

Learning Difficulties of Students in Mathematics

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Abstract:

This study determined the level of learning difficulties in Mathematics of the Grade 7 learners in a public secondary school, in a small-sized division, in southern Negros for the school year 2023-2024 as the basis for an intervention plan. The descriptive research design was used in this study with which data was gathered from 170 Grade 7 learner-respondents utilizing a researcher-made questionnaire that has passed extensive tests of validity and reliability. The questionnaire gathered the profile of the students – sex, distance from home to school, parents' highest educational attainment, and average family monthly income, and focused on 4 major variables which are Content Knowledge, Learning Environment, Teaching Strategies, and Parental Support. This study revealed that the Grade 7 learners face moderate difficulties in Mathematics across different areas. They encounter moderate challenges in understanding mathematical content, navigating the learning environment, and adapting to various teaching strategies. However, seeking parental support for mathematical studies appears to be particularly challenging, with students reporting high levels of difficulty in this aspect. These findings seek the attention of parents to be more engaged in the learning process of students, especially those with lower educational attainment and income levels. Workshops, seminars, and informational sessions can be organized to educate parents on the importance of their involvement in their child's mathematical education and provide them with strategies to support learning at home.

Keywords: Difficulties, learning, mathematics, students

Introduction:

Nature of the Problem

The Department of Education (DepEd) in the Philippines emphasizes the development of students' critical thinking and mathematical problem-solving skills, as outlined by the World Economic Forum (2020). However, research by Preclaro (2019) highlights significant challenges faced by Filipino students in mathematics, including difficulties in retrieving facts, understanding mathematical language, and solving word problems. These struggles can lead to long-term negative effects on academic performance and future opportunities (Nelson & Powell, 2018). The Grade 7 Mathematics Learning Standards require students to apply mathematical concepts in real-life scenarios using technology (DepEd Order 21, s. 2019), yet recent data from the Enhanced Regional Unified Numeracy Test (ERUNT) for the 2023-2024 academic year indicate that over half of the students fall into the "Low Proficiency" category, signaling the need for intervention.

Despite DepEd's educational goals, a significant gap exists between expectations and actual student performance. The 2018 Program for International Student Assessment (PISA) by the OECD revealed that Filipino 15-year-olds ranked second lowest among 79 countries in mathematics literacy (Luz, 2022). Bhusal (2021) identified multiple factors contributing to poor math performance, such as misconceptions, lack of motivation, ineffective teaching strategies, and insufficient integration of mathematics into daily life. Additionally, the preferential treatment of high-performing students further widens the achievement gap. Addressing these challenges requires improvements in teaching methods, curriculum design, and targeted student support to enhance overall mathematical proficiency in the country.

Mathematics extends beyond the classroom, playing a crucial role in various global fields like natural science, engineering, medicine, and social science (Jones, 2023). Recognizing its impact on future opportunities and diverse careers, this study aims to assess learners' difficulties in Mathematics, seeking valuable insights to enhance their achievements. The findings will inform the development of a personalized, comprehensive, and inclusive intervention plan.

Current State of Knowledge

Mathematics learning disability (MLD) is a complex and diverse condition influenced by various combinations of cognitive risk factors that contribute to mathematical difficulties (Kroesbergen, Huijsmans, & Friso-van den Bos, 2021). One key aspect of this heterogeneity is the variability in selection criteria used across studies, raising concerns about how inconsistent criteria impact the comparability of research findings. Specifically, questions arise regarding the differences in mathematical and cognitive profiles between restricted and less stringent MLD samples (Kroesbergen et al., 2021; Peters & Ansari, 2019). This study aims to explore these questions by examining the mathematical and cognitive characteristics of different MLD samples based on widely applied selection criteria: (a) severity of performance on standardized math tasks (Van Luit, 2019) and (b) persistence of math difficulties (Van Luit, 2019).

Many students struggle with abstract mathematical symbols, problem transformation, and recalling basic concepts, which are essential for mastering equations and formulas (Sarimanoğlu, 2019; Vidad, 2019). A study by Dendiego & Narciso (2019) further highlights that solving equations and memorizing formulas pose significant challenges for students. Research suggests that a positive learning environment, including classroom design, teacher-student relationships, and school climate, enhances academic achievement and engagement (Renzulli, 2018; Fredricks, Blumenfeld, & Paris, 2019). Okello (2023) emphasizes that a well-equipped and supportive school environment fosters intellectual growth and improves academic performance. Additionally, a positive classroom climate contributes to students' psychological well-being, promoting a sense of belonging and emotional stability, which are crucial for effective learning (Roeser, Midgley, & Urdan, 2019).

Preclaro (2019) found that Filipino students struggle with retrieving mathematical facts, understanding mathematical language, and solving word problems, often facing difficulties in comprehension, strategy selection, and careless solving. Despite the Department of Education's (DepEd) efforts to enhance mathematics education through curriculum revisions, including the K-12 program, mathematics remains one of the most challenging subjects in basic education (Rin & Domondon, 2021). Mathematics equips learners with essential skills like logical reasoning and problem-solving, yet many students still face learning difficulties. Additionally, UNICEF Philippines (2021) highlighted that students from lower socio-economic backgrounds encounter greater academic challenges due to limited access to resources and lower parental educational levels, further hindering their ability to succeed in mathematics.

Assessing teachers' skills and competencies is crucial for improving education quality, as research indicates a strong correlation between teacher effectiveness and student performance (Yunianto et al., 2021). While past studies have focused on subject matter knowledge, they often fail to assess the broader range of teacher competencies. Yunianto et al. (2021) examined mathematics teachers' Knowledge of Content and Students (KCS) through lesson plans and found that many struggled to predict students' responses and problem-solving strategies, particularly in maximizing area from a given perimeter. This highlights gaps in teacher preparedness to support student learning effectively. Additionally, Filipino students continue to perform below global and regional math standards, partly due to a curriculum that emphasizes rote memorization over problem-solving and critical thinking (Dee et al., 2021; Saleem, 2022).

Zimmer-Gembeck (2023) emphasized the importance of communication skills in mathematics, suggesting that male students benefit from collaborative learning and peer tutoring to enhance their articulation of mathematical ideas. However, Mangwende and Maharaj (2018) noted that mismatches between teaching strategies and students' learning styles hinder effective learning. Gender disparities also play a role, as Rodríguez et al. (2019) found that female students often experience higher anxiety and lower confidence in math, affecting their ability to communicate ideas effectively. Wang & Degol (2017) stressed the need for inclusive classrooms and role models to promote gender equity in STEM. Additionally, Levine and Pantoja (2021) highlighted that boys may struggle with self-regulation skills such as planning and organization, which are crucial for math success. Yu & Deng (2022) further observed that male students tend to exhibit more disruptive behaviors, potentially affecting their focus and spatial organization in learning environments.

The study by Faremi, Mabuza, and Akinwarere (2023) found that students who travel long distances to school perform worse in geography, highlighting the need for government intervention in transportation. Parental involvement also significantly influences academic success, as Lara and Saracostti (2019) emphasized the necessity of parental engagement, while Priyam and Nath (2021) suggested that family support fosters social and emotional development. Chen and Mok (2023) found that active parental involvement promotes a mastery-oriented mindset in students, improving their persistence in learning. Similarly, Utami (2022) noted that parental support helps mitigate academic stress, particularly in male students. Studies by Idris et al. (2020) and Hidayatullah & Csíkos (2024) revealed a strong correlation between parents' educational attainment and students' academic performance, as well-educated parents tend to be more involved in their children's studies. Haider et al. (2024) reiterated that students from lower educational backgrounds struggle more with teacher-related issues due to limited academic support at home. The Education Endowment Foundation (n.d.) and Wahi (2023) further stressed that socio-economic status affects academic outcomes, with lower-income students having fewer educational resources and support, whereas higher-educated parents set greater academic expectations, motivating their children to excel.

Theoretical Underpinnings

Mathematics learning difficulties (MLD) can negatively impact students' academic progress and future opportunities (Nelson & Powell, 2018). Cognitive abilities, lack of prior knowledge, and insufficient effort contribute to these challenges (Waswa & Al-Kassab, 2023; Acharaya, 2017). Perkins' Theory of Learnable Intelligence (1995) suggests that intelligence is not fixed but can be developed through learning and effort. The theory identifies three types of intelligence: analytical, which aids in logical problem-solving; creative, which fosters innovative thinking; and practical, which applies knowledge to real-world situations. Understanding these aspects can help educators address MLD by tailoring interventions to students' cognitive strengths and weaknesses.

Applying Perkins' theory, educators can design strategies that enhance analytical, creative, and practical intelligence to support students struggling with mathematics. Analytical intelligence helps students grasp mathematical concepts and reason logically, creative intelligence encourages innovative problem-solving, and practical intelligence ensures real-life application of math skills. Recognizing intelligence as malleable allows for targeted instructional approaches that promote growth through practice, feedback, and scaffolded learning experiences. By fostering a growth mindset and implementing these strategies, educators can help students overcome mathematical challenges and achieve long-term academic success.

Objectives

This study aimed to determine the level of learning difficulties in Mathematics of the Grade 7 learners in a public secondary school, in a small-sized division, in southern Negros for the school year 2023-2024 as the basis for an intervention plan. Specifically, it sought answers to the following questions: 1) the learners' learning difficulties in Mathematics according to the area of content knowledge, learning environment, teaching strategies, parental support; and 2) the significant difference in learners' learning difficulties in Mathematics when grouped and compared according to the aforementioned variables.

Methodology

The approach used in the study is described in this chapter. It explores the research design, the study's location, the participants and subjects, and the process of collecting and analyzing the data.

Research Design

The descriptive research design was used in this study to determine the level of learning difficulties in Mathematics of the Grade 7 learners in a public secondary school, in a small-sized division, in southern Negros for the school year 2023-2024 as the basis for an intervention plan. According to Creswell (2017), a descriptive-comparative research design is a methodological strategy that seeks to characterize the traits of one or more groups and compare them to find trends, distinctions, or connections. This design is handy for thoroughly explaining the variables being studied and figuring out how they vary between groups. Hence, the descriptive design was used in this research because the researcher considered it the most suitable design for determining the level of learning difficulties in Mathematics. This design is suited for the study, which aims to describe, explain, and validate findings to have accurate and reliable data and good results.

Study Respondents

The researcher collected data using a customized survey questionnaire to assess Grade 7 students' learning difficulties in Mathematics during the 2023-2024 school year, serving as the basis for targeted intervention programs. The questionnaire had two parts: Part I gathered demographic information, including sex, distance from home to school, parents' educational attainment, and family income, providing insights into students' backgrounds. Part II consisted of 32 items divided into four areas—Content Knowledge, Learning Environment, Teaching Strategies, and Parental Support—to evaluate factors influencing mathematical challenges. Responses were measured on a 5-point Likert scale, ranging from "strongly agree" to "strongly disagree," ensuring a comprehensive understanding of students' difficulties.

Instruments

The main data-gathering instrument of this study is the interview protocol. Based on the research goals, the reviewed literature and studies, and the theoretical framework of the study, the interview questions formulated were focused on challenges encountered, coping mechanisms, best practices, unaddressed challenges, suggested solutions, and learning gained by the teachers in teaching literacy and numeracy in the last mile schools. These questions were sent to an education expert teaching in a tertiary institution with a PhD in educational management. The research instrument was subjected to validity (4.77-excellent) and reliability (0.936-excellent). All of them were interpreted as worthy and good; respectively.

Data Gathering Procedure

Upon obtaining approval for the questionnaire from the panel members, the researcher enlisted three professors recognized as experts in education and research to validate the instrument. Subsequently, the reliability of the research questionnaire was ascertained by administering it to 30 Grade 7 students of the same school who were not actual respondents. Following determining the questionnaire's reliability, the researcher formally requested permission from the School Principal through a letter. Once approval was granted, a schedule for data gathering was set. The researcher personally administered and retrieved the research instrument to ensure a 100% retrieval rate. Post-retrieval, the data were meticulously tabulated, analyzed, and interpreted in alignment with the specific problems outlined in this study. Individual respondent scores were encoded according to variables, and computations were executed using SPSS software. Simultaneously, statistical tables were crafted, considering the study's objectives.

Data Analysis and Statistical Treatment

Objective No. 1 also used the descriptive-analytical scheme and mean to determine the level of learners learning difficulties in Mathematics according to the following areas of content knowledge, learning environment, teaching strategies, and parental support.

Objective No. 2 used the comparative-analytical scheme and Mann-Whitney U test to determine whether or not significant differences exist in the level of learners learning difficulties in Mathematics when grouped and compared according to the variables mentioned earlier.

Ethical Consideration

This research was guided by a strong commitment to ethical principles in investigating mathematics learning difficulties among Grade 7 students. Prior to any data collection, explicit and informed consent was sought from both students and their parents or guardians. Consent forms clearly articulated the study's purpose, procedures, and potential risks and benefits, emphasizing the voluntary nature of participation. Students and their parents or guardians were assured that participation decisions would not affect academic standing or any other aspect of their relationship with the school. The research prioritized confidentiality and anonymity, with stringent measures in place to safeguard participants' privacy. Personal information was handled with the utmost care, and data were anonymized during analysis to ensure that individual identities remained protected. Secure storage protocols were implemented to restrict access to identifiable information exclusively to authorized personnel. Parental involvement was actively sought and respected throughout the study. Before students' participation, parental consent was diligently obtained, providing parents or guardians with a comprehensive understanding of the research objectives and potential implications. Continuous and transparent communication channels were maintained with parents or guardians to address any queries or concerns that may arise during the research process.

Results and Discussion

This section deals with the presentation, analysis and interpretation of data gathered to carry out the objectives of this study. All these were made possible by following certain appropriate procedures so as to give the exact data and solution to each specific problem.

Table 1

Level of Learners' Learning Difficulties in Mathematics in Content Knowledge

Items	Mean	Interpretation
As a learner, I am having difficulties in...		
1. understanding mathematical formulas and equations.	3.46	Moderate Level
2. applying mathematical concepts to solve real-world problems.	3.19	Moderate Level
3. explaining mathematical concepts to my peers and others.	3.45	Moderate Level
4. interpreting and analyzing data presented in mathematical form.	3.34	Moderate Level
5. recognizing patterns and relationships in mathematical contexts.	3.26	Moderate Level
6. using mathematical reasoning and logic to justify solutions.	3.34	Moderate Level
7. memorizing mathematical facts, rules, and procedures.	3.28	Moderate Level
8. identifying errors in mathematical reasoning or calculations.	3.05	Moderate Level
Overall Mean	3.30	Moderate Level

Table 1 shows the level of learners' learning difficulties in mathematics concerning various content knowledge, with

an overall mean of 3.30, indicating a moderate level of difficulty. Item number 8, "Identifying errors in mathematical reasoning or calculations," obtained the lowest mean of 3.05, interpreted as a moderate level, while item number 1, "Understanding mathematical formulas and equations," obtained the highest mean of 3.46, interpreted as a moderate level.

This moderate level of difficulty suggests that although students are not overwhelmingly struggling, they face consistent challenges that must be addressed to improve their understanding and performance in mathematics. Moreover, understanding and applying mathematical formulas and equations is a particular area where students struggle the most.

The findings align with Sarimanoğlu's (2019) study, which indicates that many students find abstract mathematical symbols and their manipulation difficult due to the high level of cognitive and abstract thinking required. This also agrees with Vidad (2019), who observed that many students face difficulties in transforming problems into mathematical equations and recalling fundamental concepts, which are crucial for mastering mathematical formulas and equations. Additionally, a study by Dendiego, D., & Narciso, N. C. (2019) on Grade 11 students at Kaytitinga National High School highlighted that solving equations and memorizing formulas are significant challenges for students.

Table 2

Level of Learners' Learning Difficulties in Mathematics in Learning Environment

Items	Mean	Interpretation
As a learner, I am having difficulties in...		
1. Setting up the physical location for easy mobility in the classroom.	3.29	Moderate Level
2. Inquiring or requesting assistance during mathematics class.	3.32	Moderate Level
3. accessing additional learning resources in the classroom to help me understand mathematical concepts.	3.28	Moderate Level
4. receiving timely and constructive feedback on my mathematical performance from my mathematics teacher.	3.08	Moderate Level
5. Sustaining my engagement and motivation within the mathematics learning environment.	3.19	Moderate Level
6. Engaging with my peers during mathematics activities on assignments or problem-solving.	3.19	Moderate Level
7. Utilizing or navigating technology like interactive software or mobile applications incorporated into our mathematics class.	3.28	Moderate Level
8. Managing disruptions in my math class that hinder my focus.	3.17	Moderate Level
Overall Mean	3.23	Moderate Level

Table 2 shows the level of learners' learning difficulties in mathematics within the learning environment, with an overall mean of 3.23, indicating a moderate level of difficulty. Item number 4, "Receiving timely and constructive feedback on my mathematical performance from my mathematics teacher," obtained the lowest mean of 3.08, also interpreted as a moderate level, while item number 1, "Inquiring or requesting assistance during mathematics class," obtained the highest mean of 3.32, interpreted as a moderate level.

The result indicates that while students are not overwhelmingly struggling within the learning environment, they face consistent challenges that need to be addressed to enhance their learning experiences in mathematics. The difficulty in inquiring or requesting assistance during class suggests that students might feel hesitant or unsure about asking for help, which can impede their understanding and progression in mathematical concepts. Effective communication and support mechanisms need to be established to ensure students feel comfortable seeking assistance.

The findings align with the research conducted by Magayon and Tan (2016), which discovered that Filipino mathematics teachers support students during their learning activities by monitoring whether they are completing tasks correctly, identifying students' needs related to the tasks, offering prompts and positive feedback to those making progress, assisting students facing difficulties with the tasks, and providing helpful information to accelerate their progress.

Table 3

Level of Learners' Learning Difficulties in Mathematics in Teaching Strategies

Items	Mean	Interpretation
As a learner, I am having difficulties in...		

1. Adjusting to my mathematics teacher's teaching approaches.	3.38	Moderate Level
2. following instructions given by my mathematics teacher.	3.27	Moderate Level
3. Participating in interactive, hands-on activities throughout math classes.	3.33	Moderate Level
4. Accommodating my teacher's incorporation of technology, like interactive software, into math lessons.	3.35	Moderate Level
5. Finding my teacher's instructions clear and comprehensible.	3.21	Moderate Level
6. Recognizing the significance when my teacher connects mathematical concepts to real-world instances during lessons.	3.14	Moderate Level
7. adjusting to my teacher's use of a variety of teaching methods to explain mathematical concepts.	3.36	Moderate Level
8. Maintaining involvement even when my teacher doesn't employ imaginative teaching techniques to enhance the appeal of mathematics lessons.	3.28	Moderate Level
Overall Mean	3.29	Moderate Level

Table 3 shows learners' learning difficulties in mathematics concerning teaching strategies, with an overall mean of 3.29, indicating a moderate level of difficulty. Item number 6, "Recognizing the significance when my teacher connects mathematical concepts to real-world instances during lessons," obtained the lowest mean of 3.14, also interpreted as a moderate level, while item number 1, "Adjusting to my mathematics teacher's teaching approaches," obtained the highest mean of 3.38, interpreted as a moderate level.

This signifies that while students are not overwhelmingly struggling with teaching strategies, they do face consistent challenges that need to be addressed to improve their understanding and performance in mathematics. Moreover, adjusting to the teacher's teaching approaches is a particular area where students struggle the most. This suggests that variability in teaching styles or the methods employed by teachers may not align well with all students' learning preferences, indicating a need for more adaptable or differentiated teaching strategies to cater to diverse learner needs.

The results are consistent with the study by Mangwende & Maharaj (2018), which found that not all mathematics students benefited from their teachers' teaching strategies because of a misalignment between the teachers' methods and the students' learning styles.

Table 4

Level of Learners' Learning Difficulties in Mathematics in Parental Support

Items	Mean	Interpretation
As a learner, I am having difficulties in...		
1. Receiving support and positive reinforcement from my parents regarding my mathematics studies.	3.65	High Level
2. seeking help from my parents in accomplishing my mathematics homework.	3.34	Moderate Level
3. engaging in conversations with my parents about the mathematical concepts I am studying.	3.45	Moderate Level
4. looking for sufficient learning resources related to mathematics available in our home.	3.62	High Level
5. encouraging my parents to regularly attend parent-teacher meetings to discuss my progress in mathematics.	3.46	Moderate Level
6. Involving my parents in math-related activities or games with me outside of school hours.	3.40	Moderate Level
7. Learning time management skills with the help of my parents, who assist me in developing effective scheduling and prioritization techniques.	3.56	High Level
8. Managing exam-related stress with the support of my parents, who create a nurturing environment and aid me in dealing with the pressures of exams.	3.70	High Level
Overall Mean	3.53	High Level

Table 4 shows the level of learners' learning difficulties in mathematics concerning parental support, with an overall mean of 3.53, indicating a high level of difficulty. Item number 2, "Seeking help from my parents in accomplishing my mathematics homework," obtained the lowest mean of 3.34, interpreted as a moderate level. Item number 8, "Managing exam-related stress with the support of my parents, who create a nurturing environment and aid me in dealing with the pressures of exams," obtained the highest mean of 3.70, interpreted as a high level.

This reveals that while parental support is crucial, there are specific areas, particularly related to exam stress, where learners might need additional or different types of support to effectively mitigate their difficulties in mathematics.

The findings are reinforced by Hernández-Padilla et al. (2023), who suggest that parental involvement can have a positive effect on students' academic performance and help reduce learning difficulties. However, the degree and nature of this impact may vary depending on the type of parental support. Their study, which explored the effects of parental participation in school activities and home support, found that both forms of involvement significantly enhanced students' mathematics achievement. It also emphasized that family involvement, particularly when coupled with a high socioeconomic status, has a beneficial influence on students' learning outcomes in mathematics.

Additionally, a study by Chen & Mok (2023) revealed that active parental engagement in their children's education encourages a mastery orientation in students, promoting persistence and a positive approach to academic challenges, which can reduce learning difficulties.

Table 5

Difference in the Level of Learners' Learning Difficulties in Mathematics in Content Knowledge when grouped and compared according to variables

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	Sig. level	Interpretation
Sex	Male	85	83.75	3464.000	0.643	0.05	Not Significant
	Female	85	87.25				
Distance from Home to School	Near	80	88.16	3387.500	0.506	0.05	Not Significant
	Far	90	83.14				
Parents Highest Educational Attainment	Lower	127	93.74	1684.500	0.000	0.004	Significant
	Higher	43	61.17				
Average Family Monthly Income	Lower	109	93.69	2431.500	0.004	0.004	Significant
	Higher	61	70.86				

Results presented in table 5 on the difference level of learners' learning difficulties in mathematics in content knowledge when grouped and compared according to sex, distance from home to school with the computed p-value of 0.643 and 0.506 which are greater than the level of significance of 0.05. On the other hand, parents' highest educational attainment, and average family monthly income has the computed p-value of 0.000 and 0.004 which are lower than the level of significance 0.05.

Thus, the hypothesis stating that there is no significant difference level of learners' learning difficulties in mathematics in content knowledge when grouped and compared according to sex, distance from home to school is not rejected. However, when grouped and compared according to parents' highest educational attainment, and average family monthly income is rejected.

Therefore, there were no statistically significant variations in the level of learning difficulties in mathematics content knowledge between different sexes or based on the distance of students' homes from the school while there exist significant variations in the level of learning difficulties in mathematics content knowledge on the parents' highest educational attainment, and average family monthly income.

The results imply that factors like parental education and family income play a more influential role in shaping academic outcomes. This underscores the importance of addressing socioeconomic disparities in education, with implications for policy interventions and resource allocation. By prioritizing targeted support for students from lower-income families or those with parents with lower educational attainment, educators and policymakers can work towards reducing inequalities in mathematics education.

These results are backed up the study of Malabarbas, et al. (2022) educational attainment of parents and their family's monthly income are predictors of their children's academic achievement. Furthermore, there is a need for inclusive educational strategies that consider the diverse needs of students to foster academic achievement and reduce educational inequalities (García & Weiss, 2017).

Table 6

Difference in the Level of Learners' Learning Difficulties in Mathematics in Learning Environment when grouped and compared according to variables

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	Sig. level	Interpretation
Sex	Male	85	76.14	2817.000	0.013	0.05	Significant
	Female	85	94.86				
Distance from Home to School	Near	80	90.11	3231.000	0.247	0.05	Not Significant
	Far	90	81.40				
Parents Highest Educational Attainment	Lower	127	91.23	2002.500	0.009	0.05	Significant
	Higher	43	68.57				
Average Family Monthly Income	Lower	109	89.99	2835.500	0.111	0.05	Not Significant
	Higher	61	77.48				

Table 6 presents the results on the difference level of learners' learning difficulties in mathematics in learning environment when grouped and compared according to distance from home to school and average family monthly income with the computed p-value of 0.247 and 0.111 which are greater than the level of significance of 0.05. Thus, the hypothesis stating that there is no significant difference level of learners' learning difficulties in mathematics in learning environment when grouped and compared according to distance from home to school and average family monthly income not rejected.

However, when students are grouped in terms of sex and parents' highest educational attainment, the computed p-value of 0.013 and 0.009 which are lower than the level of significance 0.05. Hence, the null hypothesis stating that there is no significant difference level of learners' learning difficulties in mathematics in learning environment when grouped and compared according to sex and parents' highest educational attainment is rejected.

The result indicates that that factors such as gender and parental education level have an influence on students' experiences and challenges in learning mathematics. This means that male students experience lower learning difficulties in the learning environment compared to their female counterparts. Additionally, students with parents who have achieved lower educational attainment levels experience higher learning difficulties in the learning environment compared to students with parents who have higher educational attainment. This finding could have implications for educational policy and practice, highlighting the importance of considering individual student characteristics and family backgrounds in designing effective instructional strategies and support systems to address diverse learning needs.

The result concurs with the points raised by Wang & Degol (2017) that addressing gender disparities in education remains a critical issue. They suggest that interventions aimed at promoting gender equity in STEM fields should focus on creating inclusive classroom environments and providing role models and mentors to encourage female participation

The results moreover agreed to the study of Okello (2023) the school environment is of paramount importance in shaping and reshaping intellectual ability. Supportive and favorable school environment enriched with enough learning facilities, and favorable climate makes students more comfortable, more concentrated on their academic activities that result in high academic performance.

Table 7

Difference in the Level of Learners' Learning Difficulties in Mathematics in Teaching Strategies when grouped and compared according to variables

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	Sig. level	Interpretation
Sex	Male	85	77.42	2926.000	0.032	0.05	Significant
	Female	85	93.58				
Distance from Home to School	Near	80	90.41	3207.000	0.219	0.05	Not Significant
	Far	90	81.13				
Parents Highest Educational Attainment	Lower	127	91.71	1942.000	0.005	0.05	Significant
	Higher	43	67.16				
Average Family Monthly Income	Lower	109	91.38	2684.000	0.037	0.05	Significant
	Higher	61	75.00				

Table 7 presents the results on the difference level of learners' learning difficulties in mathematics in teaching strategies when grouped and compared according to distance from home to school and with the computed p-value of 0.219 which is greater than the level of significance of 0.05. Thus, the hypothesis stating that there is no significant difference level of learners' learning difficulties in mathematics in teaching strategies when grouped and compared according to distance from home to school is not rejected.

However, when students are grouped in terms of sex, parents' highest educational attainment, and average family monthly income the computed p-value of 0.032, 0.005, and 0.037 which are lower than the level of significance 0.05. Hence, the null hypothesis stating that there is no significant difference level of learners' learning difficulties in mathematics in teaching strategies when grouped and compared according to sex, parents' highest educational attainment, and average family monthly income is rejected.

The result indicates that factors such as sex, and parental education level, and family income have an influence on students' experiences and challenges in learning mathematics in terms of teacher's teaching strategies. This means that male students experience lower learning difficulties in adapting to teaching strategies compared to their female counterparts. Additionally, students with parents who have achieved lower educational attainment levels face greater challenges in adapting to teaching strategies compared to students with parents who have higher educational attainment. Students whose parents have lower educational attainment face greater challenges in adapting to teaching strategies. Moreover, students from lower-income families encounter more challenges in adapting to teaching strategies compared to their counterparts from higher-income families.

This agrees to the research by Wang and Degol (2017) which indicates that girls often face higher anxiety and lower confidence in STEM subjects, including mathematics, which can impede their adaptation to various teaching strategies. Furthermore, aligning with finding of Wahi (2023), which emphasize the indirect role of parental education in providing academic support and fostering a conducive learning environment at home and that higher-educated parents frequently have greater expectations for their children's academic success. Children may be inspired to perform well in school by these expectations.

Students from lower-income families encounter more challenges in adapting to teaching strategies compared to their counterparts from higher-income families. This aligns with the study Zhang, et al. (2020) which indicates that both family SES (Socioeconomic Status) and parental academic involvement were positively associated with math achievement, suggesting that higher SES and increased parental academic involvement correlated with better academic outcomes for children.

Table 8

Difference in the Level of Learners' Learning Difficulties in Mathematics in Parental Support when grouped and compared according to variables

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	Sig. level	Interpretation
Sex	Male	85	82.42	3351.000	0.414	0.05	Not Significant
	Female	85	88.58				
Distance from Home to School	Near	80	79.08	3086.000	0.108	0.05	Not Significant
	Far	90	91.21				
Parents Highest Educational Attainment	Lower	127	95.80	1422.500	0.000	0.05	Significant
	Higher	43	55.08				
Average Family Monthly Income	Lower	109	99.17	1835.000	0.000	0.05	Significant
	Higher	61	61.08				

Results presented in table 8 on the difference level of learners' learning difficulties in mathematics in parental support when grouped and compared according to sex and distance from home to school with the computed p-value of 0.414 and 0.108 which are greater than the level of significance of 0.05.

Thus, the hypothesis stating that there is no significant difference level of learners' learning difficulties in mathematics in parental support when grouped and compared according to sex and distance from home to school is not rejected.

On the other hand, the difference levels of learners' learning difficulties in mathematics in parental support, when grouped and compared according to parents' highest educational attainment and average family monthly income, have computed p-value of 0.000 and 0.000, which are lower than the level of significance 0.05.

Therefore, the hypothesis stating that there is no significant difference level of learners' learning difficulties in mathematics in parental support when grouped and compared according to parents' highest educational attainment and average family monthly income is rejected.

Hence, there were no statistically significant variations in the level of learning difficulties in mathematics parental support between different sexes or based on the distance of students' homes from the school while there exist significant variations in the level of learning difficulties in mathematics parental support on the parents' highest educational attainment, and average family monthly income.

This means that students with parents who have achieved lower educational attainment levels face greater challenges in receiving parental support compared to students with parents who have higher educational attainment. Similarly, students from lower-income families encounter more challenges in receiving parental support compared to their counterparts from higher-income families.

These findings underscore the critical role of parental educational attainment and family income in providing adequate support to students in their mathematics learning endeavors. Addressing these disparities is essential to ensure equitable access to support for all students, irrespective of their socioeconomic backgrounds.

Cariaga's study (2022) and Dayagbil et al. (2021) confirm the result of this study that parental involvement positively affects children's academic success. Parents should involve themselves in their kid's intellectual growth. They also emphasize the importance of parental involvement in enhancing student achievement, particularly in subjects like mathematics. This is further supported by the study of Education Endowment Foundation (n.d.) which indicates that lower-income students may have limited access to educational resources, less parental support, and a less conducive learning environment at home, contributing to their greater challenges in understanding mathematics.

Conclusions

The study concludes that students' learning difficulties in Mathematics are primarily influenced by parental educational attainment and family income rather than distance from home to school or gender. Students from lower-income households and those with parents with lower education levels struggle more with content knowledge and parental support, while disadvantaged learners face challenges in instructional techniques and engagement. Although gender differences exist, socioeconomic status plays a more significant role in determining the degree of difficulty in learning Mathematics. Given these findings, the study recommends implementing parent involvement programs through workshops and instructional sessions, specialized support programs such as National Learning Camp and Mathematics Review, gender-sensitive teaching strategies, equitable resource distribution based on learners' needs, and routine monitoring and evaluation to ensure continuous improvement in addressing students' mathematical challenges.

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