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Factors Influencing Mathematical Ability of Grade 6 Pupils

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Abstract

It is crucial for educators and policymakers to comprehend the elements influencing sixth-grade children's mathematics abilities if they are to successfully support students in their learning process. In this premise, this study analyzed the extent of factors influencing the mathematical ability of Grade 6 learners in one elementary school in Bacolod City Division during the school year 2022-2023. The variables included in this study are sex, parent's education, and family income. To determine the extent of factors influencing the student's mathematical ability, the following areas are considered: learners' motivation, parental support, teachers' instructional skills, and learning resources. Data for this descriptive study was collected from 101 Grade 6 pupils- respondents using a self-made survey questionnaire that has passed the rigorous tests of validity and reliability. Results show that most respondents are female, and parents are at the elementary and high school level only, with Php 12,000.00 and above as the Family Income. The extent of factors influencing the mathematical ability of grade 6 learners according to learners' motivation and Parental support and when group according to variables shows moderate extent except for parent's highest educational attainment in of learner's motivation that shows great extent while in teacher's instructional skills, and learning resources and when group according to variables shows great extent. Also, results show that there is no significant difference among all areas. To foster students' mathematical proficiency and interest, this paper calls for teachers to offer varied exercises and activities, for parents to engage children in math tasks at home, maintain communication through regular meetings and group chats, and teachers should continuously enhance instructional skills, ensure access to organized learning resources, and provide ample time and supplementary materials for concept mastery.

Keywords: Education, mathematical ability, parental support, teachers' competence, Bacolod City, Negros Occidental, Philippines.

Bio-Profile:

Lerma A. Oyog holds a degree in Bachelor of Elementary Education major in English and is currently pursuing her Master of Arts in Education major in Administration and Supervision at STI West Negros University. She serves as Teacher III and the Mathematics School Coordinator of Mandalagan Elementary School, Division of Bacolod City. Her passion for teaching and

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learning methods and curriculum development in mathematics is her motivation for doing research.

Introduction

Nature of the Problem

Mathematical ability is the tool used not only to help learners develop their thinking ability but also to help them develop their basic skills of solving problems, especially problems in daily life. The goal of teaching mathematics to be effective was for the learners to be able to solve its problems. As a matter of fact, experience in solving the problems of the subject is very important to developing learners' thinking skills and helping them gain more skills in solving problems in daily life (Apares, 2019).

Mathematics provides learners with essential and logical reasoning in solving problems and in deciding critical concerns. Also, in the research study by Waldera (2018), learner mathematical confidence was also compared before and after five weeks of intervention. Interventions consisted of daily, 15-minute, small-group mathematics interventions that focused on engaging number sense activities.

Based on the study, Learners' mathematical ability increased by 16.17%. Learners' overall mathematical confidence levels increased from 3.2 to 3.4, which is an increase of 0.2 on a scale of 5. It was discovered that confidence levels regarding students' ability to do mathematics increased, while students' levels regarding liking mathematics varied (Apares, 2019).

As a math teacher, the researcher noticed that the intermediate learners are poor in retention of the lesson, their attitude towards math subjects, and mathematical ability that affects their grades are getting low, and their performance in math declined because of the different extra-curricular activities of the learners in the public school, learners lack motivation, parents support and teacher instructional skills in teaching the subjects and learning resources. In this sense, learners lose focus on their studies because of some factors. In terms of learners' achievement in the school where the researcher assigns the results of the periodic tests, it is shown that the learners' achievement falls below 75%, specifically in math subjects.

Current State of Knowledge

Mazana, Montero, and Casimir (2019) conducted a study entitled Investigating Students' Attitudes Toward Learning Mathematics. Learners' learning of and performance in mathematics is affected by several factors, including students' attitudes towards the subject, teachers' instructional practices, and school environment. The results show that students initially exhibit a positive attitude towards mathematics, but their attitude becomes less favorable as they move forward to higher levels of education.

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It was supported by Colgan (2014), who states that learning and attitude are intricately connected. When students are positive about learning and feel able to succeed, they are more likely to be successful. Learning is more likely to happen because they are engaged, willing to take risks and invest in the task.

Meanwhile, Nyman and Sumpter (2019) opined that the students expressed motivations for doing mathematics. The results show that the children express both intrinsic motivation (cognitive-oriented and emotional-oriented) as well as extrinsic motivation (including outward and compensation). Two new categories of cognitive intrinsic motivation were found—normative and personal. Results also indicated an interplay between the different categories and within categories, signaling that expressed motivation is double-layered.

Indeed, according to Rabia et al. (2017), study habits contribute significantly to the development of knowledge and perceptual capacities. Study habits tell a person how much he will learn, how far he wants to go, and how much he wants to earn. These all could be decided with the help of one's study habits throughout life.

Theoretical Underpinnings

This study is anchored on Walberg's Theory of Productivity, which specifies nine factors that should be considered to enhance students' affective, behavioral, and cognitive learning (Walberg et al., 1986; Waldrip & Giddings, 1994; Bruinsma & Jansen, 2007). The first group of factors includes aptitude variables that contain students' motivation and ability (prior achievement). Students' motivation is indicated by the belief that they can learn mathematics, the feeling of responsibility to undertake the mathematical tasks, finding mathematics interesting, perseverance, and a positive feeling that when they do mathematics tasks, they are likely to apply the appropriate cognitive strategies. Prior achievement is related to the student's belief that positive results in previous examinations will support their mathematics learning. Walberg's theory is relevant to guide our discussions regarding factors influencing students' attitudes (a like or dislike) towards mathematics and those affecting their learning and performance. Factors that guide our discussion factors influence mathematical ability. These factors are relevant to our study because they are the main determinants of the learning process (Mazana et al., 2019).

This theory played a role in the study because the researcher wanted to determine the factors influencing the ability of intermediate learners to learn mathematics. The factors that affect the learning levels of learners in Mathematics are largely controllable and can be manipulated, as suggested by Walberg. Knowledge acquisition, in this particular case, is influenced by Parental support, learners' motivation to learn the subjects, teacher instructional skills in teaching the subjects and learning resources, mainly, learners' prejudices and similar factors and the difficulties of learners is a clear manifestation of how learners' response to various stimuli. Mathematical understanding is very important in understanding mathematical problems and problems in daily life. A meaningful understanding of learning mathematics should be directed at developing the mathematical connections between different ideas and

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understanding how mathematical ideas are interrelated, thereby building a thorough understanding and use of mathematics in contexts outside of mathematics.
Many other theorists, philosophers, and educators have addressed the factors influencing learners' mathematical ability; however, these theories support the underpinning of this study. These theories can be linked to the present study, for they deal with factors influencing mathematical ability. The researcher would then be able to come up with recommendations to elevate the learners' mathematics ability.

Objectives

This study aimed to determine the extent of factors influencing the mathematical ability of Grade 6 learners in one elementary school in Bacolod City Division during the school year 2022-2023 as a basis for an intervention plan. Specifically, it sought to determine: 1) the factors that influence the Mathematical ability of Grade 6 learners based on learners' motivation, parental support, teachers' instructional skills, and learning resources; 2) the extent of factors that influence the Mathematical ability of Grade 6 learners when grouped according to selected variables, and 3) the significant difference in the extent of factors influencing the Mathematical ability of Grade 6 learners when grouped according to selected variables.

Methodology

Research Design

This study utilized the descriptive research design, which aimed to determine the extent of factors influencing the mathematical ability of Grade 6 learners in one elementary school in Bacolod City Division during the School Year 2022-2023. According to McCombes (2019), descriptive research involves describing, recording, analyzing, and interpreting phenomena' present nature, composition, or processes that focus on prevailing conditions or how a person aims to describe a population, situation, or phenomenon accurately and systematically.

Respondents

The respondents of this study were 101 Grade 6 learners in one School in Bacolod City Division in the School Year 2022-2023 using random sampling through the fish bowl technique.

Instruments

This study used a self-made questionnaire to gather all the data, mainly from Grade 6 learners' respondents. The questionnaire has two parts: Part 1 contains queries on respondents' profiles such as sex, Parents' Education, and Family Income, while Part 2 contains the questionnaire proper consisting of 8-line items per area in learners' motivation, Parental support, teacher instructional skills, and learning resources using the five-point Likert scale, which

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contains the following scores: 5 – always; 4 – Often; 3 – Sometimes; 2 – almost, and 1 – almost never.

Procedures

Data Collection

After the research instrument was found valid and reliable, the researcher requested permission from the School Division Superintendent to conduct the study and administer the questionnaire to the respondents. After answering the survey, the questionnaires were immediately retrieved, and the data were tallied and tabulated using the proper statistical tools with the aid of the Statistical Package for Social Sciences (SPSS).

Data Analysis and Statistical Treatment

Objective no. 1 used the descriptive-analytical scheme and mean to determine the extent of factors influencing the mathematical ability of Grade 6 learners in learners' motivation, Parental support, teachers' instructional skills, and learning resources. Objective no. 2 likewise used the descriptive-analytical scheme and mean to determine the extent of factors influencing the Mathematical ability of Grade 6 learners when grouped according to three selected variables. Objective no. 3 used the comparative analytical scheme and the Mann-Whitney U Test to determine the significant difference in the extent of factors influencing the Mathematical ability of Grade 6 learners when grouped according to the same selected variables.

Ethical Considerations

Ethical procedures are ensured in this study. Careful measures are taken to respect their privacy and confidentiality. These measures include seeking approval from the Office of the Schools Division Superintendent of the division office before engaging in the research. After the approval, the researcher provides sufficient information on the purpose of this study and the implications of their participation. The discussion would help the participants in three areas, including gaining knowledge of the research and all the essential information to make an informed decision, increasing intelligence to allow the participant to come to a decision independently and voluntarily elect to participate in the research (Prout & Brown, 2007 as cited in Dumdum, 2021). Furthermore, participants are assured of the confidentiality of their responses and that no information provided is individually linked to them. The participants also cannot indicate their names in the survey questionnaire. A measure is also taken to protect participants from physical and psychological harm, such as embarrassment, stress, and loss of self-esteem (Leedy & Omrod, 2010). Finally, all participants were duly informed of their right to withdraw their participation during the survey without any repercussions.

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Results and Discussions

This section presents the analysis and interpretation of the data gathered. It also presents the study's findings through statistical tools and descriptive and inferential data treatment.

Table 1

Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Learners' Motivation

Items	Mean	Interpretation
As a learner, I encourage myself to …		
1. Read the topics in my math subjects in advance.	3.43	Moderate Extent
2. solve mathematical problems on the board in our math class.	2.93	Moderate Extent
3. play games that use numbers.	3.58	Great Extent
4. study mathematics during vacant hours at school	3.04	Moderate Extent
5. watch the teacher work on a mathematical equation or problem on the blackboard	4.29	Great Extent
6. I feel good when I solve mathematics problems by myself.	4.15	Great Extent
7. take time to study math before going to school.	2.86	Moderate Extent
8. spend more time in school doing mathematics exercises and activities.	3.48	Moderate Extent
Overall Mean	**3.47**	**Moderate Extent**

Table 1 shows the extent of factors influencing the mathematical ability of Grade 6 learners in learners' motivation, with an overall mean of 3.47, which is interpreted as a moderate extent. Watching the teacher work on a mathematical equation or problem on the blackboard has the highest mean of 4.29. The results imply that some of the learners could clearly understand the lesson when the teacher discussed and used board work to explain the process or concept of the lesson. They can focus on studying in school with the supervision and help of the teacher. Results also showed that respondents are not motivated to study the lesson at home because of gadgets and doing household chores; some of the respondents mainly indicated their inability to provide time to self-study Mathematics, and presumably other subjects, at home. Most of these learners' idle time is spent on something else rather than studying their lessons. This is as detrimental as it looks. Self-studying at home plays a vital role in the learners' academic capabilities.

Table 2

Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Parental Support

Items	Mean	Interpretation
As a learner, I experienced my parents…		
1. show the support I need for school activities.	4.38	Great Extent
2. check on my Math performance in school.	3.25	Moderate Extent
3. go to school to talk to my Math teacher.	1.65	Low Extent
4. help me accomplish my homework.	3.32	Moderate Extent
5. explain to me some of the concepts/lessons in Math that I need help understanding.	3.79	Great Extent

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6. show support in my math project.	3.64	Great Extent
7. listen to me when I openly talk at home about my difficulties in school.	3.39	Moderate Extent
8. encourage me to do better If my grades are lower than expected.	3.57	Great Extent
Overall Mean	**3.38**	**Moderate Extent**

Table 2 shows the extent of factors that influence the mathematical ability of Grade 6 learners in parental support. The overall mean is 3.38, which is interpreted as a moderate extent. Item No. 1, which shows the support I need for school activities, yielded the highest mean of 4.38, interpreted as great extent, and item no. 3, “go to school to talk to my Math teacher," yielded the lowest mean of 1.65, and interpreted as low extent. These findings show that Parental support significantly impacts their children's academic achievement. Respondents need the full support of their parents to attend meetings, get involved in school activities, and monitor their children's academic performance.

Table 3

Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Teacher’s Instructional Skills

Items	Mean	Interpretation
As a learner, I personally observed my teacher…		
1. Set expectations and goals before the start of any lesson.	4.14	Great Extent
2. encourages learners to be more engaged in the class through group dynamics and lively activities.	4.17	Great Extent
3. has the ability to connect daily lessons to everyday life so that learners can easily relate and absorb lessons.	4.24	Great Extent
4. Develop a consistent flow of instructions.	3.97	Great Extent
5. consider the diversity of learning needs and provide differentiated instructions.	3.74	Great Extent
6. captures various learning styles to provide a calibrated instructional design.	3.81	Great Extent
7. compliments positive behavior.	4.25	Great Extent
8. Only leave any lesson or activity after correctly concluding it.	3.39	Moderate Extent
Overall Mean	**3.97**	**Great Extent**

Table 3 illustrates the Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Teacher’s Instructional Skills. It can be observed that the overall mean of this area is 3.97, which is interpreted as a great extent. Item 7, which states compliments positive behavior, obtained the highest mean of 4.25, interpreted as a great extent. Given the findings of this study, respondents love to hear appreciation and praise from their teachers for their greatest accomplishments and exemplary performance in math. Additionally, teachers must offer remedial instruction for individuals who need help picking up the lessons to support learner inclusion. Such actions signal the teacher's concern and avert failure for learners.

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Table 4

The extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Learning Resources

Items	Mean	Interpretation
As a learner, I personally knew the teacher…		
1. It provides lessons found in our mathematics textbooks and modules.	4.11	Great Extent
2. Find a way to provide photocopied reading materials for lessons not found in books.	3.78	Great Extent
3. Use visual aids and ICT to enhance our understanding of the lessons.	4.33	Great Extent
4. allow us to do research in the library for our assignment.	2.27	Low Extent
5. Give math material like puzzles and other mental games.	3.68	Great Extent
6. Give take-home Math assignments so we can investigate the subject using other resources like the internet and certain books and modules.	3.97	Great Extent
7. encourages us to learn Math using computers and other technically advanced gadgets.	3.28	Moderate Extent
8. provides us with math modules.	3.83	Great Extent
Overall Mean	**3.66**	**Great Extent**

Table 4 presents the extent of factors influencing the Mathematical ability of Grade 6 Learners in learning resources. The findings mostly revealed this area, with an overall mean of 3.66. Item No. 3, which states that using visual aids and ICT to enhance our understanding of the lessons, got the highest mean of 4.33, interpreted as a great extent. Following these results, the respondents emphasized the effective use of ICT in the learning process, which they can understand easily with the help of visual aids and other learning support used by the teachers in delivering instruction. Online apps and other platforms help learners develop their mathematical ability and study habits.

Table 5

Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Learners' Motivation According to Sex

Items	Male		Female	
As a learner, I encourage myself to …	**Mean**	**Interpretation**	**Mean**	**Interpretation**
1. Read the topics in my math subjects in advance.	3.52	Great Extent	3.34	Moderate Extent
2. solve mathematical problems on the board in our math class.	3.00	Moderate Extent	2.87	Moderate Extent
3. play games that use numbers.	3.73	Great Extent	3.45	Moderate Extent
4. study mathematics during my vacant hours at school	2.98	Moderate Extent	3.09	Moderate Extent
5. watch the teacher work on a mathematical equation or problem on the blackboard	4.21	Great Extent	4.36	Great Extent
6. I feel good when I solve mathematics problems by myself.	4.15	Great Extent	4.15	Great Extent
7. take time to study math before going to school.	2.97	Moderate Extent	2.75	Moderate Extent

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8. spend more time in school doing mathematics exercises and activities.	3.48	Moderate Extent	3.47	Moderate Extent
Overall Mean	**3.51**	**Great Extent**	**3.44**	**Moderate Extent**

As revealed in Table 5, the overall mean score received by male respondents is 3.51, interpreted as a great extent. The male respondents had the highest mean score of 4.21 on item no. 5, which states that watching the teacher work on a mathematical equation or problem on the blackboard is interpreted to a great extent. The female respondents obtained an overall mean score of 3.44, interpreted as a moderate extent. The highest mean score is 4.36 on item no. 5, which states, "with the teacher work on a mathematical equation or problem on the blackboard interpreted as great extent. This implies that both groups of respondents quickly learn by watching their teacher explain the lesson and doing the board work to show the process and strategy of the concepts and formulas. They are motivated to study, love math, and enjoy doing their math activity because they understand the process.

Table 6

Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Parental Support According to Sex

Items	**Male**		**Female**	
As a learner, I personally experienced my parents…	**Mean**	**Interpretation**	**Mean**	**Interpretation**
1. show the support I need for school activities.	4.35	Great Extent	4.40	Great Extent
2. check on my Math performance in school.	3.40	Moderate Extent	3.11	Moderate Extent
3. go to school to talk to my Math teacher.	1.54	Low Extent	1.75	Low Extent
4. help me accomplish my homework.	3.06	Moderate Extent	3.55	Great Extent
5. explain to me some of the concepts/lessons in Math that I need help understanding.	3.73	Great Extent	3.85	Great Extent
6. show support in my math project.	3.79	Great Extent	3.51	Great Extent
7. listen to me when I openly talk at home about my difficulties in school.	3.21	Moderate Extent	3.55	Great Extent
8. encourage me to do better If my grades are lower than expected.	3.42	Moderate Extent	3.72	Great Extent
Overall Mean	**3.32**	**Moderate Extent**	**3.43**	**Moderate Extent**

Table 6 shows the extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Parental Support According to Sex. The result shows that both males and females got 4.35 showing that the support needed for school activities got the highest mean and was interpreted to a great extent. Further analysis, however, reveals that both respondents have the same concern. Parental presence in school helps learners motivate; parental support is one of them. Some studies attempted to reveal whether the performance of students reporting high parental support is different from those reporting low parental support and to reveal whether there is any difference in the academic achievement of students based on students' Parental service (Hasan, 2016).

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Table 7

Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Teacher's Instructional Skills According to Sex

Items	Male		Female	
As a learner, I personally observed my teacher…	**Mean**	**Interpretation**	**Mean**	**Interpretation**
1. Set expectations and goals before the start of any lesson.	4.19	Great Extent	4.09	Great Extent
2. encourages learners to be more engaged in the class through group dynamics and lively activities.	4.25	Great Extent	4.09	Great Extent
3. has the ability to connect daily lessons to everyday life so that learners can easily relate and absorb lessons.	4.06	Great Extent	4.40	Great Extent
4. Develop a consistent flow of instructions.	3.96	Great Extent	3.98	Great Extent
5. consider the diversity of learning needs and provide differentiated instructions.	3.71	Great Extent	3.77	Great Extent
6. captures various learning styles to provide a calibrated instructional design.	3.79	Great Extent	3.83	Great Extent
7. compliments positive behavior.	4.17	Great Extent	4.32	Great Extent
8. Only leave any lesson or activity after correctly concluding it.	2.96	Moderate Extent	3.76	Great Extent
Overall Mean	**3.89**	**Great Extent**	**4.04**	**Great Extent**

As shown in Table 7, male respondents obtained an overall mean of 3.89, and female respondents assessed an overall mean score of 4.04, which both interpreted to a great extent. However, the highest mean score of 4.25 on item no. 2, which states, "encourages learners to be more engaged in the class through group dynamics and lively activities, and for female the highest mean score of 4.40 is on item no. 3, which states can connect daily lessons to everyday life so that learners can easily relate and absorb lessons, which both interpreted as a great extent. Relative to the results, the male respondents like to engage in the class through group dynamics and lively math activities. Also, female respondents were motivated and inspired to do their best in math, knowing that their teacher would appreciate and be proud of their accomplishments by giving praise and recognition.

Table 8

Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Learning Resources According to Sex

Items	Male		Female	
As a learner, I personally knew the teacher…	**Mean**	**Interpretation**	**Mean**	**Interpretation**
1. It provides lessons that can be found in our mathematics textbooks and modules.	4.10	Great Extent	4.11	Great Extent
2. Find a way to provide us with photocopied reading materials for lessons not found in books.	3.56	Great Extent	3.98	Great Extent
3. Use visual aids and ICT to enhance our understanding of the lessons.	4.31	Great Extent	4.34	Great Extent

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4. allow us to do research in the library for our assignment.	2.17	Low Extent	2.36	Low Extent
5. Give math material like puzzles and other mental games.	3.54	Great Extent	3.81	Great Extent
6. Give take-home Math assignments so we can investigate the subject using other resources like the internet and certain books and modules.	4.02	Great Extent	3.92	Great Extent
7. encourages us to learn Math using computers and other technically advanced gadgets.	3.15	Moderate Extent	3.40	Moderate Extent
8. provides us with math modules.	3.73	Great Extent	3.92	Great Extent
Overall Mean	**3.58**	**Great Extent**	**3.73**	**Great Extent**

As presented in Table 8, the extent of factors influencing the mathematical ability of Grade 6 learners in learning resources according to sex is to a great extent in both male and female respondents, with an overall mean of 3.58 and 3.73, respectively. Uses visual aids and ICT to enhance our understanding of the lessons, got the highest mean for males, 4.31, and 4.34 for females. While allowing us to do research in the library for our assignment, it has the lowest for male and female pupils. In view of the results, the implementers perceived the important function of libraries in their studies. However, with the help of technology, some learners can skip the library to study. They can easily browse the internet to access and get information services that are easily accessible to the learners to meet their information needs.

Table 9

The Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Learners' Motivation According to Parents' Education

Items	**Lower**		**Higher**	
As a learner, I encourage myself to …	**Mean**	**Interpretation**	**Mean**	**Interpretation**
1. Read the topics in my math subjects in advance.	3.45	Moderate Extent	3.38	Moderate Extent
2. solve mathematical problems on the board in our math class.	2.85	Moderate Extent	3.09	Moderate Extent
3. play games that use numbers.	3.60	Great Extent	3.56	Great Extent
4. study mathematics during my vacant hours at school	3.00	Moderate Extent	3.12	Moderate Extent
5. watch the teacher work on a mathematical equation or problem on the blackboard	4.25	Great Extent	4.35	Great Extent
6. I feel good when I solve mathematics problems by myself.	4.09	Great Extent	4.26	Great Extent
7. take time to study math before going to school.	2.72	Moderate Extent	3.15	Moderate Extent
8. spend more time in school doing mathematics exercises and activities.	3.36	Moderate Extent	3.71	Great Extent
Overall Mean	**3.42**	**Moderate Extent**	**3.58**	**Great Extent**

It can be gleaned in Table 9 that the extent of factors influencing the mathematical ability of Grade 6 learners in learners' motivation according to Parents' Education is moderate extent for those with lower educational attainment with an overall mean of 3.42. On the other hand,

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respondents with higher educational attainment have a great extent with an overall mean of 3.58. Watch the teacher work on a mathematical equation or problem on the blackboard that has the highest mean.

Following these results implies that learners easily understand the teacher's discussion while showing the steps or process on the board. Learners can actively participate in class discussions if they are interested. Therefore, motivation to study math is one factor in developing learners' mathematical skills. The respondents have a common intention to establish connection and collaboration with their teacher working on a mathematical equation or problem on the blackboard so that they can understand and learn quickly.

Table 10

Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Parental Support According to Parents' Education

Items	Lower		Higher	
As a learner, I experienced my parents…	**Mean**	**Interpretation**	**Mean**	**Interpretation**
1. show the support I need for school activities.	4.28	Great Extent	4.56	Very Great Extent
2. check on my Math performance in school.	3.19	Moderate Extent	3.35	Moderate Extent
3. go to school to talk to my Math teacher.	1.64	Low Extent	1.68	Low Extent
4. help me accomplish my homework.	3.22	Moderate Extent	3.50	Great Extent
5. explain to me some of the concepts/lessons in Math that I need help understanding.	3.81	Great Extent	3.76	Great Extent
6. show support in my math project.	3.52	Great Extent	3.88	Great Extent
7. listen to me when I openly talk at home about my difficulties in school.	3.52	Great Extent	3.12	Moderate Extent
8. encourage me to do better If my grades are lower than expected.	3.69	Great Extent	3.35	Moderate Extent
Overall Mean	**3.36**	**Moderate Extent**	**3.40**	**Moderate Extent**

As presented in Table 10, the extent of factors influencing the mathematical ability of Grade 6 learners in parental support according to parents' education is moderate extent in both lower and higher respondents with an overall mean of 3.36 and 3.40, respectively. Both respondents who belong to higher and lower income groups gained the highest mean on showing the support I need for school activities, which was interpreted to a great extent.
Relative to the results, this implies that some learners need more motivation to study the lesson due to tasks assigned to them in the family. Parental involvement in terms of checking their children's Mathematics performance is low.

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Table 11

Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Teachers' Instructional Skills According to Parents' Education

Items	**Lower**		**Higher**	
As a learner, I personally observed my teacher…	**Mean**	**Interpretation**	**Mean**	**Interpretation**
1. Set expectations and goals before the start of any lesson.	4.10	Great Extent	4.21	Great Extent
2. encourages learners to be more engaged in the class through group dynamics and lively activities.	4.19	Great Extent	4.15	Great Extent
3. has the ability to connect daily lessons to everyday life so that learners can easily relate and absorb lessons.	4.16	Great Extent	4.38	Great Extent
4. Develop a consistent flow of instructions.	3.84	Great Extent	4.24	Great Extent
5. consider the diversity of learning needs and provide differentiated instructions.	3.64	Great Extent	3.94	Great Extent
6. captures various learning styles to provide a calibrated instructional design.	3.78	Great Extent	3.88	Great Extent
7. compliments positive behavior.	4.18	Great Extent	4.39	Great Extent
8. Only leave any lesson or activity after correctly concluding it.	3.28	Moderate Extent	3.59	Great Extent
Overall Mean	**3.90**	**Great Extent**	**4.10**	**Great Extent**

The data in Table 11 shows that the extent of factors influencing the mathematical ability of Grade 6 learners in teacher's instructional skills according to Parents' Education is to a great extent in both lower and higher positions with an overall mean of 3.90 and 4.10, respectively. Notably, those who have lower educational attainment have the highest mean of 4.19, interpreted to a great extent in item 2, which states it encourages learners to be more engaged in the class through group dynamics and lively activities. However, higher educational attainment respondents attained the highest mean of 4.39, interpreted as a great extent in item 7, which states compliments positive behavior.

This implies that responses indicate that students need motivation to actively engage in the lesson or activity. Establishing resources and platforms to continue discussions outside of class can help students extend their learning and feel more engaged with Math. It is the role of teachers to ensure the broad-based development of learners. This means ensuring that all learners can develop their cognitive, social, emotional, cultural, and physical skills to the best of their abilities. Teachers will give differentiated instruction and activities to cater to all learners' needs.

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Table 12

Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Learning Resources According to Parents' Education

Items	Lower		Higher	
As a learner, I personally knew the teacher…	**Mean**	**Interpretation**	**Mean**	**Interpretation**
1. It provides lessons that can be found in our mathematics textbooks and modules.	4.01	Great Extent	4.29	Great Extent
2. Find a way to provide us with photocopied reading materials for lessons not found in books.	3.78	Great Extent	3.79	Great Extent
3. Use visual aids and ICT to enhance our understanding of the lessons.	4.28	Great Extent	4.41	Great Extent
4. allow us to do research in the library for our assignment.	2.27	Low Extent	2.26	Low Extent
5. Give math material like puzzles and other mental games.	3.61	Great Extent	3.82	Great Extent
6. Give take-home Math assignments so we can investigate the subject using other resources like the internet and certain books and modules.	3.96	Great Extent	4.00	Great Extent
7. encourages us to learn Math using computers and other technically advanced gadgets.	3.33	Moderate Extent	3.18	Moderate Extent
8. provides us with math modules.	3.79	Great Extent	3.91	Great Extent
Overall Mean	**3.63**	**Great Extent**	**3.71**	**Great Extent**

Table 12 illustrates that the extent of factors influencing the mathematical ability of Grade 6 learners in learning resources according to Parents' Education is a great extent, with an overall mean of 3.63 and 3.71. Groups occupying the lower and higher educational attainment yielded the highest mean of 4.28 and 4.41, interpreted to a great extent in item 3, which states that visual aids and ICT enhance our understanding of the lessons, respectively. This implies that respondents respond about learning math subjects in different ways. Some learners embrace the use of technology in researching and studying the lesson by simply browsing the internet, making them comfortable and manageable. However, some learners need access to online research and gadgets. They preferred to go to the library to research their assignments. It is possible that teachers do not have to encourage pupils to use computers and other technologically advanced gadgets because, by the norm, these young learners are digital natives, while the teachers are struggling to become technological migrants.

Table 13

The extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Learners' Motivation According to Family Income

Items	Lower		Higher	
As a learner, I personally encourage myself to …	**Mean**	**Interpretation**	**Mean**	**Interpretation**
1. Read the topics in my math subjects in advance.	3.35	Moderate Extent	3.49	Great Extent
2. solve mathematical problems on the board in our math class.	2.89	Moderate Extent	2.96	Moderate Extent
3. play games that use numbers.	3.63	Great Extent	3.55	Great Extent
4. study mathematics during my vacant hours at school	3.00	Moderate Extent	3.07	Moderate Extent

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5. watch the teacher work on a mathematical equation or problem on the blackboard	4.50	Very Great Extent	4.11	Great Extent
6. I feel good when I solve mathematics problems by myself.	4.04	Great Extent	4.24	Great Extent
7. take time to study math before going to school.	2.80	Moderate Extent	2.91	Moderate Extent
8. spend more time in school doing mathematics exercises and activities.	3.37	Moderate Extent	3.56	Great Extent
Overall Mean	**3.45**	**Moderate Extent**	**3.49**	**Moderate Extent**

As shown in Table 13, the extent of factors influencing the mathematical ability of Grade 6 learners in motivation according to Family Income is moderate in lower and higher respondents, with an overall mean of 3.45 and 3.49, respectively. Those with lower incomes have the highest mean of 4.50, which is interpreted to a great extent by watching the teacher work on a mathematical equation or problem on the blackboard. The higher income respondents gained the highest mean of 4.24, which is interpreted as a great extent of feeling good when solving mathematics problems by myself. Relative to the results, it can be implied that regardless of the income bracket of the families they belong to, the respondents' mathematical ability remained practically the same. Their inability to spare a little time to study Mathematics at home is not a usual part of the norms they have developed. This will truly spell the difference in their grasp of the lessons and thus will impact their overall performance. Learners love to learn with the help of their teacher, as respondents perceived, and they feel good when they can solve mathematical problems on the board with the help of the teacher.

Table 14

Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Parental Support According to Family Income

Items	**Lower**		**Higher**	
As a learner, I personally experienced my parents…	**Mean**	**Interpretation**	**Mean**	**Interpretation**
1. show the support I need for school activities.	4.37	Great Extent	4.38	Great Extent
2. check on my Math performance in school.	3.43	Moderate Extent	3.09	Moderate Extent
3. go to school to talk to my Math teacher.	1.74	Low Extent	1.58	Low Extent
4. help me accomplish my homework.	3.43	Moderate Extent	3.22	Moderate Extent
5. explain to me some of the concepts/lessons in Math that I need help understanding.	4.02	Great Extent	3.60	Great Extent
6. show support in my math project.	3.74	Great Extent	3.56	Great Extent
7. listen to me when I openly talk at home about my difficulties in school.	3.43	Moderate Extent	3.35	Moderate Extent
8. encourage me to do better If my grades are lower than expected.	3.85	Great Extent	3.35	Moderate Extent
Overall Mean	**3.51**	**Great Extent**	**3.27**	**Moderate Extent**

As reflected in Table 14, the extent of factors influencing the mathematical ability of Grade 6 learners in Parental support according to Family Income is a great extent for those with lower income with an overall mean of 3.51; on the other hand, respondents with higher income have a moderate extent with an overall mean of 3.27. Specifically, respondents with lower

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income and higher income have a great extent of interpretation to show the support I need for school activities. This implies that the same parental practice of visiting the school to talk to teachers needs to be included from both lower and higher levels. This may be because both parents are employed and there is a scarcity of free time for parents to visit the school and see their children's learners. Regardless, though, this is clearly a case of a missed opportunity to know where and what their children need so they can adjust their parenting styles.

Table 15

Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Teacher's Instructional Skills According to Family Income

Items	**Lower**		**Higher**	
As a learner, I personally observed my teacher…	**Mean**	**Interpretation**	**Mean**	**Interpretation**
1. Set expectations and goals before the start of any lesson.	4.33	Great Extent	3.98	Great Extent
2. encourages learners to be more engaged in the class through group dynamics and lively activities.	4.26	Great Extent	4.09	Great Extent
3. has the ability to connect daily lessons to everyday life so that learners can easily relate and absorb lessons.	4.24	Great Extent	4.24	Great Extent
4. Develop a consistent flow of instructions.	4.04	Great Extent	3.91	Great Extent
5. consider the diversity of learning needs and provide differentiated instructions.	3.52	Great Extent	3.93	Great Extent
6. captures a wide range of learning styles to provide a calibrated instructional design.	3.72	Great Extent	3.89	Great Extent
7. compliments positive behavior.	4.28	Great Extent	4.22	Great Extent
8. Only leave any lesson or activity after properly concluding it.	3.57	Great Extent	3.24	Moderate Extent
Overall Mean	**4.00**	**Great Extent**	**3.94**	**Great Extent**

As reflected in Table 15, the extent of factors influencing the mathematical ability of Grade 6 learners in teacher's instructional skills according to Family Income is the great extent in both lower and higher respondents with an overall mean of 4.00 and 3.94, respectively. Specifically, the lower income respondents gained the highest mean of 4.33, interpreted as a great extent in item 1, which states that they set expectations and goals before the start of any lesson. However, the higher income respondents got the highest mean of 4.24, interpreted as great extent in item 3, which states can connect daily lessons to everyday life so that learners can easily relate and absorb lessons. This implies that in the assessment of the respondents, the teaching-learning experience in Mathematics needs to be enhanced with the use of available digital platforms with the help of various activities that the teacher prepared to meet the learning goals and learners' learning experiences. The survey result described the classroom scenario as casual and as straightforward as it seemed. 21st-century learners are particular about digital learning. It makes them feel counted.

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Table 16

Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Learning Resources According to Family Income

Items	Lower		Higher	
As a learner, I personally knew the teacher…	**Mean**	**Interpretation**	**Mean**	**Interpretation**
1. It provides lessons that can be found in our mathematics textbooks and modules.	4.24	Great Extent	4.00	Great Extent
2. Find a way to provide us with photocopied reading materials for lessons not found in books.	3.63	Great Extent	3.91	Great Extent
3. Use visual aids and ICT to enhance our understanding of the lessons.	4.28	Great Extent	4.36	Great Extent
4. allow us to do research in the library for our assignment.	2.22	Low Extent	2.31	Low Extent
5. Give math material like puzzles and other mental games.	3.72	Great Extent	3.65	Great Extent
6. Give take-home Math assignments so we can investigate the subject using other resources like the internet and certain books and modules.	3.93	Great Extent	4.00	Great Extent
7. encourages us to learn Math using computers and other technically advanced gadgets.	3.24	Moderate Extent	3.31	Moderate Extent
8. provides us with math modules.	3.91	Great Extent	3.76	Great Extent
Overall Mean	**3.65**	**Great Extent**	**3.67**	**Great Extent**

As presented in Table 16, the extent of factors influencing the mathematical ability of Grade 6 learners in learning resources according to Family Income is of great extent in both lower and higher respondents, with an overall mean of 3.65 and 3.67, respectively. Both respondents from higher and lower income got the highest mean on using visual aids and ICT to enhance our understanding of the lessons and interpreted to a great extent. This implies that across all income groups, the same opinion is given on allowing us to do research in the library for our assignment. Digital learners in the 21st Century teaching-learning aspect would always require a stepped-up process. Apart from wanting to see digitalization of the delivery of some of their lessons, these learners are sometimes waiting for their teachers to encourage them to go into computer learning.

Table 17

Difference in the Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Learners' Motivation According to Selected Variables

Table 17 presents the difference in the extent of factors influencing the mathematical ability of Grade 6 learners when grouped and compared according to variables. In terms of sex, the computed U was 1175.00 with a p-value of .508, which is greater than the 0.05 level of significance and interpreted as "not significant." Consequently, the hypothesis, which states "there is no significant difference in the extent of factors influencing the Mathematical ability of Grade 6 learners when grouped and compared according to sex," was accepted. On the other hand, when grouped and compared according to Parents' Education, there exists no significant

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difference in the extent of factors influencing the Mathematical ability of Grade 6 learners with the computed U of 934.50 and the p-value of 0.141, and when grouped and compared according to the Family Income, the computed U test was 1225.00 with a p-value of 0.784, greater than the 0.05 significance level, therefore, the hypothesis, was accepted.

In view of the results, this implies that sex, Family Income, and highest educational attainment do not significantly affect the factors that influence the mathematical ability of Grade 6 learners in terms of learners' motivation.

Nyman and Sumpter (2019) opined the students' expressed motivations for doing mathematics. The results show that the children express both intrinsic motivation (cognitive-oriented and emotional-oriented) as well as extrinsic motivation (including outward and compensation). Two new categories of cognitive intrinsic motivation were found—normative and personal. Results also indicated interplay between the different categories and within categories, signaling that expressed motivation is double-layered.

Table 18
Difference in the Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Parental Support According to Variables

The data in Table 18 depicts the difference in the extent of factors influencing the mathematical ability of Grade 6 learners when grouped and compared in of Parental support according to variables. Specifically, in the variable sex, when the data of the male and the female groups are compared and tested, the computed U test was 1206.50 with a p-value of 0.655, greater than the 0.05 significance level. This indicates no significant difference exists in the extent of factors influencing the mathematical ability of Grade 6 learners when grouped and compared according to sex. Hence, the null hypothesis was accepted. Moreover, there is no significant difference in the extent of factors influencing the mathematical ability of Grade 6 learners when grouped and compared according to Parents' Education with the computed U of 1116.00 and p-value of 0. 0.868, and in terms of Family Income, the computed U was 996.50 with a p-value of 0. 0.067, which is greater than the 0.05 level of significance and interpreted as "not significant." Therefore, the hypothesis also was accepted.

According to the findings, sex, family income, and education do not significantly affect the factors that influence the mathematical ability of Grade 6 learners in terms of parental support. Indeed, the results of Park et al.'s (2017) study revealed that students with high levels of parental participation in volunteering, PTA/PTO, and fundraising activities were likely to have higher achievement scores in federal and state standards mathematics assessments. Also, parental involvement and intercommunication with the school resulted in a more positive learning environment and higher school achievement and rating. Park et al. suggested that creating room for parents to participate in planning school activities transfers some of the responsibility of student learning to the parents. The school was obligated to establish programs and avenues for parent input and involvement. Parental participation in planning helped the school develop more tailored programs to meet the student's needs academically and behaviorally. The researcher

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found that school-based parental involvement benefits the student, parent, school, and the wider school community.

Table 19
Difference in the Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Teacher's Instructional Skills According to Selected Variables

Table 19 illustrates the difference in the extent of factors influencing the mathematical ability of Grade 6 learners when grouped and compared in of teacher's instructional skills according to variables. Results show that when grouped and compared according to sex, the computed U was 1125.50 with a p-value of 0.318; next, in terms of parents' education, the computed U test is 909.00 with a p-value of 0. 0.097, and in terms of the family income, the computed U test is 1198.50 with a p-value of 0. 0.649, which all are greater than the 0.05 significance level. Therefore, the hypothesis was accepted and these findings imply that the aforementioned variables do not significantly affect the factors that influence the mathematical ability of Grade 6 learners in terms of teachers' instructional skills.

One of the crucial components of the program is instruction. Teacher Education students in Math are always encouraged to adopt teaching strategies that are based on the understanding of every learner's individuality. This call for both MATH faculty members and education students to take a variety of teaching approaches that could address individual differences. There are many best ways to teach MATH subjects, for a teacher has to waver among teaching methods that would best work for the learners. The instruction thus needs to be assessed as this would indicate the quality of education provided among the students (Cardino, 2020).

Table 20
Difference in the Extent of Factors Influencing the Mathematical Ability of Grade 6 Learners in Learning Resources According to Selected Variables

Table 20 presented the difference in the extent of factors influencing the mathematical ability of Grade 6 learners when grouped and compared according to variables. In terms of sex, the computed U was 1067.00 with a p-value of 0.162; as to parents' education, the computed U is 1026.00 with a p-value of 0.415; and in terms of Family Income, the computed U test was 1213.00 with a p-value of 0. 722, which is greater than 0.05 level of significance. Therefore, the hypothesis was accepted.

The results mean the aforementioned variables do not significantly affect the factors that influence the mathematical ability of Grade 6 learners in terms of learning resources. Wang (2018) investigates how secondary school students use learning resources in mathematics in Shanghai and England, compares the resource use between the two places, and examines what factors influence resource use in the two contexts. The results revealed that Shanghai students relied heavily on paper-based resources and used them in various situations, had a strong sense of self-regulation behind their resource use, and thought highly of the helpfulness of learning resources in their learning of mathematics. While England students usually incorporated both

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paper-based and e-resources in mathematics learning, used the resources mainly depending on teachers' instructions, and held a relatively critical view of the helpfulness of the resources. More differences than similarities were found between the two places, and there existed some significant associations between the contextual factors and resource use, which indicated that the constructed factors could explain students' resource use and even the differences in resource use to a certain extent.

Conclusion

The factors that affect sixth-grade students' mathematical proficiency have differing degrees of influence from the respondents' sex, parents' education, and family income. Mathematical competence is largely influenced by teachers' instructional abilities and the availability of learning tools, with learners' motivation and parental support often demonstrating a moderate influence. But other patterns show up when you take into account factors like sex, parents' level of education, and family income. For example, female students tend to be more motivated and rely more on parental support. In contrast, male students tend to benefit more from teacher instruction, learning tools, and their own motivation. Though there are differences in the impact of parental support and drive, pupils from higher financial and educational backgrounds also often benefit more from teacher instruction, resources, and motivation. It's interesting to note that no discernible distinctions in the degree of factors impacting mathematical ability are found when comparing across different variables, indicating a complex interaction of several elements in determining pupils' mathematical competency.

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