

# An Investigation of the Factors That Contribute to Poor Problem-Solving Skills in Grade 8 Mathematics Learners in Namibia

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## Abstract

The study seeks to investigate the factors that contribute to poor problem-solving skills in Grade 8 Mathematics learners at three combined schools in the Ongha circuit. A case study design was used within the qualitative approach. A theory of Vygotsky's social constructivism theory of cognitive development was used as the theoretical framework of this study. The population for this study comprised all 19 Grade 8 Mathematics teachers from three combined schools in Ongha Circuit, in the Ohangwena region. A sample comprising six Grade Eight Mathematics teachers was then chosen purposively from the three combined schools in Ongha Circuit. An interview guide was used to collect data from the Mathematics teachers. Data were analyzed using themes that were discussed later. The literature and the theoretical framework were used to compare and contrast the study findings. Participants revealed that problem-solving skills have a long-term effect on learners' learning. The study uncovered that learners with poor problem-solving skills experience difficulties in solving mathematical problems and in daily life. The study also unveiled that the factors that contribute to poor problem-solving at the combined school were language problems, lack of resources, lack of mathematical pedagogical knowledge, lack of involvement of parents, lack of motivation and support, and lack of training and workshops. It can therefore be suggested from the results of this study, that some of the strategies that can be applied to enhance learners' problem-solving skills in mathematics are such as allow learners to do more practice, designing suitable examples and activities, using different teaching strategies, using key mathematical terms and use more teaching aids. The study further recommends the school management to provide teaching and learning resources, organize min-trainings

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and monitor compensatory programs. The study also suggests that the education regional directorate should supply adequate textbooks, give professional support, and organize training and workshops to help teachers to improve problem-solving skills among learners.

### Keywords

Problem-Solving, Performance, Mathematics, Learners, Teachers, School, Social Constructivism, Language

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## 1. Introduction

Poor problem-solving skills among learners in Mathematics were observed globally. A study by [Incebacak and Ersoy \(2016\)](#) in Turkey secondary schools reveals that students had difficulty in solving problems in Mathematics. Another study by [Tambunan \(2019\)](#) observed students in Indonesia experience the challenge to answer Mathematics problem-solving questions. A similar study in South Africa by [Raoano \(2016\)](#) revealed learners lack problem-solving skills in Mathematics, due to language barriers. Learning problem-solving is a significant aspect of the curriculum of mathematics that integrates real-life problems. In Namibia, a lack of Mathematical problem-solving skills have been observed among the Junior Secondary (Grade 8 - 9) learners which contribute to poor performance in Mathematics ([DNEA, 2021](#)). Furthermore, it was indicated that one of the contributors to the poor performance of learners in mathematics is learners failing to answer problem-solving questions ([Ministry of Education, 2020](#)). A study done in Namibia revealed that learners do not learn Mathematics with understanding due to the language barrier among learners and the lack of teaching strategies among teachers ([Chirimbana and Naukushu, 2012](#)).

According to the regional education directorate report, about 95% of mathematics teachers were trained on the revised curriculum to improve their teaching skills and content delivery. It also indicated that about 60% of learners in the junior secondary phase had Mathematics books. However, learners were still struggling to solve problem-solving questions ([Ministry of Education, 2020](#)). Poor performance in Mathematics is evident at three selected combined schools with an average pass rate of 37.5% in 2017, 28.3% in 2018, 24.8% in 2019, and 21.9% in 2020 during November/December examinations respectively ([Ministry of Education, 2020](#)).

Again, studies in the area of Mathematics in Namibia such as [Sikukumwa \(2017\)](#) in the Kavango East region that explored the types of strategies used to solve algebraic word problems by grade 12 ordinary level mathematics learners, [Kleopas \(2020\)](#) in the Kunene region explored the challenges of teaching Mathematical problem-solving skills at junior primary phase. Similar findings were discovered by many researchers that a lack of teaching and learning resources,

poor language skills among teachers and learners, inappropriate teaching methods, and negative attitudes toward learners, lack of parental involvement, a lack of motivation, and support had been identified as contributing factors to learners' performance in Mathematics in other countries (Raoano, 2016). However, it seems no study was conducted to investigate the factors that contribute to poor problem-solving skills in grade 8 Mathematics learners in the Ongha circuit. Therefore, this study intended to fill the research gap.

The main purpose of this was to investigate the factors that contribute to poor problem-solving skills in Grade 8 Mathematics learners at three combined schools in the Ongha circuit. This study sought to answer the following question: What are factors that contribute to poor problem-solving skills in Grade 8 learners in Mathematics at three combined schools? This paper discusses the theoretical framework and literature reviews. Integral to this, the paper also discussed the methodology and findings and discussions. Finally, the paper made conclusions and recommendations from the study.

## 2. Theoretical Framework and Literature Reviews

The study was based on the theory of Vygotsky's social constructivism of cognitive development. Social constructivism advocates the ultimate role of interactions of individuals in their social environment to develop their cognitive (Mukeredzi & Mandrona, 2013). Social constructivism is defined as a description of how knowledge is created by individuals as they interact in their social environment (Beghoul & Chelghoum, 2020). A series of recent studies have indicated that the social constructivist framework is based on three principles; researching an idea, construction of evidence, as well as evaluation of evidence (Parmaxi, Zaphiris, & Ioannu, 2016).

The study used this theory to understand how students construct new knowledge through continuous social interactions. Beghoul and Chelghoum (2020) believe knowledge creation happens through cooperative learning, project-based learning, and discovery practices. Social constructivism entails the process of communication and interaction through the use of mathematical symbols, terms, and concepts to produce learning. Besides, it can be propounded that to create knowledge in a constructivist classroom, a mathematics teacher needs to concentrate on the process each student uses instead of focusing on the correct answers. Mathematics teachers need to adopt different teaching strategies to increase learners' chances to acquire knowledge. Studies have indicated that social constructionism enables learners to attain new knowledge through interacting in groups or pairs during the lesson (Mukeredzi & Mandorona, 2013). In their study, Parmaxi et al. (2016) confirm that the social constructivist approach enables learners to be engaged and encourages them to learn and share ideas and opinions.

A large number of existing studies in the broader literature have revealed that factors that might contribute to poor problem-solving in Mathematics are such

as; challenges to comprehend the key terms in the question among learners and unable to make sense of concepts used (Phonapichat, Wongwanich, & Sujiva, 2014) and difficulties in understanding concepts meanings (Angateeah, 2017). The significance of language comprehension to solve a mathematical problem has been at the centre of debates over the years. Silver and Thompson (1984) conducted a study in the United State of America on problem-solving in elementary schools and found that one challenge learners experience in Mathematics is a lack of reading ability. These findings corroborate an earlier study done in the USA by Chase and Lee (2009) on mathematics reading difficulties and found that reading ability affects problem-solving skills. This was also confirmed by the vast majority of researchers that a lack of reading skills has a major impact on problem-solving skills (Lamb, 2010). Conversely, a series of recent studies observed a little link between reading ability and achievement in problem-solving (Knifong & Holtan, 1976). A study by Knifong and Holtan (1976) divulged that only less than 10% of mistakes made by grade 6 learners on standardized test problems were caused by reading difficulties in the USA researched schools. These findings substantiate an earlier study by Reynders (2014) that confirmed that the problem of language act as a hurdle to the learning of problem-solving. A study by Matlala (2015) in South Africa in the Northern Cape Province investigated teachers' experience when teaching mathematics via problem-solving and found that teachers use a teacher-centred approach. The teachers confirmed that they lack the experience to assimilate a problem-solving approach into their teaching. He concluded that teachers need to receive regular training to improve their mathematical content knowledge and teaching pedagogies. Sharing similar sentiments, Dimmock (2011) propounds that subject knowledge is required to engage learners in mathematical problem-solving. He further posits that learners' performance in problem-solving is directly influenced by teachers' experience and qualifications. In line with that idea, Knapp et al. (1995) affirm that poor problem-solving skills in learners can be caused by teachers' incompetence, poor mathematics knowledge and lack of training. He further narrated that lack of discipline, poor commitment, and bad attitudes lead to more learners not attending school. Thus teachers need adequate training to improve their teaching skills toward problem-solving.

A study by Yang (2013) in China investigated the learner's support, perception and attitude toward Mathematics in secondary school learners and observed a positive correlation between, learner support, students' perceptions and attitude and their classroom learning. This study concluded that the Mathematics learning environment is influenced by parental involvement and support from teachers and other stakeholders and its connection with learners' attitudes toward mathematics. These findings substantiate an earlier study by Mohd, Mahmood and Mohd (2011) examined the issues that can have an impact on learners' achievement in Mathematics and found a substantial link between parental participation and students' attitudes toward problem-solving and mathematics

achievement. In another study, [Mutodi and Ngirande \(2014\)](#) examined the influences of support on learners' perception of mathematics achievements at selected South African secondary schools. The study observed learners' perception can be influenced by factors such as teacher support, teaching and learning materials, learners' background, confidence, fables, and opinions regarding mathematics. Findings revealed that myths and views on mathematics teachers' and parents' motivation, the approach of teaching and learning materials used and learners' self-confidence determine learners' perception of mathematics and affect their problem-solving skills.

The influence the achievement of primary and secondary school learners in Mathematics reveals that lack of resources influences learners' performance ([Matlala, 2015](#)). It could be indicated that insufficient teaching and learning materials make find it difficult for teachers to teach mathematical problem-solving effectively. The study recommended that more teaching materials are required to increase the capacity of how teachers to teach problem-solving skills in Mathematics. These findings authenticate an earlier study by [Murphy \(2010\)](#) that investigated the impacts of inadequate teaching and learning materials on learners' achievements in a school in the USA and found that lack of teaching aids affects learners' achievement in schools.

### 3. Methodology

This study used a qualitative methodology to collect data from the participants. The qualitative methodology sought to elicit the subjective diverse opinions of the participants. A qualitative approach helped the researcher to get an opportunity to attain an in-depth understanding of the factors that may contribute to poor problem-solving skills in Grade 8 learners in Mathematics. A phenomenological research design was used in this study. According to [Creswell \(2014\)](#), a phenomenological study design requires the researcher to find and understand the experience of people about an issue. This phenomenological research design is a qualitative method that allows a deep investigation of a natural phenomenon and provides a full understanding of the particular experience of the participants. For this study phenomenological strategy of inquiry was used to learn from the participant's perspective on the factors that contribute to poor problem-solving skills of learners in Mathematics in Grade eight at the selected combined school.

The population for this study comprised all 19 Grade 8 Mathematics teachers from 19 combined schools in Ongha Circuit, in the Ohangwena region. Three combined schools from the Ongha Circuit were randomly selected to take part in this study. A sample comprising six Grade eight Mathematics teachers was then chosen purposively from the three combined schools in Ongha Circuit. In this study, Mathematics teachers were regarded as suitable participants for this study because they were in a position to share the experiences they encounter during the teaching and learning of Mathematics.

A purposive sampling method was used to select Mathematics teachers because the researchers only targeted the Mathematics teachers who were currently teaching grade eight at the three selected combined schools at Ongha Circuit. Although there were many schools that offer grade eight in the Ongha circuit, two combined schools whose results in the final end-of-year examination for the 2017-2020 academic year were below 50% and a combined school that performed above 50% were selected to take part in this study. An in-depth face-to-face semi-structured individual interview research instrument was used to collect data for this study. This research instrument was used to allow participants to share ideas, opinions, and views on the factors that contribute to poor problem-solving skills in grade eight mathematics learners at the selected combined schools. In this study, thematic analysis was used to analyze the qualitative data. The data were transcribed, then broken down and grouped into themes and sub-themes to create meanings. The themes developed were discussed to answer the research question of the study.

## 4. Findings and Discussions

The following **Table 1** shows how the results of this study are divided into one major theme and six sub-themes.

### 4.1. Theme 1: Factors That Contribute to Poor Problem-Solving Skills of Learners in Mathematics in Grade Eight at a Selected Combined School

The participants were asked to indicate the factors that may contribute to poor problem-solving skills of learners in Mathematics in Grade eight at a selected combined school. Participants' responses indicated several factors such as language problems, lack of resources, lack of mathematical pedagogical knowledge, lack of parental involvement, lack of motivation and support and lack of training and workshops.

#### 4.1.1. Sub-Theme 1.1 Language Problem

The vast majority of participants in the interview mentioned poor language proficiency among learners as the cause of poor problem-solving skills in mathematics at the school. Participants highlighted that lots of learners in grade 8 could not speak English well, and had a problem reading English with understanding. Participant T3 indicated, "*most of our learners cannot answer problem-solving questions due to lack of understanding*". In support, the participant, T1 said, "*learners have a poor English background; they cannot answer problem-solving questions, as they do not get what the questions want them to do. This is because many learners read without truly understanding what they are reading*". Participant T2 said, "*Some learners can read the statement well but do not comprehend the statement, only understanding can help a learner to solve a question*".

**Table 1.** The factors that contribute to poor problem-solving skills of learners in Mathematics in Grade eight at three selected combined schools.

Theme	Sub-themes
<b>Theme 1:</b> Factors that contribute to poor problem-solving skills of learners in Mathematics in Grade eight at three selected combined schools.	<b>Sub-theme 2.1:</b> Language problem
	<b>Sub-theme 2.2:</b> Lack of resources
	<b>Sub-theme 2.3:</b> Lack of mathematical pedagogical knowledge
	<b>Sub-theme 2.4:</b> Lack of parental involvement
	<b>Sub-theme 2.5:</b> Lack of motivation and support
	<b>Sub-theme 2.6:</b> Lack of training and workshops

In the interview participant, T4 stated, “*many learners faced difficulties in answering problem-solving questions due to, lack of understanding*”. Participant T4 further lamented that language problems were also experienced by some teachers. He said, “*the majority of teachers we have at our school, were trained before independence, so they do experience English problems during classroom instructions because, at that time, their medium of instructions was Afrikaans*”. The remarks made by participant T4 were cemented by Participant T5 who said, “*language problem is a major concern at our school, both in teachers and learners. Some teachers mix with Oshiwambo (vernacular) when teaching because they cannot speak English*”. This problem may lead learners to fail to interpret mathematical problem-solving questions correctly due to a lack of understanding. Participants believe that language proficiency enhances the ability to solve mathematical problem questions. Moreover, it was also noted that mathematical problem-solving skills can be attributed to a lack of reading skills.

The above views correlate with Silver and Thompson’s (1984) sentiments who speculated that one challenge learners experience in Mathematics is a lack of reading ability and understanding. These findings also substantiated an earlier study by Reynders (2014) that confirmed that the problem of language act as an obstacle to solving mathematical problems.

#### 4.1.2. Sub-Theme 1.2 Lack of Resources

Participant T2 said, “*Many learners do not have textbooks as one mathematics textbook is shared by up to five learners, we only rely on the chalkboard*”. In addition, Participant T5 indicated that “*a lack of teaching and learning resources is a problem across all subjects; the learners only rely on the notes provided by the subject teachers on the chalkboard*”. In support participant T3 said, “*we only rely on the few textbooks we have at school, like in grade 8, we have 65 learners in total and we have only 15 mathematics textbooks for grade 8 for revised curriculum in the school, five (5) textbooks were provided by the MoEAC when the curriculum was revised in 2016 and 10 textbooks were bought by the school, so one copy is shared by many learners*”. Participant T4 also indicated, “*the schools only rely on the fund provided by the MOEAC which is insufficient as compared to the school needs*”.

It was noted that a lack of resources might cause a lack of commitment and low morale among teachers and learners and can compromise the quality of teaching and learning in the school. It is evident from the above data that teaching and learning materials can act as a contributor to poor problem-solving in Mathematics. It was indicated that a lack of resources affects learners' performance. Thus, participants believe that the lack of relevant textbooks and visual aids was the cause of poor problem-solving skills in Mathematics. The findings above authenticate the earlier findings of [Murphy \(2010\)](#) that found that a lack of teaching aids affects learners' achievement in schools.

#### 4.1.3. Sub-Theme 1.3 Lack of Mathematics Pedagogical Knowledge

It is important to ensure that a problem-solving foundation is well instilled into the learners as they use that knowledge throughout their learning of Mathematics in all grades. Participant T4 indicated, *"despite many of the teachers at our school are qualified, most of them acquired their teaching qualifications before independence, so they do not possess advanced teaching skills and most of these teachers are found in Junior and senior primary phase"*. Similarly, participants T2 indicated, *"most of the learners we receive from the previous grade that were taught by other colleagues, learners get promoted with numerous competencies not fully mastered. He further said that, for instance, I have five (5) learners in the Grade 6 class who are still struggling to perform four basic operations well. These learners lack the basic numeracy skills that they could obtain in Grade 5"*. Participant T5 added, *"due to the fact the school has too many teachers over the age of 50, the challenge of poor problem-solving skills is difficult to solve at the moment"*.

Participants also mentioned a lack of information on the best strategies to teach problem-solving skills. Participant T4 stated, *"teachers need guiding strategies to help learners improve their problem-solving skills"*. In addition, participant T5 said, *"one teacher I observed recently teaching problem-solving, the teacher only read the problem and instructed learners to do without guiding them on how to approach the question. This may be a result of lack of guiding strategies to assist learners how to approach or to tackle the problem-solving question"*. In support participant T1 indicated, *"honestly sometimes, the reason why learners lack many skills can be blamed on us (teachers). I also have a topic that I struggle to present to the learners, so I also lack the best strategies to help learners to improve their problem-solving skills"*.

Participants were asked to indicate the teaching methods used by teachers when teaching problem-solving questions. Participant T4 indicated that *"many teachers only rely on teacher-centred method"*. He further said, *"this method limits learners' participation during the lesson"*. Participant T3 reiterated that *"it is very difficult to use learner-centred approach to these learners. When you put them in group and give them problem-solving questions, you will just find the minutes of the lesson finished without learners doing anything"*. Participant T2 indicated, *"I put my learners in a group, allocate each group problem-solving"*

*questions and instruct them to discuss and find the solution*". This was supported by the remarks made by participant T5, who said, *"what I picked up during classroom observation is that learners are given pair work or group work during mathematics problem solving so that they exchange views and learn from each other" but many learners do not benefit because they do not contribute to the discussion.*

Besides, participant T1 said, *"I always group my learners according to their learning ability so that those who do not understand can get help from others. This helps because you can find those learners who hardly try, also take part in the discussion"*. Participant T5 supported group discussion by saying *"group discussion real help learners to improve problem-solving skills, the teacher just needs to put more effort into using this method"*. Teacher mathematics knowledge contributes greatly to problem-solving skills in Mathematics. This denotes that subject knowledge and teaching competence are key to involving learners in an effective mathematical problem-solving classroom. Participants believe that teaching mathematical problem-solving effectively requires a teacher with specialized knowledge and skills. The findings above support and uphold the findings by Knapp et al. (1995) affirm that poor problem-solving skills in learners can be caused by teachers' lack of knowledge and poor mathematics knowledge. This implies that a lack of knowledge and experience inhibits teachers to integrate problem-solving approaches into their teaching.

#### **4.1.4. Sub-Theme 1.4 Lack of Parental Involvement**

Participants indicated that education should start from home, but due to the poor educational background of most parents of children in a rural school, this does not happen. Participants also stated that many parents lack understanding of the importance of their involvement in children's education. Participant T4 said, *"one challenge the school face is that most learners are from homes headed by old people who cannot read or write"*. Participant T2 added, *"Since most children live with a grandparent, they hardly find anyone to help them with their homework when they are at home"*. Participant T1 indicated that *"children living in rural areas do not get educational support from homes"*. Participant T5 said, *"even when we invite parents to come and view their children's books at school, most parents do not take this exercise seriously, only a few parents turn up"*.

Participant T6 added, *"Many parents do not put more effort in their children's education, many learners are from houses headed by old people"*. In addition, participant T3 said, *"most parents do not visit the school to hear the progress of their children in their school work"*. During the interview participant, T1 said, *"there was a time I invited a parent for one male learner who does not do his mathematics homework to come to school, I kept waiting for the parent but never turn up"*. This makes it difficult to find ways to help the learners in their learning. Participant T2 stated, *"I initially put up a strategy for each parent to check and sign his or her child's mathematics homework books weekly but only*

*a few parents used to sign their children's books, this discouraged me*". This is an indication that the involvement of parents in their children's education is very minimal. It is evident from the above findings that lack of parental involvement in their children's education contributes to poor mathematical problem-solving skills. Participants indicate that students' mathematics achievement can be influenced by parental involvement. The above findings were in line with the findings from Mutodi and Ngirande's (2014) study that discovered that teacher support and parental contribution affect learners' problem-solving skills. This denotes that learners who are not fully supported by parents do not achieve better in Mathematics.

#### **4.1.5. Sub-Theme 1.5 Lack of Motivation and Support**

Participant T3 indicated, *"learners need someone from high office in the MOEAC or government to motivate them"*. She further added *"we tried our best to talk to them but it seems learners do not want to take their learning serious"*. Participant T4 indicated, *"learners do not put in extra effort in their learning which may be due to lack of motivation"*. In addition, Participant T5 said, *"Despite, that we award the best performers in Mathematics in each class on a termly basis, very little improvement among learners"*. Lack of motivation and support affects learners' confidence toward Mathematics problem-solving questions. This means that learners need support to improve their mathematical achievement. During the interview, the majority of the participants concurred that lack of motivation is one of the factors that contribute to poor problem-solving skills in Mathematics. The above findings correlate with the view of Mutodi and Ngirande (2014) that revealed that motivation and support improve learners' perception, views and opinions toward Mathematics. This implies that learners who receive educational and psychological support perform well in mathematical problem-solving than those who are not.

#### **4.1.6. Sub-Theme 1.6 Lack of Training and Workshops**

Participant T5 indicated, *"most of our teachers are not well trained on the revised curriculum; this makes it difficult to implement it effectively. We (school) wrote a request to the regional directorate of education so that training can be arranged but they responded by saying lack of funds prohibited them to arrange a workshop. Despite that, we do help our teachers where they experience a problem where we can"*. In addition, participant T3 indicated, *"since I started my teaching profession in 2016, I never attended any workshop"*. Participant T6 said, *"we only rely on our HOD and neighbouring teachers to help us when experiencing difficulties in our teaching"*. He added, *"but sometimes we need experts from the regional office to train us on how we approach certain topics"*. Moreover, participant T2 stated, *"in most cases when the Senior Education Officer (SOE) visit schools to conduct classroom observation, they concentrate more on mistakes, oftentimes they do not listen and attend to teachers' problems but they only blame teachers on errors they detected instead of helping the*

*teachers to improve their teaching approach*". Participants indicated that the last time workshop for the revised curriculum was done in 2015 and no training was conducted afterwards despite new teachers getting employed since then. Participant T2 indicated, "I only attended a workshop once in 2015 when the new curriculum was revised". Moreover, participant T4 lamented, "there were subject facilitators that were selected in the cluster three years ago to train teachers who were not trained on the revised curriculum but this exercise did not effectively take place due to lack of funds". He further added, "we use knowledgeable teachers in the circuit as a referral when a certain teacher presented a problem in their teaching although this activity is not 100% effectively at least assistance is given". It is evident from the above data that lack of training limits teachers to offer quality teaching. Participants believe that lack of training was mentioned by participants as a contributor to poor problem-solving skills. These findings substantiate the views of Matlala (2015) which indicates that teachers' mathematical content knowledge can be enhanced by training. This denotes that mathematics teachers need to be trained to improve the teaching and learning process.

## 5. Conclusion

The study uncovered factors that contribute to poor problem-solving skills of learners in Mathematics in Grade 8 at three selected combined schools. The findings revealed that multiple factors may contribute to poor problem-solving skills in learners in Mathematics, namely, language problems, lack of resources, lack of mathematical pedagogical knowledge, lack of parental involvement, lack of motivation and support and lack of training and workshop. Participants indicated that language problems contribute greatly to poor problem-solving skills in Mathematics. The participants mentioned that many learners have poor English communication skills and reading skills, thus, they find it difficult to solve problem-solving questions because they do not understand the questions. The participants also uncovered that language problem is experienced by both teachers and learners. The participants in the study divulged that some teachers presented lessons in vernacular language because they cannot express themselves well in English. The findings of the study revealed that lack of reading skills and understanding were the cause of poor problem-solving skills of learners in Mathematics.

The findings of the study also revealed that the lack of resources contributes to poor problem-solving skills in learners in Mathematics. The participants revealed that the schools had a shortage of mathematics textbooks and other teaching and learning resources. The majority of the participants were of the view that a lack of resources affects the commitment and morale of teachers and learners. The finding of the study further revealed that teachers' mathematics knowledge inhibits learners' mathematics problem-solving skills. The participants uncovered that teachers lack mathematics pedagogical knowledge, thus,

they find it difficult to assist learners with problem-solving. Participants had the view that due to limited teacher pedagogical knowledge, teachers rely heavily on the teacher-centered approach when presenting their lessons. The participants further revealed that mathematics teachers lack the knowledge and experience to integrate problem-solving approaches into their teaching.

Furthermore, lack of parental involvement was cited by participants that it contributing to poor mathematic problem-solving in learners. The participants revealed that most children were from homes headed by the elderly and find no one to assist them in their learning when they are at home. The participants also mentioned that many parents whose children come to the school do not visit the school to discuss challenges faced by their children in their learning even if they are invited. The participants indicated that on many occasions, parents can be invited but never turn up. Besides, the participants in the interview disclosed that learners lack motivation, thus, they do not put extra effort into their learning. This implies that learners who receive educational and psychological support perform well in mathematical problem-solving than those who are not.

The finding of the study discovered a lack of workshop/training at the school and in the circuit. The participants mentioned that most teachers were not trained in the reformed curriculum. The participants gave their views that a lack of workshops inhibits teachers to develop suitable skills to assist learners to improve their mathematical problem-solving skills. The participants had the view that teachers were unable to assist learners to tackle problem-solving questions due to limited knowledge caused by a lack of workshops to broaden their knowledge.

## 6. Recommendation

The study made the following recommendations to enhance learners' mathematical problem-solving skills at the school and the Ministry of Education Arts and Culture.

### **Recommendation to the Mathematics teachers**

- Teachers should teach more problem-solving questions to learners to allow more practice to improve problem-solving skills in learners.
- Teachers should teach through problem-solving to allow learners to explore and discover new mathematical concepts.
- Teachers should design suitable teaching aids and activities to be applied in the classroom practice to enhance the learning of problem-solving.
- Teachers should employ different teaching strategies that accommodate learners with different learning abilities to enhance problem-solving skills.
- Teachers should emphasize key mathematical terms and vocabularies to enhance learners' problem-solving skills.

### **Recommendation to the Ministry of Education, Arts and Culture**

- The ministry should provide professional support to teachers and help them to improve their teaching strategies on problem-solving.

- The ministry should provide adequate textbooks to schools to help teachers to teach effectively.
- The ministry should organize workshops and training for mathematic teachers and tackle issues that affect the teaching and learning of mathematical problem-solving.

## 7. Areas of Further Research

The study investigated the factors that contribute to poor problem-solving skills of learners in Mathematics in Grade eight at three selected combined schools in the Ongcha circuit. Therefore, a comparative study needs to be undertaken focusing on the factors that contribute to poor mathematical problem-solving at combined and primary schools. The researcher recommends a future research study to look at the problem-solving skills of learners in terms of gender. Another aspect the researcher felt need future research is to conduct a comparative study on problem-solving skills between rural schools and urban schools in Namibia.

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## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

## References

- Angateeah, K. S. (2017). An Investigation of Students' Difficulties in Solving Non-Routine Word Problem at Lower Secondary. *International Journal of Learning and Teaching*, 3, 46-50. <https://doi.org/10.18178/ijlt.3.1.46-50>
- Beghoul, Y., & Chelghoum, A. (2020). Use of the Social Constructivist Approach in Teaching Oral Skill to First Year BA Students of English. In *The Second National Conference on Language, Mind and Learner's Cognitive Capacities* (pp. 16-31).
- Chase, Y., & Lee, D. (2009). *Reading Practice in Early Schools. Teaching Models* (4th ed.). McGraw-Hill.
- Chirimbana, M., & Naukushu, S. T. (2012). Mathematics Papers Must Have Gone Crazy. In *The 7th National Mathematics Congress, Swakopmund Annual Mathematics Congress*, Swakopmund, 16 May 2012.

- Creswell, J. W. (2014). *Research Design*. SAGE.
- Dimmock, C. (2011). *Leadership, Capacity Building and School Improvement: Concepts, Themes and Impact*. Routledge. <https://doi.org/10.4324/9780203817452>
- Directorate of Examination and Assessment (DNEA) (2021). *Regional Examination Reports 2021 Oshana Region: Oshakati*.
- Incebacak, C., & Ersoy, M. (2016). Problem Solving Skills of Secondary School Students. *China-USA Business Journal*, 15, 275-285. <https://doi.org/10.17265/1537-1514/2016.06.002>
- Kleopas, E. (2020). *Challenges of Teaching Mathematical Problem Solving Skills*. Master's Thesis, University of Namibia.
- Knapp, M. S., Shields, P. M., & Turnbull, B. J. (1995). Academic Challenge in High-Poverty Classrooms. *Phi Delta Kappan*, 76, 770-776.
- Knifong, J. D., & Holtan, B. (1976). An Analysis of Children's Written Solutions to Word Problems. *Journal for Research in Mathematics Education*, 7, 106-112. <https://doi.org/10.5951/jresmetheduc.7.2.0106>
- Lamb, J. H. (2010). Reading Grade Levels and Mathematics Assessment: An Analysis of Texas Mathematics Assessment Items and Their Reading Difficulty. *Journal of Mathematics Educator*, 20, 22-34.
- Matlala, S. G. (2015). *The Experiences of Secondary Mathematics Teachers Teaching Mathematics through Problem Solving*. Master's Thesis, Stellenbosch University.
- Ministry of Education (2020). *Directorate of National Examination and Assessment of Namibia Report*. Windhoek: Ministry of Education.
- Mohd, N., Mahmood, T., & Mohd, N. I. (2011). Factors That Influence Students in Mathematics Achievement. *International Journal of Academic Research*, 3, 118-121.
- Mukeredzi, T. G., & Mandrona, A. R. (2013). The Journey to Becoming Professionals: Student Teachers' Experiences of Teaching Practice in a Rural South African Context. *International Journal of Education Research*, 62, 141-151. <https://doi.org/10.1016/j.ijer.2013.07.010>
- Murphy, J. (2010). *An Investigation of the Effects of Class Size on Student Achievement in Title I Elementary Schools: A Mixed Methods Study*. Master's Thesis, VCU University.
- Mutodi, P., & Ngirande, H. (2014). The Influence of Students' Perceptions on Mathematics Performance. *Mediterranean Journal of Social Sciences*, 5, 431-442.
- Parmaxi, A., Zaphiris, P., & Ioannou, A. (2016). Enacting Artifact-Based Activities for Social Technologies in Language Learning Using a Design-Based Research Approach. *Journal of Computers in Human Behavior*, 63, 556-567. <https://doi.org/10.1016/j.chb.2016.05.072>
- Phonapichat, P., Wongwanich, S., & Sujiva, S. (2014). An Analysis of Elementary School Students' Difficulties in Mathematical Problem Solving. *Precedia-Social and Behavior Sciences*, 116, 3169-3174. <https://doi.org/10.1016/j.sbspro.2014.01.728>
- Raoano, M. (2016). *Improving Learners' Mathematics Problem Solving Skills and Strategies in the Intermediate Phase: A Case Study of a Primary School in Lebopo Circuit*. Master's Thesis, University of Limpopo.
- Reynders, A. (2014). *Obstacles That Hamper Learners from Successfully Translating Mathematical Word Problems into Number Sentences*. Master's Thesis, University of the Free State.
- Sikukumwa, E. (2017). *Types of Strategies Used to Solve Algebraic Word Problems by Grade 12 Ordinary Level Mathematics Learners of Kavango East Region of Namibia*.

Master's Thesis, The University of Namibia.

Silver, E. A., & Thompson, A. G. (1984). Research Perspectives on Problem Solving in Elementary School Mathematics. *Journal of Elementary School*, 84, 529-545.

<https://doi.org/10.1086/461382>

Tambunan, T. (2019). The Effectiveness of the Problem Solving Strategy and the Scientific Approach to Students' Mathematical Capabilities in High Order Thinking Skills. *International Electronic Journal of Mathematics Education*, 14, 293-302.

<https://doi.org/10.29333/iejme/5715>

Yang, X. (2013). Senior Secondary Students' Perceptions of Mathematics Classroom Learning Environments in China and Their Attitudes towards Mathematics. *The Mathematics Educator*, 15, 66-80.