

Analysis Of Students' Basic Mathematical Ability In Primary Schoolteacher Education Study Program State University Of Makassar

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Abstract. As prospective primary school teachers, students in primary school teacher education study program (PGSD) should be able to work on the subject matter of Mathematics material correctly. However, it is still often heard that the students make mistakes in counting operations during their apprenticeship in elementary schools. The same thing was also revealed that when elementary school teacher candidates took the Civil Servant Candidate (CPNS) test, there were still many graduates who had errors in completing elementary school math problems. The study aimed to: (1) describe basic Mathematical abilities of final semester PGSD students at State University of Makassar, (2) know the description of elementary Mathematics material that is considered difficult by final semester PGSD students at State University of Makassar, (3) to investigate what factors affecting the basic Mathematical ability of the final semester PGSD students at State University of Makassar. This research is a descriptive qualitative with the type of case studies to analyze the description of PGSD students' basic Mathematical ability in the academic year of 2018-2019. The population of this study was 302 students. The samples taken were 30% of the population, 105 people. For qualitative data collection, 18 respondents were interviewed. The average results of the Mathematical ability tests of final year PGSD students at State University of Makassar were 76.83 modes 80.00 with a standard deviation of 13.62.

Keywords: Basic Mathematical Ability, PGSD Students.

1. Introduction

Mathematics is a basic science that must be strengthened since elementary school because it contributes most to all other knowledge. Objectives of Mathematics in elementary education level are; (1) students to be able to deal with changing circumstances that have always evolved in life in the world through training to act on logical, rational, critical, careful, honest, effective and efficient thinking, (2) preparing students to be able to use Mathematics and develop mathematical mindset in everyday life as well as in studying various sciences [1].

Teachers and Lecturers Policy No. 14/2005 and Government Regulations No 19/2005 state that teachers' competencies include personal, pedagogical, professional and social competencies. Teacher competency can be interpreted as a form of unity of knowledge, skills, and attitudes in the form of intelligent and responsible actions in carrying out tasks. Elementary school teacher candidates (PGSD students) need to prepare themselves to become professional, broad-minded, and intellectual elementary school teachers, as well as capable of developing teaching knowledge and skills.

Mathematics education courses develop mathematical understanding in the form of basic abilities that students must possess to achieve other mathematical abilities to be able to understand Mathematics material at a higher level [2]. In addition to develop understanding of pedagogical Mathematics material and practices, PGSD students who have obtained Mathematics education courses will show the results of their college experience through practical training to teach Mathematics and final exam results. The results shown are a manifestation of students' understanding of pedagogics in Mathematics education.

As prospective elementary school teachers, PGSD students should be able to work on the subject matter of Mathematics material correctly. However, it is still often heard that PGSD students still make mistakes in counting operations during their apprenticeship in elementary school. The same thing was also revealed that when elementary school teacher candidates took the CPNS test, there were still many elementary school teacher candidates had errors in completing elementary school math questions.

The basic mathematical ability is the capability, competence and skills of PGSD students in solving elementary math problems. The implementation of education at elementary school level aims to equip students with provisions to live in society and be able to continue their education to a higher level, so the purpose of learning mathematics in schools is that not only students are skillful in using mathematics, but they are also capable of mathematical reasoning in everyday life [3].

The Mathematics courses studied in the PGSD study program are; Basic Introduction to Mathematics (logic, reasoning, relations and functions, equation), Mathematics Education I (Numbers, Factors and Multiples), Mathematics Education II (Plane figure, Solid figure and Measurement), Mathematics Education III (Social Arithmetic, probability and statistics). This course is distributed from the first semester to the final semester. After students take courses to the final semester, they are expected to have the knowledge and skills that will be used in their respective responsibility to become professional elementary teachers in the field of Mathematics.

Realizing this reality, as a lecturer at PGSD, especially in the field of Mathematics education studies, researchers paid attention to the problem. One thing to figure out is how the ability of PGSD students to solve elementary math problems and any material elements that have not been mastered by students. By knowing the weaknesses in mastering elementary Mathematics material, remedial can be given precisely on target, or what Mathematical material needs to be added or reduced in order to improve the ability of PGSD students to solve elementary Mathematics questions. In turn, it will be the input of the authorities when there will be improvements and curriculum changes.

The purpose of this study, based on the formulation of existing problems, namely; (1) To find out how to describe the basic mathematical abilities of the final semester students of primary school teacher education study program at UNM, (2) To find out an overview of elementary mathematics material that is considered difficult by the final semester students PGSD study program (3). To find out what factors influence the ability of the basic Mathematics ability of the final semester students of primary school teacher education study program at UNM.

The benefits obtained from this research are figuring out facts about understandings on pedagogic and Mathematics education for PGSD students, giving concrete information to be used as a foundation in following up Mathematics Education lecturing activities for elementary school teacher candidates, enriching the educational literature of prospective elementary school teachers and as input material for other researchers who are interested in following up the results of this study by taking different research.

2. Methods

This research is a descriptive qualitative research case study type, which analyzes in depth the picture of the basic ability of the final semester students of PGSD UNM Makassar in the academic year 2018-2019. Data collection is carried out by giving tests for quantitative data, and open interviews for qualitative data.

The population of this study was all final semester students of PGSD Makassar (183 people), PGSD Pare pare (65 people) and PGSD Bone (54 people) so the total population was 302 people. The number of samples taken was 30% of the population. Sampling for quantitative data (tests) was done by proportional random sampling method, but the total samples taken were 105 people. For qualitative data collection (interviews) regarding the factors that affect the basic Mathematical ability, 6 people from each sample of PGSD Makassar, Bone and Pare-Pare were taken by selecting 2 students who got the highest score, 2 students who got the moderate score and 2 students who got the lowest score. So the total respondents interviewed were 18 people.

This study obtained an overview of the basic mathematical abilities of the final semester students of PGSD UNM in the academic year 2018/2019. The results of the tests given to the respondents were then analyzed by descriptive analysis which would describe the average, maximum value, minimum value, median, mode and standard deviation of the respondents. Analysis of material considered difficult by students was obtained from the test results data that was analyzed using ANATES. Analysis of the results of interviews with respondents was conducted by triangulating the data so that several factors were found to influence the understanding of respondents' basic Mathematical ability. Then a data tabulation was made about affecting factors in general.

3. Discussion

After the quantitative data collection in the form of tests for students in three PGSD locations, the results of the descriptive statistics were obtained as follows:

Table 3.1: Description of Mathematical Ability of PGSD Students

		Statistics	
		Responden	Nilai
N	Valid	105	105
Mean			76.8253
Median			80.0000
Mode			80.00
Std. Deviation			13.62120
Minimum			30.00
Maximum			96.67
Sum			8066.66

Based on the table above, it can be seen that the average score of the Mathematics ability test results of the PGSD UNM students is 76.83 mode 80.00 with a standard deviation of 13.62. The maximum value is 96.67 and the minimum value is 30.00. This shows that the value obtained was still far from expectations, because a final semester PGSD student who

will soon become an elementary school teacher actually gets an average score of more than 85 Mathematics abilities.

The value distribution obtained by students of the PGSD UNM Study Program is: there are still 59% of students who get grades less than or equal to 80 (≤ 80). This is still very far from expectations, because in fact more than 75% of students obtained more than 80.

Overview of Mathematics Materials that Are Considered Difficult

The instruments in the form of tests given to respondents consisted of 30 numbers which were divided into 4 main materials in elementary school. The acquisition of data about the number of respondents who answered correctly every question based on the subject matter can be seen in the following table:

Table 3.2 Respondents' Mastery of Material

No	Material	Item Number	Mastery (%)	Category
1	Numbers	1, 2, 3, 4, 5	80	Good
2	Algebra	6, 7, 8, 9, 10, 11, 12, 13, 15	74	Moderate
3	Geometry	18, 19, 20, 21, 22, 23	40	Poor
4	Measurement and Statistics	14, 16, 17, 24, 25, 26, 27, 28, 29, 30	55	Poor

The table above shows that the respondents' mastery of the material for Numbers was in good category because there were 80% who have answered correctly. For Algebraic material, 74 % of respondents answered correctly in moderate category. The material of Geometry and Measurement / Statistics was included in poor category, because only 40% of respondents answered Geometry material correctly and 55% answered for measurement material and Statistics.

Factors Affecting Mathematical Ability

Open interviews were conducted with respondents after working on the test instrument. The main questions given to respondents were about the difficulties that they felt during studying Mathematics courses taught from the first semester to the final semester. The other questions about various things, including the conditions and learning facilities of each respondent. Analysis of the results of interviews with triangulation of data obtained several conclusions as follows: (1) the basic mathematical ability (basic concept) that is owned was poor, this is because the previous school background (high school / vocational) includes majors taken while still in high school (2) teaching methods for several lecturers who have not been able to motivate students to study hard, (3) Mathematical laboratory facilities and infrastructure that are not yet available for several relevant subjects, (4) the relationship between Mathematics courses that have been studied with subjects in primary school is very poor, so some mathematical questions in elementary school are still considered difficult or have never been studied during college.

4. Conclusions

Based on the statistical analysis, it was obtained that the average value of the mathematics ability test results of the PGSD students was 76.83. This indicated that the scores obtained were still far from expectations, because final year PGSD students who would soon become an elementary school teacher should obtain average grade of Mathematical ability more than 85. Regarding the respondents' ability cumulatively, there were still 59% of students who got grades less than or equal to 80 (≤ 80). This is still very far from expectations, because there should be more than 75% of students obtained more than 80 grades.

The results of the research on respondents' mastery of Mathematics subject matter in elementary school showed that the material for numbers were good because there were 80% who had answered correctly. For algebraic material, respondents who answered correctly were 74% in the moderate category. The material of Geometry and Measurement / Statistics is included in the poor category, because only 40% of respondents correctly answered Geometry material and 55% answered for measurement material and Statistics.

Related to the factors that influence the respondents' basic mathematical ability, it is obtained that several causes were, among others; lack of mastery of basic Mathematics concepts, methods of teaching by several lecturers that are not varied, inadequate laboratory facilities and the linkages between lecture material obtained with subject matter in elementary schools that are still poor.

The suggestions that can be proposed are; (1) early learning or matriculation of Mathematical concept is needed for new PGSD students who are from non-exacta vocational school or non-science high school, (2) lecturers need to be able to motivate students in learning Mathematics courses, (3) adjustments and alignment between curriculum Mathematics courses with the 2013 curriculum in elementary school are necessary, (4) laboratory facilities and infrastructure that are comprehensive in facilitating the Mathematics learning process should be completed and especially related to the latest technology, (5) for future researchers, it is necessary to conduct in-depth research (qualitative) about the factors that influence the basic Mathematical ability of PGSD students in general.

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