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Mathematics in the First Language: Improving the Numeracy Skills of Grade One Learners

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Abstract: This phenomenological research study aimed to explore the improvement of the numeracy skills of the grade one learners through the use of first language. The participants were composed of seventeen (14) informants. They had undergone individual in-depth interview. Based on their narrations, all of them experienced different teaching strategies to improve numeracy skills of learners. Findings revealed that participants experienced strenuous facilitation of necessary numeracy skills among grade one learners when first language of the so called mother tongue language was used, thus, teachers had to apply repeated delivery of instruction to ensure mastery of skills using first language as medium of instruction. Learners did not have the comprehensive understanding of the lesson to augment numeracy skill in grade one level, learners tend to become introverted and unsociable thus, unable to relate and communicate the skill. In this sense teachers have to redirect pedagogical strategies sticking to first language as medium of instruction. Innovative and inventive way of determining strategies has to be given a critical point in deliberately adopting constant practical work approaches so learners can fully engage with the competencies with respect to grade one Math contents.

Keywords: Difficulties and Challenges in Teaching, Mathematics Competency of Teachers, Numeracy Skills

A. Introduction

As the school year progresses, students and teacher can work together to identify especially significant or important artifacts and processes to be captured in the portfolio (Barton & Collins, 1993). Additionally, they can work collaboratively to determine grades or scores to be assigned. Rubrics, rules, and scoring keys can be designed for a variety of portfolio components. In addition, letter grades might also be assigned, where appropriate. Finally, some of oral discussion or investigation should be included as part of the summative evaluation process. This component should involve the student,

teacher, and if possible, a panel of reviewers in a thoughtful exploration of the portfolio components, students' decision-making and evaluation processes related to artifact selection, and other relevant issues (Anderson, 2004).

In the classroom setting, it is important that a teacher should have monitored the progress of the child in the academe so as create an intervention program that addresses his/her weaknesses (Elbeltagi et al., 2023; Trail, 2022). One best practice to diagnose the performance of the learners is through portfolio assessment. Portfolio assessment is a term with many meanings, and it is a process that can serve variety of purposes. A portfolio is a collection of student work that can exhibit a student's efforts, progress, and achievements in various areas of the curriculum.

A portfolio assessment can be an examination of student-selected samples of work experiences and documents related to outcomes being assessed, and it can address and support progress toward achieving academic goals, including student efficacy (Beattie, 2004). Steers (2004) said that portfolio assessments have been used for large-scale assessment and accountability purposes (e.g., the Vermont and Kentucky state-wide assessment systems), for purposes of school-to-work transitions, and for purposes of certification. For example, portfolio assessments are used as part of the National Board for Professional Teaching Standards assessment of expert teachers. According to Black (2008) Portfolio assessments grew in popularity in the United States in the 1990s as part of a widespread interest in alternative assessment. Because of high-stakes accountability, the 1980s saw an increase in norm-referenced, multiple-choice tests designed to measure academic achievement. By the end of the decade, however, there were increased criticisms over the reliance on these tests, which opponents believed assessed only a very limited range of knowledge and encouraged a "drill and kill multiple-choice curriculum. Advocates of alternative assessment argued that teachers and schools modeled their curriculum to match the limited norm-referenced tests to try to assure that their students did well, "teaching to the test" rather than teaching content relevant to the subject matter. Therefore, it was important that assessments were worth teaching to and modeled the types of significant teaching and learning activities that were worthwhile educational experiences and would prepare students for future, real-world success.

Mangaron (2011) said that a student portfolio is a systematic collection of student work and related material that depicts a student's activities, accomplishments, and achievements in one or more school subjects. The collection should include evidence of student reflection and self-evaluation, guidelines for selecting the portfolio contents, and criteria for judging the quality of the work. The goal is to help students assemble portfolios that illustrate their talents, represent their writing capabilities, and tell their stories of school achievement.

Portfolio is not a random collection of observations or student products; it is systematic in that the observations that are noted and the student products that are included relate to major instructional goals (Cerqueira et al., 2023; VanTassel-Baska, 2021). For example, book logs that are kept by students over the year can serve as a reflection of the degree to which students are building positive attitudes and habits with respect to reading. A series of comprehension measures will reflect the extent to which a student can construct meaning from text. Developing positive attitudes and habits and increasing the ability to construct meaning are often seen as major goals for a reading program.

From the standpoint of Lim (2003) he imparted that the researcher as a language teacher has an ardent objective to explore on how the portfolio assessment affects the academic efficacy of a child. Hopefully, valuable recommendations will be offered so that language and reading teachers may able to track the progress of the learners in the academe through portfolio.

Boughton (2007) unveiled that in this premise that the researcher is motivated to conduct a study to explore and get familiar further with the problem hoping to offer valuable solutions. The researcher believes that the result of this study can enlighten and gives direction to every mathematics teacher and other beneficiaries in order that quality education will take place inside the classroom. The purpose of this phenomenological study is to identify the improvement of the numeracy skills of the grade one learners. At this stage in the research, the use of first language will be generally considered as the medium of the teaching- learning process in mathematical understanding.

B. Methods

This study uses qualitative research employing phenomenology which is the used of first language as medium in numeracy skills (Cheeli, 2024; Urcia, 2021). Interviews are conducted with a group of individuals who have first-hand knowledge of an event, situation or experience. The interview(s) attempts to answer two broad questions. The data were then read and reread and culled for like phrases and themes that are then grouped to form clusters of meaning (Creswell, 2020). Through this process the researcher may construct the universal meaning of the event, situation or experience and arrive at a more profound understanding of the phenomenon. In this study phenomenology attempts to extract the most pure, untainted data and in some interpretations of the approach, bracketing is used by the researcher to document personal experiences with the subject to help remove him or herself from the process. One method of bracketing is memoing.

The role of the researcher in this study is to attempt to access the thoughts and feelings of study participants. It involves asking informants to talk about things that may be very

personal to them. Sometimes the experiences being explored are fresh in the participant's mind, whereas on other occasions reliving past experiences may be difficult. However the data are being collected, a primary responsibility of the researcher is to safeguard participants and their data. Mechanisms for such safeguarding must be clearly articulated to participants and must be approved by a relevant research ethics review board before the research begins.

Qualitative analyses typically require a smaller sample size the quantitative analyses. Qualitative sample sizes should be large enough to obtain feedback for most or all perceptions. Obtaining most or all of the perceptions will lead to the attainment of saturation. Saturation occurs when adding more participants to the study does not result in additional perspectives or information. The concept of saturation for achieving an appropriate sample size in qualitative studies. For phenomenological studies, Creswell (2020) recommends five to 25. There are no specific rules when determining an appropriate sample size in qualitative research. Qualitative sample size may best be determined by the time allotted, resources available, and study objectives.

The participants in this study were the eight (8) informants where the Focus Group Discussion (FGD) was conducted. The selected informants were the grade one teachers from Lupon District, Davao Oriental. All of these teachers have experienced different teaching strategies and languages in the teaching-learning process. The selection was based from the official list of teachers handling grade one learners for the school year 2018-2019.

According to Creswell (2020), an important step in the process is to find people or places to study and to gain access to and establish rapport with participants so that they will provide good data. A closely interrelated step in the process involves determining a strategy for the purposeful sampling of individuals or sites. Once the inquirer selects the sites or people, decisions need to be made about the most appropriate data collection approaches. To collect this information, the researcher develops protocols or written forms for recording the data such as interview or observational protocols. Also, the researcher needs to anticipate issues of data collection, called "field issues," which may be a problem, such as having inadequate data, needing to prematurely leave the field or site, or contributing to lost information. Finally, a qualitative researcher must decide how she stored the data so that they can easily be found and protected from damage or loss.

In this study, there were seven steps in the process of data collection. First was the site or individual; the participants were grade one teachers of Lupon District. The selection was based from the official list of teachers handling grade one learners. Second was the access and rapport; letter of permission for the school principal, teachers, and the concerned parents were prepared for easy collection of data. The third was the purposeful sampling

strategy; all participants have experienced the phenomenon being studied. There were fourteen (14) informants selected in this study. The selected informants were considered group of individuals who can best inform the researcher about the research problem. They were also considered as individuals who have experienced the phenomenon and can facilitate the collection of data. The fourth was the forms of data; the process of collecting information involves primarily in-depth interviews with as many as ten (14) informants. The fifth was the recording procedures; the use of a protocol was used in the observation and interviewing procedures. A predesigned form used to record information collected during an observation or interview. The sixth was the field issues; limited data collection is engaged in this study. It consists of two interviews or observations, so that the time needed to collect the data was not quite long. The last was the storing of data; we need the use of database in backing up information collected and noting changes for all types of research studies.

In this study all the data collected were carefully examined and thoughtfully analyzed. The researcher first described personal experiences with the phenomenon under study. The researcher begun with full description of her own experience of the phenomenon. This was an attempt to set aside the researcher's personal experiences so that the focus can be directed to the participants.

C. Results and Discussion

This chapter presents the analysis and interpretation of qualitative responses drawn out from the selected participants through interviews and focus group discussions. Using guide questions to facilitate the collection of information, the research has able to understand generally the experiences shared, and, challenges that participant have encountered, on which lessons learned are worthy disseminating to parents and other significant stakeholders.

Selected participants as key informants of the study were six Elementary Public School Teachers teaching Grades 1 to 3, where the medium of instruction is mother tongue (sinugbuhanong binisaya), while other eight members of the focus group were likewise teachers in the same public school, and had been quiet long enough in rendering public school teaching.

The preceding discussion flaunt the results based on the purpose of the study posed. It can be reviewed that this study intended to explore the experiences, challenges and lessons learned among teacher-participants in using first language or the mother tongue in teaching numerical skills among Grade one Pupils. Using the phenomenology approach, the research selected participants purposely to draw out authentic information

through interview and group discussion to further validate responses and build foundation of arguments to resolve the posed contentions.

Experiences vary from individual having encountered different circumstances. These may be in a form of personal encounter or observations from others which both may or may not affect directly, and becomes a good foundation and bases of sharing sound inputs, thus, considers a very good reference for further discussion and deliberations.

Participants' response during informant interview revealed that there is a difficulty in facilitating learning competencies given lesson contents in Grade One Math since most of the learners do not understand the terminologies in sinugbuhanong binisaya, Teachers find it hard and difficult to understand the concept in math due to the MTB medium of instruction. As a result, learners are withdrawn, shy and timid in participating and interacting with peers and teacher most especially when Math subject is conducted. Strenuous facilitation of numeracy skill is evident based on the teacher-participants experiences in providing facilitation for Math Grade One learners.

A study of Schonau (2004) revealed that mathematical competence is the ability to develop and apply mathematical thinking in order to solve a range of problems in everyday situations. Building on a sound mastery of numeracy, the emphasis is on process and activity, as well as knowledge. Mathematical competence involves, to different degrees, the ability and willingness to use mathematical modes of thought (logical and spatial thinking) and presentation (formulas, models, constructs, graphs, charts). In this context, mathematical ability and competence will beard to develop by learners since teachers are having these experiences. According to the responses although teachers encountered frustrations on their part, and even feels guilt and incapable of facilitating learning, based on the behavioral responses if the learners, teachers are trying to enhance the process through re teaching the concept until mastery among learners is evident.

Student who can analyze and reason well is a more independent and resilient student (Mai et al., 2021). The instructional emphasis at all levels should be on a thorough understanding of the subject matter and the development of logical reasoning. Students should be asked "Why?" frequently enough that they anticipate the question, and ask it of themselves. They should be expected to construct compelling arguments to explain why, and to understand a proof comprising a significant sequence of implications. They should be expected to question and to explore why one statement follows from another. Their understandings should be challenged with questions that cause them to further examine their reasoning. Their experience with mathematical proof should not be limited to the format of a two-column proof; rather, they should see, understand, and construct proofs in various formats throughout their course work. A classroom full of discourse

and interaction that focuses on reasoning is a classroom in which analytic ability and logic are being developed. On the other hand, members of the focus group discussion shared their experiences when using mother tongue in teaching Mathematics for Grade One learners, unanimously through the following statements:

...it is very hard to teach mathematics when mother tongue language is used... I need to repeat the lesson for them to fully understand ...this makes me feel low in self-esteem (FGD1)

.... I find it had because out pupils cannot understand it well since we are Dabawenyo, so I have to translate the words to that they can understand... I had to create more activities in order for them to relate in Mel life settings. And I feel like I am incapable of teaching (FGD2)

…I feel like am struggling at the first time of teaching math in first language. I need to strategized so that my learners will pay attention and can understand what am I talking about... need to repeat the words through drill and oral speaking. This saddens me' for I feel frustrated (FGD3)

... I feel challenged and at the same time struggling on how am I going to let the pupils understand the words honesty / still have to use the third language (English) for them to understand and I feel like / am incapable of teaching them (FGD4)

... challenging on my part, I need to reemphasized through pictures and drills. i used pictures and will let them say it orally, like follow - after - me saying it to them…through choral reading it seems there is change (FGD5)

…It is very hard to teach mathematics using mother tongue but on the other side, it is a challenging task...i need to reteach and repeat the oral reading and showing of pictures (FGD6)

...as a grade 1 teacher it is really hard and challenging for me to let them understand and I agree with you maam that we still have to use the third language for them to be able to understand (FGD7)

...I agree with all of you teachers that it is the very hard to teach mathematics using mother tongue but on the other side it is the most challenging task / ever accepted as a teacher. Maka challenged gyud ang pagtodlo sa mga bata and usahay makapongot pero mangita gyud ta ug paagi as a teacher (FGD8)

The forecited findings are supported by the statements of Griffin, Sharon (2005), she emphasized that to teach math, you need to know three things. You need to know where you are now (in terms of the knowledge children in your classroom have available to build upon). You need to know where you want to go (in terms of the knowledge you want all children in your classroom to acquire during the school year). Finally, you need to know what is the best way to get there (in terms of the learning opportunities you will provide to enable all children in your class to achieve your stated objectives). Although this sounds simple, each of these points is just the tip of a large iceberg. Each raises a question (e.g., Where are we now?) that I have come to believe is crucial for the design of effective mathematics instruction. Each also points to a body of knowledge (the iceberg) to which teachers must have access in order to answer that question.

These are evident so that teachers, although experiencing a lot of difficulties, still find many ways to make learning successful among Grade One pupils learning numeracy skills. Repeated delivery of instruction can be a very good approach through drill and group oral reading to come up with better mastery of skills which fit to type of learners, in this manner strenuous teaching of numeracy skills will be mitigated, and that learners will find it easy to comprehend concepts and mastery shall be exhibited.

Challenges are always part on the process of development and adhering to change, one has to come up with better skills in reducing risks upon given various circumstances. Themes generated based on the responses made it through introverted and unsociable learners. This projects challenges on the part of the teachers when facilitating numeracy skill among Grade One learners. Since Math is technical in nature, and learners do not appreciate for they do not understand the mother tongue in Mathematics in learning concepts thus, competencies are hard to master, and they are struggling with the use of MTB as medium of instruction, students find it hard to learn the concepts in different language, and most students love learning using Filipino or English, but when applied to Math competencies learners are shy and withdrawn for they are not used to MTB using Math, thus, competencies in Math Grade one are difficult since learners and sometimes teachers are not used to teach using the MTB language, which made it more challenging in terms of translating the mathematical words into different languages so learners can understand the concept of the lesson through MTB as medium of instruction. These premises gave way to an idea that learners turn into unsociable when learning numeracy gets in and teachers will feel unsatisfied and frustrated.

Given the challenges under varied circumstances, redirected pedagogical strategies are developed to cope up with the challenges encountered. Teachers find ways by changing the approaches and method in teaching though providing exercises and homework for further mastery of the concepts, and attendance to LAC sessions, seminars and other professional growth activities to augment skills in facilitating learning. In the classroom setting, it is important that a teacher should have monitored the progress of the child in the academe so as create an intervention program that will address his/her weaknesses. One best practice to diagnose the performance of the learners is through portfolio assessment. Portfolio assessment is a term with many meanings, and it is a process that can serve a variety of purposes.

A portfolio is a collection of student work that can exhibit a student's efforts, progress, and achievements in various areas of the curriculum. A portfolio assessment can be an examination of student-selected samples of work experiences and documents related to outcomes being assessed, and it can address and support progress toward achieving academic goals, including student efficacy (Akumdaare Atiah, 2023). Meanwhile, members of the focus group discussion shared the challenges encountered when using

mother tongue in teaching Mathematics for Grade One learners, unanimously through the following statements

...although it is really a difficult experience but I need to respond positively...i am a teacher and I should need to get along with Grade one learners (FGD1)

... it is too hard for a teacher to find out that doubt is in for I thought that I am incapable of teaching... afterwards, I can laugh with them if they find it interesting (FGD2)

...mathematics differs from other learning areas when it is used mother tongue as first language and a medium of instruction, it is difficult on the part of the learner since, they are not used to binisaya in learning mathematics (FGD3)

... the terminologies are different with other learning areas pupils find it hard to understand and relate but teachers has to unpack the difficulties that is why they need to take time to develop mastery of skills as required by the competencies in the curriculum guide (FGD4).

This flaunts a picture based on descriptive narratives that a teacher never gives up with the tasks to overcome challenges and even take these challenges as an opportunity to learn new ways and strategies to augment teaching skills using MTB as medium of instruction. Although they found out that math or numeric skills are different with other learning areas in terms of its competencies and scope of content, still they find ways on how to increase performance teaching and academic achievement of learners.

... when learners do not respond for they find it difficult to understand, and I need to be open minded so the basic competencies will be understood by them (FGD5)

... although some challenges are too find and difficult to overcome, but still worth remembering on the context of a teacher which is memorable to every learner (FGD6)

...I also respond positively like other teachers because I believe that if the teacher is positive the pupils as well will be positive in their learning (FGD7)

... I am a teacher and I have to render public service through teaching learners...I have to make my task done through trying strategies on my own which learners can learn easily understand (FGD8)

All teachers are faced with a dizzying array of mathematics concepts and skills they are expected to teach to groups of students who come to their classrooms with differing levels of preparedness for learning. This is true even at the preschool level. Children's thinking follows natural developmental paths in learning math. When teachers understand those paths and offer activities based on children's progress along them, they build developmentally appropriate math environments. The authors explain math learning trajectories and why teaching math using the trajectories approach is effective. A chart gives examples of instructional tasks for the learning trajectory for addition and subtraction.

Lessons learned given overcoming challenges are sweetest moment under circumstances. Participants are receptive when it comes to getting lessons learned and be a good mark to take off to another new challenges in the profession.

Using the first language or the so-called MTB is really challenging one and especially unfolding the concepts using sinugbuhanong binisaya to Grade one learner. Teachers in this sense, given experiences and encountered challenges, they found a better way to resolve and overcome for more effective facilitation of teaching skills and enhancement.

It can be observed based on the participants responses that they have to find ways to improve strategies and approaches and share with others for reliable and effective application, with this way one has to deepen understanding learners' needs and characteristics. Comparison of strategies and find out the better and applicable one is essential in the application of new method and strategies through innovative techniques and finally, to determine verifiable indicators, assessment of teaching performance through peer and colleague and track progress so flexibility in teaching approaches may expand. Teachers have to be innovative and inventive in order to effectively infuse lessons learned given challenges encountered. On the other hand, to complement and suffice the lessons learned and the actions to be taken by the teachers, constant practical work approach using differentiated instruction has to be manifested most in the teaching and learning processes. Since these Grade One pupils are on their way to develop skills in very basic way, it is then considered as critical in nature. Teachers could not afford to loosen the ties and let the kids go on their way exploring learning. It has to be scaffold and in turn has to be very generous in coaching and mentoring. Real-life examples and constant drill through group oral recitation and practical application and work approaches of the learners through differentiated instruction must be given. Teach the children religiously until competencies are mastered. Constant practice of integration across learning areas using the MTB in facilitating the lesson. Develop a sense of persevering attitude in working out new possibilities, and in this manner, one can share with teachers and parents for improvement of facilitation of successful learning. Moreover, members of the focus group discussion shared the learning insights encountered when using mother tongue in teaching Mathematics for Grade One learners, unanimously through the following statements.

.... "I have to be creative in terms of using instructional materials and explicit teaching delivery...be strategic in teaching even is not good enough (FGD1)
..." I have to be very equipped with the appropriate teaching strategies in teaching Math using mother tongue as medium of instruction to Grade One learner (FGD2)
... "Learning experiences are worth sharing, so that positive outlook is discussed and how to deal with them (FGD3)
…"It has to be shared with stakeholder such as parents whose perspective is completely different with teachers facilitating skills (FGD4)

"sharing insights can help teachers to improve teaching-learning processes and this improves communication connection with parents and may encourage learners to perform better (FGD5)
... "policy on the use of mother tongue has to be strengthened not only as medium of instruction in school but as well as in directing parents to use the same in the home to aster the skill of oracy (FGD6)
..."by integrating the concept to other learning area using the mother tongue as medium of instruction will improve learners' appreciation of learning process thus, they easily understand the concepts introduced to them (FGD7)
..." with wisdom and facilitating skills of the teachers, learners can also easily overcome the difficulties in finding best strategies to lear improve numeracy skills with the support of the peers and parents (FGD8)

By sharing through homeroom meeting and parent - teachers' association conferences, on success stories brought about by this study, the reflections cited by the members of the focus group discussion can be given flesh out through implementing in real life settings in school thus augmenting leading environment. It has been said by the author named Steers (2004) unveiled that student who spend years studying mathematics yet never develop an appreciation of its beauty are cheated of an opportunity to become fascinated by ideas that have engaged individuals and cultures for thousands of years. While applications of mathematics are valuable for motivating students, and as paradigms for their mathematics, an appreciation for the inherent beauty of mathematics should also be nurtured, as mathematics is valuable for more than its utility. Opportunities to enjoy mathematics can make the student more eager to search for patterns, for connections, for answers. This can lead to a deeper mathematical understanding, which also enables the student to use mathematics in a greater variety of applications. An appreciation for the aesthetics of mathematics should permeate the curriculum and should motivate the selection of some topic.

D. Conclusions

Given the presented discussions, the researcher found out that a teacher experience varies given circumstances in facilitating learning to achieve numerical skills among Grade one learners. It has been found out that participants have experienced strenuous facilitation of necessary numeracy skills among Grade one learners when first language of the so-called mother tongue language is used, thus, teachers have to apply repeated delivery of instruction to ensure mastery of skills using first language as medium of instruction. Since, learners do not have the comprehensive understanding of the lesson to augment numeracy skill in Grade one level, learners tend to become introverted and unsociable thus, unable to relate and communicate the skill. In this sense teachers have to redirect pedagogical strategies sticking to first language as medium of instruction. An innovative and inventive way of determining strategies has to be given a critical point in deliberately

adopting constant practical work approaches so learners can fully engage with the competencies with respect to grade one Math contents. Teachers are adept in teaching and facilitating strategies. Teachers are skillful enough in finding ways and means to augment learning skills in numeracy and persistent in pursuing quality education.

Repeated delivery of instruction through individual and group drill makes facilitation more effective and successful. Redirecting pedagogical strategies could augment fear and shyness among learners and constant practical work approach has to be deliberately done for mastery of skills. Indicators directed in the Philippine Professional Standards for Teachers has to be given emphasis through authentic application in every teaching-learning process. All the nine indicators directed in the individual commitment performance has to be valued and religiously practiced. Such policy shall be strengthened and the lessons learned from this phenomenological study can be given flesh and realistic in its application. The features of practice embedded in the rubrics of the PPST are evident enough to make the teachers effective in facilitation across learning areas, as long as it is familiarized and practiced then, there is no reason that learners could not learn and master the competencies.

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