

Problem-Solving Skills and Readability of Text Among Grade 7 Learners

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ABSTRACT

This study dealt with the problem-solving skills and readability of text among grade 7 learners. The study aimed to determine the level of problem-solving skills and assessed the readability of the text of the learners. The study also focused on determining the relationship between these two variables. Then, the researchers prepared a problem-based learning material which reflected the findings of the study. Furthermore, the researchers utilized the descriptive research design, and two data-gathering instruments were used: test and survey questionnaire. In addition, stratified proportional sampling was used in determining the number of respondents in this study. The respondents of the study were the 288 grade 7 learners of Batangas City Integrated High School (BCIHS) under the Basic Education Curriculum during the school year 2023-2024. After the data were gathered, the researchers utilized frequency, percentage, Chi-square, mean, and standard deviation as the statistical tool. The results of the findings showed that the level of problem-solving skills of the grade 7 learners are above the average level when it comes to identifying while they were at a low level in terms of breaking, generating, evaluating, and monitoring. On the other hand, the respondents of the study were on a high level of readability. Also, the findings showed that there is a significant relationship between their skills in identifying and breaking a word problem to their readability and no significant relationship between generating, evaluating, and monitoring with their readability. Further, problem-based learning material was prepared to enhance the problemsolving skills of the learners.

Keywords: problem-solving skills, readability of text, grade 7 learners, problem-based learning material



1. INTRODUCTION

Mathematics Education plays a pivotal role in shaping the cognitive development and problem-solving abilities of the learners. And one of the most encountered processes in Mathematics Education is problem-solving. It refers to finding solutions to different kinds of mathematical problems. On the other hand, [1] stated that the skills necessary in solving a mathematical problem can be broken down into five which are identifying, breaking, generating, evaluating, and monitoring.

Under identifying and breaking, learners identify and break down a problem. Under this, learners can understand and break down the problem into components. Generating indicates that the learners is devising a plan to solve a word problem. Through this, learners will be able to choose and weigh the right formula or strategies to be used in the problem. In terms of evaluating, learners can implement the strategies they think will be useful in finding out the answer. While in monitoring, learners check and think about their solution and look back at their process from the start. With that, methods in mathematics place a high value on problem-solving abilities, thus, the core of problem-solving is how an individual approaches a problem

Furthermore, mathematical comprehension is the ability of an individual to process the written text, understand it, and make interpretations from the text. It is necessary that the learner can understand the word problem to come up with a correct answer. On the other hand, readability of text influences the learner's understanding of solving a word problem. Readability of text is the ability of the learners to comprehend a text through its structures. It allows the learner to decipher a text. Through this, learners will be able to understand what the text implies. Aside from that, the readability of text focuses on the construction of the text, its length, and its structure. These factors affect how the learners categorize the ease of reading a text. It is also a reason for how the learners process the text and make an interpretation based on what they read.

Mathematics 7 is one of the foundations for learners in Junior High School to improve their skills when it comes to problem-solving. Based on the Curriculum Guide from grades 1-10 mathematics that can be found on the official website of the Department of Education, Mathematics 7 has four quarters, and each quarter has a content respectively. In the first quarter, number and number sense is the focus which is all about the concepts of sets and real numbers of systems. Under this, learners are expected to gain knowledge about the use of the Venn Diagram and fundamental operations on integers. Then, the next quarter is all about measurement patterns and algebra. In the second quarter, learners are expected to be able to understand the concepts of measurement such as solving problems involving units of measurement. Additionally, the third quarter is about the concepts of geometry of shapes and sizes and geometric relationships. Under this, it is expected that learners will understand different concepts under geometry such as lines, angles, and polygons. Lastly, the fourth quarter focused on Statistics and Probability. On this, learners will be able to demonstrate an understanding of statistics which consists of its importance, statistical instruments and data, and calculating measures of central tendency.

On the other hand, not to mention, grade 7 learners are one of those individuals whose mathematical comprehension and problem-solving skills are in the stage of development. These learners are in a state where their mathematics subject is transitioning to a more complex level of mathematics especially when it comes to word problems. Nowadays, it can be observed that grade 7 learners are still on the pace of their transition of learning from modular or online learning to face-to-face setup. Also, it can be said that grade 7 learners' learning especially in mathematics had a great impact while learning in the time of the



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pandemic. It can be observed that most of the learners don't know some concepts that should have been taught when they were in elementary school. With this, it can be said that grade 7 learners' capabilities in understanding a statement and solving may vary because of how their readability had been assessed and how their level of problem-solving skills was categorized.

Because of the diversity of the grade 7 learners, it can be supposed that each of them has different capabilities in comprehending a word problem that might affect their skills in problem-solving. In addition, the study by [2] found that grade 7 learners have inadequate listening skills, restricted vocabulary, and poor recall when it comes to mathematics. In connection with the above-mentioned premises, the researchers conducted this study because of the diverse capabilities of the learners in solving word problems. It was observed by the researchers that there are various skills in problem-solving that learners should possess to correctly solve a given problem. Aside from that, the researchers noticed that there are different levels of how the learners understand a text. With this, the researchers hypothesize that the abilities of the learners to solve problems in mathematics have been influenced by their level of comprehension skills. Learners might arrive at an incorrect answer based on the given problem.

2. OBJECTIVES

This study aimed to determine the relationship between problem-solving skills and readability of text among grade 7 learners in mathematics at Batangas City Integrated High School.

Specifically, the study sought to address the following objectives:

- 1. Determine the level of problem-solving skills of the respondents in terms of:
- 1.1. Identifying;
- 1.2. Breaking;
- 1.3. Generating;
- 1.4. Evaluating; and
- 1.5. Monitoring.
- 2. Assess the text readability of the learners.

3. Determine the significant relationship between the problem-solving skills and readability of the learners.

4. Prepare a problem-based learning material.

3. MATERIALS AND METHODS

The researchers used the descriptive method of research in this study which allows them to describe problem-solving skills and readability of text of the grade 7 learners in mathematics at Batangas City Integrated High School. Respondents of the study were the grade 7 learners of Batangas City Integrated High School under the Basic Education Curriculum School Year 2023-2024. Using Raosoft Sampling software, the researchers obtained two hundred eighty-eight

(288) learners as their recommended total respondents with a five percent (5 percent) margin of error and ninety-five percent (95 percent) confidence level from one thousand one hundred thirty-three (1133) grade 7 learners under Basic Education Curriculum of Batangas City Integrated High School.

Stratified proportional sampling was utilized in this study to determine the number of respondents in each section through the authorization of the Department Head of Mathematics of Batangas City Integrated High School. Additionally, there were two



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(2) instruments utilized in gathering the relevant data in this study, which are the test and survey questionnaire. The study used a researcher-made test to determine the level of problem-solving skills of a learner and a survey questionnaire to determine the level of readability of the text of the respondents. The questionnaires were carefully designed, validated, distributed, and scored. Thus, the main data collection instruments were a researcher-made test and a survey questionnaire.

In gathering information, the researchers used the step-by-step procedure to finalize the study. First, the researchers wrote and submitted a letter to the Principal's Office of Natalia Velasquez Ramos Memorial Integrated School to conduct a pilot tryout to test the reliability of the test and survey questionnaire. After that, a letter was submitted to the Division Office of Batangas City and the Principal's Office of Batangas City Integrated High School for permission to collect data on the respondents, specifically grade 7 learners under the Basic Education Curriculum.

Then, the researchers asked for the help of the mathematics faculty in disseminating the researchers- made test and the survey questionnaire. The respondents answered the data-gathering instrument in about one (1) hour. The collection and retrieval of data was done in two days. The utmost confidentiality will be ensured from all the information gathered from the respondents. After data gathering, the researchers collected data and were tallied and arranged for a presentation to formulate a conclusion and recommendations. The data was carefully analyzed to derive a valid and right conclusion. The statistical tools were rightly utilized to come up with valid findings and prepare problem-based learning material based on it.

Moreover, to interpret the data collected, the following statistical tools were used to attain the research objectives: frequency, mean, standard deviation, percentage, and chi-square. On the other hand, the general research ethics were taken into account in this study. In doing so, all the procedures for this research were explained to the respondents. A consent letter explaining that the study would be voluntary and would not have any impact on the participants' daily lives. Confidentiality was offered as the participants' identifying information would not be sought.

4. RESULTS AND DISCUSSION

4.1 Level of Problem-Solving Skills of the Respondents

The study determines the level of the problem-solving skills of the respondents in terms of identifying, breaking, generating, evaluating, and monitoring.

4.1.1 Identifying.

This ability determines the level of the problem- solving skills of the learners in knowing what is asked in each problem. This is the first skill needed in answering a word problem. Table 1 presents the level of problem-solving skills of the respondents in terms of identifying.

Level	Frequency	Percent
Above Average (8 and above)	180	62.50
Average (4-7)	64	22.22
Low (0-3)	44	15.28

Table 1. Level of problem-solving skills in terms of identifying

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Total		288	100.00
Mean: 7.4583	SD: 2.9511		

It can be observed from the table that the majority of the respondents had an above-average level in terms of identifying a given word problem (180, 62.50 percent). Learners who are above average in identifying unknown and known information in mathematics word problems demonstrate the following abilities: they can accurately determine what information is given in the problems; these learners can identify the relevant numbers, quantities, and facts; they can clearly distinguish between the known information and the unknown information that need to solve the problem; these learners understand what the question is asking to find; they can rephrase the problem in their own words for better understanding and; these learners restate the problem in a way that makes sense to them. Aside from that, learners were above average at identifying the unknown because they could use keywords to identify what was unknown in the problem. Through this, they were able to determine what statements correspond to what is being asked. It contradicts the study of [3] in which they stated in their study that the difficulty learners encounter when trying to solve mathematics problems is understanding the problem. In connection with the study's findings, it was supported by [4] who states that being able to solve problems fast indicates that the learners were able to spot what is unknown in each problem. It means that learners who were at above-average levels possess the ability to comprehend at a fast pace, can detect what is asked, and can use keywords to identify unknowns.

On the other hand, it can also be observed in the table in which grade 7 learners have an average level of knowing what is being asked in the problem with a percentage of 22.22. The average level of performance in identifying the unknown and known in mathematics word problems can be described as follows: learners often struggle to identify the unknown and known quantities in word problems. Common difficulties include translating the problem statement into mathematical language and symbols; recognizing keywords that indicate mathematical operation and determining which quantities are given and which need to be solved. The learners who fall under the average level have some ability to identify unknown and known in a word problem but often make mistakes and misconceptions. This contradicts the idea of [5], who stated that the main barriers to problem-solving skills are insufficient mathematical skills and the inability to identify the problem.

It also shows that some of the learners are facing a problem in terms of identifying a word problem. As shown in the table, some learners have a low level of identifying what is being asked in the problem (44, 15.28). Learners may struggle with decoding or reading a problem due to common misunderstandings with mathematical terms. This misunderstanding leads to errors in interpreting problem sentences and missing mathematics symbols. In addition, they faced difficulties in understanding the language, the mathematical terms used, or making connections with the problem which affects their time to solve a word problem. It supported the study of [6] which stated that learners' ability to identify a problem is at a low level. In addition, [3] mentioned that laziness in reading questions that are too lengthy and difficult to comprehend affects the learner's ability to identify what is unknown in a given problem.

As an overall result, it reveals that the learners have above-average problem-solving skills for identifying the problem (\bar{x} = 7.4583, SD = 2.9511). Learners who excel at identifying the known and unknown in mathematics word problems have developed strong reading comprehension, mathematical reasoning, and problem representation skills. They can accurately detect the relevant information, determine what needs to be solved, and translate the problem into mathematical terms. Providing practice with a variety of word



problem types can further enhance these skills.

4.1.2 Breaking.

It describes the ability of the respondents to identify the given information/values in a word problem. Table 2 presents the level of problem-solving skills of the respondents in terms of breaking.

Level	Frequency	Percent		
Above Average (8 and above)	97	33.68		
Average (4-7)	75	26.04		
Low (0-3)	116	40.28		
Total	288	100.00		
Mean: 5.2083 SD: 3.5532				

Table shows the level of problem-solving skills of grade 7 learners in terms of breaking. It can be observed in the table that the biggest portion of the respondents attained a low level of problem-solving skills as validated by 116 responses or 40.28 percent. This indicates that learners must possess an in-depth understanding of the problem to divide it into parts where they can easily proceed to the next step of solving the problem. The respondents can accomplish their goal through appropriate problem elaboration and paraphrasing the given information to better understand the problem. This is parallel to the idea of [6] which stated that learners are very poor at defining what are the goals and information needed in solving mathematical word problems.

Meanwhile, 97 or 33.68 percent of the total number of respondents have an above-average level of problem-solving skills. Learners who have an average level can be described as having the ability to break the problem into smaller details which helps them better understand the information presented; they know how to disintegrate facts and figures when the given is hard to understand; they can elaborate on the problem stated and break it down into parts that could be easily answered. These findings support the claim of [7] that breaking was to solve mathematical problems. This includes underlining and selecting the most important information, such as words and information provided in the problem, as well as posing self-questions related to problem-solving. In addition, the findings support the study of [8] that breaking is a process of taking down into parts a complex topic or content to better understand the meaning of a text or problem.

Lastly, 75 or 26.04 percent of the total number of respondents have an average level of breaking a word problem. This means that learners at average level demonstrates the ability to break down some of the given information in a problem due to a lack of learning opportunities to improve their mathematics performance; learners experience confusion as to which information will be needed to solve the problem and; they might face difficulty in understanding the problem due to the length of the problem, how it was constructed, and the mathematical language utilized in it.

As a result, it can be said that grade 7 learners are at a low level in breaking down a given problem due to different reasons (\bar{x} = 5.2083, SD = 3.5532). This implies that learners are not capable of choosing what information is necessary to solve a problem. They failed to determine what values would be needed to come up with a correct solution and answer.

4.1.3 Generating.

It describes the ability of the respondents to determine what formula/operation is needed to solve the given problem. Table 3 presents the level of problem-solving skills of the respondents in terms of generating.

Level	Frequency	Percent
Above Average (8 and above)	37	12.85
Average (4-7)	94	32.64
Low (0-3)	157	54.51
Total	288	100.00
Mean: 3.4931 SD: 2.7787		

Table 3. Level of problem-solving skills in terms of generating

It can be observed in the table that the majority of the grade 7 learners have a low level of problem- solving skills, validated by 157 or 54.51 percent of total number of respondents. These results reveal that learners find it difficult to observe their methods of dealing with the problem; they were not able to fully determine what formula/operation would be needed to arrive at the correct answer; they cannot remember the concept of the given problem and forget what strategies are needed to come up with a correct answer and they do not possess the visual skills to correctly get the answer. As [6] point out, their study found that learners are poor in the generating strategies to be utilized in each problem which supported the findings of these studies.

Moreover, there were 94 or 32.63 percent of the total number of respondents who have an average level of problem-solving skills. It means that only a few understand what operation to use and see themselves as effective learners of mathematics. This implies that, learners demonstrated the abilities to generate potential solutions to the problem, but they still experience few difficulties in outlining the various approaches that can be used to solve the problem. Still, learners were able to assess what will be the operation/formula that needs to be utilized in each word problem. As [9] points out, generating potential solutions to the problem at hand is an important part of effective problem-solving.

Lastly, a small percentage (37, 12.85 percent) have an above-average level of problem-solving skills.

This tells that very few learners are effective learners and doers of mathematics they truly understand what the given operation/formulas are to be utilized in the problem. This may be brought about by various factors such as learners, parents, teachers, and environmental factors. It can also mean that few of the respondents can understand what the needed formula/operation will be used to come up with an answer. It supports the study of [10], problem-solving is the ability to recognize and address problems by using necessary abilities.However,appropriate strategies/formulas/operations are important to derive a right and valid answer.

Overall, the level of problem-solving skills of the respondents in terms of generating is at a low level (\bar{x} = 3.4931, SD = 2.7787). It implies that learners were not able to assess what mathematical strategies should be chosen to answer the given problem.

4.1.4 Evaluating.

This ability determines the level of the learners in creating a mathematical equation based on the given

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problem. Table 4 presents the level of problem-solving skills of the respondents in terms of evaluation.

Level	Frequency	Percent
Above Average (8 and above)	39	13.54
Average (4-7)	87	30.21
Low (0-3)	162	56.25
Total	288	100.00

Table 4. Level of problem-solving skills in terms of evaluating

Mean: 3.4965 SD: 2.6830

It can be observed in the table that half of the grade 7 learners have a low level of problem-solving skills (162, 56.25 percent). Learners who are at low level can be described as follows: they had a hard time thinking and getting on how they would employ the formula/operation, to come up with an answer; they may have chosen a strategy that is inappropriate for the situation or the problem; they face difficulties in evaluating solutions objectively and comprehensively with thorough analysis; they failed to make the correct perception and decision on what to do in the problem; they do not know how to organize the information given, what concepts to use, what the number of facts concerned, which operations to carry out, what is the order of the operational procedure, and much more; learners failed to assess the given information and input the correct formula/operation; they cannot fill up the necessary details in the first skills needed in solving a problem might cause a learner to derive a correct answer. It supports the claim of [11] which states that there are steps in solving word problems to ensure accuracy and thoroughness. On the other hand, the findings of the study contradict the study of [6] that stated that learners have enough abilities to evaluate what strategies are needed and how to transform them into an equation. On the other hand, some of the learners got an average level of problem-solving skills in terms of evaluating (87, 30.21 percent). This means that learners possess the following descriptions: they can assess the value of solving the problem in various ways and despite the difficulties they encountered they could still aim to use different methods in finding a solution. This [12] contention that learners must be aware of the methods and strategies to be used in problem-solving. Thus, mastery of the subject will be obtained when learners are aware of the various solutions to a problem and can determine which alternative will almost efficiently answer the question. Inspect that many learners find difficulties in terms of evaluating.

However, there are some learners who had skills in evaluating a problem which is categorized at above average level (39, 13.54 percent). Learners at above- average levels in terms of evaluating can be described as follows: they can assess the value of solving the problem in various ways; learners are confident in dealing with problem-solving strategies; they manage to think positively and build confidence in providing techniques that will answer the problem. and they typically distinguish the differences between each approach and select the one that will provide the necessary solution to the problem. This is supported by [13] which stated that learners tend to develop their skills when they find alternative solutions to the problem.

Based on the table, it can be said that the majority of the respondents fall under the category of low level in terms of evaluating a problem (\bar{x} = 3.4965, SD = 2.6830). It seems that their ability to transform the given information into the chosen formula/operation was not enough to arrive in a correct answer. Because of this, they might not be able to come up with the right process and might encounter difficulties in the next

problem-solving skills.

4.1.5 Monitoring.

This ability describes what is the final answer/solution to the problem. Table 5 represents the level of problem- solving skills of the respondents in terms of Monitoring.

Tuble 5. Devel of problem borring skins in terms of monitoring			
Level	Frequency	Percent	
Above Average (8 and above)	41	14.24	
Average (4-7)	108	37.50	
Low (0-3)	139	48.26	
Total	288	100.00	
Mean: 3.8438 SD: 2.7598	•		

As can be seen from the table, most of the learners are at a low level in terms of monitoring a word problem (139, 48.26 percent). Learners are at a low level because they possess the following descriptions: they were not able to arrive at the final skill in solving problems which is monitoring; they cannot acquire the other skills which is necessary to solve the problem; they failed to arrive at showing their solutions and answers in solving problems affecting their skills and categorized at a low level; learners lack other skills needed in solving a word problem. Parallel to the findings of this study, [14] mentioned in their study that solving word problems is a sequence of steps that learners must follow to derive a correct answer and solutions.

However, the respondents got an average level of problem-solving when it comes to monitoring (108, 37.50 percent). Because mathematical problems are complex, learners who are at an average level demonstrate the following: they struggle with several phases, including applying mathematical knowledge, determining the concepts to use, and stating mathematical sentences; learners fail at the later stages of the solution process; they face difficulties in understanding the problem, determining what to assume, and investigating relevant information; they cannot translate the problem into a mathematical form and they did not emphasize providing complete and detailed information to determine whether the answer is correct or incorrect. It was supported by [15], that monitoring the problem influences patterns, which determines whether a solution is efficient or not. This means that learners should improve their ability to try different techniques to solve the problem, view all information positively to improve their reasoning skills, and create clear, well-structured, and detailed ideas to prove the results. Learners may wish to continue practicing and improving their ability to monitor their progress in providing solutions to the given problem.

Furthermore, it can be observed in the table that the items have acquired 14.24 percent which is categorized as above average level. This means that learners provided in-depth understanding and focused on determining whether their answers were correct or incorrect. When they recognize the correct or incorrect answer, they take the necessary action to ensure that the results are relevant. This also implies that the learners are good at observing their progress when solving a problem and making sense of the outcome by ensuring all information and solutions are correct. In relation, [16] mentioned that showing the solutions and finding the correct answer is part of problem-solving.



To generalize, most of the grade 7 learners are at a low level in monitoring (\bar{x} = 3.8438, SD = 2.7598). Their skills in identifying what is asked, breaking the given information, generating strategies, and evaluating the given problem might have a huge impact on monitoring their solutions and answers. With this, learners should learn how to assess a given problem to come up with a correct answer. It also corresponds that most of the grade 7 learners lack other skills that affect them in arriving at a correct answer.

4.2 Readability of Text of the Respondents

The study assessed the level of readability of the text of respondents which can be categorized into three levels: high; average; and low. Table 6 presents the readability of the text of the respondents.

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Level	Frequency	Percent	
High (102 and above)	221	76.74	
Average (65-101)	67	23.26	
Low (28-64)	0	0.00	
Total	288	100.00	

Table 6. Readability of text of the respondents

Mean: 110.4653 SD: 14.7428

Table shows the readability of the text of the respondents. It can be observed in the table that the items have acquired 221 or 76.74 percent of the respondents with the category, high readability of text. Striving for high readability increases the chances that thoughts and ideas will be easily understood by the learner. Enhanced readability reduces potential confusion and allows the learner to effortlessly comprehend the information that is conveyed, without using much mental effort. In addition, it can also be said that the respondents of this study can understand well the concept of the text that they have read. It may also imply that learners have strategies in reading to better understand the statements they are reading. Also, it can be said that learners are on a high level of readability because they have the knowledge and the ability to understand the text they have read. They can use different strategies to understand a text such as translating the English text to their native language, thinking first before reading a text, and paying closer attention to what they are reading.

Aside from that, learners are categorized as having a high level of readability because of their capacity to use context clues and other materials to understand text. Learners utilized dictionaries and other materials to help them understand an unknown term in a text. They also make guesses to identify the meaning of an unknown term. But most of the time, learners used context clues to know what a statement means. Through this, learners were able to determine the underlying message of a text. Besides that, the respondents of the study were on a high level of readability because they could take an overall view of the text before reading it. Through this, they can assess the length of time they will allocate, what the terms present in the text, determine the length and organization, and critically analyze what information is present in the text. This supports the study of [17] who mentioned that the use of context clues was a factor for the learners to understand a text. Through this, they determine what a text expresses. Also, it supports the study of [18] that learners use skimming, scanning, making predictions, and questioning strategies to understand a text. It indicates that learners' strategies in reading impact how high or low their readability is. With that, it can



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be said that the findings of the study might also have underlying factors that prove the level of comprehension of the learners.

Meanwhile, the average readability of text acquired 67, or 23.26 percent of the respondents. It implies that grade 7 learners are at a level where they are neither low nor high when it comes to their readability level. They can read the text and understand it. This indicates that learners can comprehend the context but on a normal level. The average readability of a text means the level of difficulty or ease with which the text can be understood by the average reader. Texts can be difficult or easy, depending on factors inherent in them, on the relation between the text and the knowledge and abilities of the reader in which they are engaged. It is a measure of the complexity of the language and structure used in the text. This finding is supported by the study of [19] which stated that the level of comprehension of the learners is average. Aside from that, difficulties in comprehending texts may vary among readers. It may come from vocabulary, words, phrases, or sentence structures. Concerning results and discussion, sentence length and word aspects of the readability of the learners. The result was supported by [20] that the readability of a text is connected to sentence length. On the other hand, the low readability of text of the respondents has 0 frequency/percent, which suggests that none of the respondents faced difficulties in comprehending a text. It shows that learners do not experience problems understanding what they read.

Generally, the majority of the respondents fall under the category of high readability (\bar{x} = 110.4653, SD = 14.7428). This implies that the respondents could understand well what the text means. It also indicates that respondents could determine what the message of the text expresses through the use of various strategies. The results of the study revealed that the respondent of the study has the capacity to comprehend a text and be able to understand its context.

4.3 Relationship of Level of Problem-Solving Skills and Readability of Text of the Respondents

Table 7 presents the relationship between the level of problem-solving skills and the readability of the text of the respondents.

As shown from the table, problem-solving skills in terms of identifying and breaking have a p-value less than 0.05 which suggests rejecting the null hypothesis and implies that there is a significant relationship to the readability of text. However, there is no significant relationship between learners' readability of text and their level of problem-solving skills in terms of generating, evaluating, and monitoring. This means that identifying and breaking were found to be dependent on their level of readability but when it comes to generating, evaluating, and monitoring, there is no relationship between these three towards their level of readability. Learners have different levels of comprehension and skills in solving word problems. Based on the findings, it can be said that learners who have high readability indicate that they can determine what is being asked and what is the given information in a problem.

Table 7. Relationship of level of problem-solving skills and readability of text of the respondents

Problem- Solving Skills	Readability of Text			
	Chi- square	Р-	Decision on H_0	Interpreta tion
	Value	value		interpreta don
Identifying	14.535	.001	Reject	Significant



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Breaking	8.176	.017	Reject	Significant
Generating	5.645	.059	Failed to Reject	Not Significant
Evaluating	2.269	.322	Failed to Reject	Not Significant
Monitoring	3.475	.176	Failed to Reject	Not Significant

$\alpha = 0.05$

Learners who possess a great level of readability can assess a given problem unknown and the information needed to solve it. It implies that learners who have a high level of understanding mean they can identify what is asked in the problem and find the necessary information/values in the given word problem. It was supported by [19] who stated that there is a positive correlation between the readability and problem-solving skills of the learners. This suggests that learners can solve the problem if they can comprehend what is written in a text.

In addition, word problems encountered by the learners are mostly based on real-world situations. Because of this, they were able to associate and understand the context of the problem well. Since there are connections between their comprehension and skills in identifying and breaking a word problem, this indicates that they can derive a correct answer. This supports the study of [21] that word problems typically have real-world connections, and through comprehension, learners can be able to correctly answer the word problem. Additionally, the findings of the study that there is a relationship between identifying and breaking to their readability might be proof that learners' performance in mathematics might also have a connection with it. This means that when learners can understand a word problem it also implies that their skills in problem-solving are a factor in assessing their mathematics performance. It implies that learners' ability to answer and compute a mathematical problem has a connection to their level of comprehension. It also means that when the learners solve a mathematical problem, they should have the ability to understand it as well.

In light of the findings of this study, as shown in the result, having a high level of understanding doesn't necessarily mean having a high level of problem- solving skills. It also showed from the results that despite having a high level of readability, learners faced difficulties in determining strategies, employing them, and finding the solutions and answers. Even though learners understand well what they read, it doesn't necessarily mean that they can think of the right strategies/formulas/operations needed to come up with a solution. It contradicts the findings of [22] who stated that the difficulties encountered by the learners regarding comprehending word problems lie in the accurate comprehension of the text, rather than the numbers or operations. It means that learners have the knowledge of what strategies need to be utilized but do not understand the text, finding it difficulties in the next step, which is substituting the given information from the chosen strategies. It is a part of the problem- solving skills where the learners need to assess the problem carefully starting from what is asked and what operation/formula is needed.

The findings of the study are aligned with [23] which stated in their study that learners struggle to convert word problems into numerical statements and to identify the appropriate operation to use to obtain the solution. Apart from this, the findings of the study concerning the relationship between evaluating and readability imply that the ability of the learners to transform a word problem into a mathematical sentence doesn't necessarily mean they need a high level of readability. This proves that no connection exists between them. It might be due to varied reasons since there are different factors in solving a word



problem.

The findings of this study that there is no significant relationship between problem-solving skills in terms of generating, evaluating, and monitoring their level of understanding might be due to their past mathematical experiences. Since the learners experienced the modular and online modality of learning at their elementary level, there could be an impact on their skills in solving word problems. It was supported by

[24] that most of the learners cannot study independently and most of them cannot easily understand the instructions in the distance mode of learning. This affects their level of comprehension which may result in difficulties in answering a mathematical word problem. It could be said that the learners' abilities in the current situation were influenced by their mathematical performance from the past which affects their problem-solving ability.

4.4 Preparation of Problem-Based Learning Material

Following the analysis of the study and a review of relevant topics and literature on problem-solving skills and readability of text, the researchers developed a problem-based learning material. This learning material focused on the level of problem-solving skills in terms of identifying, breaking, generating, evaluating, and monitoring in connection to their eadability. This will help the learners to enhance their level of problem-solving skills, especially in terms of identifying and breaking. Through this material, learners will be able to improve their skills in solving word problems.

Furthermore, the prepared problem-based learning material is composed of topics under Mathematics 7 from the first quarter to the third quarter. It aimed to reflect the study's findings and address the topics where learners experience difficulties such as Venn diagrams and operations on rational numbers. The prepared problem-based learning material involves the learners' participation individually and in groups. In addition, the prepared output for this study sought to deal with the result of the findings of the study. Generally, it aimed to enhance the problem-solving skills and readability of text of the grade 7 learners. It is also created to strengthen learners' capabilities in solving word problems and their abilities to comprehend text. Also, the prepared problem-based learning material is intended to promote collaboration and cooperation in class. For 21st century learners, this learning material integrates technology, thus, it aims to develop learners' skills in using technology. Additionally, each activity has its target or objectives. As mentioned, the prepared problem-based learning material aimed to enhance the problem- solving skills among grade 7 learners. It consists of different activities that will help in the development of the learners' abilities to solve problems and their level of comprehension. Through this learning material, learners' skills in problem-solving and their abilities to comprehend will be enhanced. Aside from that, learners' critical thinking skills will be developed. It was supported by the study of [25] that through problem-based learning, learners develop critical thinking and problem-solving skills. Each activity was also expected to raise awareness among learners about using technology as part of learning. Lastly, it aimed to foster learners' cooperation and collaboration in doing

the activities.

Moreover, this prepared problem-based learning material is intended to increase the level of problemsolving skills of the respondents. Since this learning material is composed of different kinds of activities, each of them has its way on how the learners will improve their skills individually or in a group. Thus, it will not only increase the learners' skills in solving word problems, but it may also affect their performance



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in mathematics.

5. CONCLUSIONS

Based on the findings, the following conclusions were drawn:

1. The problem-solving skills of grade 7 learners are above average level in terms of identifying and low level in terms of breaking, generating, evaluating, and monitoring a word problem.

2. Learners from grade 7 had a high level of readability.

3. The problem-solving skills of grade 7 learners, which are identifying and breaking, had a significant relationship to their level of readability.

4. Problem-based learning materials were prepared.

6. RECOMMENDATIONS

The following recommendations have been made given the initial findings and conclusion:

1. The problem-based learning material that has been prepared can be presented to the experts for their suggestions and comments.

2. Mathematics and English teachers should collaborate in creating activities and tasks to enhance the level of comprehension and problem- solving skills of the learners.

3. Future researchers can conduct a relative study to determine the finding's reliability

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