# Enriching the Problem-Solving Skills of Learners: Blueprint of Elementary School Teachers in Mathematics

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Abstract: This study investigated the approaches employed by teachers to cultivate problem-solving abilities among elementary school students. Through in-depth interviews with educators, the researcher uncovered both their effective strategies and the challenges they face. Eight (8) purposively selected teachers participated in the study, sharing their experiences. By carefully analyzing their responses, the researcher identified key approaches teachers use to enhance problem-solving skills, such as collaborative learning and visualization techniques. However, teachers also highlighted significant obstacles, including students' lack of basic math skills and a general disinterest in learning mathematics. Based on these findings, the study proposed two key recommendations to enrich the approaches of enriching the problem-solving skills of learners such as providing teacher training workshops in teaching mathematics and ensuring the availability of learning materials. This research endeavored to shed light on how teachers foster problem-solving skills in their classrooms. The insights gained are valuable for improving the quality of education, emphasizing that with the right support, students can build stronger problem-solving abilities.

Keywords: Enriching, Problem-Solving Skills of Learners, Blueprint, Elementary Teachers

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#### I. INTRODUCTION

Developing strong problem-solving skills is crucial for elementary students' academic growth and future success. These abilities enhance logical reasoning, creativity, and adaptability across all subjects and real-life situations. Effective strategies can engage young learners while building their confidence and critical thinking skills. This study examines how elementary teachers can strengthen students' problem-solving skills in mathematics.

Prodigy (2022) underscored that mathematics has profound and far-reaching importance in everyday life and long-term personal development. It is more than just a school subject - it is a practical tool we use daily for tasks like budgeting, cooking, and shopping. Beyond its immediate applications, mathematics serves as a universal language that transcends cultural and linguistic barriers, enabling global collaboration and innovation.

Similarly, Mastermind Tutorials (2023) emphasized that mathematics is a foundational subject that plays a pivotal role in molding a child's cognitive development. It lays the groundwork for advanced mathematical and scientific concepts, as well as the critical thinking abilities essential for success in any field. In the primary school setting, students are introduced to the basic mathematical notions of numbers, operations, geometry, and measurement. Establishing a strong mathematical foundation equips students with the tools necessary for thriving in these subjects. Conversely, students who struggle with mathematics in the primary years are more likely to face difficulties in subsequent educational stages. Providing students with a solid grounding in mathematics can set them up for long-term success. Mathematics is a subject that can be both enjoyable and engaging. By incorporating hands-on activities, games, and real-world examples, students can experience the learning process in a fun and meaningful manner.

In addition, ICMI (2023) stressed that mathematics is foundational to human cognition, functioning as a universal instrument for logical reasoning, mental discipline, and comprehending the world. Its interdisciplinary relevance is emphasized, illustrating how mathematical proficiency elevates learning across disciplines and has been esteemed globally as a pillar of education. Mathematics is essential for students' future success, enabling pursuit of high-demand STEM careers and cultivating universally valuable skills such as logical reasoning, pattern recognition, and problemsolving. Math education nurtures critical workplace competencies, including resilience, growth mindset, and adaptability, which employers prioritize over rote expertise (Grand Canyon University, 2018). Unfortunately, Ling and Mahmud (2023) noted that students' proficiency in mathematical problem-solving skills remains inadequate. This is because students often struggle to comprehend mathematical problems presented in verse form, exhibit weaknesses in planning appropriate solution strategies, and frequently make errors in their calculations. Similarly, Gurat (2018) disclosed that contemporary students continue to encounter difficulties in mastering sentencebased mathematics problem-solving abilities. This predicament arises from the dearth of studies investigating the challenges encountered by these mathematics educators and the teaching approaches they employ to overcome such challenges.

Meanwhile, Hogbin (2020) posited that math teachers often face limited time to design ideal, engaging lessons. While educators might want more hours to create polished activities, time constraints often make this unworkable. Subsequently, Rusdin and Ali (2019) identified key challenges that students face in mathematics, including difficulties in understanding word-based problems, gaps in fundamental mathematical concepts, and inaccuracies in calculations. A critical issue they highlighted is students' inability to translate word problems into operational mathematical forms.

A mathematics educator is someone who motivates their learners to think critically and creatively beyond the scope of the textbooks. Each student is touched every day by the commitment and zeal of their teachers. But since learners permeate through different difficulties and have different ways in which they learn, a number of factors need to be looked into. This particular research seeks to find out how teachers at the elementary level guide their students in developing effective problem-solving skills. The study is important because it offers an analysis of the real-life experiences of teachers from which elementary school students can practically enhance their problem-solving skills.

#### II. METHOD

In order to gather the information required for answering the research questions, this study employed a qualitative phenomenological research design. Details include in-depth interviews with participants that give them a chance to talk freely and honestly. Qualitative research is defined by Hatch (2012) as naturalistic research or research into daily life. Human behavior in any life was directly observed. According to naturalistic researchers, learning from firsthand experience with a problem is far superior to the objective approach that purports to define quantitative methods. Qualitative research is the methodical, inductive, holistic, epic, subjective, process-oriented approach used in understanding, interpretation, description, development of a theory on a phenomena or environment (Burns & Grove 2003).

Moreover, the purpose of phenomenology, as used in this study, is to comprehend the common experiences of educators on enriching the problem-solving skills of students. In qualitative research, the phenomenological approach is very useful for revealing the essence of lived experiences (Tomaszewski et al., 2020), citing Flood (2010). This approach offers an in-depth understanding of how primary school teachers help their pupils acquire efficient problem-solving skills.

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In this phenomenological study, eight (8) elementary school math teachers served as important informants in this phenomenological inquiry. As the main technique for collecting information, the researcher used in-depth interviews, which enabled a comprehensive examination of the teachers' actual experiences in helping students develop problem-solving skills. The study recorded the approaches, challenges, and teaching philosophies these teachers employ to improve students' ability to solve mathematical problems in the classroom through personal testimonies.

On the use of in-depth interview, Fontana and Frey (2000) pointed out that in-depth interviews can be either structured or flexible, which is why they work so well for qualitative research. In this study, these interviews helped uncover the real-world experiences and perspectives of elementary math teachers as they teach problem-solving skills. The study focuses on public school math teachers, carefully selected to ensure their insights are relevant and meaningful. By choosing participants this way, the research captures a clearer picture of the strategies, challenges, and methods these teachers use to help young learners develop problem-solving skills.

Further, ethics were a priority in this study from start to finish. Before participating, every teacher gave informed consent, meaning they clearly understood the research goals, which explored on how they teach problem-solving in math, and knew they could ask questions or step away at any time. They also agreed to have their interviews recorded, with the guarantee that their responses would stay confidential and only be used for this research. Respecting their autonomy, protecting their privacy, and ensuring fairness weren't just formalities; they were key to building trust with the teachers and keeping the study honest.

As the researcher, my job was to craft thoughtful questions, interview elementary math teachers, and carefully analyze their responses to understand how they teach problem-solving skills. Following the approach described by Graneheim and Lundman (2004) and referenced in Vinitha (2019), I'll organize and code the teachers' answers, looking for patterns and themes to uncover deeper meaning. This will help reveal their teaching strategies, challenges, and what actually works when helping young students develop math problem-solving skills. In the end, this method should give us meaningful, detailed insights on how elementary math are taught and what we need to improve in enriching the problem-solving skills of students.

Furthermore, to analyze the data, I used Thematic Content Analysis (TCA), a method detailed by King (2004) and cited in Dawadi (2020). In this study, this approach helps uncover key themes around how elementary math teachers approach instruction and the challenges they face. I went ISSN No:-2456-2165

through the interview transcripts multiple times, looking for patterns in how these teachers develop problem-solving skills in their students. Following O'Connor and Gibson's (2003) framework, I then organized and grouped the data into broader themes, making sure the findings were both reliable and valid. The final results are presented in a way that clearly shows how teachers design, adjust, and improve their methods to strengthen students' problem-solving abilities in math.

To make sure the findings were credible and wellsupported, I used environmental triangulation by gathering data from different elementary schools with varied approaches to teaching math. This allowed the study to compare and weave together insights from diverse classrooms, making the results more reliable. As Vivek (2023) points out, including multiple teaching contexts helped capture the full range of teachers' experiences in developing students' problem-solving skills. By looking at different school environments, the study gained a clearer, more complete picture of the strategies that teachers use and the challenges they face when teaching math problemsolving.

Overall, this study examined at how elementary school math teachers approach teaching problem-solving skills, including what they find effective, what obstacles they encounter, and how they modify their methods. Eight teachers took part in in-depth interviews, which gave us important insights into common challenges and successful strategies for helping students improve their problem-solving abilities. The study provides a clear picture of how teachers develop and present problem-solving lessons to enhance math learning by closely examining these discussions and contrasting various classroom settings.

#### III. RESULTS AND DISCUSSIONS

The results of the phenomenological study investigating how elementary grade math teachers help their students to acquire problem-solving skills are presented in this section. Key themes on the strategies of teachers are as follows by thorough thematic analysis of in-depth interviews with eight (8) purposefully chosen participants.

#### > Collaborative Learning.

Teachers consistently highlighted collaborative learning as one of their most effective approaches for developing math problem-solving skills. When students work together on shared tasks or problems, discussing ideas and creating solutions as a team, they build deeper understanding. The teachers in this study found that this method not only strengthens math skills but also encourages students to take ownership of their learning.

This aligns with Oluwole & Muraina's (2016) research, which shows how collaborative learning supports social constructivism. By working in small groups, students exchange ideas freely, challenge each other's thinking, and collectively construct knowledge thus making it a powerful tool for problem-solving development.

#### Visualization Approach.

Another theme that emerged on the scheme of teachers in enriching the problem-solving skills of learners in mathematics is visualization approach. Teachers in this study consistently highlighted visualization as a key strategy for building math problem-solving skills. They found that when students use visual approaches to tackle math problems, abstract concepts become more concrete and easier to understand. This method helps students "unpack" challenging problems by making them more accessible. As Arcavi (2003) explained, visualization isn't just about looking at pictures. It's an active thinking process where students create, interpret, and work with diagrams, mental images, or digital tools. This process helps them communicate ideas, discover new connections, and deepen their mathematical understanding.

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Similarly, Rathour et al. (2022) explained that visualization helps students in three important ways: it creates mental connections, shows how mathematical objects behave, and illustrates processes step-by-step. This is particularly valuable in math, where abstract concepts often create learning barriers.

Consequently, while math teachers used various approaches to develop students' problem-solving skills, they still faced significant challenges that hindered their efforts. These obstacles, which emerged as clear themes in our research, reveal the real difficulties elementary math teachers encounter when trying to strengthen their students' problemsolving abilities. The main challenges include:

### Lack of Fundamental Math Skills.

Teachers participating in this study identified a significant obstacle based on participant narratives: many students struggle to develop their problem-solving skills because they lack basic math skills. Hudson et al. Al (2010) explained how a lack of basic math skills in the classroom usually results in computation errors that make problem solving difficult.

#### > Dislike in learning Mathematics.

Another challenge that the participants encountered in is the dislike of learners with mathematics or the lack of interest in learning mathematics. In this study, teacherparticipants noted that many students simply don't like math or lack interest in learning it. This attitude makes it especially hard to develop their problem-solving skills. Study by Aguilar (2021) contributes to the explanation of why this occurs. Numerous elements, including social and cultural influences, influence students' motivation, attitudes, and beliefs regarding math. According to the study, young students who lack confidence or believe they are "bad at math" frequently carry these unfavorable opinions with them throughout their time in school.

Hence, this phenomenological study provides insights from the phenomenon in view of the strategies and difficulties of enhancing the skills of learners. Insights are helpful recommendation in managing the difficulties of guiding students to improve their mathematical abilities. The recommendations of this research are as follows.

#### > Training Workshop in Teaching Mathematics.

Teachers should have constant opportunities to improve their teaching strategies; quality training courses allow them to remain up to date with the most effective approaches to increase the math competency of their students. Sharp et. al (2018) posits that the math workshop approach transforms classrooms into active learning environments where students work on challenging projects together. Rooted in social learning theory, this method helps students deepen their math knowledge by means of inquiry-based activities in small groups, idea discussion, and introspection on their development.

#### Provision for Learning Materials.

In general, good learning materials are game changers in education, especially for math. They help students grasp difficult concepts by making abstract ideas more concrete. As Muthanje et al. (2020) point out, these teaching tools do more than just support lessons, they actually keep students engaged in school. When governments provide quality materials, we see fewer dropouts, better attendance, and stronger academic results across the board.

Overall, the instructional strategies explored show how teachers take great care to develop their students' ability to solve mathematical problems. These aren't just experiments conducted in the classroom; there is proof of their effectiveness. But the truth is that educators face enormous challenges. Many struggles with students who lack basic mathematical aptitude or enthusiasm, even when using these successful strategies. When trying to develop strong problemsolving skills, these obstacles may seem impossible to overcome.

There are two practical solutions underscored in this study: first, offering math teachers specialized training workshops; and second, making sure that classrooms are equipped with high-quality teaching resources. Real progress could be made if schools successfully implement these suggestions. Teachers would acquire more effective techniques for enhancing their students' problem-solving abilities, students would become more proficient in mathematics, and perhaps most importantly, we might finally spark students' genuine interest in the subject.

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