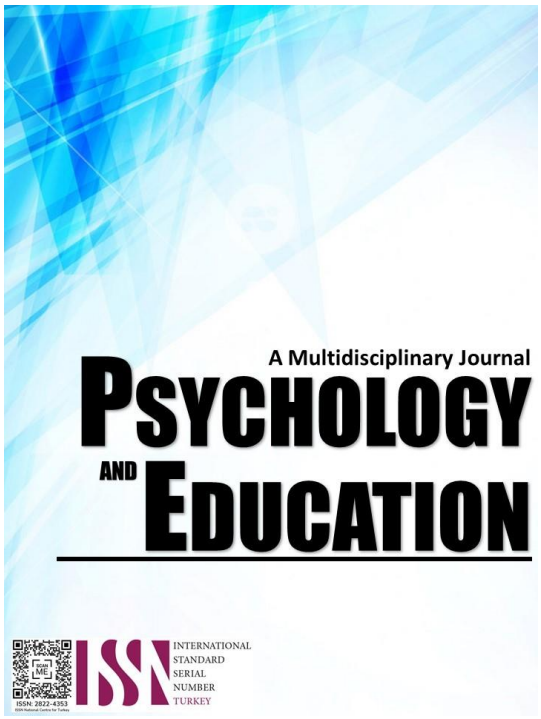
EXTENT AND EFFECTIVENESS OF MATHEMATICS INTERVENTION STRATEGIES: THEIR RELATIONSHIP TO THE ACADEMIC PERFORMANCE OF STUDENTS



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Research Article

Extent and Effectiveness of Mathematics Intervention Strategies: Their Relationship to the Academic Performance of Students

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Abstract

This study aims to ascertain the extent as well as the effectiveness of Mathematics intervention strategies in addressing student's difficulties in Mathematics as well as its relationship to their academic performance. Frequency counts and percentage distribution, mean and standard deviation, mean rank, Kruskal-Wallis and Spearman-rho were used to analyze the data gathered, using the purposive sampling technique. Intervention strategies including Think-Paire Share, Individualized Student Activity, Drill and Practice, Peer Mentoring, Games, Learners Activity Sheet, ICT-Based Mentoring, and Home Visitation were found to have significant relationship with the extent of implementation by the teachers and its effectiveness in Mathematics. Furthermore, the study found that all intervention strategies utilized by the teachers in teaching Mathematics were Effective to improved student performance in Mathematics. Moreover, the study also discovered that there was a significant difference on the effectiveness of the intervention strategies employed by teachers in terms of ICT based instruction according to sex which denotes that students' perspective on the effectiveness of ICT-based mentoring differed. However, when grouped according to school ICT-based mentoring it was found not to be significant in terms of its effectiveness. These effective strategies must be incorporated and institutionalized into the subject's curriculum. This study concludes that the interventions strategies utilized by teachers are effective to improve students' performance in Mathematics. It is expected that the results of this study may contribute to the improvement of programs and intervention strategies in helping students overcome barriers in learning the content of the subject.

Keywords: *extent, effectiveness, intervention strategies, academic performance*

Introduction

I almost failed my Mathematics subject, but so thankful I was rescued. This was according to a grade 8 student who received his academic rating on July 2022. The strong predictors of student success are Mathematical proficiency and logical thinking skills. They emphasized that an effective Mathematics intervention strategy can help students pass the subject, improve their numeracy skills, and develop their confidence and interest in solving Mathematical problems, which are significant in improving their critical thinking and logical reasoning skills.

However, performance in Mathematics still declined not only in the Philippines but also in some other countries.

On average across the Organization for Economic Co-operation and Development (OECD) countries, according to the Program for International Student Assessment (PISA) 2018 result, the mean performance in Mathematics declined in 3 countries/economies (Malta, Romania, and Chinese Taipei). It remained stable in the remaining 47 participating countries/economies. In the United States, South Africa, Taiwan, and Indonesia it was found out that low-achiever students in Mathematics relied on others to learn. Students with poor performance in Mathematics are very dependent and passive in participating in any learning activities, have difficulty reading Mathematical texts or questions, and students' misinterpret the Mathematical word problem, and cannot express or translate word problems to Mathematical equations. These are evident for many students continue to fall behind the standard of Mathematics achievement as stated in the Program for International Student Assessment (PISA) (Novriania & Surya, 2017, Bosman and Schulze et al., 2018, & Yeh et al., 2019).

The Philippines ranked 2nd from the bottom among 79 participating countries in the recent PISA 2018, according to DepEd - National Report of the Philippines (2019). This alarming result revealed that Filipino students recorded a mean score of 353 points in Mathematics Literacy, significantly lower than the OECD mean of 489 points (Callaman & Itaas, 2020).

They also pointed out that only 1 out of 5 Filipino students, or approximately 19.7 percent, attained at least the minimum proficiency level (Level 2) in Mathematics Literacy (DepEd - National Report of the Philippines, 2019). The Junior High School students of Alamada, North Cotabato, are not exempted from this problem.

In Alamada High School, the MPS is 34.15 percent, Dado High School 64.99 percent, and Pigcawaran

High School 45.06 percent. These statistical results stress the importance of engaging in solid teaching practice suited to the learning style of learners with learning difficulties in Mathematics. The present gaps and issues mentioned in the international as well as in both national and local scenes are very alarming, specifically on the poor performance of students in Mathematics. These prompted the researcher to study this problem.

Research Questions

This study aimed to determine the effectiveness of Mathematics intervention strategies in addressing students' difficulty in Mathematics. Specifically, it sought to answer the following questions:

1. What is the profile of the respondents in terms of sex and educational attainment of parents and school?
2. What is the extent of implementation of the Mathematical intervention strategies utilized by teachers?
3. How effective are the intervention strategies utilized by teachers?
4. What is the academic performance of students in Mathematics before and after the intervention?
5. Is there a significant difference between the academic performance of the students when grouped according to sex?
6. Is there a significant difference in the effectiveness rating of the intervention strategies employed by teachers when grouped according to selected demographic profile?
7. Is there any significant relationship between the extent of intervention strategies utilized, the effectiveness of intervention strategies, and the academic performance of students in Mathematics?
8. What are the challenges experienced by the respondents during the implementation of Mathematics interventions?

Methodology

This section presents the research design, locale and respondents of the study, sampling design, research instrumentation, validity and reliability of the instrument, data gathering procedure, and statistical tools and data treatment.

Research Design

The study used the descriptive-correlational research design. It is descriptive since it describes the profile of the respondents in terms of sex and educational attainment of parents, the extent of intervention strategies employed, the effectiveness of intervention strategies, the academic performance of students, and challenges experienced in the implementation of the intervention. It also used the correlational method to determine the significant differences in the profile of the respondents according to the selected profile of the respondents and the considerable relationship of parents, school, Mathematics intervention strategies employed, and between the extent of intervention strategies used, the effectiveness of intervention strategies employed in Mathematics and academic performance of the students.

Locale and Respondents of the Study

The study was conducted within the Municipality of Alamada, Cotabato. A place where most of the students come from the Municipality's remote area and are composed of different tribes. The samples were taken from public secondary schools namely: Alamada National High School, Dado High School, and Pigcawaran High School. The respondents of the study were 328 Junior High School students with low performance in Mathematics who were officially enrolled for School Year 2021-2022.

Sampling Technique

Purposive sampling was the sampling technique used in the study where the respondents were all junior high school students with 76 and below performance ratings in Mathematics at Alamada National High School, Dado High School, and Pigcawaran High School.

Instrumentation

The study used a researcher-made questionnaire as the main instrument in data collection. The items included in the instrument were based on the related literature and studies the researcher reviewed. The instrument is composed of four parts.

The first part contains the respondent's personal profile regarding sex, grade level, school, educational attainment of parents, and academic performance of the first, second, and third quarters in Mathematics. The second part consists of the Mathematics intervention strategies employed by the teacher and its extent of utilization, which are rated using a scale of 1 to 5, where 5-Always, 4-Often, 3-Sometimes, 2-Rarely, and 1- Never. The third part contains

statements to generate the effectiveness rating of Mathematics intervention strategies employed by the respondents to be rated by using the scale 1-5, where 5-Strongly Agree, 4-Agree, 3-Neither Agree nor Disagree, 2-Rarely and 1-Never. Finally, the fourth part includes the challenges encountered by the respondents in the implementation of the program which were rated using the scale from 1 to 5 where 1-correspond to Not a problem at All, 2-A little Problem, 3-Moderately a Problem, 4-A Problem and 5-Very Much a Problem.

Validity and Reliability of Instrument

The adviser checked the clarity of instructions for each item's content and validity, and the panel members taking into considerations the content, structure, and grammatical construction.

To test the reliability, the instrument was pilot tested on 20 students of Kitub Ba-o High School to ensure the research instrument's reliability before the study's conduct. The Cronbach Alpha was used to test the reliability of the questionnaire with an r-value of 0.93.

Data Gathering Procedure

The researcher sought permission from the office of the Dean of the Graduate School of the Notre Dame of Midsayap College and the DepEd Cotabato Division Office. After approval, a letter was sent to the Supervisor/Principal for the schedule of the questionnaire distribution. The data gathered were coded, consolidated, tabulated, and subjected to an appropriate statistical program for data processing. The researcher personally administered and retrieved the questionnaire.

Results and Discussion

This section presents the results of the study in tabular and textual forms. This includes the profile of the respondents in terms of the school attended, sex, grade level, and educational attainment of parents, the extent of implementation of mathematical intervention strategies, the effectiveness of the intervention strategies utilized by the teachers in Mathematics, the academic performance of the respondents, the difference between the academic performance of the students when grouped according to sex, the difference on the effectiveness rating of the intervention strategies employed by teachers when grouped according to sex, school, and grade level, the relationship between the extent of implementation of the intervention strategies employed by the teachers and its effectiveness in Mathematics, the relationship between the extent of the intervention strategies utilized by the teachers, and the academic performance of students in Mathematics, and challenges experienced by the respondents during the implementation of Mathematics interventions.

Profile of the Respondents

Table 1 displays the profile of the respondents. It includes the school of the respondents, the sex of the respondents, the grade level of the respondents, and the educational attainment of the respondent's parents. The large number of respondents, which accounted for 44.80 percent of the total population, were taken from Dado High School, while 36 percent were from Alamada High School and 19.20 percent from Pigcawaran High School.

Profile of the Respondents

Table 1. *Profile of the Respondents*

Variable	*Frequency*	*Percentage*
School of Respondents		
Dado High School	147	44.80
Pigcawaran High School	63	19.20
Alamada High School	118	36.00
Total	328	100.00
Sex		
Male	140	42.70
Female	188	57.30
Total	328	100.00
Grade Level of Respondents		
Grade 7	107	32.60
Grade 8	88	26.80
Grade 9	69	21.00
Grade 10	64	19.50
Total	328	100.00
Education of Respondents Parents		
Elementary Undergraduate	93	28.40
Elementary Graduate	48	14.60
High School Undergraduate	58	17.70
High School Graduate	74	22.60
Vocational	3	0.90
College Undergraduate	18	5.50
College Graduate	34	10.40
Total	328	100.00

The study was primarily participated by females, which is 57.30 percent than males with 42.70 percent

respondents. Out of the 328 respondents, the majority are from Grade 7, with 107 respondents, while the least are from Grade 10, with 64 respondents. The result also revealed that most of the respondents' parents are elementary undergraduates, which accounted for 28.40 percent of the population, while only 10.40 percent achieved a college diploma.

The Extent of Implementation of Mathematical Intervention Strategies In Terms of Think-Pair-Share and Individualized Student Activity

Think-Pair Share

The data on the extent of implementation of mathematical intervention strategies in terms of Think-Pair-Share and Individualized Student Activity are shown in Table 2a.

The think-pair-share strategy allows students to think on a given topic, formulate individual ideas and share the ideas with a pair and then with the whole class. The result further revealed the three statements that have the highest mean scores include, *My teacher asked/allowed me to formulate ideas to answer mathematical problem given to us* (M=4.09, sd=1.06); *My teacher asked/allowed me to analyze mathematical problem given to us* (M=4.07, sd=1.02); and *My teacher asked/allowed me to reflect on the mathematical problem given to us* (M=4.01, sd=0.97). These three statements are described as Often and interpreted as an Extensively implemented strategy.

While two statements gained the lowest mean scores, which include, *My teacher, asked/allowed me to share my solution of the mathematical problem in the class* (M=3.57, sd=1.31), and *My teacher asked/allowed me to discuss my ideas of the Mathematical problem to my partner* (M=3.75, sd=1.26). These two statements are described as Often and interpreted as an Extensively implemented strategy. The think-Pair-Share strategy gained an overall mean score of 3.92 which is further described as Often and interpreted as an Extensively used strategy with an sd of 1.15.

Table 2a. *The Extent of Implementation of Mathematical Intervention Strategies in Terms of Think-Pair Share and Individualized Student Activity*

Item	*Mean*	*SD*	*Description*
Think-Pair Share My teacher asked/allowed me to…			
1. reflect on the mathematical problem given to us.	4.02	0.97	Often
2. analyze mathematical problem given to us.	4.07	1.02	Often
3. formulate ideas to answer mathematical problem given to us.	4.09	1.06	Often
4. share my ideas of the mathematical problem with my partner.	3.77	1.24	Often
5. discuss my ideas of the mathematical problem to my partner.	3.75	1.26	Often
6. raise my hand if I am ready to present my answer/ solution.	4.01	1.21	Often
7. share my solution of the mathematical problem in the class.	3.57	1.31	Often
8. participate in the discussion with my partner.	4.00	1.12	Often
9. talk if it is my time to share my ideas.	3.96	1.18	Often
Overall Mean		3.92	Often
Overall Standard Deviation		1.15	
Individualized Student Activity My teacher instructed me to…			
1. reflect mathematical problem by myself.	3.89	1.09	Often
2. analyze mathematical problem by myself.	3.99	1.05	Often
3. form ideas on mathematical problem by myself.	3.65	1.17	Often
4. explore how the mathematical problem presented can be solved by myself.	3.92	1.16	Often
5. discover solution to a mathematical problem by myself.	3.78	1.19	Often
6. answer mathematical exercises by myself.	3.91	1.14	Often
7. self-study about my Mathematics lesson.	4.10	1.10	Often
8. perform on the given mathematical task alone.	3.81	1.06	Often
9. work or make my Mathematics project alone.	3.71	1.18	Often
Overall Mean	3.86		Often
Overall Standard Deviation		1.13	

Individualized Student Activity

The Individualized Student Activity independently engaged learners in learning activities, like answering mathematical tasks or solving problems individually.

Among the items used in this aspect, the result revealed three statements have the highest mean scores, which include, *My teacher, instructed me to self-study about my Mathematics lesson* (M=4.10,

sd=1.10); *My teacher instructed me to analyze the mathematical problem by myself* (M=3.99, sd=1.05); and *My teacher instructed me to explore how the mathematical problem presented can be solved by myself* (M=3.92, sd=1.16) described as Often.

The respondents further revealed by the respondents that the two lowest items with statements *My teacher instructed me to form ideas on the mathematical problem by myself* (M=3.65, sd=1.17), and *My teacher instructed me to work or make my Mathematics project alone* (M=3.71, sd=1.18), are described as Often and interpreted as an Extensively implemented strategy.

This strategy gained an overall mean score of 3.86, which is described as Often and interpreted as an Extensively implemented strategy, and with a standard deviation of 1.13 which means that the respondents' responses among the items used in this category varied.

The Extent of Implementation of Mathematical Intervention Strategies in Terms of Drill and Practice and Peer Mentoring

The result of the extent of implementation of mathematical intervention strategies in terms of Drill and Practice and Peer Mentoring is presented in Table 2b.

Drill and Practice

Three of the nine statements in this strategy have high mean scores and standard deviations. These statements include, *My teacher guided me to try solving mathematical problems* (M=4.22); *praised me as Very Good! Great Job! Excellent! and other positive comments when I got a correct answer* (M=4.20); *motivated me to participate in solving mathematical exercise* (M=4.01) described as Often and interpreted as Extensively implemented a strategy with standard deviations 1.04, 1.06, and 1.14 respectively.

Table 2b. *The Extent of the Implementation of Mathematical Intervention Strategies in Terms of Drilland Practice and Peer Mentoring*

Item	*Mean*	*SD*	*Description*
Drill and Practice My teacher…			
1. asked me to solve more mathematical exercises on the concerned lesson.	3.90	1.14	Often
2. asked me to practice more mathematical exercises on the concerned topic.	3.87	1.12	Often
3. asked me to show my solution step-by-step in solving mathematical problem.	3.96	1.17	Often
4. gave praises to me like Very Good! Great Job! Excellent! and other positive comments when I got a correct answer.	4.20	1.06	Often
5. asked me to explain my answer in front of the class.	3.67	1.30	Often
6. asked me to practice computational techniques.	3.65	1.23	Often
7. motivated me to participate in solving mathematical exercise.	4.01	1.14	Often
8. encouraged me to try solving mathematical problem.	3.96	1.20	Often
9. guided me to try solving mathematical problem.	4.22	1.04	Often
Overall Mean	3.94		Often
Overall Standard Deviation		1.16	

Peer Mentoring My mentor…			
1. asked me to read carefully the mathematical problem.	4.29	1.08	Often
2. asked me to analyze mathematical problem	4.09	1.05	Often
3. guided me in solving difficult mathematical problems.	4.16	1.03	Often
4. encouraged me to practice more mathematical exercises.	3.98	1.15	Often
5. asked me to solve mathematical problem repeatedly.	3.77	1.22	Often
6. asked me to show the process in solving mathematical problems.	4.04	1.06	Often
7. asked me to solve mathematical problem and let me show and explain it with my peer.	3.74	1.22	Often
8. encouraged me to solve more mathematical problems on the concerned lesson.	3.81	1.22	Often
9. supported me in the difficult part of the lesson.	4.11	1.13	Often
Overall Mean	4.00		Often
Overall Standard Deviation		1.13	

While the statements, *My teacher asked me to practice computational techniques,* and *My teacher asked me to explain my answer in front of the class* (M=3.65) described as Often and interpreted as Extensively implemented strategy, have the lowest mean scores and standard deviations of 1.23 and 1.30. This strategy has an overall mean score of 3.94, described as Often and interpreted as an Extensively implemented strategy with a standard deviation of 1.16.

Peer Mentoring

The items with the highest means are items 1, 3, and 9, described as Often. The item that states that *My mentor asked me to read carefully the mathematical problem* (M=4.29, sd=1.08); *guided me in solving complex mathematical problems* (M=4.16, sd=1.03); and *supported me in the difficult part of the lesson* (M=4.11, sd=1.13). While the items that gained the least mean scores were *My teacher asked me to solve a mathematical problem and let me show and explain it with my peer* (mean=3.74, sd=1.22), and *My teacher asked me to solve a mathematical problem repeatedly* (mean=3.77, sd=1.22), with a description of Often and interpretation as Extensively implemented strategy.

This strategy has an overall mean score of 4.00, described as Often and interpreted as an Extensively implemented strategy with an sd of 1.13.

The Extent of Implementation of Mathematical Intervention Strategies in Terms of Games and Learning Activity Sheet

Games

The results of the extent of implementation of mathematical intervention strategies in terms of games and learning activity sheets as depicted in Table 2c. Four statements have the highest mean scores and are described as Often. The statements are item 3, *My teacher allowed me to participate in all activities* with a mean score of 4.01 and standard deviation of 1.04, item 7 *encouraged me to be focused in performing the games* (M=3.91, sd=1.10), item 6 *encouraged me to become attentive in performing games* (M=3.84, sd=1.11); and item 8 challenge me to be alert in solving mathematical games (M=3.84, sd=1.15). These are interpreted as Extensively implemented strategies.

Table 2c. *The Extent of Implementation of Mathematical Intervention Strategies in Terms of Games and Learning Activity Sheet*

Item	*Mean*	*SD*	*Description*
Games My teacher…			
1. integrated games in my Mathematics subject.	3.22	1.18	Often
2. asked me to participate in the games.	3.51	1.23	Often
3. allowed me to participate in all activities.	4.01	1.04	Often
4. encouraged me to think critically in solving Mathematical games.	3.71	1.11	Often
5. motivated me to perform the mathematical games.	3.59	1.21	Often
6. encouraged me to become attentive in performing the games.	3.84	1.11	Often
7. encouraged me to be focused in performing the games.	3.91	1.10	Often
8. challenged me to be alert in solving mathematical games.	3.84	1.15	Often
9. encouraged me to observe the value of sportsmanship during the games.	3.77	1.16	Often
Overall Mean	3.71		Often
Overall Standard Deviation		1.14	
Learning Activity Sheet My teacher instructed me to…			
1. read carefully the mathematical learning activity sheet.	4.50	0.90	Always
2. analyze the concept of the lesson.	4.30	0.97	Often
3. comprehend the content of the learning activity sheet.	4.16	1.01	Often
4. reflect the concept of the lesson.	4.00	1.07	Often
5. answer the activity sheet by applying the concept of the lesson.	4.25	1.02	Often
6. practice more mathematical exercises in the activity sheet.	4.11	1.12	Often
7. answer all the mathematical exercises.	3.82	1.23	Often
8. ask questions for clarification about the content of the learning activity sheet.	4.07	1.15	Often
9. submit learning activity sheet within the allotted time.	4.01	1.13	Often
Overall Mean	4.14	Often	Extensive
Overall Standard Deviation	1.07		

While the statement *My teacher integrated games in my Mathematics subject* and *asked me to participate in the games* got the lowest mean scores of 3.22 and 3.51, described as Often and interpreted as Extensively implemented a strategy with standard deviations of 1.18 and 1.23, respectively.

This strategy has an overall mean score of 3.71, described as Often and with an interpretation of Extensively implemented with a standard deviation of 1.14.

Learning Activity Sheet

The result revealed that three items were rated with the highest means. Item 1, *My teacher instructed me to read the mathematical learning activity sheet carefully* with a mean of 4.50, described as Often with an sd of .90; and in Item 2, *My teacher instructed me to analyze the concept of the lesson* with a mean 4.30 described as Often with an sd of 0.97). Similarly, in item 5, *My teacher instructed me to answer the activity sheet by applying the concept of the lesson* with a mean of 4.25, described as Often and interpreted as an Extensively implemented strategy with an sd of 1.02. However, the statements *My teacher instructed me to answer all the mathematical exercises* and *My teacher instructed me to reflect on the concept of the lesson* have the least mean scores of 3.82 and 4.00, described as Often, and standard deviations of 1.23 and 1.07, respectively. Generally, the learning activity sheet as an intervention strategy got an overall mean score of 4.14, described as Often and interpreted as an Extensively implemented strategy, with a standard deviation of 1.07.

The Extent of Implementation of Mathematical Intervention Strategies in Terms of Information and Communication Technology (ICT)-Based Mentoring and Home Visitation

Table 2d. *The Extent of Implementation of Mathematical Intervention Strategies in Terms of Information and Communication Technology (ICT)-Based Mentoring and Home Visitation*

Items	*Mean*	*SD*	*Description*
Information and Communication Technology (ICT)-Based Mentoring My teachers asked me to…			
1. watch and listen to Mathematics video lesson.	3.76	1.18	Often
2. analyze the concept of the lesson from the video presented.	3.85	1.01	Often
3. become attentive during the presentation of video lesson.	3.70	1.09	Often
4. reflect the concepts of the lesson from the video presented.	3.57	1.16	Often
5. replay the video lesson if needed.	3.73	1.22	Often
6. do the activity presented in the video.	3.68	1.11	Often
7. answer mathematical problem presented in the video.	3.63	1.18	Often
8. solve mathematical problem from the video lesson.	3.66	1.17	Often
9. share to the class what was learned from the video lesson.	3.59	1.21	Often
Overall Mean	3.69		Often
Overall Standard Deviation		1.15	
Home Visitation During home visitation my teacher…			
1. asked me to give time in reading my Mathematics lesson.	4.28	1.06	Often
2. asked me to give time to work on the learning task of my Mathematics module.	4.10	1.03	Often
3. encouraged me to submit my learning task completely.	4.16	1.11	Often
4. encouraged me to submit my learning task on time	4.09	1.13	Often
5. gave assistance on the difficult part of the lesson.	3.98	1.12	Often
6. provided me with simplified activity sheet which I can easily understand.	4.07	1.08	Often
7. encouraged my parents to take part in my learning.	3.85	1.26	Often
8. allowed me to feel free in asking questions in the difficult part of the lesson.	4.13	1.08	Often
9. reminded me not to be absent.	4.19	1.12	Often
Overall Mean	4.09		Often
Overall Standard Deviation		1.11	

The extent of implementation of mathematical intervention strategies in terms of information and communication technology (ICT)-based mentoring and home visitation is presented in Table 2d. In these items, the statements that are rated with the high mean scores, which are described as Often and interpreted as Extensively implemented strategy, include, *My teacher asked me to analyze the concept of the lesson from the video presented* (M=3.85, sd=1.01); *My teacher asked me to watch and listen to Mathematics video lesson* (M=3.76, sd=1.18); and *My teacher asked me to replay the video lesson if needed* (M=3.73, sd=1.22).

While the statements, *My teacher asked me to reflect on the concepts of the lesson from the video presented,* and *My teacher asked me to share with the class what was learned from the video lesson* gained the least mean scores among the items used, with a mean score of 3.57 and 3.59, described as Often and interpreted as Extensively implemented strategies, having standard deviations of 1.16 and 1.21, respectively.

This strategy gained an overall mean score of 3.69 with a description of Often and a standard deviation of 1.15.

Home Visitation

Home visitation is another mathematical intervention strategy. Three of the nine statements have the highest mean scores and are described as Often and interpreted as Extensively implemented strategies include, *During home visitation, my teacher asked me to give time in reading my Mathematics* (M=4.28, sd=1.06); *During home visitation, my teacher reminded me not to be absent* (M=4.19, sd=1.12); and *During home visitation, my teacher encouraged me to submit my learning task completely* (M=4.16, sd=1.11). Meanwhile, the statements *During home visitation, my teacher encouraged my parents to take part in my learning* (M=3.85, sd=1.26) and *During home visitation, my teacher assisted in the difficult part of the lesson* (M=3.98, sd=1.12) described as Often and interpreted as Extensive strategies, gained the least mean scores. Generally, the items gained an overall mean score of 4.09, described as Often with a 1.11 standard deviation, showing heterogeneous responses on the statements rated.

Summary of the Extent of the Implementation of Mathematical Intervention Strategies

Table 3. *Summary of the Extent of the Implementationof Mathematical Intervention Strategies*

Strategies	*Mean*	*SD*	*Description*
Think-Pair Share	3.92	1.15	Often
Individualized Student	3.86	1.13	Often
Drill and Practice	3.94	1.16	Often
Peer Mentoring	4.00	1.13	Often
Games	3.71	1.14	Often
Learning Activity Sheets	4.14	1.07	Often
ICT-Based Mentoring	3.69	1.15	Often
Home Visitation	4.09	1.11	Often
Overall Mean	4.36		Often
Overall Standard Deviation		1.13	

Table 3 presents the summary of the extent of the implementation of the mathematical intervention strategies used in this study.

It was found that the learning activity sheets strategy gained the highest mean score of 4.14, described as Often with a standard deviation of 1.07. Similarly, home visitation and peer mentoring yielded a mean score of 4.09 and 4.00, respectively. These are often described with an sd of 1.11 and 1.13, respectively.

However, ICT-Based Mentoring and Games gained the least mean scores of 3.69 and 3.71 but are often used by teachers with standard deviations of 1.14 and 1.15, respectively. Generally, the overall mean score is 4.36, describing Often, and interpreted as an Extensively implemented strategy, with a standard deviation of 1.13.

Effectiveness of the Intervention Strategies Utilized by the Teachers in Terms of Think-Pair-Share and Individualized Student Activity

Table 4a. *Effectiveness of the Intervention Strategies Utilized by the Teachers in Terms of Think-Pair Share and Individualized Student Activity*

Intervention Strategy Utilized	*Mean*	*SD*	*Description*
Think-Pair Share It made me…			
1. read on the mathematical problem given to us.	4.36	0.88	Agree
2. reflect on the mathematical problem given to us.	3.89	1.01	Agree
3. analyze on the mathematical problem given to us.	3.93	1.05	Agree
4. share my ideas /solution of the given mathematical problem to my partner.	1.08	3.79	Agree
5. discuss my ideas/solution of the given mathematical problem to my partner.	1.12	3.74	Agree
6. raise my hand if I am ready to present my answer/ solution.	1.04	4.09	Agree
7. participate always in the discussion with my partner.	3.86	1.05	Agree
8. solve on the mathematical problem with my partner.	3.85	1.06	Agree
9. talk and explain if it is time to share my ideas.	3.93	1.12	Agree
Overall Mean	3.94		Agree
Overall Standard Deviation		1.05	
Individualized Student Activity I can…			
1. explore how the mathematical problem presented can be solved by myself.	3.89	1.08	Agree
2. answer mathematical exercises by myself.	3.73	1.15	Agree
3. do self-study with my Mathematics lesson.	3.69	1.17	Agree
4. perform my mathematical task independently.	3.49	1.22	Moderately Agree
5. work with my Mathematics project alone.	3.33	1.34	Moderately Agree
6. comprehend mathematical problem by myself.	3.49	1.19	Moderately Agree
7. analyze mathematical problem by myself	3.80	1.16	Agree
8. form ideas on mathematical problem by myself.	3.52	1.14	Agree
9. discover solution to mathematical problem by myself.	3.46	1.25	Moderately Agree
Overall Mean	3.60		Agree
Overall Standard Deviation		1.19	

The data on the effectiveness of the intervention strategies utilized by teachers in terms of Think-Pair-Share and Individualized Student Activity is shown in Table 4a.

Think-Pair Share

Regarding think-pair share, out of the nine items used to measure the strategy's effectiveness, items 1, 6, 3, and 9 got the highest mean scores with a description of Agree and interpreted as Effective. These items are, *It made me read the mathematical problem given to us,* earned the highest mean score of 4.36 (sd=0.88), *It made me read raise my hand if I am ready to present my answer solution* (M=4.09, sd=1.04), *It made me analyze on the mathematical problem given to us* (M=3.93, sd=1.05), and *It made me talk and explain if it is time to share my ideas* (M=3.93, sd=1.12). While item 5, It *made me discuss my ideas/solution of the given mathematical problem with my partner*, and item 4, *It made me share my ideas/solution of the given mathematical problem with my partner*, have the lowest mean scores of 3.74 and 3.79 with a description of Agree, interpreted as Effective with an sd of 1.12 and 1.08 respectively.

Individualized Student Activity

Based on the findings, for the Individualized Student Activity, three items yielded the highest mean scores of 3.89, 3.80, and 3.73, described as Agree and interpreted as Effective with an sds of 1.08, 1.16, and 1.15, respectively. These items are, *I can explore how the mathematical problem presented can be solved by myself, I can analyze Mathematical problems by myself,* and *I can answer mathematical exercises by myself.*

However, the item, *I can work with my Mathematics project alone* (M=3.33, sd=1.34), and *I can discover a solution to a mathematical problem by myself* (M=3.46, sd=1.25), gained the lowest mean scores, with a description of Moderately Agree and are further interpreted as Moderately Effective.

In summary, the result revealed that the respondents Agreed that both Think-Pair Share and Individualized Student Activity are Effective intervention strategies based on the overall mean scores of 3.94 and 3.60, with a standard deviation of 1.05 and 1.19, respectively.

Effectiveness of the Intervention Strategies Utilized by the Teachers in Terms of Drill and Practice and Peer Mentoring

Table 4b. *Effectiveness of the Intervention Strategies Utilized by the Teachers in Terms of Drill and Practice and Peer Mentoring*

Intervention Strategy Utilized	*Mean*	*SD*	*Description*
Drill and Practice I can…			
1. show my solution step-by-step in solving mathematical problems.	3.92	0.96	Agree
2. feel motivated when my teacher praises me. This increased my interest in doing mathematical exercises	1.00	3.80	Agree
3. feel motivated when my teacher praises me.	4.13	1.00	Agree
4. feel interested in doing mathematical exercises.	3.93	1.12	Agree
5. elaborate my answer in front of the class.	3.71	1.17	Agree
6. explain my answer in front of the class.	3.57	1.24	Agree
7. practice more mathematical exercises on the concerned lesson.	4.07	1.03	Agree
8. feel hopeful to try again in solving mathematical exercises when I got a wrong answer.	4.08	1.03	Agree
9. practice computational techniques.	3.61	1.11	Agree
Overall Mean	3.87	Agree	Effective
Overall Standard Deviation	1.07		

Peer Mentoring I can…			
1. feel comfortable learning Mathematics lesson with my mentor every time he/she told me to feel free in asking questions.	4.22	1.01	Agree
2. understand easily my Mathematics lesson when my mentor guides me to come up with the solution in solving mathematical problems.	4.07	0.96	Agree
3. understand better my Mathematics lesson when my mentor demonstrated to me the solution in solving mathematical problems.	4.12	1.01	Agree
facilitated by my mentor.	4.09	1.01	Agree
5. increase my score in Mathematics quiz when my mentor will facilitate me.	4.03	1.01	Agree
6. feel active to solve mathematical problems if my mentor assisted me.	3.99	1.11	Agree
7. feel interested to solve mathematical problems if my mentor will assist me	4.09	0.98	Agree
8. practice more mathematical exercises.	4.12	1.03	Agree
9. feel confident to solve mathematical problems.	3.85	1.12	Agree
Overall Mean	4.06	Agree	Effective
Overall Standard Deviation	1.03		

Table 4b displays the result of the effectiveness of the intervention strategies utilized by teachers in terms of drill and practice and peer mentoring.

Drill and Practice

For the drill and practice, the respondents are Agreeable that this strategy is Effective. The statements *I can feel motivated when my teacher praises me* (M=4.13, sd=1.00); *I can practice more mathematical exercises on the concerned lesson* (M=4.07, sd=1.03); and *I can feel hopeful to try again in solving mathematical exercises when I get a wrong answer* (M=4.08, sd=1.03), have the highest mean scores with a description of Agree, and interpreted as Effective. Meanwhile, the statements *I can explain my answer in front of the class* (M=3.57, sd=1.24), and *I can practice computational techniques* (mean=3.61, sd=1.11), gained the least mean scores with a description of Agree and interpreted as Effective strategies.

Peer Mentoring

For peer mentoring, out of the nine statements used to measure the effectiveness of the strategy, the statement *I can feel comfortable learning Mathematics lessons with my mentor every time they told me to feel free to ask questions,* earned the highest mean score of 4.22 described as Agree with an sd of 1.01 interpreted as Effective. Likewise, *I can better understand my Mathematics lesson when my mentor demonstrated the solution to solving mathematical problems* (M=4.12, sd=1.01), and *I can practice more Mathematical exercises* (M=4.12, sd=1.03) have a description of Agree, and interpreted as Effective strategies. While the statements, *I can feel confident to solve mathematical problems,* and *I can feel active to solve mathematical problems if my mentor assisted me,* gained the least mean scores of 3.85 and 3.99, described as Agree with a standard deviation of 1.12 and 1.11 respectively. Both strategies are interpreted as Effective strategies.

The respondents rate all the statements in both strategies as Agree with an Effective interpretation. Both strategies are effective interventions with an overall mean score of 3.87 and 4.06, respectively, with a standard deviation of 1.07 and 1.03. sd=1.00); I can practice more mathematical exercises on the concerned lesson (M=4.07, sd=1.03); and I can feel hopeful to try again in solving mathematical exercises when I got a wrong answer (M=4.08, sd=1.03), have the highest mean scores with a description of Agree, and interpreted as Effective. Meanwhile, the statements I can explain my answer in front of the class (M=3.57, sd=1.24), and I can practice computational techniques (mean=3.61, sd=1.11), gained the least mean scores with a description of Agree, and interpreted as Effective strategies.

For peer mentoring, out of the nine statements used to measure the effectiveness of the strategy, the statement *I can feel comfortable learning Mathematics lesson with my mentor every time he/she told me to feel free in asking questions,* earned the highest mean score of 4.22 described as Agree with an sd of 1.01. Likewise, the statements, *I can understand better my Mathematics lesson when my mentor demonstrated me the solution in solving mathematical problems* (M=4.12, sd=1.01), and *I can practice more Mathematical exercises* (M=4.12, sd=1.03) have a description of Agree, and interpreted as Effective strategies. While, the statements, *I can feel confident to solve mathematical problems,* and *I can feel active to solve mathematical problems if my mentor assisted me,* gained the least mean scores of 3.85 and 3.99 described as Agree with standard deviation of 1.12 and

1.11 respectively. Both strategies are interpreted as Effective strategies.

All the statements in both strategies are rated by the respondents Agree with an interpretation of Effective. Both strategies are found to be Effective interventions with an overall mean score of 3.87 and 4.06, respectively with a standard deviation of 1.07 and 1.03.

Effectiveness of the Intervention Strategies Utilized by the Teachers In Terms of Games and Learning Activities Sheet

Table 4c reflects the mean, standard deviation, and description of the effectiveness of the intervention strategies utilized by the teachers in terms of games and learning activity sheets.

Games

In terms of Games, results showed that item 7 got the highest mean of 3.92, which states that *I feel focused on solving a mathematical problem*, described as Agree and sd. of 1.07. In item 6, *I feel alert in solving a mathematical problem* (M=3.89, sd=1.08) described as Agree. In item 8, I *have developed my confidence in learning Mathematics*. I *feel challenged in solving a mathematical problem* (M=3.88) and (M=3.88) described as Agree and interpretation of Effective with a standard deviation of 1.01 and 1.06, respectively. However, item 9, which states that *I feel active in attending mathematical games*, has a mean of 3.76, described as Agree, and sd. of 1.11, interpreted as Effective, and item 3, *I can improve my calculation skill* (M=3.81, sd.=1.06) have the means with a description of Agree and interpreted as Effective.

Table 4c. *Effectiveness of the Intervention Strategies Utilized by the Teachers in Terms of Games and Learning Activity Sheet*

Intervention Strategy Utilized	*Mean*	*SD*	*Description*
Games I…			
1. have developed my confidence in learning Mathematics.	3.88	1.01	Agree
2. feel attentive in my Mathematics class when game is introduced.	3.82	1.01	Agree
3. can improve my calculation skill.	3.81	1.06	Agree
4. can participate in games as mathematical learning activity.	3.82	1.10	Agree
5. feel excitement to attend my Mathematics class every time my teacher incorporates games.	3.82	1.07	Agree
6. feel alert in solving mathematical problem.	3.89	1.08	Agree
7. feel focus in solving mathematical problem	3.92	1.07	Agree
8. feel challenged in solving mathematical problem.	3.88	1.06	Agree
9. feel active in attending mathematical games.	3.76	1.11	Agree
Overall Mean	3.84		Agree
Overall Standard Deviation		1.06	
Learning Activity Sheet Activity sheet helps me…			
1. improve my reading skill.	4.25	0.96	Agree
2. improve my comprehension skill.	4.14	0.98	Agree
3. enrich my knowledge in Mathematics.	4.14	1.04	Agree
4. improve my performance rating in Mathematics.	4.05	1.07	Agree
5. practice more mathematical exercises.	4.10	1.04	Agree
6. reflect the content of the lesson.	3.86	1.12	Agree
7. improve my numeracy skill.	3.96	1.11	Agree
8. increase my confidence in solving mathematical problem.	3.97	1.06	Agree
9. solve accurately mathematical problems.	3.77	1.08	Agree
Overall Mean	4.03		Agree
Overall Standard Deviation		1.05	

Learning Activity Sheet

On the learning activity sheet, item 1, which state that *the Activity sheet helps me improve my reading skill*, had the highest mean of 4.25, described as Agree, interpreted as Effective, and sd of .96. Additionally, Item 2, *Activity sheet helps me improve my comprehension skill* (M=4.14, sd.=0.98) and *Activity sheet helps me enrich my knowledge in Mathematics* (M=4.14, sd.=1.04) both described as Agree and interpretation of Effective. On the other hand, items 9

and 6 have the lowest mean.

Item 9 states that *Activity sheets help me solve mathematical problems accurately* with a mean of 3.77, and item 6, *Activity sheet helps me reflect the content of the lesson* with a mean of 3.86, described as Agree and interpreted Effective with a standard deviation of 1.08 and 1.12 respectively. All statements in both intervention strategies have a description of Agree and are interpreted as an Effective strategy. Games and learning activity sheets gained an overall mean score of 3.84 and 4.03, respectively, with standard deviations of 1.06 and 1.05.

Effectiveness of the Intervention Strategies Utilized by the Teachers in Terms of Virtual/Information and Communication Technology (ICT)Based-Mentoring and Home Visitation

Table 4d depicts the effectiveness of the intervention strategies utilized by the teachers in terms of virtual/information and communication technology (ICT) based mentoring and home visitation.

Table 4d. *Effectiveness of the Intervention Strategies Utilized by the Teachers in Terms of Virtual/Information and Communication Technology (ICT) Based-Mentoring and Home Visitation*

Intervention Strategy Utilized	*Mean*	*SD*	*Description*
Virtual/Information and Communication Technology (ICT) Based-Mentoring I can…			
1. feel interested to attend my Mathematics class using virtual or video lesson.	3.80	1.11	Agree
2. feel attentive in listening to my Mathematics video lesson.	3.71	1.01	Agree
3. easily recall my Mathematics lesson using video presentation.	3.64	1.09	Agree
4. easily understand my Mathematics lesson using virtual or video presentation.	3.56	1.12	Agree
5. improve my performance rating in Mathematics by using virtual or video presentation	3.55	1.12	Agree
6. easily reflect the content of the lesson.	3.50	1.12	Agree
7. easily analyze the mathematical problem presented.	3.63	1.10	Agree
8. easily replay the video lesson.	3.70	1.11	Agree
9. feel excitement in solving mathematical exercises.	3.60	1.11	Agree
Overall Mean	3.63		Agree
Overall Standard Deviation		1.09	
Home Visitation I…			
1. feel that my teacher is concerned about me.	4.28	1.01	Agree
2. feel that my teacher becomes flexible and considerate to me.	4.12	0.98	Agree
3. become interested in learning.	4.01	1.05	Agree
4. feel motivated to work on my mathematical tasks and exercises.	3.94	1.05	Agree
5. observe that my performance rating in Mathematics is increasing.	3.95	1.07	Agree
6. become sincere in solving mathematical problem and exercises.	3.99	1.00	Agree
7. am inspired to attend my Mathematics class.	3.91	1.07	Agree
8. passed/promoted with my Mathematics subject.	4.00	1.06	Agree
9. become dedicated to attend my Mathematics class.	3.85	1.09	Agree
Overall Mean	4.00		Agree
Overall Standard Deviation		1.04	

Virtual/ICT Based Mentoring

Among the nine questions used for the virtual/information and communication technology (ICT) based mentoring as an intervention strategy, the statement *I can feel interested in attending my Mathematics class using virtual or video lesson,* gained the highest mean score of 3.80 described as Agree and interpreted as Effective, and with sd of 1.11.

Similarly, statements, *I can feel attentive in listening to my Mathematics video lesson* (M=3.72), and *I can easily replay the video lesson* (M=3.70) described as Agree and interpreted as Effective with a standard deviation of 1.01 and 1.11, respectively. While the statements, I *can quickly reflect on the content of the lesson,* and *I can improve my performance rating in*

Mathematics by using virtual or video lessons have the lowest mean scores of 3.50 and 3.55, described as Agree and interpreted as Effective. Both have an sd of 1.12.

Home Visitation

All items used in both intervention strategies have a description of Agree, which is interpreted as Effective. For Home visitation, it was found that item 1, which states that *I feel that my teacher is concerned about me*, got the highest mean (M=4.28, sd=1.01) described as Agree and interpreted as Effective; item 2, *I feel that my teacher becomes flexible and considerate to me* (M=4.12, sd=0.98) described as Agree with an interpretation of Effective, and *I become interested in learning* (M=4.01, sd=1.05) described as Agree and interpreted as Effective have the highest mean scores.

However, in item 9, I *became dedicated to attending my Mathematics class*(M=3.85), and in Item 7, *I am inspired to attend my Mathematics class* (M=3.91) have the lowest mean scores described as Agree, and both interpreted as Effective with sd of 1.09 and 1.07 respectively. In summary, ICT-based mentoring and home visitation gained an overall mean score of 3.63 and 4.01, described as Agree with sd. of 1.09 and 1.04, respectively.

Summary of the Effectiveness of the Intervention Strategies Utilized by Teachers in Mathematics

Table 5. *Summary of the Effectiveness of the Intervention Strategies Utilized by the Teachers in Mathematics*

Intervention Strategy Utilized	*Mean*	*SD*	*Description*
Think-Pair Share	3.94	1.05	Agree
Individualized Student Activity	3.60	1.19	Agree
Drill and Practice	3.87	1.07	Agree
Peer Mentoring	4.06	1.03	Agree
Games	3.84	1.06	Agree
Learning Activity Sheets	4.03	1.05	Agree
ICT-Based Mentoring	3.63	1.09	Agree
Home Visitation	4.01	1.04	Agree
Overall Mean	4.44		Agree
Overall Standard Deviation		1.07	

Table 5 shows the summary of the effectiveness of the intervention strategies utilized by the teachers in Mathematics. Among the eight strategies, Peer mentoring (M=4,06, sd=1.03), Learning Activity Sheets (M=4.03, sd=1.05), and Home Visitation (M=4.01, sd=1.04) have the highest mean scores described as Agree and interpreted as Effective.

In contrast, Individualized Student Activity Sheet and ICT-Based Mentoring (M=3.63, sd=1.09) have the lowest mean scores described as Agree and interpreted as Effective. Altogether, the result revealed an overall mean score of 4.44, having a description of Agree, and was further interpreted as Effective with an sd of 1.07.

Academic Performance of the Respondents

Table 6 presents the result of the academic rating of students in Mathematics from the first quarter to the fourth quarter. A closer look at the data in Table 6 shows a significant improvement in students' grades from Quarter 1 to Quarter 4. For the first quarter rating period, 362 students had grades ranging from 71-75, described as Beginning, and 66 students got grades of 76-78, described as Developing, while no one reached the Proficiency level with grades 81-85, described as Proficient.

In the second quarter, 235 students with grades 71-75 described as Beginning, and 93 students had grades 76-80 described as Developing, while none got grades 81-85 described as Proficient. In the third quarter, 79 students with grades 71-75 described as Beginning and 246 students have grades 76-80 described as Developing, and three students have grades 81-85 described as Proficient.

Academic Performance of the Respondents

Table 6. *Academic Performance of the Respondents*

Grade Interval	*Q1*			*Q2*			*Q3*			*Q4*		
	f	P	Description	f	P	Description	f	P	Description	f	P	Description
81-85	0	0	Proficient	0	0	Proficient	3	0.90	Proficient	29	8.80	Proficient
76-80	66	20.12	Developing	93	28.40	Developing	246	75.00	Developing	299	91.20	Developing
71-75	262	79.88	Beginning	235	71.60	Beginning	79	24.10	Beginning	0	0	Beginning
Total	328	100.00		328	100.00		328	100.00		328	100.00	
Mean		74.45			75.40			76.60			78.30	
SD		1.23			0.93			1.26			1.49	

Table 6 presents the result of academic rating of students in Mathematics from first quarter to fourth quarter. For the fourth quarter, none got grades of 71-75, described as Beginning, while 299 students got grades of 76-80, described as Developing, and 29 students had grades of 81-85, described as Proficient.

The number of students with improved academic performance based on their grades per quarter is consistently increasing. As observed in quarter 2, there was an increase in the mean score (75.40), Q3 (76.40), and Q4 (78.30). Furthermore, the number of students

having better grades is observed in Q3 and Q4 with 3 and 29 students, respectively, with grades ranging from 81 to 85 described as Proficient.

However, 246 and 299 students have grades ranging from 76 to 80 for Q3 and Q4, respectively, described as Developing. In Q4, no student has a grade lower than 76, and almost all have passing grades of 76 to 80, which is described as Developing. Overall academic performance of the respondents showed a significant improvement based on the grade intervals from Q1 to Q4.

Difference Between the Academic Performance of the Students When Grouped According to Sex

Table 7. *Difference Between the Academic Performance of the Students when Grouped According to Sex*

Quarter Grade	*Sex*	*n*	*Mean*	*p-value*
Rank				
First Quarter	Male	140	148 75	0.005
	Female	188	176.23	
Second Quarter	Male	140	154.49	0.043
	Female	188	171.95	
Third Quarter	Male	140	157.23	0.217
	Female	188	169.91	
Fourth Quarter	Male	140	156.55	0.172
	Female	188	170.42	

The significant difference between the student's academic performance, when grouped according to sex, is shown in Table 7. Based on the data presented, it could be inferred that there is a significant difference in the academic performance of male and female respondents in the first and second quarter grading periods since the *p*-value of 0.005 and 0.043, respectively, are lesser than the arbitrarily chosen level of significance of .05. Hence, the null hypothesis which states that there is no significant difference on the academic performance of the students when grouped according to sex in the first and second quarter is rejected.

While in the third and fourth quarters, there is no evidence of a significant difference in the respondents' academic performance when grouped according to sex since the p-values of .217 and .172 are greater than the .05 level of significance. Thus, the null hypothesis, which states that there is no significant difference between the academic performance of the respondent in Q3 and Q4 when grouped according to sex, is not rejected.

The Difference on the Effectiveness Rating of the Intervention Strategies Employed by Teachers When Grouped According to Sex

Table 8. *The Difference on the Effectiveness Rating of the Intervention Strategies Employed by Teachers when Grouped According to Sex*

Intervention Strategies	*Sex*	*n*	*Mean rank*	*p-value*
Think-Pair Share	Male	140	161.45	0.615
	Female	188	166.77	
Individualized Student	Male	140	158.31	0.307
Activity	Female	188	169.11	
Drill and Practice	Male	140	169.86	0.377
	Female	188	160.51	
Peer Mentoring	Male	140	169.86	0.53
	Female	188	160.51	
Games	Male	140	170.92	0.290
	Female	188	159.72	
Learning Activity Sheet	Male	140	161.51	0.622
	Female	188	166.72	
ICT-Based Mentoring	Male	140	176.90	0.041
	Female	188	155.26	
Home Visitation	Male	140	164.04	0.377
	Female	188	164.84	

Table 8 reflects the difference in the effectiveness rating of the intervention strategies employed by teachers when grouped according to sex. The result reveals that among the intervention strategies used, only the ICT-based mentoring has a *p-value* of 0.041 which is lesser than the level of significance of .05 level of significance.

The data reveal that there is no significant difference between the effectiveness rating of the intervention strategies employed by teachers in terms of Think-Pair-Share, Individualized Student Activity, Drill and Practice, Peer Mentoring, Games, Learning Activity Sheet, and Home Visitation when grouped according to sex since the p-values of .615, .307, .377, .530, .290, .622, and .377, respectively, are greater than the .05 level of significance. Therefore, there is no evidence that the null hypothesis, which states that there is no significant difference between the effectiveness rating of the intervention strategies employed by teachers when grouped according to sex, will be rejected.

However, results show a significant difference in the effectiveness rating of the intervention strategies teachers employed in ICT-based instruction when grouped according to sex. Therefore, the null hypothesis is rejected.

The Difference in the Effectiveness Rating of the Intervention Strategies Employed by Teachers When Grouped According to the School

Table 9. *The Difference in the Effectiveness Rating of the Intervention Strategies Employed by Teachers when Grouped According to School*

Variable Intervention Strategies	*School*	*n*	*Mean Rank*	*P-value*
Think-Pair Share	Dado HS	147	150.45	0.039
	Pigcawaran HS	63	168.26	
	Alamada HS	118	180.00	
Individualized Student Activity	Dado HS	147	183.89	0.003
	Pigcawaran HS	63	156.21	
	Alamada HS	118	144.77	
Drill and Practice	Dado HS	147	149.70	0.027
	Pigcawaran HS	63	168.09	
	Alamada HS	118	181.02	
Peer Mentoring	Dado HS	147	139.43	0.000
	Pigcawaran HS	63	162.37	
	Alamada HS	118	202.55	
Games	Dado HS	147	150.45	0.020
	Pigcawaran HS	63	162.37	
	Alamada HS	118	183.14	
Learning Activity Sheet	Dado HS	147	134.24	0.000
	Pigcawaran HS	63	172.10	
	Alamada HS	118	198.14	
ICT-Based Mentoring	Dado HS	147	170.88	0.193
	Pigcawaran HS	63	145.42	
	Alamada HS	118	166.74	
Home Visitation	Dado HS	147	142.57	0.000
	Pigcawaran HS	63	145.39	
	Alamada HS	118	202.02	

Table 9 presents the difference in the effectiveness rating of the intervention strategies employed by teachers when grouped according to school. The result revealed that all intervention strategies employed by teachers except ICT base mentoring have significant differences when grouped according to schools.

The intervention strategies such as the Think-Pair-Share, Individualized Student Activity, Drill and Practice, Peer Mentoring, Games, and Home Visitation are found to be significantly different since the *p* values of .039, .003, .000, .020 are lesser than the significant level of 0.05. Therefore, the null hypothesis, which states that the effectiveness rating of the intervention strategies employed by teachers when grouped according to school, is rejected.

On the contrary, ICT-based mentoring is not significant since the p-value of 0.193 is greater than the arbitrarily chosen significance level. Hence, the null hypothesis that there is no significant difference in the effectiveness of the intervention strategies employed by teachers in ICT-Based mentoring when grouped according to school is not rejected.

The Difference in the Effectiveness Rating of the Intervention Strategies Employed by Teachers When Grouped According to Grade Level

Table 10. *The Difference in the Effectiveness Rating of the Intervention Strategies Employed by Teachers when Grouped According to Grade Level*

Intervention Strategies	*Grade level*	*N*	*Mean rank*	*p-value*
Think-Pair Share	Grade 7	107	156.16	0.614
	Grade 8	88	165.17	
	Grade 9	69	175.69	
	Grade 10	64	165.45	
Individualized Student	Grade 7	107	152.52	
	Grade 8	88	167.63	0.438
	Grade 9	69	173.95	
	Grade 10	64	170.05	
Drill and Practice	Grade 7	107	181.00	0.614
	Grade 8	88	160.06	
	Grade 9	69	154.33	
	Grade 10	64	153.99	
Peer Mentoring	Grade 7	107	156.1	0.614
	Grade 8	88	165.17	
	Grade 9	69	175.69	
	Grade 10	64	165.45	
Games	Grade 7	107	156.16	0.614
	Grade 8	88	165.17	
	Grade 9	69	175.69	
	Grade 10	64	165.45	
Learning Activity Sheet	Grade 7	107	156.16	0.614
	Grade 8	88	165.17	
	Grade 9	69	175.69	
	Grade 10	64	165.45	
ICT-Based Mentoring	Grade 7	107	156.16	0.614
	Grade 8	88	165.17	
	Grade 9	69	175.69	
	Grade 10	64	165.45	
Home Visitation	Grade 7	107	156.16	0.614
	Grade 8	88	165.17	
	Grade 9	69	175.69	
	Grade 10	64	165.45	

Table 10 presents the difference in the effectiveness rating of the intervention strategies employed by teachers when grouped according to grade level.

The data show that all intervention strategies used by the teachers have a p-value greater than the level of significance of 0.05. The effectiveness of teachers' intervention strategies is similar when grouped according to grade level. Thus, the null hypothesis, which states that there is no significant difference in the effectiveness of the intervention strategies employed by teachers when grouped according to grade level, is not rejected.

Relationship Between the Extent of Implementation of the Intervention Strategies Employed by the Teachers and Its Effectiveness in Mathematics

Table 11. *Relationship Between the Extent of Implementation of the Intervention Strategies Employed by the Teachers and Its Effectiveness in Mathematics*

Extent of Utilization	*Effectiveness*			
	r value	p-value	Interpretation	Decision
Think- Pair Share	0.489**	0.000	Significant	Rejected
Individualized Student Activity	0.244**	0.000	Significant	Rejected
Drill & Practice	0.577**	0.000	Significant	Rejected
Peer Mentoring	0.665**	0.000	Significant	Rejected
Games	0.547**	0.000	Significant	Rejected
Learning Activity Sheet	0.584**	0.000	Significant	Rejected
ICT-Based Mentoring	0.612**	0.000	Significant	Rejected
Home Visitation	0.549**	0.000	Significant	Rejected

Table 11 presents the relationship between the Extent of Implementation of the Intervention Strategies Utilized and Its Effectiveness in Mathematics.

The data show that all intervention strategies are significantly correlated since the p-values are all equal to .000, which is lesser than the .01 level of significance. Hence, the null hypothesis is rejected, which states that there is no significant relationship between the extent of intervention strategies used and the effectiveness of intervention strategies employed by the teachers.

Relationship Between the Extent of the Intervention Strategies Utilized by the Teachers, and the Academic Performance of Students in Mathematics

Table 12. Relationship Between the Extents of Intervention Strategies Utilized by the Teachers and Academic Performance of Students in Mathematics

Extent of Utilization	*Academic Performance*			
	R-value	p-value	Interpretation	Decision
Think- Pair Share	0.087	0.115	Not Significant	Rejected
Individualized Student Activity	0.040	0.467	Not Significant	Rejected
Drill & Practice	0.051	0.356	Not Significant	Rejected
Peer Mentoring	0.072	0.196	Not Significant	Rejected
Games	0.129*	0.020	Not Significant	Rejected
Learning Activity Sheet	0.128*	00.020	Not Significant	Rejected
ICT-Based Mentoring	0.042	0.450	Not Significant	Rejected
Home Visitation	0.049	0.375	Not Significant	Rejected

Table 12 presents the relationship between the extent of the intervention strategies utilized by teachers and the academic performance of students in Mathematics.

Correlation analysis data revealed on the extent implementation of intervention strategies utilized, and academic performance of students in Mathematics, two out of eight strategies are found to be significantly correlated since the p-values are lesser than or equal to the lead level of significance. These include games (r=0.129, p=0.020) and Learning Activity Sheet (r=0.128, p=0.020). Thus, the null hypothesis which states that there is no significance of implementation of intervention strategies used and the academic performance of the students is rejected.

However, intervention strategies such as Think-Pair Share (r value=0.087, p value=0.115), Individualized Student Activity (r value=0.040, p value=0.467), Drill and Practice (r value=0.051, p value=0.356), Peer Mentoring (r value=0.072, p value=0.196), ICT-Base Mentoring (r value=0.042, p value=0.450), and Home Visitation (r value=0.049, p value=0.375) are not significantly correlated with academic performance of students in Mathematics. There is no evidence to reject the null hypothesis since the p-values are greater than that that .05 level of significance. Hence, the null hypothesis which states that there is no significant relationship between the extent of intervention strategies utilized and the academic performance of the students is not rejected.

Challenges Experienced by the Respondents during the Implementation of Mathematics Interventions

Table 13. *Challenges Experienced by the Respondents during the Implementation of Mathematics Interventions*

Challenges Experienced by the Students	*Mean*	*SD*
1. Lack of understanding about the subject content.	4.00	0.99
2. mathematical problems are difficult to resolve	3.80	0.99
3. Insufficient background knowledge in Mathematics.	3.76	0.97
4. Laziness to make efforts to do additional tasks	3.07	1.21
5. A very difficult subject.	3.65	1.11
6. Have fear in my Mathematics subject.	2.61	1.37
7. Difficulty to comprehend mathematical statements.	4.07	0.94
8. Difficulty in understanding mathematical terms.	3.93	0.95
9. Difficulty in reading mathematical symbols	3.68	1.02
Overall Mean	3.62	
Overall Standard Deviation		1.06

Table 13 presents the different challenges of students during the implementation of Mathematics intervention. Among the challenges experienced by the respondents, the result revealed that the items, *Difficulty to comprehend mathematical statements* (M=4.07), *Lack of understanding about the subject content* (M=4.00), and *Difficulty in understanding mathematical terms* (M=3.93) have the highest mean scores described as *Much a Problem* with sds of 0.94, 0.99 and 0.95 respectively.

While *I Have fear in my Mathematics subject* and *laziness in making efforts to do additional tasks,* with mean scores of 2.61 and 3.07, respectively, are considered least challenging, described as Moderately a Problem with sds of 1.37 and 1.21 respectively. The overall mean of the nine statements used had earned 3.62, described as Much a Problem, and sd of 1.06.

Conclusion

According to the results of the current study, teachers extensively utilized the eight intervention strategies, including Think-Pair-Share, Individualized Student Activity, Drill and Practice, Peer Mentoring, Games, LAS, ICT-Based Mentoring, and Home Visitation as interventions to students with varied learning needs. When teachers are committed to help students who are academically at risk, the latter can improve their academic performance and learn Mathematics more effectively.

Teachers' intervention tactics work well at raising students' performance levels. These techniques encourage students to engage in the learning process actively, address their learning disabilities, and enhance their academic achievement in Mathematics.

It can be further concluded that students sex categories had no significant difference on the effectiveness rating of the intervention strategies except for ICT-based mentoring. Grade level also has no significant difference in the effectiveness rating of the intervention strategies used. While parents' educational level could contribute to the effectiveness rating of the strategies such as think-pair share and learning activity sheet, exhibited significant results.

Finally, students' difficulties to comprehend mathematical statements, Lack of understanding about the subject content and difficulty in understanding mathematical terms are the most challenging experiences noted by the students upon the implementation of the intervention strategies while attending their Mathematics lesson. These negative experiences were effectively addressed by integrating different intervention strategies with the learners which keep them engaged and motivated to learn the subject.

Considering the findings of the study, the researcher highly recommends the following:

1. Mathematics teachers should utilize varied intervention strategies and intensify the extent of the implementation and always unlock learning difficulties before introducing new learning content to have a common understanding of new Mathematical concepts.
2. Mathematics teachers should always translate different mathematical terminologies into an ordinary

language that students can easily understand.
3. Teachers at all levels should conduct a Multiple Intelligences Test on the first day of class to assess learners learning preferences.
4. Teachers should employ intervention strategies appropriate to the learning needs of students.
5. Teachers should consistently utilize varied intervention strategies fitted to the learning style and capabilities of the students.
6. Teachers should integrate ICT-Based mentoring in Mathematics to provide meaningful learning experiences for the learners. Therefore, teachers should be capacitated and equipped with the necessary skills in ICT.
7. School administration should allocate time for teachers to conduct home visitation to a student that is academically at risk.
8. Future studies may conduct quasi-experimental research to examine further the extent and effectiveness of the eight intervention strategies and make these effective tools to improve students' academic performance

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