Utilization of Language Strategies in Teaching Grade 10 Mathematics of Narvacan National Central High School

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ABSTRACT: This study aimed to evaluate the utilization of Language Strategies in teaching Grade 10 Mathematics at Narvacan National Central High School during the 4th quarter of the SY 2022-2023. Specifically, it focused on the profile of the students, their level of performance in language strategies, and their mathematics performance. It further determined the relationship between the students' profile and the level of performance in language strategies, the students' profile and their level of participation, the students' performance in language strategies and their mathematics performance, and the problem encountered by the teachers in teaching mathematics using language strategies.

This study used a quantitative research approach employing the correlational research design. The research design is a combined description, evaluative and correlational design. This study made use of a questionnaire consisting of two parts, the performance of the students when using language strategies and the 4th quarter grades of the learners in Mathematics.

Hence, it is recommended students will participate in every activity or discussion related to the different language strategies. The performance of the students may be improved by sustaining the utilization of Language Strategies in Teaching Mathematics. Teachers and school heads are encouraged to innovate programs or activities that address issues related to low comprehension and low retention of students.

KEYWORDS: Teaching of Mathematics, Language Strategies, Student Performance

I. INTRODUCTION

Mathematics, in the words of William Paul Thurston, is not about numbers, equations, computations, or algorithms: it is about understanding (Dreyer, 2019). Mathematics is one of the most important subjects that a child will have to learn because it plays such an important role in their lives and education, as no matter what field of work they choose, some form of mathematics will be involved (International Mathematical Union, 2023).

Despite the benefits that Mathematics can provide, students claim that it is challenging. Its perplexity drags students down to the point where they lose interest in the subject. Furthermore, exposing students to numbers and all mathematical concepts is like transporting them to an unfathomable dimension. They regard mathematical formulas as abstract, only capable of being handled by gifted individuals. Furthermore, complex numbers and mind-boggling formulas cause students to focus on the difficulty of the problem rather than its essence and importance (Yeh et al., 2019).

A language strategy is a broad plan for a lesson that comprises organization, instructional objectives, and a list of tactics that will be used to carry out (Stone and Morris, in Issac, 2010 as cited by Saputra, et al. 2014).

Teaching mathematics using effective language strategies is essential for helping students grasp and understand mathematical concepts. In many content areas, including mathematics, vocabulary understanding is a major contributor to overall comprehension. Good reading skills, and English proficiency. and an understanding of mathematical vocabulary, language, and structure plays a critical role in the teaching and learning of mathematics word problems. It is an essential tool for enabling learners to create meaningful mental pictures necessary for solving mathematical problems (Moleko, 2021).

Moreover, PISA 2018 revealed that Filipino learners obtained lower points in Reading, Mathematics, and Science Literacy compared to the Organization for Economic Co-operation and Development (OECD) average points.

Researchers in the Philippines have identified factors that may lead to poor performance of the students in language and mathematics literacy. Some factors that can lead to poor language literacy are lack of vocabulary, difficulty in conveying and organizing ideas, students' perception and lack of motivation and interest (Saavedra & Barredo, 2020). In addressing the different

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factors that lead to poor language literacy, researchers suggested strategies like Role, Audience, Format, Topic or RAFT strategy (Kabigting 2022), using eclectic reading model (Dizon, 2020) and establishing English corners in the school.

The Department of Science and Technology (DOST) Region 1 and Science Education Institute under the Science Teacher Academy for the Region (STAR) conducted a project entitled, "Strengthening and Enhancing the Learning Tools of the Math and Science Teachers in the Municipalities without Scholars and to DOST I CEST Communities". As part of the project, the training on Language Strategies in Teaching Science and Mathematics was provided to the identified teachers last April 20-23, 2022 at Vigan City, Ilocos Sur. The teachers undergo workshops on the different language strategies in teaching mathematics.

The different strategies in improving the performance of students in language and mathematics are found effective. However, the strategies for language literacy are for language literacy only. The same with the strategies used in mathematics, it is only intended for mathematics. There are still gaps in using effective teaching strategy that could help Filipino students improve their mathematics performance while also exercising their language performance.

. Though there are numerous researches on how to improve mathematics performance of the students, there are only few studies on the utilization of language strategies in teaching mathematics specially here in the Philippines

Language strategies in teaching Mathematics a new strategy introduced to the DepEd teachers of Division of Ilocos Sur. This is the reason why the researcher evaluated the said strategies and looked into the possible effects on the mathematics performance of students along with the other variables' profiles and class participation.

A. Objectives of the Study

This research aimed to evaluate the utilization of language strategies in teaching Mathematics at Narvacan National Central High School during the 4th quarter of the School Year 2022-2023.

Specifically, it sought to answer the following questions:

1. What is the profile of the student-respondents in terms of:

    a. age;

    b. sex;

    c. birth Order;

d. educational attainment of parents;

e. reading materials;

f. frequency of using gadgets a day; and

g. length of time in using gadgets?

2. What is the level of performance of the students in language strategies along:

a. vocabulary building;

b. composing with keywords;

c. metacognition;

d. defining format;

e. profile; and

f. frames?

3. What is the level of participation of the students in class discussion when using Language Strategies in Teaching Mathematics as perceived by the students themselves and the mathematics teachers?

4. What is the level of Mathematics Performance of the Grade 10 learners in the 4th quarter of Narvacan National Central High School?

5. Is there a significant relationship between the profile of the students and the level of performance in language strategies?

6. Is there a significant relationship between the profile and the level of participation of the students?

7. Is there a significant relationship between the level of performance of the students in language strategies and the level of Mathematics Performance of the Grade 10 learners in the 4th quarter?

8. Is there a significant relationship between the level of participation and level of performance of the students in the 4th quarter?

9. What are the problems encountered by the teachers in teaching Mathematics using language strategies?

II.   REVIEW OF LITERATURE

Profile of Respondents. Studies on student profiles can help educators develop educational techniques and policies, as well as improve faculty knowledge of learning challenges (Da Silva, 2010).

Age. Grade 10 is the final year of junior high school and the fourth year of high school in the Philippines. In Grade 10, students are typically between the ages of 15 and 16. According to Bation and Sabaldana (2018), 16 is the ideal age for grade 10.

Sex. Studies could use the respondents' gender sex as a parameter to better understand how gender affects people's decisions (Voxco, 2023).

Birth Order. The firstborn could differ greatly from the second born and the lastborn. The expectations from parents may also have an impact on the student's academic performance. Since the family is the child's first experience with a group, the role that the child plays there may also have an impact on the child's personality (Baybay, 2017).

Educational attainment of parents. Having educated parents, working parents, and affluent families are strong indicators of how well students will develop (Kean et al. 2020). Khan et al. (2015) revealed that much higher parental education levels are associated with students' academic success.

Reading Materials. Numerous studies have been published that discuss how using physical or digital resources in the teaching of mathematics affects students' academic progress. It has been demonstrated that using resources in the classroom can improve student achievement, particularly in mathematics (Sherman & Bisanz, 2009).

Frequency of Using Gadgets a Day. Although the connection between gadget use and academic performance is complicated and influenced by many factors, it is possible that how frequently students use gadgets (such as cellphones, tablets, and computers) in a day will affect how well they score in math. Frequent gadget use may cause cognitive overload, as students' cognitive resources are divided among many tasks, which may hinder their ability to think deeply about mathematics (Wilmer et al. 2017).

Language Strategies in Teaching Mathematics. Mathematics has long been thought of as a subject with few language requirements. Math and language are inextricably linked; language facilitates mathematical reasoning (Dale & Cuevas, 1992 as cited by Jarrett, 1999). Mathematics has its own grammatical patterns, norms, and vocabulary. Students must acquire the special meanings that some English terms have in a mathematical context while learning English. According to Harris (2005), to understand mathematics, students must learn many content-specific vocabulary words, know the meaning of many complex phrases, understand that many common English words have unique meanings in mathematics, understand that prepositions, know the meaning of prefixes and suffixes, understand unique mathematical sentence constructions, understand statements and questions that are written in passive voice and know that mathematical operations are associated with many different words.

Vocabulary Building. Students need vocabulary building techniques to expand their expanding vocabulary. Teachers frequently advise students to read widely and conduct research. Building a vocabulary involves learning new words, studying their meanings, and storing them for use in the future.

Composing with Keywords. The keyword strategy improved the vocabulary achievement and retention of the students (Al-Zahrani, 2011). Also, when acquiring vocabulary in a second language, the keyword technique outperforms both rote memorization and semantic mapping (Sagarra & Alba 2006).

Metacognition. Metacognitive strategies are techniques that aid students in understanding how they learn. Utilizing metacognitive techniques stimulates one's thinking and can result in deeper learning and better performance, notably among difficult students (Anderson, 2022).

Defining Format. When emphasizing the significance of how information is structured and ordered within a document, presentation, or other form of communication, you are emphasizing format as a language strategy. To ensure that the material flows logically, this involves taking into account the arrangement of the content, headers, subheadings, and the general structure (Last 2019).

Frames. Frames refers to a cognitive and linguistic notion used as a language technique to change how information is perceived, evaluated, and understood in the context of language and communication. By framing, facts or messages, one can affect the perceptions, attitudes, and responses of others (Kaufman, Elliott & Shmueli 2020).

Profile. Profiling as a language strategy is the process of employing certain language and communication skills (Deutschmann & Steinvall 2020). Profiling offers organizing and summarizing advice information based on previously acquired knowledge (USC University of Southern California. (2023). It serves as text organizers and outlines to help students keep to the topic and follow a plan.

III. METHODOLOGY

This presents the research design, population and locale of the study, the data gathering instrument and procedure, the statistical treatment, and the data categorization of data.

Research Design

This study used a quantitative research approach employing the correlational research design. The research design is a combined description, evaluative and correlational design where theories or concepts gathered were used to describe a certain phenomenon and were subjected to correlational strategy to see significant associations.

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Population and Locale of the Study

The researcher used purposive sampling with 249 student-respondents out of 1, 200 total population of Grade 10 students were taken as respondents from Narvacan National Central High School, Narvacan, Ilocos Sur. Slovin's formula was used in the selection of the student respondents. On the other hand, a total enumeration of 15 Mathematics teachers are taken as respondents, they are the ones who participated in the Language Strategies in Teaching Mathematics training. In total, there are 264 respondents in the study.

Data Gathering Instrument and Procedure

This study made use of a questionnaire consisting of two parts, the performance of the students when using language strategies and the 4th quarter grades of the learners in Mathematics.

The questionnaire was adapted from Gabatino (2020) with slight modifications to fit the purpose of the study. It is used as the main data-gathering tool for students and teachers.

Statistical Treatment of Data

To treat and analyze the data gathered, the following statistical tools were utilized:

Frequency counts and **percentages** were employed to describe the respondents' profile.

Weighted Mean ($\bar{x}$) was utilized to determine the level of participation of students when using Language Strategies in Teaching Mathematics and level of performance of students when using language strategies.

The Spearman rank correlation coefficient was used to look into the association between ordinal data like birth order, educational attainment of parents and frequency of using gadgets to the level of participation and level of performance in language strategies.

Point biserial was used to look into the association between sex and reading materials to level of participation and level of performance of the students in language strategies.

IV. RESULTS AND DISCUSSIONS

Table 1. Level of Performance of the Students in terms of the Different Dimensions of Language Strategies

	Student-respondents	
Language Strategies	Mean	DR
1. Vocabulary Building	89	VS
2. Composing with Keywords	86	VS
3. Profile	96	O
4. Metacognition	86	VS
5. Defining Format	93	O
6. Frames	98	O
Overall Mean	90	O

Table 1 reveals that the highest mean of 98 is described as Outstanding which is attained at "Frames'. It implies that students perform well when using text organizer that helps them keep to the topic and follow a plan. It is followed by the mean 96 which is also described as Outstanding by the item "Profile" which provides templates on which information can be inputted to explain a concept.

However, the item "Composing with Keywords" got the lowest mean of 86 and was described as Very Satisfactory. Students and teachers must work more on these language strategies. This implies that students are proficient in identifying and selecting relevant terms that capture the essence of the problem.

The overall mean is 90 and described as Outstanding. This means that even though this strategy is new, the students in Narvacan National Central High School are learning and performing well using this strategy.

The use of languages strategies is very important for tackling vocabulary issues in mathematics. Students typically do better on problem-solving tasks when they can accurately translate word problems into mathematical expressions and equations (Emanuel & Chamidah, 2021). Understanding, interpreting, and critically assessing mathematical material are all part of mathematical literacy. The development of language abilities is crucial for the acquisition of mathematical literacy. Students are better prepared to excel in mathematics if they can read and interpret mathematical texts and diagrams (Gal, 2002).

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Table 2. Level of Participation Perceived by the Students and Teachers

Items	Students		Teachers		As a Whole	
	$\bar{x}$	DR	x	DR	WM	DR
1. Students are participating in identifying the different vocabulary words related to the lesson/ topic in Mathematics.	4.3	A	4.77	A	4.54	A
2. Students are religiously answering assessments using language strategies	3.9	O	4.77	A	4.34	A
3. Students have individual folders to compile their outputs	3.8	O	4.92	A	4.36	A
4. Students answer the assessment using language strategies	4.0	O	4.31	A	4.16	O
5. The students are involved in discovering all the possible vocabularies that can be used in the discussion	3.9	O	3.92	O	3.91	O
6. Students contribute to the preparation needed for the presentation of the output.	4.1	O	4.23	A	4.17	O
7. Students recite their answers using language strategies	3.8	O	4.69	A	4.25	A
8. Students show their eagerness to answer.	3.8	O	4.77	A	4.29	A
9. Students allow their free time to gather together to practice the different language strategies.	3.8	O	4.62	A	4.21	A
10. Students are contributing their ideas during class discussions using language strategies.	3.9	O	4.38	A	4.14	O
Overall Mean	3.95	O	4.54	O	4.25	A

Table 2 The highest mean score according to the student-respondents is 4.3, described as Always, garnered by the statement, "Students are participating in identifying the different vocabulary words related to the lesson/ topic in Mathematics." This is an indication that students are interested in using different language strategies in learning Mathematics because they are participating in identifying different vocabulary words related to their lessons.

Language strategies, such as providing sentence frames or encouraging students to use different vocabularies, boost students' confidence in expressing their ideas. When students feel encouraged to use language, they are more likely to participate (Gibbons 2015).

There are various reasons why effective language strategies tend to increase student participation in math lessons. Language techniques support the development of an inclusive and stimulating learning environment where students are inspired and confident to actively participate (Deignan 2022).

Students are given the means and encouragement to articulate their mathematical ideas through language strategies. Students are more likely to share their ideas and solutions in class as they grow more self-assured in their ability to communicate quantitatively. Students are more likely to actively participate in class discussions and ask questions to further their understanding when they can clearly express their ideas (Gibbons 2019).

Level of Mathematics Performance of the Grade 10 learners in the 4th quarter of Narvacan National Central High School

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Table 3. Level of Mathematics Performance of the Students

Numerical Ratings	f	%	Level of Performance
90 and above	128	51.41	Outstanding
85 – 89	69	27.71	Very Satisfactory
80 – 84	46	18.47	Satisfactory
75 – 79	6	2.41	Fairly Satisfactory
74 and below	0	0	Did Not Meet Expectations
TOTAL	249	100	

Table 3 Results reveal that the highest percentage of 51.41% of the students obtained a final grade of 90 and above which indicates that a great number of students have an Outstanding level of performance which is the highest level of performance that can be attained. The next level of performance attained is Very Satisfactory achieved by 27.71 percent of the total respondents, while there is no (0%) student who "Did Not Meet Expectations". Furthermore, the mean grade of the students is 90 which indicates an Outstanding level. This result suggests that Grade 10 students of the Narvacan National Central High School, in general, have an outstanding performance in Mathematics for the 4th quarter of the school year 2022-2023.

The result is similar to the study of Hebres (2023) where the performance of the Grade 10 student- respondents is outstanding. However, it negates by the study of Derrac (2019) where performance of the Grade 10 student- respondents is satisfactory. This implies that there is a difference mathematics performance in the different schools in the Philippines. The performance of the students in mathematics can be affected by the strategies used by the teachers. It can also be affected by the students socio-economic status, classroom setting, peers and other factors.

Table 4. Relationship Between the Profile of the Students and the Level of Performance of the Students Using Language Strategies

Profile	Level of Performance of the Students Using Language Strategies	
	Correlation Coefficient	p-value
Age	-0.025	0.693
Sex	0.125*	0.049
Birth order	-0.051	0.424
Education of Father	0.115	0.071
Education of Mother	0.041	0.525
Reading Materials		
Books	-	-
E-books	0.012	0.855
Newspaper	0.138*	0.030
Frequency of using gadget	-0.08	0.206
Length of time using gadget	-0.08	0.209

Table 4 revealed that there is a correlation between the sex of the respondents and their performance in mathematics using the different language strategies. It is supported by the computed correlation of 0.125 where the correlation is significant at 0.05 level. The positive correlation implies that female is performing better in Mathematics when using different language strategies. Hattie & Timperley (2007) suggested that teachers may provide specialized assistance and instruction to male students who may be having math difficulties. Assistance that is tailored to their unique needs can result in substantial advancements. Mention the practical uses of mathematics to male students. Showing students how math is used in relevant industries helps boost motivation and performance (Leshner & Moseley, 2018). Moreover, teachers may encourage male students to acquire reading materials like newspaper, books and e-books that could help them improve their mathematics performance when using language strategies.

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Table 4. Relationship Between the Profile of the students and the Level of Performance in Language Strategies

Profile	Level of Participation	
	Correlation Coefficient	p-value
Age	0.077	0.693
Sex	0.125*	0.048
Birth order	-0.039	0.536
Education of Father	-0.038	0.555
Education of Mother	0.038	0.553
Reading Materials		
Books	-0.086	0.178
E-books	-0.031	0.631
Newspaper		
Frequency of using gadget	-0.053	0.403
Length of time using gadget	-0.08	0.209

Table 5 revealed that there is a correlation between the sex of the respondents and the level of participation when using the language strategies. The computed r value is 0.0125 which implies that female respondents participate more in class when using language strategies.

This result is supported by the study of Bailey et al. (2020) which revealed that females participated more in classes. Study showed that females participate more than males and teachers place higher standards on females than on males in terms of participation and performance (Garcia 2008). Female students participate in mathematics classes for a variety of reasons, including enjoyment gained from studying mathematics, a desire to study mathematics, and curiosity in mathematics (Yarkwah 2020). However, these results were negated by the study of Martínez et .al (2020) which confirms that females tend to have fewer positive attitudes toward mathematics than their male classmates.

Relationship between the level of performance of the students in terms of the different dimensions in language strategies and the level of Mathematics Performance of the Grade 10 learners in the 4th quarter

Table 5. Correlation between Students' Performance in Language Strategies and Mathematics Performance

Language Strategies	Correlation Coefficient	p-value
Vocabulary Building	0.441**	0.000
Keywords	0.467**	470.000
Profile	0.262**	0.000
Metacognition	0.779**	0.000
Defining	0.515**	0.000
Frames	0.212**	0.001
Overall	0.823**	0.000

Table 6. Overall, it can be seen that there is a positive correlation between student performance and the different language strategies specifically Vocabulary Building, Keywords, Profile, Metacognition, Defining format, and Frames and the level of Mathematics Performance of the Grade 10 learners in the 4th quarter. This means that student performance in different language strategies may fully contribute to a better performance in Mathemtics. It is supported by the study of Peng (2020) which revealed that there is a ssrelation between language and mathematics found in 344 studies with 393 independent samples and more than 360,000 participants.

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By encouraging students to express their thought processes, participate in reflective conversations, and relate abstract concepts to concrete situations, effective language tactics enable students to comprehend mathematical subject on a deeper level. Students strengthen their understanding and identify misconceptions by verbalizing their ideas and justifications. Discussions among students and teachers help to create a collaborative learning environment where different points of view help to create a deeper knowledge of mathematical ideas (Star & Rittle-Johnson 2009).

In addition, reading skills focusing on understanding the text are important in solving mathematical tasks at the end of compulsory school (Korhonen et al. 2020).

Relationship between level of participation and level of Mathematics performance
Table 6. Correlation between Students' Level of Participation and Level of Performance in the 4th Quarter

	Correlation Coefficient	p-value	Decision
Participation	0.033	0.600	ns

Table 7 revealed that there is no significant relationship between the level of participation and level of performance in the 4th quarter. A possible reason for this result is the different learning styles exist among students. While some students could gain a lot from participating actively in class and having conversations, others might understand subjects better through independent study or practical application (Lincoln Land Community College 2021). The dynamics of the class and its size can affect how participation is perceived. Due to the shorter interaction times in larger classes, it may be more difficult for individual engagement to have a significant effect on overall achievement (Wang & Calvano 2022).

However, Maamin, Maat & Iksan, Z. H. (2021) revealed that mathematical achievement is significantly correlated with affective engagement, and behavioral involvement. Understanding difficult arithmetic topics can be improved by actively participating in class discussions, asking questions, and working through problems together. Different modes of interaction with the subject might improve knowledge retention and application (Prodigy Education 2016).

FINDINGS
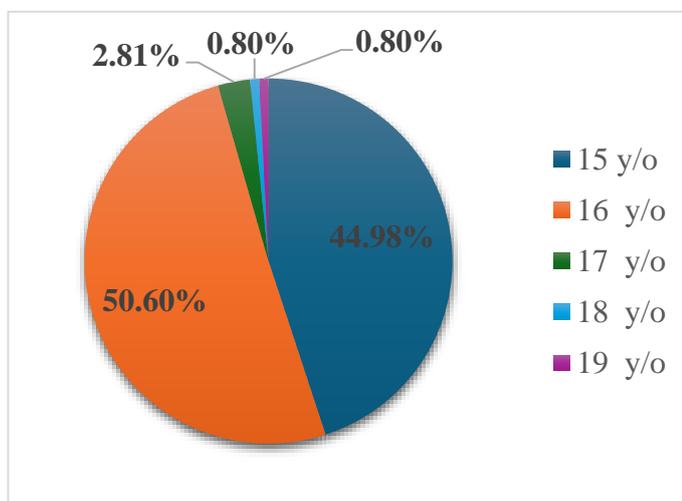
Figure 2. Distribution of Respondents by Age

Figure 2 shows that the majority of the student respondents are 16 years old with a total of 126 or 50.60% of the total respondents. It is followed by the student-respondents who are 15 years old with a total of 112 or 44.98% of the total respondents. There are only 2 or 0.80% of the respondents are 18 years old and 19 years old respectively.

To effectively design instructional strategies and interventions, educators and researchers must recognize how age affects a variety of educational characteristics. Understanding the link between age and student results can help educators create more specialized instructional strategies that cater to the various learning needs of students (Smith, 2017).

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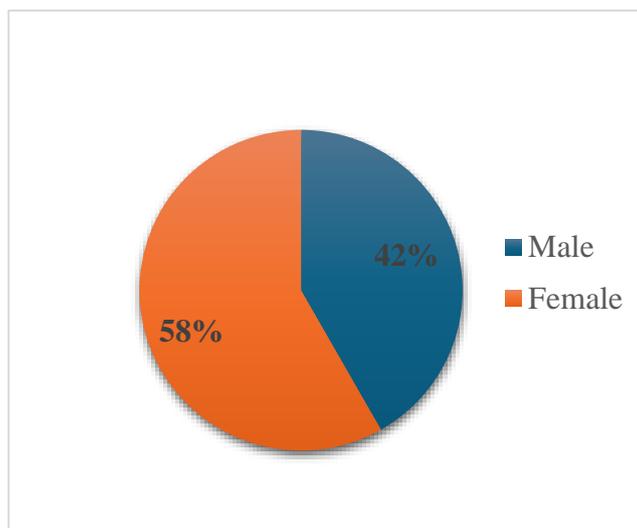
Figure 3. Distribution of Respondents by Sex

Figure 3 presents the distribution of respondents in terms of sex. Dominating the figure in terms of sex are the female respondents with 145 or 58% of the total. The male respondents, on the other hand, have 104 or 42%.

Traditional gender roles and conventions have historically given schooling for males a higher priority in many societies. However, societal attitudes are slowly changing to recognize the value of females' education, which may have contributed to a rise in female enrollment (Duflo, 2012). In addition, the global movement for women's empowerment and gender equality has raised awareness of the value of females' education. Higher enrolment rates are a result of initiatives and advertisements emphasizing the advantages of educating female (UNESCO, 2019). Moreover, Johnson (2017) revealed that compared to male students, female students demonstrated higher levels of intrinsic motivation and interest in attending class. In addition, females mainly emphasized the value of education and their desire to thrive academically when discussing their attitudes toward school (Smith & Brown 2018).
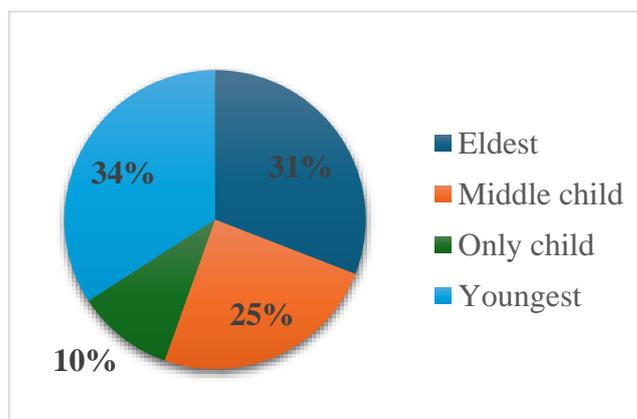
Figure 4. Distribution of Respondents by Birth Order

The youngest children in the family surfaced as the most numbered respondents comprising a total of 85 out of 249 or 34% of student respondents. Following are the eldest, middle children, and only child in the family, with 77 or 31%, 61 or 25%, and 26 or 10%, respectively.

Birth order is one of several factors in a child's life that might affect personality development. Researchers, psychologists, and scientists have been interested in the study of personality and its development for centuries (BetterHelp Editorial Team 2023). The educational experiences and results of a student can be influenced by their birth order. But it's crucial to remember that a students' development and academic success are influenced by a variety of factors, not only birth order (Sitel 2019).
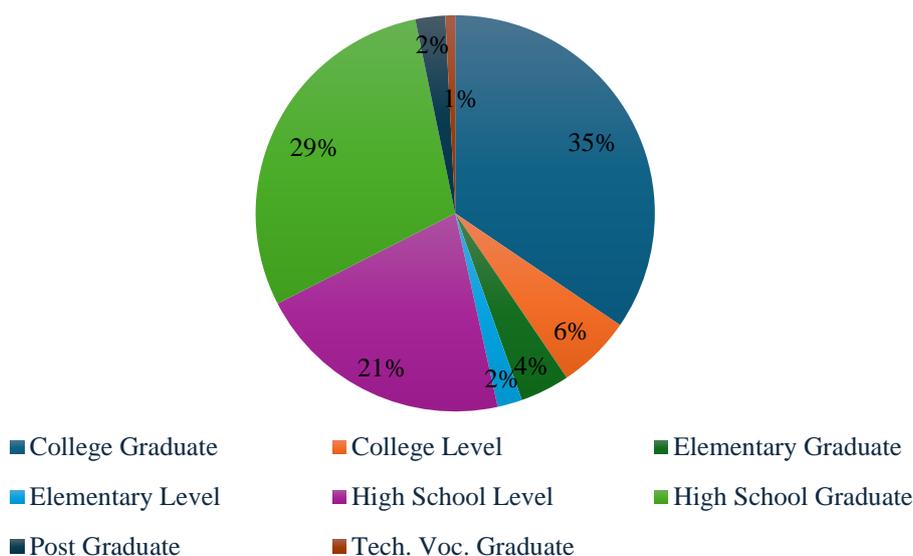
Figure 5. Distribution of Respondents by Educational Attainment of Father

The highest recorded count and percentage is 86 or 35% which belongs to the respondents whose fathers graduated from college. Moreover, those who completed their High School and those who were able to attend high school but did not finish ranked next with 73 or 29% and 52 or 21%, respectively. Those who took technical vocational courses have the least count with 2 or 1%.

Numerous studies have discovered a link between a father's educational background and his children's academic success. Higher educated fathers likely to have children who do better in school (Davis-Kean 2005). Higher-educated fathers frequently have greater expectations for their children's academic success. Children may be inspired to perform well in school by these expectations (Wahi 2023). Moreover, fathers who have completed their education might be good role models for their children. If children witness their fathers respecting and seeking education, they may be more likely to believe it is important (Flouri & Buchanan 2002).
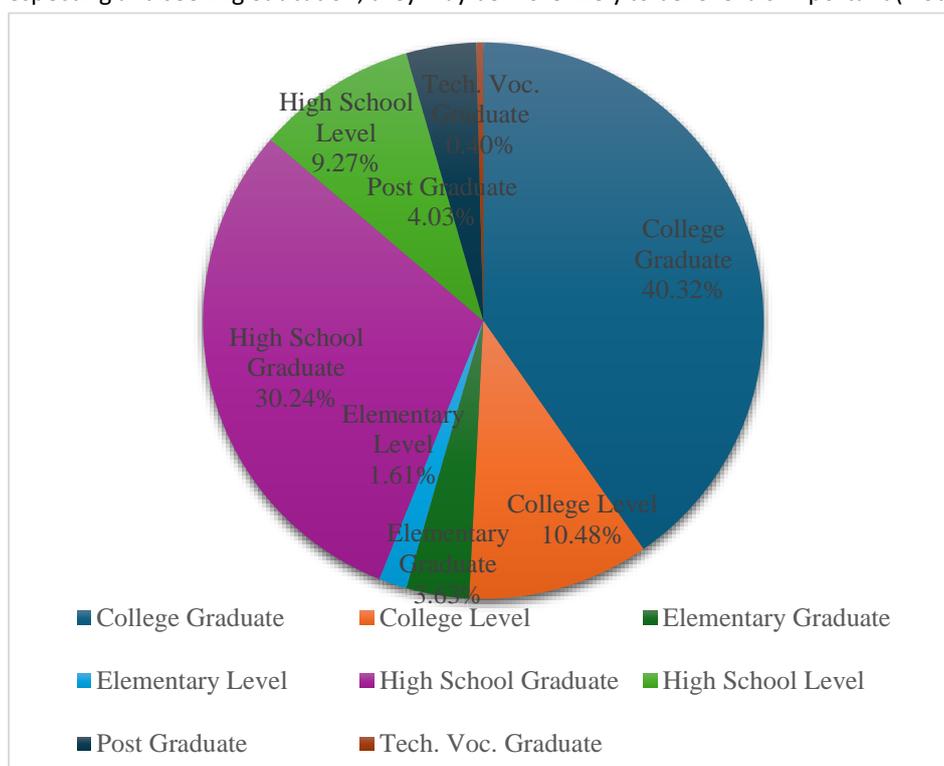
Figure 6. Distribution of Respondents by Educational Attainment of Mother

The highest recorded count and percentage is 40.32% or 100 of the population have mothers who graduated from college. Moreover, those who completed their High School and those who were able to attend college but did not finish ranked next with 75 or 30.24% and 26 or 10.48%, respectively. Those who took technical vocational courses have the least count with 1 or 0.4%.

According to an exploratory study, parents actively manage their child's academic life in ways that may directly affect their educational success. There may be common parental techniques based on the fact that mothers consistently offer the same amount and variety of schooling strategies. Even if the child's academic performance is within control, the tactics that are used do vary depending on the socioeconomic position of the mother. Mothers with at least a bachelor's degree are more aware of their child's academic success, interact with instructors more frequently, and are more inclined to control their child's academic performance. Regardless of their child's academic achievement, women with college degrees are more likely to take college-preparatory courses for their child (Baker & Stevenson, 1986 as cited by Barger, et al. 2019).
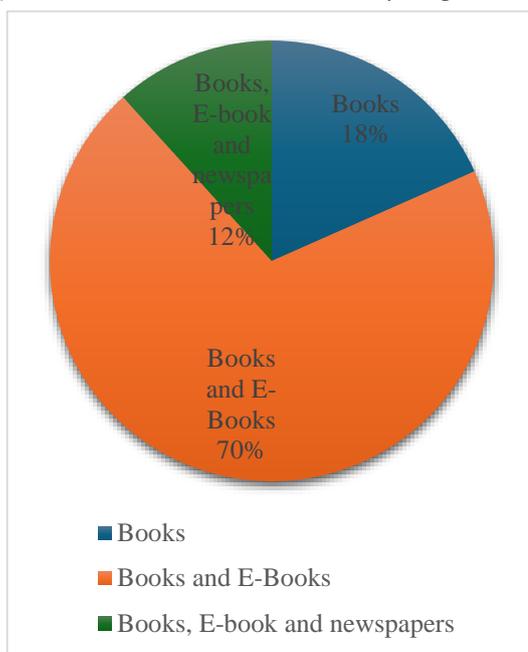

Figure 7. Reading Materials

Most of the student-respondents with a total of 168 or 70% uses books and e-books as their reading materials. There are also 44 or 18% of the respondents who do respondents are using books, e-books, and newspapers as their reading materials. have books as their reading materials. However, only 28 or 12% of the total respondents have all the three reading materials.

The academic performance of students who have access to a variety of reading resources, such as books, periodicals, and newspapers, is generally better. Reading and academic success can be encouraged by having a well-stocked home library or having access to a school or community library (Neuman & Celano 2001). The availability of digital reading materials like e-books and internet resources helps students' academic performance and reading abilities in the modern digital age (Leu et al. 2015).

Moreover, using mathematics e-books has a high effect on students' mathematics achievement (Wijaya et al. 2022). Furthermore, the success of students in mathematics in school is significantly influenced by textbooks (Van Den Ham & Heinze 2018).
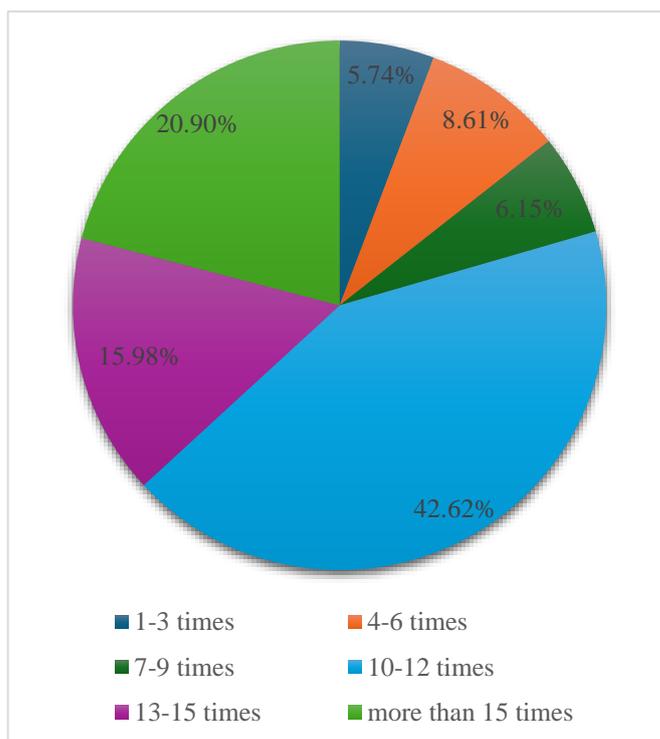
Figure 8. Frequency of Using Gadgets a Day

The highest recorded count and percentage is 109 or 42.62% which belongs to the respondents who use gadgets 10-12 times a day. It is followed by 51 or 20.9% of the respondents who uses gadgets more than 15 times a day. In addition, there is only 14 or 5.74% of the respondents use gadgets 1-2 times a day.

When students use technology for education, whether it's to access educational applications, online materials, or e-books, it can boost their learning and perhaps raise their grade point averages. Innovative educational technology can give students individualized learning opportunities and aid in their comprehension of difficult ideas (Hattie & Yates 2014). However, excessive use of technology for non-educational activities, particularly for social media and gaming, can result in distractions and less study time, which can have a negative impact on academic achievement. The cognitive capacity of students can also be impacted by screen addiction and sleep difficulties brought on by late-night technology use (Twenge 2017).

Based on general observations and limited studies, it is not uncommon for students to use gadgets for several hours a day, especially for educational purposes and social interactions. However, the exact frequency and duration can vary significantly among individuals and across different contexts (Rashid et al. 2021).
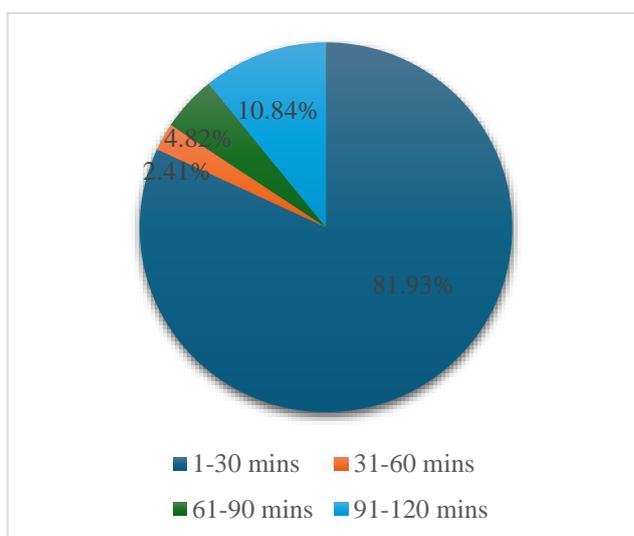

Figure 9. Length of Time in Using Gadgets

Figure 9 revealed that 204 or 81.93% of the respondents use their gadgets 1-30mins peruse. This is because, in school, they are not allowed to use cell phones unless it was needed. There are only a few respondents who use their gadgets 31-60 mins peruse.

It is almost similar to the study of Wahyuni et al. (2019), where most of the student-respondents uses their gadgets less than 5 hours a week. They also advised parents and teachers is to limit the use of gadgets to children where the duration of playing gadgets should be less than 40 minutes/day and frequency less than 3 times/day and 1-3 days/week.

V.   CONCLUSION

1. Majority of the student- respondents are female and aged 16 years old. In terms of the educational attainment of their parents, both father and mother were college graduates. Most of the student- respondents are youngest child in their family, have books, e-books, and newspapers as their reading materials and are using their gadgets 10-12 times a day for 1-30 minutes.
2. The students obtained an impressive performance in Mathematics using the different language strategies.
3. The level of participation of the students in class discussions when using Language Strategies in Teaching Mathematics is high.
4. The Grade 10 students of Narvacan National Central High School have an outstanding performance in Mathematics in the Fourth Quarter of the School Year 2022-2023.
5. Sex can be an indicator of the overall performance in mathematics using the different language strategies. Female students obtained a higher performance in language strategies.
6. There is a significant relationship between the sex of the respondents and the level of participation when using the language strategies.
7. There is a significant relationship between the level of performance of the students in terms of the different dimensions in language strategies and the level of Mathematics Performance of the Grade 10 learners in the 4th quarter.
8. Though language strategies is a helpful strategy in teaching mathematics, teachers still encountered problems when teaching mathematics using language strategies. There are some students in the class who have low comprehension and low retention.
9. There is no significant relationship between the level of participation and the level of performance in the 4th quarter.

VI. RECOMMENDATION

1. School heads may organize conferences, webinars, and training sessions related to language strategies in teaching mathematics so that more Mathematics teachers will adopt this strategy.
2. Trained teachers on language strategies shall mentor other mathematics teachers on the utilization of language strategies in teaching mathematics.
3. Teachers should continue using effective and varied teaching strategies like language strategies to improve students' Mathematics performance.
4. Teachers should give enrichment activities to the students to increase their mathematics performance.
5. Students are encouraged to participate actively to classroom discussions related to the different language strategies.
6. The performance of the students may be improved by sustaining the utilization of language strategies in teaching Mathematics by the teachers.
7. Teachers and school heads are encouraged to innovate programs or activities that address issues related to low comprehension and low retention of the students.
8. Mathematics teachers may adapt and implement the output of the study and revisions may be done when needed.
9. Future researcher/s may conduct further studies to verify the results of this current study. Additional variables may be included to enhance the scope.

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