

A Survey of the Mathematics Problem Solving Ability of Grade 10th Students in Thailand

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Abstract

The purpose of this study was to survey the Mathematics Problem Solving ability of grade 10th students. The participants were 51, grade 10th students at Sarakhampittayakhom school in Mahasarakham province, Thailand, 2nd semester of 2017 that selected by purposive sampling. The instrument was Mathematics Problem Solving ability test that was multiple choice, 30 articles. The data was analyzed by using mean, percentage and standard deviation. It was found that the mean score of Mathematics Problem Solving test was 15.57 of 30. In addition, the percentage of Mathematics Problem Solving score can show qualitative score as follows more than 80 percent is excellent, 60-79 percent is good, 50-59 percent is medium, less than 50 percent is weak. The results show that the number of students who were excellent level were 4, good level were 8, medium level were 17 and weak level were 22.

Keywords: Mathematics Problem Solving Ability

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Introduction

Mathematics problems are really difficult. These statements are quite familiarly heard when students are inquired about their homework. They seem to be struggling with their homework especially on mathematics problem-solving. Mathematics problem solving is not a topic but a process underlie the whole mathematics programmes which contextually helped concepts and skills to be learned (Ibrahim 1997). Many mathematics skills were involved in problem-solving. However, large numbers of students have not acquired the basic skills they need in mathematics (Mohd Nizam & Rosaznisham 2004; Berch & Mazzocco 2007).

According to the results of The National Institute of Educational Testing Service (Public Organization) (O-NET) in Thailand indicate the grade 12th Students in Thailand, academic year 2559 had a mean score 24.88 points out of 100 points, which lower than the benchmark of 50 percent. (National Institute for Educational Testing 2017). Problem solving is a core of mathematics because the students have to use thinking skill, principles, rules and formulas in mathematic for solving problems successfully. In addition mathematics problem solving ability is important skill for learning mathematics so teachers should thoroughly teach the process of problems solving skill to students and teacher have to explain each process of problem solving until all students understanding. Although there are some students who can solve the problems by themselves but many students do not know how to start the solving problem, how to solve the problem. As the result shows that some students lack basic knowledge and they do not understand the correct problem solving process. (IPST.209).

Problem-solving is categorized into two aspects; i) how the problems are delivered-linguistic (using words) or non- linguistic (using graphic or problem based); and ii) the illumination of the problem structure – information, objective and action-plan (Zhining et al. 1995). According to Ibrahim (1997), there are two main procedural steps in problem- solving: i) transforming the problem into mathematical sentences; and ii) computation of the operational involved in the mathematical sentences. Difficulties faced among students were more noticeable during the first procedural step in solving problem compared to the other. Polya (1981) problem-solving have 4-hierarchy phase; i) understanding problem; ii) planning; iii) performing the plan; iv) confirmation of the answer. It's obviously show that the process starting from the minute students is faced with the problem until the end when the problem is solved.

As above, the researcher want to survey the mathematics problem solving ability of grade 10th students. in Sarakhampittayakhom School, Mahasarakham Province, Thailand. The information will be useful and can be applied in the learning activities to enhance students' mathematics problem solving ability.

Research Purposes

The purpose of this study was to survey the Mathematics Problem Solving ability of grade 10th students.

Target group

The target group was 51 students of Grade 10th student (Room 7) in academic year 2017 from Sarakhampittayakhom School, Muang Mahasarakham, Thailand.

Research Instruments

The research instrument of this study was Mathematics Problem Solving ability test that was multiple choice, 30 articles.

Methodology

In this research, the data of mathematics problem solving ability was collected by using the multiple choice, 30 articles. The process of collecting data as following:

1. The researcher selected the sample from 3 classrooms of grade 10th student in academic year 2016 from Northeast of Thailand by using purposive sampling.
2. The students were asked to do the test to identify mathematics problem solving ability.
3. The data were analyzed and categorized using the criteria of The institute for the Promotion of Teaching Science and Technology (IPST).

Result

The levels of mathematics problem solving ability of 10th grade students in Thailand shown in 4 levels 1) excellent were 4 2) good were 8 3) medium were 17 and 4) weak were 22. The data were shows in Table 1.

Table 1: The levels of mathematics problem solving ability of each students.

No.	Score	Percentage	level	No.	Score	Percentage	level
1	18	60.00	good	27	12	40.00	weak
2	7	23.33	weak	28	16	53.33	medium
3	15	50.00	medium	29	12	40.00	weak
4	17	56.67	medium	30	17	56.67	medium
5	20	66.67	good	31	16	53.33	medium
6	12	20.00	weak	32	21	70.00	good
7	16	53.33	medium	33	11	36.67	weak
8	15	50.00	medium	34	16	53.33	medium
9	14	46.67	weak	35	10	33.33	weak
10	16	53.33	medium	36	19	63.33	weak
11	14	46.67	weak	37	12	40.00	weak
12	15	50.00	medium	38	10	33.33	weak
13	8	26.67	weak	39	24	80.00	excellent
14	23	76.67	good	40	14	46.67	weak
15	17	56.67	medium	41	17	56.67	medium
16	12	40.00	weak	42	8	26.67	weak
17	21	70.00	good	43	11	36.67	weak
18	14	46.67	weak	44	16	53.33	medium
19	16	53.33	medium	45	16	53.33	medium
20	20	66.67	good	46	11	36.67	weak
21	14	46.67	weak	47	17	56.67	medium
22	14	46.67	weak	48	25	83.33	excellent
23	24	80.00	excellent	49	13	43.33	weak
24	13	43.33	weak	50	16	53.33	medium
25	23	76.67	good	51	12	40.00	weak
26	24	80.00	excellent				

The results show that the percentage of mathematics problem solving ability levels of students, excellent level was 7.84%, good level was 15.69%, medium level was 33.33% and weak level was 43.14%. The data were shows in Table 2.

Table 2: The number of students and percentage.

Levels	Number of students	Percentage
Excellent (more than 80%)	4	7.84
Good (60-79%)	8	15.69
Medium (50-59%)	17	33.33
Weak (less than 50%)	22	43.14

Conclusion and discussion

According to the study, it was found that the answers of students were not correct because they cannot solve the mathematics problems and a lot of student lack of knowledge basic, calculating skill. In addition, the researcher have interviewed the students about how to solve mathematic problems. From student inquiries, we found that many students did not understand questions and they do not know how to begin for solving mathematic problems. Therefore, this might be the reasons why 22 students were classified to weak level. As a result, the teachers should teach the steps of solving problem and explain the process of solving clearly. The teacher might use new learning activities to enhance mathematics problem solving ability of students. This statement was supported by (Bender, 2012). Students who experienced difficulties reading a problem were unable to provide correct answers. In addition, correct of the problem may not be enough for finding the correct answers to a problem, because the mathematical problems involved in the problem must also be understood. There is also a need for students to develop problem solving skill besides understanding the process of the problem solving and the basic knowledge involved in the problem. In addition to the development of problem solving skill, how to apply these strategies to new situations must be understood correctly. Strengthening teacher-student and student-student relationships is very importance for the understanding of mathematics problems (Mercer & Sams, 2008). Therefore, basic knowledge and the problem solving skills of students should be handled together and instructional activities should focus on the process of mathematics problem solving and another mathematics skills.

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