to monitor student competence and understanding as well as increase thought provoking discussion. It is important to present students with questions that encourage reasoning and that allow them to draw from their prior knowledge rather than accepting “yes or no” responses. Through encouraging students to formulate educated responses and express their opinions, teachers are able to assess how familiar or interested they are in the material.

In reality, effective questioning does not always happen, even among teachers with considerable experiences in teaching. Nunan and Lambs research

on Questioning in language education reveals that over the years, teachers still pose questions in much the same way as always, with most of the questions low-level, despite improvement in teaching materials, curricula and methods of teaching. Findings from the Ghazali's study on questioning in Malaysia indicate that most teachers have problem utilizing the whole range of questions (low-level and high level thinking, convergent, divergent, literal and inferential questions) available to them.

Brenda B. Corpus in her book Principles of Teaching enumerated the type of questions according to level namely low-level questions, high level questions, convergent questions and divergent questions.

Low level questions invoke lower cognitive processing such as memorizing facts and concrete information and are useful for students who have n pre-requisite knowledge and who need to experience simple questions before moving on to complex and more abstract thinking (Ornstein) Literal and convergent questions are also low-level. Literal questions have obvious intent and answers can be lifted directly from the text (Muije and Reynolds). Convergent questions are questions that require a single predictable answer. An example of this type is, "When does lunar eclipse occur?"

In contrast, high-level thinking questions go beyond memorizing all factual information, and involve analyzing, synthesizing, cause and effect relationship or problem solving about complex situation. Divergent and inferential question are high level. While inferential questions, go beyond basic meaning and require learners to apply their prior knowledge in trying to decipher their intent (Frazu

and Rudnitski), divergent questions deal with opinions and hypothesis, evaluation; are open –ended; encourage broad response; and have a variety of appropriate answers (Ornstein).

An example for this type is, “What will happen if you leave it under direct sunlight for a week?”

Importance of Questioning

1. Develop their thought processes and guide their investigations;
2. Stimulate and sustain their curiosity and motivation;
3. Lead them to consider new ideas and take risks;
4. Help them to clarify their ideas, structure their work and learn about things that interest them;
5. Challenge their beliefs and prompt them to reconsider their current thinking;
6. Provoke them to share and debate their ideas; and
7. Encourage them to ask their own questions and to welcome an ethos of enquiry, risk and challenge (“Questioning Skills”).

Types of Questions according to Purpose

1. For Assessing Cognition. This type of questions is used to determine one’s knowledge in understanding. They promote high level thinking.
2. For verification. It determines the exactness or accuracy of the results of an activity or performance.
3. For creative thinking. It probes one’s originality.

4. For evaluating. It elicits responses that include judgments, value and choice. It also asks personal opinions about an event, a policy or a person.
5. For productive thinking. It includes cognitive reasoning. It analyses facts, recognizes patterns or trends and invokes memory and recall.
6. For motivating. It will arouse the interest and focus attention. It attempts to put students in the right mood.
7. For instructing. It directs guides and advice on what and how to do an activity. The question asks for useful information.

Related Studies

This section presents some related studies which gives the researcher the needed information and guidance for the present study.

Foreign

A study being carried out in Cameroon, Walter and Trammell in 2008 found average gains of over 200 per cent for grade one children being instructed in the local language. In 2009 the reported gains were approximately 125 per cent for grade one and 60 per cent for grade two. Gains were the greatest in reading and Mathematics and less in mastery of the second language (cited in Walter and Dekker).

In Jacob Cohen’s classic work on power and effect size in statistical analysis, an effect size of 0.8 is considered to be large. The effect sizes observed in the Lubuagan programme initiated by Walter and Dekker entitled “Mother Tongue Instruction in Lubuagan: A Case Study from the Philippine” range from 1.31 to 1.61, indicating very large effect sizes for the mother tongue

innovation. A striking feature of this research data is the variation in teacher quality. The students of high-performing teachers outscored those of low performing teachers by as much as 70 per cent.

The study of the Department of Education (DepEd) showed that the use of learners' mother tongue is the most effective medium of learning. Other studies also showed that using the mother tongue inside the classroom in early years of schooling produces better and faster learners who can easily learn a 2nd (Filipino) and even a 3rd language (English). Children's oral skills are improved using the mother tongue; the classroom becomes a venue for singing, dancing, playing games, exploring the arts, and telling stories in the regional language (Van der Schoot, et. al. cited in Tabangan 18).

The study of Malone entitled “Research and Evaluation in Mother Tongue-based Multilingual Education Programs in Ethnolinguistic Minority Communities” had provided considerable evidence that such programs benefit students who do not speak the official school language when they begin their education. The study also demonstrates convincingly that the benefits of MT-based MLE are cumulative and become most apparent only after five or more years of mother tongue instruction.

Findings of the study of Charanchi entitled “A Study of Influence of Mother- Tongue, Teacher’s Qualification, Gender and Experience on Performance in Primary School Mathematics in Katsina State” revealed that the use of mother tongue enhanced the performance in Primary School Mathematics with P value of .0001. Furthermore, findings of the study also showed that

teacher's experience has an impact on pupil's performance in primary school mathematics with a P- value of 0.002. as well as on the teacher's qualification which has a P- value of 0.0001. This meant that there was a significant difference in the performance of pupils taught by teachers with higher qualification compared to those taught with lower qualification.He further concluded that the use of mother tongue in the teaching and learning of mathematics in the primary schools especially in the first four years was more effective than the use of the English language especially in the rural areas. Pupils were highly interested in learning when their mother tongue was used. This was revealed by their active participation and contribution during the lesson.

Another study entitled "Effect of Mother Tongue and Mathematical Language on Primary School Pupils Performance in Mathematics" by OginniOmoniyi et.al. revealed a significant difference in the performance of pupils exposed to mother tongue and mathematical language. They recommended that mother tongue should be employed in the teaching of Mathematics at primary schools level in order to internalize mathematics language and make the pupils mathematics friendly at their tender age and ensure adequate and suitable training for the teachers.

Local

In Espada's study entitled, "The Native Language in Teaching Kindergarten Mathematics" found out the Kindergarten exposed to the native language performed better in Mathematics than those who were exposed to English. The study concluded that the use of native language in teaching

kindergarten mathematics results in a higher performance than the use of foreign language as a medium of instruction.

Results of Germudo's study "Perceived Extent of Effectiveness of the Mother Tongue- Based Instruction in Relation to the Academic Performance of Grade I Pupils "revealed that teachers find the use of Mother Tongue-Based Instruction effective and it is significantly related to the pupils' academic performance. The use of mother tongue to teach beginning literacy facilitated pupil' ability to enhance their social and personal development; to communicate with peers about familiar topics; to respond appropriately to what is heard; to use language confidently and appropriately for a variety of purposes and identify and describe shapes of familiar objects.

The study of Tabangan entitled "Pupils' Performance in Mother Tongue Based Class in Relation to their Performance in English and Mathematics" showed that the Grade I MTB performance is "Approaching Proficiency" while Grade II pupils' performance in English and Mathematic in the first and second grading period is "Proficient" and "Approaching Proficiency". She recommended that training and workshops of the teachers handling MTB-MLE must be strengthened thereby increasing competencies and provide innovative learning materials that could intensify the pupils' competence in the use of their mother tongue. Furthermore, her study revealed that the MTB performance in Grade 1 has a "very high" relationship to their performance in Grade 2 Mathematics.

Another study conducted by Oyzon Voltaire, et.al entitled "Teaching Geometrical Figures in Waray: The LNU-ILS Experience" reported that there is no

significant difference in the performance of pupils taught in a more exclusive version of Waray that uses indigenous Waray terms and concepts regarding geometry when compared with pupils taught in an inclusive version of Waray that borrows English terms for geometrical figures. Therefore they concluded that with Mother Tongue as the medium of instruction, the use of indigenous Warayconcepts in teaching geometrical concepts is as effective as the use of borrowed terms in English and other languages as shown on the results of the study.

Moreover, the study of DepEd Region IV-B (MIMAROPA) entitled; “Double Exposure in Mathematics: A glimpse of Mother –Tongue First” has provided local validation of the fundamental observation that top performing countries in the Trends in International Mathematics and Science Studies (TIMMS), are those that teach and test students in Science and Math in their own language.

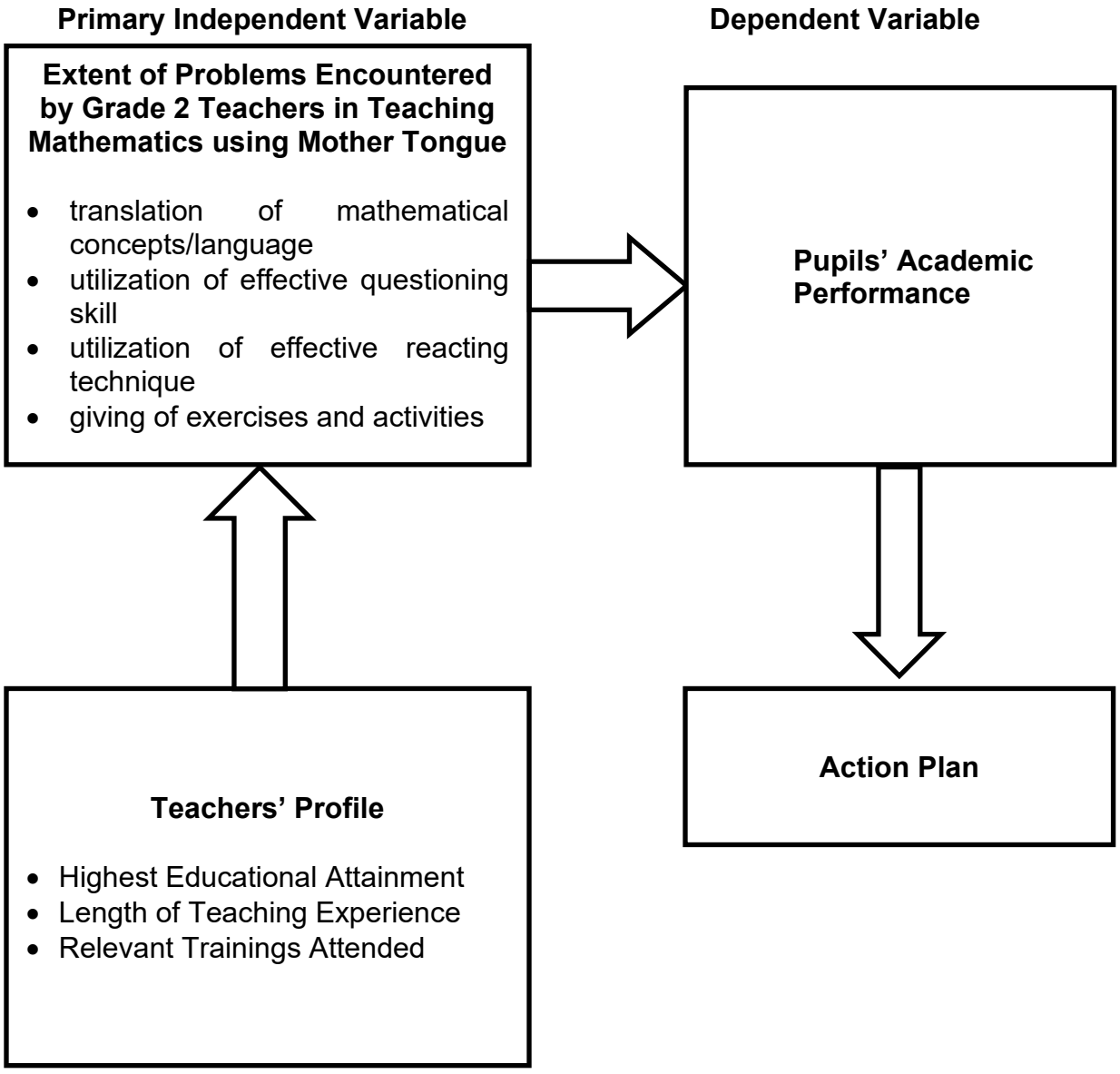
Conceptual Framework of the Study

Figure 2 on the following page shows the conceptual framework of the study. This study is geared towards assessing the problems encountered by the Grade II teachers in teaching Mathematics using mother tongue as the medium of instruction. The conceptual framework of the study consists of the primary independent variable, the secondary independent variable and the dependent variable.

The extent of problems encountered by Grade 1 teachers in teaching Mathematics using mother tongue is indicated as the primary independent variable. This variable is assumed to have influence on the dependent variable which is the pupils' academic performance.

However, the highest educational attainment, length of teaching experience, and relevant trainings attended are the secondary independent variables. The researcher has the presumption that these variables might influence the extent of problems encountered by the teachers.

A proposed action plan will be made by the researcher upon consideration of the results of the study.


Primary Independent Variable
Dependent Variable
Extent of Problems Encountered by Grade 2 Teachers in Teaching Mathematics using Mother Tongue
translation of mathematical concepts/language
utilization of effective questioning skill
utilization of effective reacting technique
giving of exercises and activities
Pupils' Academic Performance
Teachers' Profile
Highest Educational Attainment
Length of Teaching Experience
Relevant Trainings Attended
Action Plan

Secondary Independent Variable

Figure 2: Schematic Diagram of the Conceptual Framework of the Study.

THE PROBLEM

Statement of the Problem

The purpose of the study is to identify the problems encountered by the Grade 1 Mathematics teachers in teaching Mathematics using the Mother tongue as the medium of instruction in the schools of Division of Dumaguete City and their relationship to pupils' academic performance.

Specifically, this study seeks to answer the following questions:

1. What is the profile of teacher respondents in terms of:
    - 1.1 highest educational attainment;
    - 1.2 length of teaching experience and
    - 1.3 relevant trainings attended?
2. To what extent have the following problems been encountered by the teachers in teaching Mathematics using mother tongue:
    - 2.1 translation of mathematical concepts/language;
    - 2.2 utilization of effective questioning skill;
    - 2.3 utilization of effective reacting technique and
    - 2.4 giving of exercises and activities?

3. What is the pupils' average academic performance in Mathematics for SY 2013-2014?
4. Is there a relationship between the extent of problems encountered by the teachers and the pupils' academic performance?
5. Is there a relationship between the profile of the teachers and the extent of problems encountered?

Significance of the Study

The results of the study are of great significance to the following:

Pupils. They are the direct beneficiaries of improved teaching conditions in the classroom. Thus if problems are addressed outright they may have better class interaction thereby improving one's performance.

Teachers. The findings of the study will be of great help to the teachers in addressing solutions to the problems that would help improve the teaching-learning process in the classroom. They would also evaluate their performance so as enhance their questioning and feed backing skill.

School Administrators. The findings of the study will serve as guide for school administrators in giving technical assistance to the teachers. This will serve as basis in planning intervention programs to address the gaps and problems early so as to improve the implementation of the curriculum and improve school performance.

Parents. The results of the study will help the parents realize their important role in the performance of their children in school.

Scope and Limitations of the Study

Scope of the Study

The study focused on the problems encountered by the Grade 1 teachers in the Division of Dumaguete City in teaching Mathematics using mother tongue as the medium of instruction. This study covered the Grade 1 classes of the eighteen (18) public elementary schools in the Division of Dumaguete City. The Grade 1 teachers were the respondents.

Limitations of the Study

This study is intended to identify the extent of problems encountered by the Grade 1 teachers in teaching Mathematics using Mother tongue as the medium of instruction in all public schools of the Division of Dumaguete City.

The accuracy and reliability of the responses dependedon the ability of the respondents to recall their experiences and problems encountered in the classroom instruction using mother tongue in answering the survey questionnaire. Teacher's honesty in answering the survey instrument is also considered as one of the limitations of the study.

Another limitation considered in this study, is the refusal of the 3 respondents to answer the given survey questionnaire since the researcher wanted to get the whole population of the Grade 1 teachers of the Division of Dumaguete City.

Research Methodology

Research Design

The research utilizedthe descriptive-correlational method. It is descriptive since it identified the problems encountered by the Grade 1 teachers in teaching Mathematics using mother and correlational since these problems will be correlated to the pupils' academic performance. Likewise, the relationship between the profile of the teachers and their problems was also identified.

Research Environment

The place of the study is Dumaguete City, which is known to be "The City of Gentle People". It is also known as the "University Town" since the place has a number of universities where students from different regions enroll and pursue their dreams.

The Division of Dumaguete City is composed of 18 public elementary schools coming from the three districts namely Dumaguete City West, South and North.

Research Respondents

The respondents of the study were the 56 Grade 1 teachers of the Division of Dumaguete City.

Dumaguete City North District	**Number of Teachers**
1. Amador DagudagMem. Elem. School	2

2. Batinguel Elem. School	5
3. Camanjac Elem. School School	2
4. Candau-ay Elem. School	2
5. Magsayasay Memorial Elem. School	1
6. North City Elem. School	5

Dumaguete City South District	**Number of Teachers**
7. Bababajuba Elementary School	2
8. Calindagan Elem. School	2
9. Cantil-e Elementary School	1
10. City Central Elem. School	3
11. Hermenegilda F. Gloria Mem Elem. School	2
12. South City Elem. School	5

Dumaguete City West District	**Number of Teachers**
13. Balugo Elem. School	2
14. Cadawinonan Elem. School	3
15. Junob Elementary School	3
16. West City Elem. School	14
17. West City – Science Elem. School	1
18. West City- Exceptional Child Learning Center	1
Total Respondents	**56**

Research Instrument

The study made use of a questionnaire and pupils 'average final rating in Mathematics during the school year 2013-2014. In Parts A and D, the researcher used the self-made questions. These questions were based on the feedback of

the teachers on their problems encountered in translation of the mathematical concepts/language and giving of exercises during class observations and conference. The researcher also read articles and publications regarding mother tongue –based instruction and integrated important items in the questionnaire.

For Parts B and C, the researcher used a questionnaire made by SEAMEO INNOTECH entitled “The Interactive Instruction Series for Teacher Education, Trainor’s Manual on the Art of Questioning and Reacting Techniques”. SEAMEO INNOTECH is principally dedicated to identifying common and unique education problems and needs of Southeast Asian countries and developing innovative and technology-based solutions to address these problems. The Center aids in educational development within and outside the region through training and human resource development, research and evaluation, information and communications technology and other special programs addressing specific areas of concern in the Southeast Asian educational scenario.

The researcher askedpermission that their instrument will be used in this study. The questionnaire was presented to three experts in the field of mathematics and in the use of mother as a medium of instruction for content validity. The suggestions of the three experts were considered. Then a dry run was conducted to 30 teachers to find out if the items werevalid.

Data Gathering Procedure

After the design hearing, the researcher integrated all the comments and suggestions of the panel members. The validation of the questionnaire followed and finalized after the test and re-test procedure.

The researcher made a letter request for the distribution of the final questionnaire which was signed by the dean of the graduate school and approved by the Schools Division Superintendent in the Division of Dumaguete City. The endorsement and approved letter from the Schools Division Superintendent together with a letter request was presented to the principals of the respondents for formal permission regarding the questionnaire to be distributed. During the distribution, the researcher personally explained to the respondents the purpose of the research. The questionnaires were retrieved after the respondents have answered the questions.

The Mathematics grades of the pupils were gathered with the permission of the principal.

Statistical Treatment of the Data

The tools that will be used in analyzing and in interpreting the data will be the following:

Percentage This will be used to show how a part is related to a whole. It is used in presenting the profile of the respondents.

Formula:

$$Percentage = \frac{part}{whole} \times 100$$

Weighted Mean This will be used to get the extent of problems encountered by the teachers in Mathematics using mother tongue.

Formula:

$$W_{\bar{x}} = \frac{\sum fx}{n}$$

where $W_{\bar{x}}$ = weighted mean/average

x = rating

n = total number of respondents

f = frequency/number of respondents who responded in a particular category

$\sum fx$ = sum of all the products of frequency and the rating

The following scale will also be applied:

5-Point Likert's Scale

Scale	Range	Verbal description	Explanation
5	4.21-5.00	Very Serious Problem	The problem is encountered by the teachers 81-100% of the time.
4	3.41-4.20	Serious Problem	The problem is encountered by the teachers 61-80% of the time.
3	2.61-3.40	Moderate Problem	The problem is encountered by the teachers 41-60% of the time.
2	1.81-2.60	Slight Problem	The problem is encountered by the teachers 21-40% of the time.
1	1.00-1.80	Not a Problem	The problem is encountered by the teachers 1-20% of the time.

Mean This will be used in getting the extent of performance of the respondents.

Formula:

$$\bar{x} = \frac{\sum x}{n}$$

where $\bar{x}$ = mean/average

x = scores/rating

n = number of students

The performance or level of proficiency at which the student is performing shall be based on the following criteria (DepEd Order No. 73, s.2012):

Rating	Verbal Equivalent	Explanation
90% and above	Advanced	The student at this level exceeds the core requirements in terms of knowledge, skills and understanding, and can transfer them automatically and flexibly through authentic performance tasks.
85%-89%	Proficient	The student at this level has developed The fundamental knowledge and skills and core understandings, and can transfer them independently through authentic performance tasks.
80%-84%	Approaching Proficiency	The student at this level has developed the fundamental knowledge and skills and core understandings, and with little guidance from the teacher and/or with some assistance from

		peers, and can transfer these understandings through authentic performance tasks.
75%-79%	Developing	The student at this level possesses the Minimum knowledge and skills and core understandings, but needs help throughout the performance of authentic tasks.
74% down	Beginning	The student at this level struggles with his/her understanding; prerequisite and fundamental knowledge and/or skills have not been acquired or developed adequately to aid understanding.

Pearson Product Moment Coefficient of Correlation This will be used in identifying the relationship between the extent of problems encountered by the teachers and the pupils' academic performance

Formula:

$$r = \frac{N(\sum xy) - (\sum x)(\sum y)}{\sqrt{[N(\sum x^2) - (\sum x)^2)]}\sqrt{[N(\sum y^2) - (\sum y)^2)]}}$$

where x = the extent of problems encountered by the teachers

y = pupils' academic performance

r = the coefficient of correlation

To interpret the correlation value (r) obtained, the following classifications are applied:

	± 1.00	-	perfect correlation
Between	± 0.80 to ± 0.99	-	very high correlation
Between	± 0.60 to ± 0.79	-	high correlation
Between	± 0.40 to ± 0.59	-	marked correlation
Between	± 0.20 to ± 0.39	-	slight correlation
Between	± 0.01 to ± 0.19	-	negligible correlation

Chi-square. This will be used to determine the relationship between the profile of the teacher respondents and the extent of problems encountered.

Formula:

$$x^2 = \sum \frac{(fo-fe)^2}{fe}$$

where:

x^2 = chi- square

fo = observed frequency

fe= expected frequency

DEFINITION OF TERMS

To ensure better understanding of the study, the following terms are hereby operationally defined:

Academic Performance - This term refers to the pupils' first grading performance in Mathematics during the School Year 2013-2014.

Exercises and Activities – these refer to enrichment exercises and activities given by the teachers to pupils to further comprehend the lesson.

Mother Tongue –this refers to the language that a person has grown up speaking; the one that a person has known from birth without having to learn it. In this study, SinugbuanongBinisaya is the mother tongue.

Medium of Instruction-this refers tothe language used for teaching and learning the school curriculum.

Questioning Skills – these refer to teachers' ability to ask questions in order for students to be able to deliver their ideas.

Reacting Technique – this refers to the ability of the teacher to provide positive and encouraging feedback to students' participation in class, performance in examination and other related activities.

Respondents- they refer to 56 Grade 1 teachers of the Division of Dumaguete City.

Trainings – these refer to trainings useful to K-12 curriculum.

Translation of the Mathematical Concepts/Language – this refers to language translation of Mathematical concepts to Mother Tongue instruction.

CHAPTER II

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

This chapter presents, analyzes and interprets the data gathered through the use of the questionnaire.

Profile of the Respondents

This section reveals the profile of teachers in terms of educational attainment, and number of years of teaching Mathematics.

Table 1
Profile of the Teachers in Terms of Their Educational Attainment and Number of years in Teaching Mathematics
N = 56

Variables	Frequency	Percent (%)
Educational Attainment		
Bachelor's Degree	20	35.71
With Master's Degree Units	34	60.71
With Master's Degree	2	3.58
Number of Years in Teaching Mathematics		
1 – 5 years	12	21.43
6 – 10 years	12	21.43
11 – 15 years	9	16.07
16 years and beyond	23	41.07

Table 1 shows that majority of the teachers are with master's degree units and only 2 out of 56 or 3.58% have master's degree while 35.71% have bachelor's degree. The findings show that most of the teachers pursue further studies to improve one's craft and acquire knowledge for one's professional growth so as to enhance teaching capabilities. As the study of

Charanchirevealed that there was a significant difference between the performance of pupils taughtby teachers with higher qualification like a master's degree compared to those pupils taught by teachers with lower qualification like bachelor's degree. Oguntebisaid the problem lies on the quality of Mathematics teachers and he further said, "for a teacher to teach Mathematics better he must also the subject better."

Other data in table 1 reveals the profile of teachers in terms of the number of years in teaching mathematics. Findings show that most of the teachers have 16 years and beyond experience in teaching Mathematics. Teaching experience of 1-5 years and 6 -10 years has the same percentage of 21.43% while 16.07% of the teachers have 11-15 years in teaching Mathematics. A bigger percentage of the teachers might but have vast experiences in teaching Mathematics but since this is the third year in the implementation of the K-12 program wherein Mother Tongue is used as the medium of instruction in teaching Mathematics most of them are still greenhorns.

It is said that, experience is the best teacher. Every teacher brings in the classroom his teaching experiences which could positively or adversely affect classroom interaction.

Moreover, teacher quality comes from good preparation in subject content as well as pedagogy, but preparation is only one part. Experience counts. Good students come from classes whose teachers have more years of teaching experience.

Table 2
Profile of the Teachers in Terms of Relevant Trainings Attended Related to K - 12
N = 56

Seminar-Workshop/Activities	Yes		
	f	(%)	Number of Times (average)
1. Mass Training of Teachers on K-12 curriculum	54	96.43	Once
2. Mother Tongue as a Medium of Instruction	48	85.71	Once
3. Teaching Strategies for Mother Tongue Instruction	46	82.14	Once
4. Framework of the K-12 Program	49	87.50	Once

Table 2 illustrates the profile of teachers in terms of relevant trainings attended related to K-12. Most of the teachers attended the mass training of teachers on K-12 curriculum with 96.43%, framework of the K- 12 program with 87.50 %, mother tongue as a medium of instruction with 85.71% and 82.14% attended the teaching strategies for mother tongue instruction. All these trainings were attended by the teachers once.

The findings in Table 2 indicates that most of the teachers underwent training relevant to K-12 but it is very limited . Charanchi stressed that continuous training and mastery of the subject is an absolute necessity for effective teaching. The level of information possessed by the teacher should be much higher than that of the information he is expected to impart. Professional training will enable a person to acquire certain commendable characteristics such as adaptability, efficiency, the knock of arousing interest, command of instructional material and

ability to face the class with confidence.

As cited by Gregorio, it is not sufficient to be a graduate at a Teacher Education Institution (TEI) or a college, or to stand high in the profession of teaching. Like the pupils, the teacher must grow, and this growth could be attained by attending professional training and pursuing further studies.

Felipe also affirms that trainings and seminars should be conducted to improve and develop the craft of each mentor in school. Teachers should be updated on modern instructional devices and learn new methods and techniques in teachings to prepare them in globalization (34).

Furthermore, Zulueta, et.al pointed out that training provides instruction in any organizational setting and was found to have an important role in enhancing the productivity of employees. Training has been a common term in any organization. When an employee's performance is not satisfactory based on the organization's standard, he needs training. Whenever the output-input within a time period of work is not met, the supervisor will readily say they lack training (81).

Table 3
Extent of Teachers' Problems in Translation of Mathematical Concepts/Language

Extent of Problems in Translating significant mathematical terms in Mother Tongue in the following competencies:	$\overline{wx}$	**Verbal Equivalent**
1. Composes and decomposes a given number ***Ex. 9 – 4 ug 5, 5 ug 4, 6 ug 3***	3.13	Moderate
2. Reads and writes numbers up to 100 in symbols and in words ***Ex.31 - trayenta i-uno***	4.20	Serious
3. Renames numbers into tens and ones ***Ex. 78 – 7 tagnapulo 8 tinagus-a***	3.23	Moderate
4. Recognizes and compares coins and bills up to PhP100 and their notations ***Ex. 5 kasingkopisosugbayentepisos***	3.66	Serious
5. Visualizes and adds numbers with sums through 99 without or with regrouping ***Ex. 25+47***	3.41	Serious
6. Uses the expanded form to explain subtraction with regrouping ***Ex. - 50 + 4 / 28 + 8***	3.43	Serious
7. Counts groups of equal quantity using concrete objects up to 50 and writes an equivalent expression. ***Ex. 2 groups of 5***	3.23	Moderate
8. Compares and classifies 2-dimensional (flat/plane) and 3 dimensional(solid) figures according to common attributes ***Ex. Nawongsakono, rectangular ngakarton, cylindrical***	3.59	Serious
9. Constructs equivalent number expression using addition and subtraction. ***Ex. 6+5 = 12 -1***	3.48	Serious
10. Estimate and measure capacity using non-standard unit ***Ex. Si Nene nagkinahanglanug 30 kabasosa juice alangsaiyangnatawhan. Kun angusakapitselmosulodug 5 kabasonga juice, pila man kapitselsa juice angiyangandamon.***	3.50	Serious
11. Solves problems involving time. ***Ex. Ika-walokataknaugnapulog lima***	4.13	Serious
12. Infers and interprets data presented in a pictograph without scales ***Ex .Unsakabahinang pictograph?***	3.39	Serious
Composite Mean	**3.53**	**Serious**

Table 3 presents the extent of teacher's problems in translation of Mathematical concepts/ language. 75% of the listed competencies were found

to be a serious problem. Most of the teachers had a serious problem in the following competencies; reading and writing numbers up to 100 in symbols and in words;solving problems involving time;recognizing and comparing coins and bills up to PhP100 and their notations; comparing and classifying 2-dimensional (flat/plane) and 3 dimensional (solid) figures according to common attributes;constructing equivalent number expression using addition and subtraction; using the expanded form to explain subtraction with regrouping;visualizing and adding numbers with sums through 99 without or with regrouping; inferring and interpreting data presented in a pictograph without scales and estimating and measuring capacity using non-standard unit . The table also shows that 25% or 3 out 9 competencies are considered moderate in terms of translating these competencies in mother tongue.

Though contents are easy to teach but translating it to SinugbuanongBinisaya is difficult because of the limited knowledge of the teachers in the mother tongue vocabulary. In the training conducted, there was no particular session that focuses on the content of the lesson but more emphasis was given on the strategies and materials.

There is some special vocabulary in Mathematics according to Raborn. Mathematics vocabulary is said to be precise but not always familiar. Thompson and Rubenstein say that pupils need to master this mathematics language if they are to read, understand and discuss mathematical ideas. Unlike common English and our mother tongue, which pupils hear, see and use daily in reading, watching television and elsewhere, the language of Mathematics is limited to

school.

Table 4
Extent of Teachers' Problems in the Utilization of Effective Questioning Skill

Indicators	$\overline{wx}$	Verbal Equivalent
1. Ability to ask varied type of question	3.00	Moderate
2. Ability to direct the question to all pupils.	2.63	Moderate
3. Ability to call on non-volunteer pupils.	2.68	Moderate
4. Ability to rephrase questions that are unclear to the pupils.	2.46	Moderate
5. Ability to ask related questions one from simple to complex one after another.	2.77	Moderate
6. Ability to ask questions that require abstract thinking.	2.96	Moderate
7. Ability to ask questions that develop higher order thinking skills.	3.02	Moderate
8. Ability to provide for sufficient wait time for the pupils to answer.	2.84	Moderate
9. Ability to assess Comprehension	2.96	Moderate
10. Ability to involve in the discussion as many pupils as possible	2.63	Moderate
Composite Mean	2.79	Moderate

The table above reveals the extent of teacher's problems in the utilization of effective questioning skill. Majority of the listed indicators were considered as a moderate problem. These results indicate that teachers have fully developed their art of questioning regardless of the medium of instruction used whether English or Mother Tongue but the content /concepts that will be asked hinder the teachers ability to ask effective and divergent questions.

Effective questioning techniques is one of the important methods to use to increase class participation and enhance pupils learning experiences.

Table 5
Extent of Teachers' Problems inthe Utilization of Effective Reacting Technique

Indicators	$\bar{wx}$	Verbal Equivalent
1. Ability to provide feedback on the correctness or incorrectness of a response	2.71	Moderate
2. Ability to give appropriate praise to high quality responses	2.54	Slight
3. Ability to make follow up questions	2.39	Slight
4. Ability to redirect questions to other pupils	2.44	Slight
5. Ability to follow up a pupil's response with related question	2.41	Slight
6. Ability to re-phrasing the seemingly unclear question	2.50	Slight
7. Ability to show non – verbal encouragement	2.52	Slight
8. Ability to encourage learners to ask questions	2.50	Slight
Composite Mean	2.50	Slight

Table 5 discloses the extent of teacher's problems in the utilization of effective reacting technique.It reveals that a bigger percentage or 87.5% of the listed indicators are considered slight problem. The ability to provide feedback on the correctness or incorrectness of a response is a moderate problem. This means that teachers have developed the skill in handling pupils' responses to the questions asked.

According to Corpuz, the teacher's reaction to the student's inquisitiveness can motivate or demotivate students from asking more questions. Handling pupil's response is crucial. By the way a teacher handles student'sresponses; he either encourages or discourages them from actively participating in class interaction. Thus in providing corrective feedback, the

teacher should give a hint or break down the question if necessary, to guide the learner to the correct response or the teacher may explain the correct answer when the learners cannot arrive at it.

Table 6
Extent of Teachers' Problems in Giving Exercises and Activities

Indicators	$\overline{wx}$	Verbal Equivalent
1. Availability of learning guides and other references	3.77	Serious
2. Varied activities prepared that will address diverse learners	3.39	Moderate
3. Availability of manipulative materials and other supplies	3.48	Serious
4. Fluency in the use of the mother tongue	2.80	Moderate
5. Mastery of the standards and competencies	2.80	Moderate
Composite Mean	3.25	Moderate

Table 6 presents the extent of problems in giving exercise and activities. It shows that 2 indicators are considered serious problems namely; the ability of learning guides and other references and availability of manipulative materials and other supplies.

Yara in his research entitled "Teaching/Learning Resources and Academic Performance in Mathematics in Secondary Schools in Bondo District of Kenya" he posited that out of the eight independent variables, only four were significant and could be used to predict academic performance in mathematics which are classroom, laboratories, stationeries and teaching aids. These findings are in consonance with the findings of Yadar in 2007 and the report by UNESCO

in 2008 which opined that teaching/ learning materials such as textbooks, class rooms, teaching aids (chalk, board, ruler and protractor), stationeries and laboratories affect academic performance of the learners. Also the result of the findings agreed with that of Mutai in 2006 who asserted that learning is strengthened when there is enough reference materials such as textbooks, exercise books, teaching aids and class rooms while He further asserted that academic achievement illustrates per excellence the correct use of these materials(Qtd. in Yara).

The preparation of varied activities that will address diverse learners, fluency in the use of mother tongue and mastery of the standards and competencies are considered moderate problems. This means that there is a moderate problem encountered by the teachers in terms of giving exercises and activities as reflected on its weighted mean of 3.25.

Table 7
Class Performance of the Pupils in Mathematics
N = 56

Rating	Frequency	Percentage (%)
90 and above (Advanced)	1	1.79
85 - 89% (Proficient)	3	5.36
80– 84% (Approaching Proficiency)	27	48.21
75% - 79% (Developing)	23	41.07
74% and below (Beginning)	2	3.57
Average Performance	**79.69** (Approaching Proficiency)	
Standard Deviation	**3.73**	

Table 7 shows the class performance of pupils in Mathematics for the School Year 2013-2014. It reveals the biggest group of 27 or 48.21% got the grades that range from 80-84% which means “Approaching Proficiency”. There are 23 classes or 41.07% got the grades that range from 75-79% which means “ Developing” , 3 classes or 5.36% got the grades of 85-89% which means “ Proficient” , 2 classes or 3.57% got the grades of 74% and below which means “ Beginning” and 1 class or 1.79% got a grade of 90 and above which means “Advance”.

Results imply that the average performance of the pupils in class show that they have developed the fundamental knowledge and skills expected to be

mastered and core understanding and with little guidance from the teacher and/or with some assistance from peers, and can transfer these understandings through authentic performance tasks.

The above finding conforms to that of Antiquina's study. She also discloses that most of her respondents have a satisfactory rating of (80%-84%) and have an overall performance of 81.03% (36).

Table 8
Relationship Between the Extent of Problems Encountered by the Teachers and Their Pupils' Academic Performance

Pupils' Academic Performance and Teachers Extent of Problems Encountered in…	Computed r	Degree of Relationship
Translation of the Mathematical Concepts/Language	- 0.2328	Slight
Utilization of Effective Questioning Skill	- 0.1179	Negligible
Utilization of Effective Reacting Technique	- 0.1630	Negligible
Giving of Exercises and Activities	- 0.0786	Negligible
Overall	- 0.1671	Negligible

The data reveal that a "slight" relationship exists between the teachers' extent of problems in translation of the Mathematical concepts or language and their pupils' academic performance. The value of "r" indicates a negative sign. Hence, the finding means that as the problem of the teachers increases in this area, the lower is the academic performance of the pupils.As noted in Table 3, the teachers experienced a "serious" problem in thetranslation of Mathematical concepts or language. This finding was also in line with Gaarder(1985) in Bolaji where he argued that the use of English as the language of the test was one reason for low achievement scores in Hispanic students. Therefore with effective

communication and translation of the mathematical concepts students stand a better chance to comprehend what is taught to them thereby making teaching more effective and result oriented.(Lassa)

On the other hand, the other areas like the extent of problems in utilization of effective questioning skill, reacting technique and giving of exercises and activities show a negligible relationship with the pupils' academic performance. Generally, teachers experienced only a "moderate" problem in effective questioning skill and in giving exercises and activities while a "slight" problem in reacting technique as revealed in Tables 4, 5 and 6. These results may indicate that the degree of problems they encountered is manageable and they can find ways to overcome them in order not to affect the performance of the pupils.

Based on the study of Gregorio, the absolute value of a teacher is not in the regular performance of duties but rather in his power to lead and inspire his pupils through the influence of his wholesome personality and his resourcefulness to find solutions to the problems encountered in class. Love for the pupils, sympathy for their interests, tolerance, and a definite capacity for understanding results to effective teaching and learning (115).

Table 9
Relationship Between the Teachers' Number of Relevant Trainings Attended and the Extent of Problems Encountered

Number of Relevant Trainings Attended and…	Computed r	Degree of Relationship
Translation of the Mathematical Concepts/Language	- 0.1293	Negligible
Utilization of Effective Questioning Skill	- 0.2529	Slight
Utilization of Effective Reacting Technique	- 0. 2610	Slight
Giving of Exercises and Activities	- 0.2652	Slight
Overall	- 0.2838	Slight

The data reflect that a negligible relationship is seen between the number of relevant trainings attended by the teachers and their extent of problems encountered in translation of the mathematical concepts or language. The trainings that these teachers participated in for the last 3 years are all related to k-12. These trainings do not specifically discuss the competencies that the pupils will be learning. Teachers must learn these from themselves. It is also mentioned in the previous discussion that teachers experienced a "serious" problem in translation of the mathematical concepts or language. These might be the reasons why the number of trainings attended by the teachers does not establish a relationship to how they translate the mathematical concepts or language.

Briars observes that any reform in the curriculum especially Mathematics requires that teachers be reoriented towards mother tongue language in teaching and learning that ensures that a teacher in every classroom engages the pupils that ensures high level achievement.

However, the data show a “slight” relationship between the relevant trainings attended and the extent of problems they encounter in the following: utilization of effective questioning skill, utilization of effective reacting technique and giving of exercises and activities. The relationship is noted to be inversely proportional. This means that the lesser the number of trainings they attended, the more problems they experienced in the following: utilization of effective questioning skill, reacting technique and giving of exercises and activities. This happens because the time teachers spend in professional development makes a difference in their classroom instruction most especially when the activities focus on high-quality subject-matter content. Extended opportunities to better understand student learning, curriculum materials and instruction, and subject-matter content can boost the performance of both teachers and students.

Generally, a negative “slight” relationship is revealed if all problems are combined.

Finally, according to Kelly, to provide new teachers with the greatest chance of success, they need to have completed a teacher preparation program that provides them with knowledge, experience, and guidance in their profession (2).

Table 10
Relationship Between the Teachers' Educational Attainment and the Extent of Problems Encountered

Teachers' Educational Attainment and…	Computed r	Degree of Relationship
Translation of the Mathematical Concepts/Language	- 0.1316	Negligible
Utilization of Effective Questioning Skill	- 0.1607	Negligible
Utilization of Effective Reacting Technique	- 0. 2396	Slight
Giving of Exercises and Activities	- 0.2478	Slight
Overall	- 0.2422	Slight

The curriculum in the graduate studies has been used for over a decade and might not include specific areas on how the K-12 must be implemented especially in the following areas: translation of the mathematical concepts/language and utilization of effective questioning skill with the use of mother tongue. Therefore, the educational attainment of the teachers is not considered as a determinant on these areas.Moreover, the Teacher Education Institutions (TEI) where these teacher respondents graduated didn't have a subject that hones the skills of these teachers.

However, a "slight" negative relationship is established between their educational attainment and the following: utilization of effective reacting technique and giving of exercises and activities. The negative sign indicates that the lower the educational attainment of the teachers, the higher is the problems that they encountered on the mentioned areas. The graduate studies have subjects that focus on classroom strategies and these might help the teachers in imparting the mother tongue instruction.

I

As Reymunds stressed, effectiveness and initiative in teaching and assessing pupil's performance depended largely on teacher qualification.

Table 11
Relationship Between the Teachers' Length of Teaching Experience and the Extent of Problems Encountered

Length of Teaching Experience and…	Computed r	Degree of Relationship
Translation of the Mathematical Concepts/Language	- 0.0800	Negligible
Utilization of Effective Questioning Skill	- 0.0899	Negligible
Utilization of Effective Reacting Technique	- 0. 0164	Negligible
Giving of Exercises and Activities	- 0.0197	Negligible
Overall	- 0.0689	Negligible

The data illustrate that there is no relationship between the length of teaching experience of the teachers and the extent of problems they encountered in the following areas: translation of the mathematical concepts/language, utilization of effective questioning skill, utilization of effective reacting technique and giving of exercises and activities. The K-12 curriculum is new and has been implemented for the last 3 years. Thus the length of teachers' experience is not considered as a contributory to teachers' extent of problems encountered in classroom instruction. This means that teachers experience the same level of problems in the classroom instruction using the mother tongue regardless of how long they have been teaching thesubject.

CHAPTER III

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This section presents a summary of findings based on the sub-problem of the study, the conclusions drawn from the findings, and finally the recommendations.

Restatement of the Problem

The purpose of the study is to identify the problems encountered by the Grade 1 Mathematics teachers in teaching Mathematics using the Mother tongue as the medium of instruction in the schools of Division of Dumaguete City and their relationship to pupils' academic performance.

Specifically, this study seeks to answer the following questions:

1. What is the profile of teacher respondents in terms of:

1.1 highest educational attainment;

1.2 length of teaching experience and

1.3 relevant trainings attended?

2. To what extent have the following problems been encountered by the teachers in teaching Mathematics using mother tongue:

2.1 translation of mathematical concepts/language;

2.2 utilization of effective questioning skill;

2.3 utilization of effective reacting technique and

2.4 giving of exercises and activities?

3. What is the pupils' average academic performance in Mathematics for SY 2013-2014?

4. Is there a relationship between the extent of problems encountered by the teachers and the pupils' academic performance?

5. Is there a relationship between the profile of the teachers and the extent of problems encountered?

SUMMARY OF FINDINGS

In view of the results of the study the following salient findings are presented.

1. **Profile of the Teacher-Respondents**

The findings showed that in terms of highest educational attainment a bigger percentage of the teachers are with master's degree units. In terms of the number of years in teaching Mathematics most of the teachers belong to 16 years and beyond while majority of the teachers have attended relevant to K-12 and they have attended these trainings once.

2. **Extent of Problems Encountered**

Translation of Mathematical Concepts/Language is considered a "serious" problem especially on the following competenciesreading and writing numbers up to 100 in symbols and in words;solving problems involving

time;recognizing and comparing coins and bills up to PhP100 and their notations;comparing and classifying 2-dimensional (flat/plane) and 3 dimensional (solid) figures according to common attributes;constructing equivalent number expression using addition and subtraction; using the expanded form to explain subtraction with regrouping;visualizing and adding numbers with sums through 99 without or with regrouping; inferring and interpreting data presented in a pictograph without scales and estimating and measuring capacity using non-standard unit.

The problem in the utilization of effective questioning skill and giving of exercise is considered a moderate problem.

3. **Class Performance of Pupils in Mathematics**

The average class performance of the pupils in Mathematics is 79.69 which Approaching Proficiency.

4. **Relationship Between the Extent of Problems Encountered and their Pupils Academic Performance**

There is overall negligible relationship on the utilization of effective questioning skill, utilization of effective reacting technique and in giving exercises and activities while a slight relationship is shown in the translation of Mathematical Concepts/Language.

5. **Relationship Between the Extent of Problems Encountered and the Number of Relevant Trainings Attended**

There is a slight relationship in terms of utilization of effective questioning skill, utilization of effective reacting technique and in giving

exercises and activities while a negligible relationship is shown in the translation of Mathematical Concepts/Language.

Conclusions

In the light of the findings of this study, the following conclusions are hereby drawn.

1. Majority of the teachers are non-master's degree holders and been in the teaching profession for a longer time. Most of them attended the indicated seminar-workshops related to k-12 instruction but only once.
2. The teachers encountered a "serious" problem in translation of Mathematical concepts or language to the pupils and a "moderate" problem in utilization of effective questioning skill and in giving exercises and activities. Moreover, they also "slightly" had a problem in utilization of effective reactive technique.
3. The class performance of the pupils was in the "approaching proficiency" level. However, a significant percentage of them were still in the developing and beginning levels.
4. There was a "slight" negative relationship between the extent of problems encountered by the teachers in translation of the Mathematical concepts and the pupils' academic performance.
5. a. There was a "slight" negative relationship between the number of relevant training attended by the teachers and the following variables: utilization of effective questioning skill, utilization of effective reacting technique and giving of exercises and activities.

b. There was a “slight” negative relationship between the educational attainment of the teachers and the following variables: utilization of effective reacting technique and giving of exercises and activities.

In general, the Grade 1 teachers encountered a “serious” problem in the translation of Mathematical concepts or language to the pupils and this was inversely related to the pupils’ academic performance. The more problems that the teachers encountered on this area, the lower were the academic performance of the pupils.

Recommendations

In the light of the findings and conclusions drawn, the following recommendations were suggested:

1. Teachers should upgrade their one’s professional skills by pursuing further studies and attend more trainings focusing on the translation of the content of the competencies in mother tongue.
2. Teachers in coordination with the Division Math Supervisor should formulate varied exercises and activities in Mother tongue so as to enhance learning.

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Relasa, Auster C. “Problems Encountered by Grade I Teachers in the Implementation of the K to 12 Program”. Foundation University. 2013.

Relasa, Jennifer Lyn V. “Teachers’ Extent of Use of Reading Activities in Mother Tongue Instruction in Relation to Pupils’ Reading Performance.” Foundation University. 2013.

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Appendix A – **RespondentsQuestionnaire**

PROBLEMS ENCOUNTERED BY THE GRADE 1 TEACHERS IN TEACHING MATHEMATICS USING MOTHER TONGUE: A BASIS FOR AN ACTION PLAN

The purpose of this study is to know the problems encountered by the Grade 1 teachers in teaching Mathematics using mother tongue as the medium of instruction so intervention can be done at an early stage. Results of this study will serve as bases in the formulation of an action plan for the provision of technical assistance. Please fill up the questionnaire with the needed information and be objective with your responses. Rest assured that your responses will be held confidential and be treated objectively.

Thank you very much.

I: TEACHER'S PROFILE

1. **Highest Educational Attainment**

( ) Doctoral Degree ( ) With Master's Degree Units
( ) With Doctoral Degree Units ( ) Bachelor's Degree
( ) Master's Degree ( ) Others (Please specify) _____

2. **Number of Years in Teaching Mathematics**: _____

3. **Relevant Trainings attended Related to K- 12 for the last three years**

Topics	Yes	No	No. of Times
1. Mass Training of Teachers on K-12 curriculum			
2. Mother Tongue as a Medium of Instruction			
3. Teaching Strategies for Mother Tongue Instruction			
4. Framework of the K-12 Program			

II. To what extent are the problems met in the teaching of Mathematics using Mother Tongue?

Direction: Please indicate the extent to which you have encountered the following problems using the scale below as guide in answering the question.

Scale	Verbal Description	Explanation
5	Very Serious Problem	The problem is encountered by the teachers 81 -100% of the time.
4	Serious Problem	The problem is encountered by the teachers 61-80% of the time.
3	Moderate Problem	The problem is encountered by the teachers 41 – 60% of the time.
2	Slight Problem	The problem is encountered by the teachers 21 – 40% of the time
1	Not a Problem	The problem is encountered by the teachers 1 -20% of the time

A. Translation of the Mathematical Concepts/Language

Extent of Problems in Translating significant mathematical terms in Mother Tongue in the following competencies:	Very Serious Problem	Serious Problem	Moderate Problem	Slight Problem	Not a Problem
1. Composes and decomposes a given number ***Ex. 9 – 4 ug 5, 5 ug 4, 6 ug 3***					
2. Reads and writes numbers up to 100 in symbols and in words ***Ex. 31 -* trayenta *i -uno***					
3. Renames numbers into tens and ones ***Ex. 78 – 7 tagnapulo 8 tinagus-a***					
4. Recognizes and compares coins and bills up to PhP100 and their notations ***Ex. 5 kasingkopisosugbayentepisos***					
5. Visualizes and adds numbers with sums					

through 99 without or with regrouping ***Ex. 25+47***					
6. Uses the expanded form to explain subtraction with regrouping ***Ex. 50 + 4*** ***28 + 8***					
7. Counts groups of equal quantity using concrete objects up to 50 and writes an equivalent expression. ***Ex. 2 groups of 5***					
8. Compares and classifies 2-dimensional (flat/plane) and 3 dimensional(solid) figures according to common attributes ***Ex. Nawongsakono, rectangular ngakarton, cylindrical***					
9. Constructs equivalent number expression using addition and subtraction. ***Ex. 6+5 = 12 -1***					
10. Estimate and measure capacity using non-standard unit ***Ex. Si Nene nagkinahanglanug 30 kabasosa juice alangsaiyangnatawhan. Kun angusakapitselmosulodug 5 kabasongajuice,pila man kapitselsa juice angiyangandamon.***					
11. Solves problems involving time. ***Ex. Ika-walokataknaugnapulog lima***					
12. Infers and interprets data presented in a pictograph without scales ***Ex .Unsakabahinang pictograph?***					

Utilization of Effective Questioning Skill

Extent of Problems in Utilizing Effective Questioning Skills in Class Interaction	Very Serious Problem	Serious Problem	Moderate Problem	Slight Problem	Not a Problem
1. Ability to ask varied type of question					
2. Ability to direct the question to all pupils.					
3. Ability to call on non-volunteer pupils.					
4. Ability to rephrase questions that are unclear to the pupils.					
5. Ability to ask related questions one from simple to complex one after					

another.					
6. Ability to ask questions that require abstract thinking.					
7. Ability to ask questions that develop higher order thinking skills.					
8. Ability to provide for sufficient wait time for the pupils to answer.					
9. Ability to assess Comprehension					
10. Ability to involve in the discussion as many pupils as possible					

Source: SEAMEO INNOTECH. (1994)The Interactive Instruction Series for Teacher Education, p. 28

B. Utilization of Effective Reacting Technique

Extent of Problems in Utilizing effective reacting technique in handling pupils responses during class interaction	Very Serious Problem	Serious Problem	Moderate Problem	Slight Problem	Not a Problem
1. Ability to provide feedback on the correctness or incorrectness of a response					
2. Ability to give appropriate praise to high quality responses					
3. Ability to make follow up questions					
4. Ability to redirect questions to other pupils					
5. Ability to follow up a pupil's response with related question					
6. Ability to re-phrasing the seemingly unclear question					
7. Ability to show non – verbal encouragement					
8. Ability to encourage learners to ask questions					

Source: SEAMEO INNOTECH. The Interactive Instruction Series for Teacher Education, Trainor's Manual on the Art of Questioning and Reacting Techniques, 1994)

D. Giving of Exercises and Activities

Extent of problems met in giving exercises /activities using mother tongue	Very Serious Problem	Serious Problem	Moderate Problem	Slight Problem	Not a Problem
1. Availability of learning guides and other references					
2. Varied activities prepared that will address diverse learners					
3. Availability of manipulative materials and other supplies/materials					
4. Fluency in the use of the mother tongue					
5. Mastery of the standards and competencies					

III. What is the average final rating of your pupils in Mathematics for SY 2013-2014?

_____

IV. Comments/Suggestions

CURRICULUM VITAE

PERSONAL INFORMATION

Name:	**SOFIA ARANETA TUNDAG**
Date of Birth:	September 30, 1974
Place of Birth:	Dumaguete City
Gender:	Female
Civil Status:	Married
Spouse:	Alfonso L. Tundag, DVM
Daughter:	Alyanna Shen A. Tundag

EDUCATIONAL BACKGROUND

Graduate School: Master of Arts in Education
Major in Mathematics
Foundation University
Dumaguete City
October 2014

Tertiary Education: Bachelor of Elementary Education
Foundation University
Dumaguete City
March 1995
College Salutatorian

Secondary Education: Negros Oriental High School

Dumaguete City

March 1991

Elementary Education: Junob Elementary School

Dumaguete City

March 1987

Salutatorian

EXAMINATIONS PASSED **Principal Qualifying Examination**

September 18, 2005, Cebu City

Philippine Board Examination for Teachers

May 28, 1995, Dumaguete City

Career Service Professional Examination

March 18, 1995, Dumaguete City

Career Service Subprofessional

October 17, 1993, Dumaguete City

PROFESSIONAL EXPERIENCE

Elem. Sch. Principal II : **Junob Elementary School**

Talay, Dumaguete City

May 2012 to present

Elem. Sch. Principal I: **Amador Dagudag Memorial Elem. School**

Looc, Dumaguete City

January 2009 to May 2012

Elem. Sch. Principal I:	**Babajuba Elementary School**
	Dumaguete City
	January 2007 to January 2009
Teacher III:	**Junob Elementary School**
	Dumaguete City
	July 23, 2001 to January 26, 2007
Teacher I:	**Junob Elementary School**
	Dumaguete City
	July 15, 1996 to January 2007
Classroom Teacher:	**St. Francis College**
	Guihulngan, Negros Oriental
	June 1995 to March 1996

SEMINARS/ TRAININGS ATTENDED

1. Teacher Training on E-IMPACT (Enhanced Instructional Management by Parents, Community and Teachers) , Dumaguete City on February 5-9,2013
2. Division Capability Building for School Heads in the Implementation of the Grades 1 & 7 Curriculum of the K to 12 Basic Education Curriculum , Dmaguete City, October 15-19, 2012

3. 2012 National Literacy Conference and Awards with the Theme: " Literacy for Life and a Sustainable Future: Learning Together in the 21st Century " Baguio Teachers Camp, Baguio City on September 18-20, 2012
4. Division Training Program on Quality Management System (QMS) and on Monitoring and Evaluation (M & E), Dumaguete City on September 12-14, 2012
5. Training- Workshop on Project Proposal Development for the FY 2011 SBM Grant, Dumaguete City on April 2-4, 2012
6. Division Training- Workshop on Developing and Updating School Improvement Plan, Dumaguete City on February 13-15, 2012
7. Division Training- Workshop on Prgram Designing and Session Guide Writing, Dumaguete City on September 5-7, 2011
8. Capability Building of Implementers of the Management of School-Based Training & Develment (MSBTD), Dumaguete City on May 26-28, 2011
9. Instructional and Curriculuar Competence in School Leadership and Management, Dilliman, Quezon City October 5-30, 2009
10. Orientation Seminar- Workshop for the Implementation of the CY 2009 Principal –Led School Building Program, Cebu City on January 21-23, 2009

11. National Teachers Summer Convention on the Books for the Barrios, Dakak Beach Park, Dapitan City on April 4-6,2009