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Management of Numeracy Instruction in Public Elementary Schools in the Division of Batangas Province

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***Abstract*: It is the responsibility of all teachers to promote the development of numeracy among every child and young person. With a greater emphasis on numeracy for all elementary pupils, teachers must plan to revisit and consolidate numeracy skills throughout schooling. This study assessed the teacher's level of management of the numeracy instruction in terms of content knowledge, pedagogical approaches, ICT-related skills, classroom management, preparation of instructional materials, and preparation of assessment tools. The issues in numeracy instruction were also identified in this research endeavor. The descriptive research design was utilized with a researcher- made questionnaire as the main data gathering tool. Quantitative data were supported by interview and focus group discussion. With 366 public elementary Mathematics teachers from the four areas in the Division of Batangas Province serving as respondents and research participants. The statistical tools used to treat data were Frequency, Percentage, Weighted mean, F-Test and t-Test. Findings revealed that most of the respondents were still on their bachelor's degree with more than six years teaching experience. Most of them are not active in terms of trainings attended and research. However, they were found to have management skills in numeracy instruction. The level of management on numeracy instruction differed significantly on the trainings attended and further studies. Study habits, reading comprehension, and parents' support are the primary issues that needs to be addressed. Based on key findings, a numeracy management program was proposed to enhance teachers' level of management skills on numeracy instruction.**

***Keywords*: Elementary education, Instruction, Management skills, Mathematics, Numeracy.**

1. Introduction

A strong foundation in numeracy is vital for every child and young person since it strengthens their ability to engage in education, attain their full potential, and fully participate in society. Hence, The Department of Education (DepEd) reiterated that numeracy skills are the cornerstone of lifelong learning (DepEd Order No. 12, Series of 2015). These skills do not develop naturally, necessitating careful planning and instruction. For this matter, the management of instruction along this discipline is guided by goals that are set to be realized.

Numeracy enables the development of mathematical knowledge and skills required for integrated and active involvement in any community, as well as adaptation to expected changes (Department of Education and Skills, 2016).

It entails recognizing and comprehending mathematics' function in the world, as well as possessing the attitudes and capacities to use mathematical knowledge and skills effectively (Mehraj, 2014).

In this changing world, those who understand, and can do mathematics will have significantly enhanced opportunities and options for shaping their futures. Numeracy skills are becoming increasingly important in the workplace due to rapid technological advancements (BarrettRose, 2020). It is now recognized as a critical employability skill as more workers take on more complex tasks. To do meaningful work in a global and increasingly automated economy, all require a citizenry with higher levels of numeracy.

Evidently, in a society that has become technically oriented, "innumeracy" has replaced illiteracy as the principal education gap. Based on the results of the Programme for International Student Assessment (PISA,2018) and Trends in International Mathematics and Science Study **(**TIMSS, 2019), Filipino students performed poorly, ranking near the bottom of the rankings in both scientific and mathematical literacy. The results pointed to a major crisis in the country's basic education system.

Moreover, the international assessment results reflect the urgency of improving the quality of basic education in the Philippines. As DepEd Secretary Leonor Magtolis Briones stressed, the battle for quality basic education will be fought and won inside the classroom, by the teachers. With this, the K to 12 Reform (R.A. 10533) has changed the landscape of teacher quality requirements in the Philippines. It also provides the general goal of basic education. This goal is to develop 21st-century learners by providing them basic competencies and numeracy, critical thinking and learning skills, and desirable values to become productive, efficient, technologically wise, socially aware, patriotic, and responsible citizens. This is why Alestre (2016) emphasized that it is important for teachers to continue to professionalize themselves and one way of doing

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this is through proper training.

Along with training as means to cope up with the needs of pupils for quality education, fully competent teachers must develop strong mathematical content knowledge and be armed with mathematical pedagogical knowledge and management skills. As a result, Elementary Mathematics teachers are expected to possess sound numeracy key skills. They must display an appropriate mathematical disposition and value their professional development (Mathematics Framework for Philippine Basic Education, 2010).

In line with this, Teachers who can effectively demonstrate management skills such as planning and creating an effective strategy, good communication skills, decision making, leadership skills, problem-solving skills, time management, conceptual skills, controlling, motivating, and leading, whether consciously or unconsciously, appear to be better teachers. They encourage learners' creativity and curiosity, reward perseverance, intellectual honesty, objectivity, and independent thinking (Marchadesh, 2012).

Consequently, teachers' management skills strengthen their numeracy skills such as knowing and understanding, estimating, computing and solving, visualizing and modelling, representing and communicating, conjecturing, reasoning, proving, applying, and connecting. With this, mathematical difficulties can be predicted and their impact reduced through effective intervention measures such as in-service training, LAC session, coaching, and mentoring (Musso, 2012 & Lai et.al, 2015).

Effective teaching and learning which promote numeracy do not happen incidentally. It must be organized, planned, and created. Granted that some of the best learning could be informal, spontaneous, and incidental, long-term sequential learning occurs inside for teaching and learning. Such conditions must be backed – up with necessary appropriate instructional materials, ICT-related skills, and assessment tools to support the teacher in carrying out the activities in the classroom. However, poor performance in numeracy at the primary school level of education might be a result of inappropriate use of teaching methods by the teachers.

Mathematics teachers then must understand instructional planning and design instruction based upon their knowledge of school mathematics curriculum, curricular framework, and goals, learning theories, the pupils, and the community among others. They should also understand the logical and developmental explanations for mathematical topic sequencing so that they can alter and change it as needed. Furthermore, they must ensure good instruction so that students would develop their ability to explore, reason logically, make precise computations and apply principles in real-life situations.

Truly and indeed, management of instruction should be made meaningful to all. This implies that teachers should teach it with efficiency and effectiveness through the application of better strategies that make use of integrating worthwhile values in the teaching and learning process. Furthermore, the learners should be made to realize that numeracy is useful by making them see its application. Just like other fields of academic interest, numeracy must be learned comprehensively and with much depth. Based on the report by the Division of Batangas Province most of the schools obtained very low mean percentage scores (MPS) in Mathematics. Thus, the goal of the said Division for quality education in Mathematics was not fully achieved. This shows an urgent need to find ways to improve mathematics programs and instruction. There is also a need for qualified and competent teachers to fully strengthen the state of teaching mathematics.

In view of the low performance, it cannot be denied that further studies in numeracy are urgent and imperative. Believing that in order to succeed in mathematics, teachers and learners have to develop numeracy skills. As an advantage, they will demonstrate confidence and competence in using a number which will allow them to solve problems, analyse information and make informed decisions based on calculations.

It is for this reason that the researcher, being the district mathematics coordinator, wanted to focus his study on the management of numeracy instruction in public elementary schools in four areas of the Division of Batangas Province. Seeing some of his colleagues in the district facing the same challenges and problems in Mathematics instruction made him more decided to venture on this timely topic. The researcher was then prompted to develop a numeracy management program. Hence, teachers are expected to provide pupils with more opportunities and meaningful experiences to improve their numeracy skills and become numerate ones.

A. Objectives

This study focuses on the management of numeracy instruction in public elementary schools in the Division of Batangas Province.

Specifically, it aims to attain the following research targets:

1. Assess the level of management of numeracy instruction in terms of:
    - content knowledge;
    - pedagogical approaches;
    - ICT related skills;
    - classroom management;
    - preparation of instructional materials, and;
    - preparation of assessment tools.
2. Identify the issues in teaching numeracy.

2. Theoretical Framework

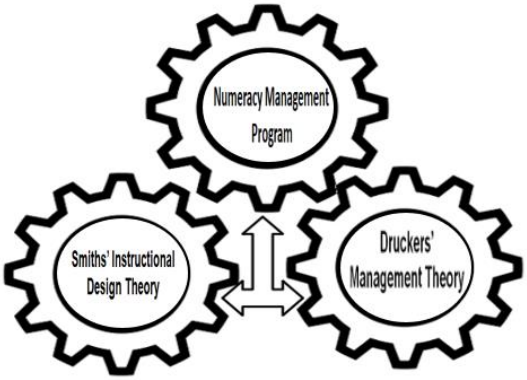

Fig. 1. Theoretical framework on numeracy management program for elementary mathematics teachers

The framework provided significant theoretical support to the study. It served as a guide in the conduct of the study and the creation of a numeracy management program for elementary mathematics teachers by considering the factors on the stated theories introduced by the expert.

It is generally expedient to combine both instructional and management theories as they act as one in the educational process towards the attainment of educational objectives. These theories go hand in hand in contributing to the success of the numeracy program and the school in general.

3. Methodology

The study is descriptive in nature, which used the quantitative approach and utilized questionnaire, focus group discussion and interview to generate data and gather relevant information. With 366 public elementary schools Mathematics teachers from the four areas in the Division of Batangas Province serving as respondents and research participants. Rao Soft application was used to get the total sample population. Random sampling using the fishbowl or lottery technique was applied in choosing the teachers-respondents of the study from each Area.The main data gathering instrument used in the study was a researcher- made questionnaire. The questionnaire was made according to how the objectives of the study were structured. The instrument underwent validation of experts in the field of education. Reliability testing was done using Cronbach alpha Test. Arrangements were made with the respondents and the researcher used Google forms for the online questionnaire and distributed the link utilizing FB messenger to gather the needed data. The responses of the respondents were tallied, tabulated, computed, analysed, and interpreted in the context of the objectives and hypothesis of the study. The statistical tools used to treat data were Frequency, Percentage, Weighted mean, F-Test and t-Test.

4. Conclusion

In light of the foregoing findings, the following conclusions are drawn.

1. The overall efficacy of elementary mathematics teachers depends greatly on their gains in trainings, further studies, experience, and active participation in research.
2. Elementary Mathematics teachers were found to have management skills in numeracy instruction.
3. The level of management on numeracy instruction differed significantly on the trainings attended and further studies.
4. Study habit, reading comprehension and parents support are the most rampant issues encountered by the elementary mathematics teachers.
5. The numeracy management program may be a relevant resource for the enhancement of teachers' level of management skills of numeracy instruction.

5. Recommendations

Based on the findings and conclusions drawn from the collected data, the researcher recommends the following:

1. The proposed numeracy management program may be presented to the Senior Education Program Specialist in charge of Mathematics for possible approval and implementation.
2. Elementary Mathematics Teacher must continue to professionalize themselves by pursuing graduate studies, trainings, and research involvement.
3. Elementary Schools may consider provision of additional initiatives and concerns among mathematics teachers in the aspects of enhancing their level of management of numeracy instruction in terms of ICT related skills, preparation of instructional Materials, content knowledge and pedagogical approaches.
4. Schools administrators should provide adequate funding for elementary mathematics teachers to undergo training and development.
5. Other studies may be conducted using the same set of variables in other divisions or other regions.

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