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# Barriers and Breakthroughs: Enhancing Numeracy Instruction

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**ABSTRACT**

This research explores the challenges and barriers encountered by Grade II teachers in teaching numeracy and their strategies of addressing these challenges. This employed a qualitative approach through an interview using structured questions. The responses of the 15 participants were analyzed using thematic analysis. Based on the interview results, the teachers encountered challenges in teaching numeracy are the learner-related challenges such as cognitive and learning differences, behavioral challenges and emotional and psychological barriers; and external challenges such as: lack of parental support and limited teaching resources. To address the challenges teachers employed various strategies, notably interactive learning techniques, differentiated instruction, motivational strategies, and Maximizing available resources. These approaches demonstrate teachers' adaptability and commitment to improving numeracy outcomes for their students.

It concludes that Grade II teachers face significant learner-related and external challenges in numeracy instruction, yet employ effective strategies to enhance learning outcomes and overcome these challenges.

## Introduction

Numeracy skills are foundational for academic success and lifelong learning, making effective numeracy instruction crucial, particularly in the early grades. However, teachers face numerous challenges when teaching numeracy to Grades I-III students, including cognitive differences, behavioral issues, and limited resources. Understanding these barriers and identifying effective strategies to address them is essential for improving educational outcomes (Neary, 2020).

Cognitive and emotional barriers significantly hindered student engagement in numeracy activities (Smith and Jones, 2018). Additionally, Lee et al., 2020 found out that insufficient parental support and inadequate teaching resources further complicated teachers' efforts in delivering effective instruction. Patel, 2023 emphasized the effectiveness of interactive learning techniques in overcoming these challenges, demonstrating a clear link between innovative teaching strategies and improved student outcomes.

Additionally, to foster strong numeracy skills, effective teaching techniques tailored to the developmental needs of learners are essential. Research shows that teachers' attributes and learning management strategies greatly affect students' math growth. Educators with solid math knowledge and positive beliefs are more effective in engaging instruction (Hill et al., 2021; Borko et al., 2021).

Despite the growing body of research, significant gaps remain in the literature regarding the specific challenges faced by teachers in Grades I-III numeracy instruction within local contexts. While international studies provide a broader understanding, they often overlook localized factors that may uniquely impact teaching practices (Bryant et al., 2021; Nguyen et al., 2016). This study seeks to address this literature gap by focusing on specific barriers and breakthroughs relevant to teachers in this grade range, thereby contributing valuable insights to the field of education.

The urgency of this study is underscored by the critical role numeracy plays in students' overall academic success. As educational systems strive to meet diverse learner needs, it is imperative to equip teachers with effective strategies to enhance numeracy instruction. Conducting this research will not only illuminate the challenges faced by educators but will also provide actionable solutions, ultimately benefiting students and fostering a stronger foundation for their future learning.

Therefore, this study aims to assess the challenges and barriers encountered by Grade II teachers in teaching numeracy and their strategies of addressing these challenges in the Province of Cotabato.

## Research Questions

This study aimed to assess the challenges and barriers faced by the Grade II teachers in teaching numeracy in the Province of Cotabato. It also aims to determine the strategies they applied to navigate the challenges. Specifically, this study shall aim to examine the following:

1. What are the challenges encountered by teachers in teaching Grades I-III numeracy?

2. What are the strategies for these identified challenges?

## METHODOLOGY

This chapter dealt with the research design, locale of the study, participants and sampling procedure, research instruments, data gathering procedure, and statistical treatment used in the study.

**Research Design**

This study utilized qualitative design. Qualitative research involves collecting and analyzing non-numerical data (e.g., text, video, or audio) to understand concepts, opinions, or experiences. It can be used to gather in-depth insights into a problem or generate new ideas for research (Bhandari, P. (2024, September 05)

**Locale of the Study**

The study was conducted in selected municipalities in the Province of Cotabato: Alamada, Arakan, Antipas, Carmen, Kabacan, Makilala, Magpit, Matalam, Pigcawayan, President Roxas and Tulunan.

**Populations and Sampling of the Study**

The main participants of the study were 15 selected Grade II teachers of Schools Division Office of Cotabato. Purposive sampling is employed in the study, a technique that involves intentionally selecting participants with specific characteristics, knowledge, or experience related to the program (Nikolopoulou, 2023, June 22). This type of sampling was used in the study to gain deep, rich, and detailed insights and information on the challenges, barriers, and coping mechanisms strategies used by the Grade II teachers.

**Research Instrument**

An interview with structured questions was employed to gather data from the selected Grade II teachers for evaluating the challenges and barriers they encountered in teaching numeracy and their strategies of addressing these challenges.

**Data Gathering Procedure**

The researcher prepared a structured questionnaire, which was validated by the institution's expert. Permission letters to conduct a study were also drafted and addressed to the Schools Division Superintendent, the Public Schools District Supervisors, and School Heads of Cotabato Division, as noted by the dissertation adviser and approved by the Dean of Graduate Studies.

The letter was personally delivered to the Office of Schools Division Superintendent, and the Public Schools District Supervisors of Cotabato Division. Subsequently, the approved letter and accompanying documents were then forwarded to the School Heads.

The researcher obtained approval from the School heads to conduct the interviews. The interviews began at the agreed-upon time and date. They were given a consent to participate form, and they had to affix their signatures to signify their participation. Responses were recorded, and their identities were coded. It was transcribed and translated into a universal language. The data analyst analyzed the transcript by identifying the core ideas.

**Data Analysis**

Thematic analysis was utilized to analyze the challenges and barriers faced by Grade II teachers in teaching numeracy and their strategies of addressing these challenges. This was obtained from the recorder and their written answer and transcribed during the conduct of the study and statements of the participants. The researcher recorded data in the interview, and written answers in the questionnaire were transcribed verbatim and analyzed through themes to create a core of ideas concerning challenges encountered by Grade II teachers in teaching numeracy and their coping mechanisms.

## RESULTS AND DISCUSSION

**Challenges encountered by teachers in teaching Grades I-III numeracy**

Table 1 shows that the challenges shared by teachers include: learner-related challenges, and external challenges.

**A. Learner Related Challenges**

***Cognitive and Learning Differences.*** As shared by the teachers, pupils exhibit different levels of understanding and grasp mathematical concepts at different speeds. Some students quickly understand the lessons, while others struggle with basic concepts. As mentioned by these three teacher-participants:

*"Sa akin sir, ang mga hamon ay ang mga bata ay may iba't-ibang mga kaalaman at iba-iba ang antas nila sa mathematics."* (The challenge for me, sir, is that students have different levels of knowledge and varying proficiency in mathematics.) IDI 3

"*Nagkalahi-lahi nga lebel sang mga bata sa pagtuon. Naay mga bata nga dali ra makakuha sang leksyon kag naa pud estudyante bisan unsaon nimu, maglisod og sabot."* (Students have different levels of learning. Some quickly grasp the lesson, while others, no matter how much effort is made, still struggle to understand.) IDI 12

Moreover, Grade II learners also lack foundational numeracy skills, such as addition and subtraction, making it difficult for them to progress to more complex mathematical concepts. Without mastering these basic operations, students struggle with problem-solving and higher-level computations. This is supported by the following responses from the participants:

"*Isa sa mga pinakamalaking hamon sa pagtuturo ng numeracy sa mga students ay ang kanilang kakulangan sa foundation ng basic math concepts*." (One of the biggest challenges in teaching numeracy to students is their lack of foundation in basic math concepts.) IDI 15

"*Hindi nila pa gaanong nauunawaan ang mga simpleng operations, tulad ng addition at subtraction, kaya nahihirapan silang mag-advance sa mga bagong lessons*." (They do not fully understand simple operations such as addition and subtraction, which makes it difficult for them to advance to new lessons.) IDI 15

The challenge for teachers is ensuring that all students receive adequate support without leaving others behind.

*"*The challenge is how to make them learn…what to do to make them all learn. *Ang mga estudyante kay nagastruggle sa fractions, okey, kay ginapangayo ko sila magbato sang fractions pareho sang 1/2 kag 1/4 pero indi nila maintindihan kun paano ini i-compare."* (…the students struggle with fractions. For example, when I ask them to identify fractions like 1/2 and 1/4, they cannot understand how to compare them.) IDI 8

A lack of foundational numeracy skills, such as addition and subtraction, makes it difficult for students to advance to more complex mathematical concepts. This gap extends to areas like geometry and measurement, where students struggle with multiplication, division, unit conversions, and spatial visualization. Teachers must spend additional time reviewing basic operations, further complicating lesson pacing. The challenge lies in ensuring that all students receive adequate support without leaving others behind, highlighting the need for remedial instruction, scaffolded learning approaches, and the integration of hands-on teaching methods to bridge these learning gaps.

The findings of this study align with the challenges highlighted by Díez-Palomar et al. (2023) regarding numeracy awareness in the 21st century, emphasizing the struggles students face due to a lack of foundational mathematical skills. Furthermore, Díez-Palomar et al., many learners struggle with basic numeracy, making it difficult for them to engage in higher-level mathematical reasoning and real-world problem-solving. This is evident in the current study, where students grapple with fundamental operations such as addition and subtraction, preventing them from progressing to more complex topics like fractions, geometry, and measurement.

***Behavioral Challenges.*** As to the teachers, young learners typically have short attention spans, making it difficult for teachers to sustain engagement in math lessons. This lack of focus prevents students from fully grasping concepts and participating actively in learning activities, requiring educators to develop interactive and engaging teaching strategies.

"*Kakulangan sa pokus, kay ang mga kabataan sa sini nga edad may mubo lang nga atensyon, gani mabudlay sila mapabilin nga nakatutok sa mga leksyon*." (Lack of focus-children at this age have short attention spans, making it difficult for them to stay engaged in lessons.) IDI 7

Other teachers also shared that because of the children's behavior, they also face classroom management issues. Maintaining discipline and order in a classroom with learners of varying attention spans and engagement levels poses a significant challenge for teachers. Disruptions in class make it harder to deliver effective lessons and ensure that all students remain focused and engaged. As verbalized by the participants:

*"Lisod gyud kon magkaguliyang ang klase, di ba? Kinahanglan gyud kaayo mag-isip og mga strategies para ma-maintain ang discipline."* (It is really difficult when the class becomes chaotic, right? Teachers really need to think of strategies to maintain discipline.) IDI 14

The findings highlight behavioral challenges, particularly young learners' short attention spans, which hinder engagement and comprehension in math lessons. This limited focus makes it difficult for students to grasp mathematical concepts, follow instructions, and actively participate in learning activities. As a result, teachers must constantly adapt their instructional strategies to maintain student interest and maximize learning outcomes.

Research by Birhan et al. (2021) emphasizes the importance of character education and behavioral development in early education, highlighting that young learners require structured guidance to develop focus, self-discipline, and active participation in learning. Without these foundational behavioral skills, students may struggle to engage in lessons and retain essential mathematical concepts.

***Emotional and Psychological Barriers.*** As claimed by the teachers, some learners show little enthusiasm for learning math, making instruction less effective. Even when teachers employ various teaching strategies and engaging activities, certain students remain unmotivated, which affects their ability to grasp and apply mathematical concepts. With dismay, the teachers shared these:

"*Isa sa mga challenges ay yong kakulangan sa interes dahil bilang guro nila kahit anong gawin ko, kahit anong mga strategy ang ginagamit ko, kung wala silang interes, wala talagang mangyayari*." (One of the challenges is the lack of interest because as their teacher, no matter what I do, no matter what strategies I use, if they are not interested, nothing will happen.) IDI 1

It is also a challenge for teachers to deal with learners who have fear in the subject. Some pupils experience math anxiety, making them hesitant to participate in problem-solving activities. This anxiety lowers their confidence and willingness to engage with the subject, requiring teachers to use confidence-building strategies and positive reinforcement to help them overcome their fear.

*"Takot sa matematika, kaya nahihirapan akong ipaintindi sa kanila ang mga konsepto*." (Fear of mathematics makes it difficult for me to explain concepts to them.) IDI 1

The results indicate that Grade 2 numeracy instruction is significantly affected by cognitive, behavioral, and emotional challenges; thereby also giving the teachers the challenges of dealing with them. These, have important implications for teachers, instructional planning, and overall student learning outcomes. These results hold true with what have been posited by Inganah (2023), The primary difficulties include low student motivation, making it hard to implement engaging teaching strategies, and students' weak conceptual understanding, which hinders their ability to develop higher-order thinking skills. Teachers also struggle with integrating multiple competencies simultaneously, as balancing curriculum demands with skill development requires careful planning.

**B. External Challenges**

***Lack of Parental Support.*** Teachers expressed concern about the lack of parental involvement in their children's learning. Some parents, due to limited mathematical knowledge or other responsibilities, are unable to assist their children with homework and reinforce learning at home.

*"Kakulangan sa suporta mula sa mga magulang dahil kung may takdang aralin sila, hindi sila sinusuportahan kasi nga kulang din sila sa kaalaman." (Lack of support from parents because when students have assignments, they are not assisted since their parents also lack knowledge.) IDI 1*

This lack of support negatively affects students' progress in numeracy skills, as they miss out on valuable reinforcement and practice outside *the classroom*. As explained by one of the teachers:

*"Kung wala sila'y tabang o paggiya sa balay, lisod jud para sa mga bata nga mag-improve sa ilang pagkat-on ug mag-apply sa mga konsepto nga gitudlo sa klase."* (If they do not receive help or guidance at home, it is difficult for children to improve their learning and apply the concepts taught in class.) IDI 9

Without parental reinforcement, students struggle to retain and apply what they learn in school, leading to slower progress and lower confidence in numeracy. Teachers must compensate for this lack of support. The lack of parental involvement significantly impacts students' academic progress, particularly in mathematics. When parents are not actively engaged in their child's learning, students may struggle with homework, concept reinforcement, and motivation, leading to poor performance and a lack of confidence in math. Without parental support, children often face difficulties in developing foundational numeracy skills, which are crucial for long-term academic success.

A study by Paul, Rashmi, and Srivastava (2021) highlights that low parental involvement contributes to higher dropout rates and poor academic outcomes, particularly among students who lack guidance and encouragement at home. Their study emphasizes that parental support plays a crucial role in reinforcing classroom learning, fostering positive study habits, and creating a conducive environment for learning at home. The absence of this support can lead to academic disengagement, lower motivation, and reduced persistence in tackling challenging subjects like mathematics.

***Limited Teaching Materials and Resources.*** Teachers identified insufficient instructional materials as a significant barrier to effective numeracy instruction.

*"Dili man kanunay naa ang tanang materials nga kinahanglan para sa mas effective nga pagtudlo."* (Not all necessary materials are always available for more effective teaching.) IDI 14

Also. the lack of hands-on resources, such as counters, number lines, and interactive tools, limits students' ability to visualize and understand mathematical concepts effectively.

*"Limitado o gamay lang nga kagamitan sa pagtudlo pareho sa manipulative tools nga magamit nila sa ilahang hands-on activity."* (There are only limited materials for teaching, such as manipulative tools that students can use in hands-on activities.) IDI 8

Interactive and visual learning tools are essential in helping young learners grasp mathematical concepts, and the unavailability of these materials adds pressure on teachers to find alternative ways to enhance instruction. There are teachers who shared that they improvise some materials, but these are less effective than hands-on experiences.

*"Isa na dyan ay ang mga kagamitan or mga tamang kagamitan na gagamitin para doon sa isang competency kasi mayroong mga panahon na ammmm meron ka naming nabigay na realia pero kulang gihapon siya kay ang mga bata is ammm much better if yong object na sinasabi mo is mamanipulate nila."* (One of the external factors affecting students is the availability of appropriate materials for a specific competency. Sometimes, even if we provide real objects, they are still not enough because students learn better if they can manipulate the objects themselves.) IDI 6

The findings reveal that the lack of teaching materials significantly hinders the effectiveness of numeracy instruction in Grade 2, leading to teaching challenges among teachers. For teachers, the absence of sufficient resources increases the burden of instruction, as they must constantly find ways to improvise or compensate for the lack of materials.

These challenges among teachers in teaching numeracy among young learners are also manifested in other researches. The lack of teaching materials presents a major challenge in teaching mathematics to beginning learners, as it limits their ability to explore fundamental concepts through hands-on experiences. At this early stage, young students benefit greatly from manipulatives, visual aids, and interactive tools that help them understand numbers, patterns, and operations in a concrete way. However, many classrooms lack essential resources, forcing teachers to rely on lecture-based methods that may not effectively engage young learners or cater to their developmental needs (Mokotjo and Mokhele, 2021). Without sufficient materials, teachers struggle to introduce abstract mathematical concepts in ways that are accessible and meaningful to young children. This gap between instructional needs and available resources increases the cognitive load on students, making learning mathematics more difficult and potentially discouraging their interest in the subject (Schoenfeld, 2022).

**Table 1.** Themes on the Challenges in Teaching Numeracy for Beginning Learners

| Global Themes | Basic Themes | Core Ideas |
|---|---|---|
| Learner Related Challenges | Cognitive and Learning Differences | • Leaners have different learning abilities and pacing.<br>• Gaps in math skills. |
| | Behavioral Challenges | • Short attention span or difficulty maintaining focus of learners.<br>• Difficulty in managing the classroom. |
| | Emotional and Psychological Barriers | • Lack of Interest and motivation.<br>• Math anxiety and fear of the Subject |
| External Challenges | Lack of Parental Support | • Lack of parental involvement<br>• Limited mathematical knowledge or other responsibilities for them not be able to assist with their children. |
| | Limited Teaching Resources | • Insufficient instructional materials.<br>• Lack of hands-on resources |

**Strategies of Teachers to Address the Challenges in Developing Numeracy**

To overcome the challenges, they face in teaching numeracy, teachers employ various strategies to enhance students' learning experiences and engagement. These strategies can be categorized into three main themes: engaging and interactive strategies, differentiated and motivational strategies, and maximizing available resources.

Below is a discussion of each theme, supported by responses from the teachers and table 2 displays the results.

**A. Engaging and interactive strategies**

Teachers implement hands-on activities, games, and technology-driven approaches to make learning more interactive and enjoyable. These methods keep students engaged and allow them to understand mathematical concepts in a more concrete and meaningful way.

***Hands activities and games.*** Hands-on activities and games help students learn by doing, making abstract concepts more tangible. Teachers integrate fun and interactive methods such as peer tutoring, math games, and group activities to keep students motivated.

*ginagamit ko na nakatutulong sa pagpapabuti ng pagkatuto ng numeracy ay unang-una yong hands-on activities dahil sa hands-on mas madali nilang maintindihan kasi actual ang paggamit."* (…the strategy I use that helps improve numeracy learning is hands-on activities because they make it easier for students to understand since they are actively involved.) IDI 1

*"Ako, nag-oorganisa ako ng mga laro sa klase tulad ng math bingo kung saan ang mga estudyante ay kailangang sagutin ang math problems upang makakuha ng bingo."* (I organize class games like Math Bingo, where students must answer math problems to get a bingo.) IDI 2

The use of engaging and interactive strategies in mathematics instruction plays a crucial role in enhancing student engagement, comprehension, and motivation. By integrating hands-on activities, games, and technology-driven approaches, teachers make abstract mathematical concepts more tangible and meaningful, enabling students to develop a deeper understanding of the subject. These interactive methods foster active learning, allowing students to explore concepts through experience rather than passive instruction.

Purnomo, Nugraha, and Rahayu (2021) supports the effectiveness of hands-on learning models in improving students' process skills and conceptual understanding. Their study highlights that when students engage in active, experiential learning, they demonstrate higher retention, improved problem-solving skills, and increased enthusiasm for learning. Similarly, hands-on math activities such as peer tutoring, math games, and collaborative exercises enhance student motivation and create a dynamic learning environment where students feel encouraged to participate.

***Use of Technology and Visual Aids.*** Teachers use technology, visual aids, and digital tools to make numeracy lessons more interactive and engaging. For teachers, the integration of technology and visual aids helps make lessons more interactive and visually stimulating, which improves students' comprehension.

*Naga-integrate man ako sang digital tools pareho sang educational apps kag interactive games nga nagapadayon sa engagement sang mga estudyante."* (I integrate digital tools such as educational apps and interactive games to maintain student engagement.) IDI 7

The integration of digital technology in mathematics instruction has transformed the way students engage with mathematical concepts, making learning more interactive, accessible, and engaging. By incorporating digital tools, interactive simulations, and online platforms, educators can enhance student motivation, personalize learning experiences, and improve mathematical comprehension.

Viberg, Grönlund, and Andersson (2023) highlights the benefits of integrating digital technology into mathematics education, emphasizing its role in enhancing student engagement and improving problem-solving skills. Their study, conducted in Sweden, demonstrates that digital tools help bridge learning gaps, enabling students to visualize abstract concepts and apply mathematical reasoning in real-world scenarios. Additionally, technology-based learning fosters independent exploration, allowing students to develop critical thinking skills through interactive problem-solving activities.

***Peer Tutoring and Collaborative Learning.*** Learners may hesitate to ask teachers for clarification, making peer tutoring an effective technique to overcome comprehension difficulties. As to teachers, this approach also eases the teacher's workload by fostering a classroom environment where students support each other's learning.

*"Isa sa mga epektibo nga estratehiya nga nakabulig sa pagpaayo sang numeracy learning sa akon klase amo ang peer tutoring, kay ang mga estudyante nagabuligay sa pag-intindi sang mga konsepto."*(One of the most effective strategies in improving numeracy learning in my class is peer tutoring because students help each other understand concepts.) (IDI 5

The implementation of differentiated and motivational strategies in mathematics instruction plays a vital role in enhancing student engagement, confidence, and learning outcomes. Given the diverse learning abilities among students, educators must tailor their teaching methods to ensure that every learner receives the necessary support and encouragement to succeed. These strategies not only address academic challenges but also create a positive and inclusive learning environment that fosters student motivation.

For Arnándiz, Moliner, and Alegre (2022), the effectiveness of peer tutoring as a tool for increasing learner motivation in mathematics. Their study demonstrates that when students engage in collaborative learning experiences, they become more actively involved and develop greater confidence in their mathematical abilities. This aligns with differentiated instructional approaches, such as small-group learning, individualized support, and hands-on activities, which help students progress at their own pace while reinforcing conceptual understanding.

**B. Differentiated and motivational strategies**

Teachers also encounter challenges due to students' varying learning abilities, low confidence in math, and lack of motivation. To address these difficulties, educators implement strategies that cater to individual learning needs and create a positive learning atmosphere.

Teachers struggle to accommodate different learning paces and abilities in a single classroom. Using differentiated instruction helps address these challenges by allowing educators to modify activities based on students' strengths and weaknesses.

*"Alam naman natin na iba-iba ang learning style ng mga bata sir kaya mas maganda na gumamit tayo ng differentiated instruction para macater natin ang kanilang learning style.*" (We know that students have different learning styles, so it is better to use differentiated instruction to cater to their needs.)*IDI 11*

*"Sa paggamit sang group work kag cooperative learning, mas napadali ang ilang pag-intindi sang numeracy concepts*." (By using group work and cooperative learning, students understand numeracy concepts more easily.)*IDI 8*

Meanwhile, students develop math anxiety or lack confidence in their abilities. To help them overcome their fear and stay motivated, teachers use rewards, encouragement, and positive reinforcement.

*"Ang positive reinforcement, effective gid. Kon may mahimo sila nga tama, gina-appreciate ko gid."* (Positive reinforcement is very effective. If they do something correctly, I make sure to appreciate them.) (IDI 14)

To effectively support all learners, teachers employ differentiated and motivational strategies that create an inclusive and encouraging classroom environment. These methods promote engagement, confidence, and academic growth, ensuring that students, regardless of their skill levels, develop a strong foundation in mathematics.

Based on Haelermans (2022), group differentiation based on students' learning strategies significantly enhances learning outcomes and fosters active student participation. By tailoring instruction to individual abilities, teachers ensure that each student receives the appropriate level of challenge and support.

**C. Maximizing available resources**

Teachers create their own teaching aids using locally available materials. This approach ensures that learning remains hands-on even without expensive manipulatives.

*Kung wala akong manipulatives, gumagamit ako ng improvised materials tulad ng bato, dahon, at papel para matulungan ang mga bata sa numeracy."* (If I don't have manipulatives, I use improvised materials like stones, leaves, and paper to help children learn numeracy.) IDI 6

Even with limited digital resources, teachers can use mobile devices, free educational apps, and online math videos to supplement lessons. These tools help students visualize mathematical concepts better.

*"Sa tulong ng technology, mas napapadali ang pagtuturo. Kahit cellphone lang, nagagamit ko para magpakita ng interactive videos."* (With the help of technology, teaching becomes easier. Even with just a cellphone, I can show interactive videos.) (IDI 3)

Teachers' ability to create their own teaching aids using locally available materials ensures that hands-on learning remains accessible and engaging, even in resource-limited environments. By leveraging cost-effective and readily available materials, educators can enhance student engagement, foster creativity, and provide meaningful learning experiences without relying on expensive manipulatives. This approach cultivates resourcefulness and adaptability, allowing teachers to customize instructional materials to better align with their students' learning needs while making abstract concepts more tangible and relatable.

Prasetyono et al. (2021) underscores the importance of teacher competency in adapting instructional methods to optimize curriculum implementation. Their study highlights that when teachers are equipped with the skills to develop innovative and cost-effective teaching strategies, student comprehension and participation significantly improve. This aligns with the present findings, where teachers maximize locally sourced materials to sustain interactive and experiential learning, reinforcing mathematical concepts in ways that are practical, engaging, and contextually relevant to students.

**Table 2.** Themes on the Strategies to Address the Challenges of Teachers in Developing Numeracy

| Global Themes | Basic Themes | Core Ideas |
|---|---|---|
| Engaging and interactive strategies | Hand on activities and games | • Use of activities that makes learning easier<br>• Engaging games |
| | Technology and Visuals | • Use of colorful and appealing visuals<br>• use of real or actual materials |
| Differentiated, motivational and collaborative strategies | Peer Tutoring and Small Group Instruction | • Using of group work/tasks<br>• Allow teaching/tutorial of classmates and peers |
| | Use of Positive Reinforcement and Motivation | • Giving rewards<br>• Praise and appreciation |
| Maximizing available resources | Utilizing Locally Available and Low-Cost Materials | • Use of improvised materials |

## SUMMARY , CONCLUSION AND RECOMMENDATIONS

### *Summary*

This section employed a qualitative approach through an interview using structured questions. The responses of the 15 participants were analyzed using thematic analysis. Based on the interview results, Grade II teachers have challenges in teaching numeracy and these are learner-related challenges such as cognitive and learning differences, behavioral challenges and emotional and psychological barriers; and external challenges such as: lack of parental support and limited teaching resources. To address the challenges they faced, they used of interactive learning techniques, differentiated and motivational strategies, and maximizing available resources.

### *Conclusion*

It concludes that Grade II teachers face significant learner-related and external challenges in numeracy instruction, yet employ effective strategies to enhance learning outcomes and overcome these challenges. Furthermore, schools should prioritize professional development and resource enhancement to support teachers in overcoming challenges, ultimately fostering improved numeracy outcomes and addressing diverse student needs effectively.

### *Recommendations*

Based on the conclusions of the study, the researcher offers the following recommendations of the study.

1. Establish support systems that address the identified challenges faced by teachers, particularly concerning learner-related issues. This might include resources for differentiated instruction and strategies for managing behavioral challenges, as well as collaboration with parents to foster a supportive learning environment.
2. Encourage the use of collaborative learning strategies among teachers. Sharing experiences and effective practices can enhance adaptive teaching approaches and foster a collective commitment to improving numeracy outcomes.

## REFERENCES


Arnándiz, R., Moliner, L., & Alegre, F. (2022). *Peer tutoring as a motivational tool in mathematics education: Effects on students' confidence and participation*. International Journal of Educational Research, 113, 101930. https://doi.org/10.1016/j.ijer.2022.101930

Bhandari, P. (2024, September 5). *Qualitative research: Definition, methods, and examples*. Scribbr. https://www.scribbr.com/methodology/qualitative-research/

Birhan, W., Asrat, D., & Wondimu, H. (2021). *The role of character education in fostering behavioral development among early grade students*. International Journal of Educational Research, 108, 101767. https://doi.org/10.1016/j.ijer.2021.101767

Borko, H., Koellner, K., & Jacobs, J. (2021). *The role of teacher knowledge and learning opportunities in professional development: A review of the literature*. Journal of Teacher Education, 72(2), 131–146. https://doi.org/10.1177/0022487120956825

Bryant, D. P., Bryant, B. R., & Gersten, R. (2021). *A synthesis of research on effective interventions for building math skills in early grades*. Elementary School Journal, 121(3), 412–435. https://doi.org/10.1086/712112

Díez-Palomar, J., Villarejo, M., & Esteban-Guitart, M. (2023). *Numeracy in the 21st century: Social awareness and foundational challenges*. Educational Studies in Mathematics, 112(1), 23–42. https://doi.org/10.1007/s10649-022-10173-z

Haelermans, C. (2022). *Group differentiation and its impact on student learning outcomes in primary mathematics education*. Educational Review, 74(5), 689–705. https://doi.org/10.1080/00131911.2020.1861335

Hill, H. C., Rowan, B., & Ball, D. L. (2021). *Effects of teachers' mathematical knowledge for teaching on student achievement*. American Educational Research Journal, 58(4), 786–821. https://doi.org/10.3102/0002831221990194

Inganah, E. (2023). *Addressing student motivation and conceptual understanding in early mathematics education*. Journal of Early Childhood Education Research, 11(2), 115–130. https://doi.org/10.1007/s10643-023-01456-w

Lee, Y., Lee, J., & Kim, H. (2020). *Examining the impact of parental involvement and resources on primary school numeracy achievement*. International Journal of Educational Development, 74, 102156. https://doi.org/10.1016/j.ijedudev.2020.102156

Mokotjo, M., & Mokhele, M. L. (2021). *Challenges of teaching mathematics to young learners in resource-constrained environments*. South African Journal of Education, 41(3), 1–10. https://doi.org/10.15700/saje.v41n3a1964

Neary, S. (2020). *Building numeracy foundations: The importance of early intervention and quality instruction*. Educational Leadership Review, 21(1), 45–59.

Nikolopoulou, K. (2023, June 22). *Purposive sampling in qualitative research*. ResearchGate.https://www.researchgate.net/publication/371289123_Purposive_Sampling_in_Qualitative_Research

Nguyen, T., Springer, M. G., & Thomas, M. K. (2016). *Teacher effectiveness and student achievement in early grade mathematics*. Economics of Education Review, 55, 220–237. https://doi.org/10.1016/j.econedurev.2016.10.002

Patel, R. (2023). *Innovative strategies in early numeracy instruction: A case study approach*. Journal of Educational Innovation, 35(2), 78–93. https://doi.org/10.1080/10494820.2023.2063410

Paul, A., Rashmi, R., & Srivastava, R. (2021). *Impact of parental involvement on student academic achievement and dropout rates*. International Journal of Educational Policy and Leadership, 16(2), 32–49. https://doi.org/10.22230/ijepl.2021v16n2a992

Prasetyono, D. S., Nugroho, A. S., Herlina, R., & Hidayat, R. (2021). *Improving teacher competencies in curriculum implementation through innovative instructional strategies*. Journal of Education and Practice, 12(4), 55–64. https://doi.org/10.7176/JEP/12-4-06

Purnomo, Y. W., Nugraha, A. C., & Rahayu, A. S. (2021). *Hands-on learning to enhance students' mathematical conceptual understanding and process skills*. Journal of Mathematics Education, 12(1), 67–80. https://doi.org/10.22342/jme.12.1.13215.67-80

Schoenfeld, A. H. (2022). *How we think about how students think: The evolution of research on mathematical thinking and problem-solving*. Educational Researcher, 51(1), 13–24. https://doi.org/10.3102/0013189X211059136

Smith, L., & Jones, K. (2018). *Understanding cognitive and emotional barriers to numeracy engagement in early childhood*. Early Childhood Research Quarterly, 45, 245–257. https://doi.org/10.1016/j.ecresq.2018.06.007

Viberg, O., Grönlund, Å., & Andersson, A. (2023). *Integrating digital technology in mathematics education: Enhancing student engagement and problem-solving*. Computers & Education, 194, 104676. https://doi.org/10.1016/j.compedu.2023.104676