

Difficulties in Solving Worded Problems of Second Year BEEEd Students of Ramon Magsaysay Technological A.Y. 2017-2018

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Abstract— The main goal of this research was to assess the level of difficulties of Second Year BEEEd students of Ramon Magsaysay Technological University Iba Campus in solving worded problems. The descriptive research design was used in the study with the used of questionnaire as the main instrument in gathering data from fifty-five respondents. The respondents are typical female, section A, and the grade in College Algebra is above satisfactory. It was found out that the respondent's perceptions in Common Procedures in Solving Worded Problems respondent's perceptions is Often, on identifying the key words or operation/s in the problem and translating English phrases to mathematical expression or equation is Moderately Difficult while the perception of respondent's in solving worded problems is Difficult. There is a significant difference between the level of the respondents on identifying the key words or operation/s in the problem in terms of sex, and section. There is a significant difference between the level of the respondents in translating English phrases to mathematical expression or equation in terms of grade. There is a significant difference between the difficulties of the respondents in solving worded problems in terms section. There is a moderate relationship between the common procedures in solving worded problems of the respondents and the level of difficulties in translating English phrases to mathematical expression or equation.

Keywords – Difficulties, Mathematical Equation, Mathematical Phrase, Worded Problems.

1 INTRODUCTION

Mathematics is really about solving problems, not just about moving letters and numbers on the right side or on the left side. Most real-world problems are stated using words and we need to translate them into mathematical statements. The difficult part of solving mathematical word problems appears to be the process of understanding a problem and deciding what operation(s) need(s) to be performed. The ability to correctly translate the written words into mathematical symbols are the key factors to a successful solution of the verbal problems.

Mathematics is a fundamental skill in our daily life. Humans have been applying mathematical knowledge for over 4000 years. Mathematics is a core subject in secondary schools. The study of mathematics was established to produce a competent person who is able to apply knowledge of mathematics in everyday life effectively and responsibly in solving problems and making decisions. In the mathematical context, it appears that many students who are weak in mathematics worry while attempting to use math skills to solve problems [1].

The needs to apply mathematics to solve everyday life problems calls for introduction of problem solving as a component of the mathematics curriculum. Problem solving mathematics curriculum encourages the use of mathematics in novel or complex situations. It also emphasizes the teaching of mathematics content through processes that students encounter in real world situations. Problem solving mathematics curriculum includes using and applying mathematics in practical tasks, in real life problems and within mathematics itself. It covers a wide range of situations from routine mathematical problems to problems in unfamiliar contexts and open-ended investigations that make use of the relevant mathematics and thinking processes [2].

Problem solving has been and will be a necessary skill not only in Mathematics but in everyday living. Part and parcel of problem solving is to translate word problems into

mathematical equation. However, students especially in grade school have difficulties in analyzing and interpreting word problems. Students most especially in grade school can easily perform an indicated operation but when this is given in verbal forms, students need to first identify what operation is involved by translating this into a mathematical sentence before actually performing the operation and arriving at the correct answer [3].

Solving word problems is among the main difficulties in algebra for many secondary school students all over the world [4]. Word problems are often considered one of the most challenging tasks in a beginning algebra class, with students likely to stumble over the move from the clean, basic formula to applying it in a real context.

2 METHODOLOGY

2.1 Research Design

The study aimed to describe, analyze and interpret level of difficulties of students in problem solving, the methodology which was adapted by the researcher is descriptive method and quantitative in its analysis. Descriptive research includes surveys and fact-finding enquiries of different kinds. Descriptive research is a type of quantitative research that involves making careful description of educational phenomena [5]. Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity [6].

2.2 Respondents and Location

This study involved the entire population of the second year BEEEd college students of Ramon Magsaysay Technological University Iba Campus Iba, Zambales School Year 2017 - 2018. Distribution of the respondents is eighteen

(18) for section A and thirty seven (37) for the section B with the total of fifty five (55) respondents.

2.2 Instruments

The questionnaire was the main instrument used in gathering the data for this study. Set of questionnaires-checklist was constructed for the respondents. The researchers constructed it after they had avail of the materials related to the topic, books and other materials. The questionnaire consisted of two parts. The first part of the questionnaire is about the personal information of the respondents. It includes the sex, section and academic performance in College Algebra. The second part is a checklist on their common procedures in solving word problems. The third part consist of two sub parts; a) the keywords and translating English phrase into mathematical phrase and b) solving word problem.

2.3 Data Collection

The floating of test paper was conducted with the permission of the Dean of College of Teacher Education RMTU Iba Campus. The researcher discussed objective of the study and the confidentiality of their responses was prioritized to assure a 100% retrieval of the instrument. The researcher personally distributes the instrument to all the respondents at the same time of the same day. The instrument was collected at the same day. Data collected from the questionnaire was tallied, analyzed, interpreted and summarized accordingly. Descriptive statistical techniques such as frequency counts, simple percentage and mean were used. Likert Scale was used to scale responses in survey research to measure level of difficulties in solving word problems.

3 RESULTS AND DISCUSSIONS

Table 1 shows the frequency and percentage distribution of respondents according to the profile of the respondents. Out of fifty-five (55) respondents, 18 or 32.73% are males and 37 or 67.27% are females. Results showed that majority of the 2nd year BEEd students in College of Teacher Education are female. 23 or 41.82% are section A and 32 or 58.18% are section B. The table reveals that majority of the respondents are in section B. The data revealed that the number of students between the two sections is not the same. The computed mean grade of the respondents is 2.31. This means that the majority of respondents passed subject with a grade of 2.00 (equivalent grade of 87 to 89) and 2.25 (equivalent grade of 84 to 86) but there are some students who got a grade of 3.00 (equivalent grade of 75 – 77) which means that they have difficulty in College Algebra.

Results showed that majority of the 2nd year BEEd students in College of Teacher Education are female. Women represent a significant majority of the teaching workforce. An increased number of females in the teaching profession are often associated with education systems that have achieved or

nearly achieved universal education [7].

Table 1: Profile of the Respondents (Sex, Section, and Academic)

Sex	Frequency	Percentage	
Male	18	32.73	
Female	37	67.27	
Total	55	100	
Section	Frequency	Percentage	
Section A	23	41.82	
Section B	32	58.18	
Total	55	100	
Description	Grade in College Algebra	Frequency	Percent
Excellent	1.25	1	1.82
Very Good	1.5	2	3.64
Very Good	1.75	4	7.27
Good	2	13	23.64
Above	2.25	13	23.64
Satisfactory	2.5	7	12.73
Satisfactory	2.75	8	14.55
Fair	3	7	12.73
Passed	3	7	12.73
Total		55	100
Mean Grade: 2.31			

Table 2 shows the perception of the respondents towards common procedures in solving worded problems. For the indicator 1, "I read a word problem more than once before attempting to solve the problem." The computed mean is 4.38 interpreted as Always (A). For indicator 2, "When I am finished working out a problem, I check if my answer makes sense with the problem." The computed mean is 4.18 interpreted as Often (O). For indicator 3, "After working out a problem, I check my work for possible errors." The computed mean is 4.00 interpreted as Often (O). For indicator 4, "I try to restate the problem in my own words."

The computed mean is 3.87 interpreted as Often (O). For indicator 5, "If I don't understand the problem, I ask for help." The computed mean is 4.00 interpreted as Often (O). For indicator 6, "I use pictures, diagram, table or chart to organize information helps me solve the word problem." The computed mean is 3.95 interpreted as Often (O). For indicator 7, "I use a trial-and-error method to calculate the number answer(s) when solving word problem." The computed mean is 4.05 interpreted as Often (O). For indicator 8, "I select a variable to represent the unknown value(s)." The computed mean is 4.02 interpreted as Often (O). For indicator 9, "I underline the clue words in the problem." The computed mean is 3.80 interpreted as Often (O). For indicator 10, "I eliminate excess information in the problem." The computed mean is 3.64 interpreted as Often (O). Based on the result the highest mean in common procedures in solving worded

problems is “I read a word problem more than once before attempting to solve the problem” the lowest mean is “I eliminate excess information in the problem.”. Problem solving requires making sense of the problem situation and the means necessary for making decisions, which directs an individual’s understanding. These three components for a problem are shared across the numerous characterizations of problem solving. However, more recent characterizations of

problems solving include distinct constructivist elements that involve connecting the situational context within the problem to experiences shared by the problem solver [8].

Effectively solving a mathematical word problem is assumed to depend not only on students’ ability to perform the required mathematical operations, but also on the extent to which they are able to accurately understand the text of the word problem [9].

Table 2. Perception of the Respondents on Common Procedures in Solving Worded Problems

Common Procedures in Solving Worded Problems	AWM	D.E.
I read a word problem more than once before attempting to solve the problem.	4.38	A
When I am finished working out a problem, I check if my answer makes sense with the problem.	4.18	O
After working out a problem, I check my work for possible errors.	4.00	O
I try to restate the problem in my own words.	3.87	O
If I don't understand the problem, I ask for help.	4.00	O
I use pictures, diagram, table or chart to organize information helps me solve the word problem.	3.95	O
I use a trial-and-error method to calculate the number answer(s) when solving word problem.	4.05	O
I select a variable to represent the unknown value(s).	4.02	O
I underline the clue words in the problem.	3.80	O
I eliminate excess information in the problem.	3.64	O
Overall Weighted Mean	3.99	O

Table 3 shows the level of difficulties in solving worded problems. The computed overall weighted mean in Identifying the key words or operation/s in the problem is 11.15 interpreted as Moderately Difficult. The study revealed that the level of the students in College Algebra based on teacher made test given by the researchers was low, it means that the students has a poor performance with mathematical word problems that cause difficulties for them, the teachers can help them overcome these problem. The computed overall weighted mean in Translating English phrases to Mathematical Expression or Equation is 9.92 interpreted as Moderately Difficult. The data shows that the students is still incapacity to Translate English phrases to Mathematical Expression or Equation, it seems that the students is lacking of awareness and ability to translate worded problems. The computed overall weighted mean in Solving worded problems is 2.70 interpreted as Difficult, the study revealed that the level of the students in College Algebra based on teacher made test given by the researchers was low, it means that the students had lack of perseverance, fortitude and self-confidence in oneself were some of the reasons established as the main obstacles that hinder most students from enjoying an otherwise exciting and interesting in identifying the key words or operation/s in the problem.

In Identifying Problem Solving in School Mathematics, the students had almost no background on the seven areas which resulted to their very low performance. They lacked knowledge, competency and skills in answering questions especially in solving the application of word problems which obtained a mean score of 2.99, followed by special product and factoring, equations and radicals. The result of the study showed that the students were deficient in the application of word problems, special product and factoring, equations and radicals [10].

Table 3: Level of Difficulties of the Respondents in Solving Worded Problems

Identifying the key words or operation/s in the problem	Descriptive Equivalent	Frequency	Percentage
Very Easy	17 – 20	8	14.55
Easy	13 – 16	21	38.18
Moderately Difficult	9 – 12	6	10.91
Difficult	5 – 8	12	21.82
Very Difficult	0 – 4	8	14.55
Total		55	100.00
Mean Score: 11.15 (Moderately Difficult)			
Translating	Descriptive	Frequency	Percentage

English phrases to Mathematical Expression or Equation	Equivalent	Frequency	Percentage
Very Easy	17 – 20	3	5.45
Easy	13 – 16	12	21.82
Moderately Difficult	9 – 12	22	40.00
Difficult	5 – 8	10	18.18
Very Difficult	0 – 4	8	14.55
Total		55	100.00
Mean Score: 9.92 (Moderately Difficult)			
Solving worded problems	Descriptive Equivalent	Frequency	Percentage
Very Easy	9 – 10	0	0.00
Easy	7 – 8	1	1.82
Moderately Difficult	5 – 6	4	7.27
Difficult	3 – 4	28	50.91
Very Difficult	0 – 2	21	38.18
Total		55	100.00
Mean Score: 2.70 (Difficult)			

Table 4. Significant Difference on the Level of Difficulties in Solving Worded Problems when Grouped according to Profile Variables. For sex, there is a significant difference between the level of the respondents on identifying the key words or operation/s in the problem. For section, there is a significant difference between the level of the respondents on identifying the key words or operation/s in the problem. And for grade, there is a significant difference between the level of the respondents on identifying the key words or operation/s in the problem.

For sex, there is no significant difference between the level of the respondents in translating English phrases to mathematical expression or equation. For section, there is no significant difference between the level of the respondents in translating English phrases to mathematical expression or equation. And for grade, there is a significant difference between the level of the respondents in translating English phrases to mathematical expression or equation.

For sex, there is no significant difference between the levels of the respondents in solving worded problems. For section, there is a significant difference between the levels of the respondents in solving worded problems. And for grade, there is no significant difference between the levels of the respondents in solving worded problems.

Table 4: Significant Difference on the Level of

Difficulties in Solving Worded Problems			
	Identifying the key words or operation/s in the problem	df	Sig.
Sex	Between Groups	1	0.05
	Within Groups	53	
Section	Between Groups	1	0.00
	Within Groups	53	
Grade	Between Groups	7	0.37
	Within Groups	47	
	Translating English Phrases to Mathematical Expression or Equation	df	Sig.
Sex	Between Groups	1	0.42
	Within Groups	53	
Section	Between Groups	1	0.94
	Within Groups	53	
Grade	Between Groups	7	0.05
	Within Groups	47	
	Solving worded problems	df	Sig.
Sex	Between Groups	1	0.30
	Within Groups	53	
Section	Between Groups	1	0.03
	Within Groups	53	
Grade	Between Groups	7	0.15
	Within Groups	47	

Table 5. Significant Relationship on the Common Procedures in Solving Worded Problems and the Level of Difficulties in Solving Worded Problems. The computer Pearson (r) value for identifying the key words or operation/s in the solving problem is 0.070 denoted as slight correlation; for translating English phrases to mathematical expression or equation the computed value is 0.416 denoted as moderate correlation; and for solving worded problems the value s 0.054 denoted as slight correlation. Therefore, there is a significant relationship between the common procedures in solving worded problems of the respondents and the level of difficulties in translating English phrases to mathematical expression or equation.

Errors in translation from the natural to the mathematical language frequently occurred due to the students' lack of command of the language, i.e., their inability "to construct a meaningful body of knowledge from the information in the question, including data and a solution scheme" [11].

Table 5: Significant Relationship

Common Procedures in Solving Worded Problems		Interpretation
Identifying the key words or operation/s in the problem	Pearson Correlation	0.070
	Sig. (2-tailed)	0.612
	N	55
Translating English phrases to Mathematical Expression or Equation	Pearson Correlation	0.416**
	Sig. (2-tailed)	0.002
	N	55
Solving worded problems	Pearson Correlation	0.054
	Sig. (2-tailed)	0.697
	N	55

** Correlation is significant at the 0.01 level (2-tailed).

4 CONCLUSIONS AND RECOMMENDATIONS

Based from the gathered data and findings, the researcher concluded that majority of the respondents are female, section B and the computed mean grade of the respondents is 2.31. The respondent's perceptions in Common Procedures in Solving Worded Problems is Often. The level of difficulties of the respondents on identifying the key words or operation/s in the problem and on translating English phrases to mathematical expression or equation is Moderately Difficult. The level of difficulties of the respondents in solving worded problems is Difficult. There is a significant difference between the level of the respondents on identifying the key words or operation/s in the problem in terms of sex, and section. There is a significant difference between the level of the respondents in translating English phrases to mathematical expression or equation. There is a significant difference between the level of difficulties of the respondents in solving worded problems in terms section.

There is a moderate relationship between the common procedures in solving worded problems of the respondents and the level of difficulties in translating English phrases to mathematical expression or equation. The teachers need to improve their teaching strategies through trainings and seminars in terms of solving worded problems so that they can acquire all necessary needs in their teaching. The teacher needs to provide step-by-step instruction in solving worded problems. The students may develop a positive attitude towards Mathematics by taking the subject as a challenge to do better. The teacher needs to add other instructional formats besides paper and pencil to teach word problems such as pictures, pie charts, and graphs. This will help the students who have difficulty in reading to learn math skills. The teachers are encouraged to use different strategies to suit the learning needs of the students. The teacher should provide a variety of problem solving experiences like games, puzzles, discussions, and etc. that will encourage the students to stretch their creativity and critical thinking skills. Conduct a similar study that would validate the result of this study.

5 REFERENCES

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