CREATIVE THINKING : A STUDENT PROFILE ON SOLVING FRACTION PROBLEM

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ABSTRACT

The aim of this study was to determine students' thinking processes in solving fractional problems. This research is expected to provide benefits in the form of information about students' thinking processes in solving fraction problems so that it can be used as a reference for educators in general in teaching fractions material. The formulation of the problem in research is how students think in solving fractional problems. Place The research was conducted at Ibnu Khaldun Junior High School, Banda Aceh. The subject of this research is one person. This study uses a qualitative approach. The results of this study are choosing a rare completion by multiplying the denominator times the denominator and the quantifier times the numerator. In solving problems with different denominators, the subject chooses to equate the denominators by multiplying the two denominators on the problem. A further creative rarity is if the question has a different denominator, that is, the denominator is different, then the subject solves the problem by means of a cross and the denominator is multiplied by the denominator, then the subject can simplify the form of the fraction by equally dividing it by one number.

Keyword: Creative Thinking, Student Profile , Solving Fraction Problem

ABSTRAK

Tujuan penelitian ini adalah untuk mengetahui proses berpikir siswa dalam memecahkan masalah pecahan. Penelitian ini diharapkan memberikan manfaat berupa informasi mengenai proses berpikir siswa dalam memecahkan masalah pecahan sehingga dapat dijadikan sebagai acuan bagi pendidik secara umum dalam mengajarkan materi pecahan. Rumusan masalah dalam penelitian bagaimana proses berpikir siswa dalam memecahkan masalah pecahan. Tempat Penelitian dilakukan di SMP Ibnu Khaldun Banda Aceh. Subjek penelititian ini berjumla satu orang. Penelitian ini menggunakan pendekatan *kualitatif.* Hasil penelitian ini yaitu memilih langka menyelesaikan dengan cara mengalikan penyebut kali penyebut dan pembilang dikali pembilang. Dalam menyelesaikan soal dengan penyebut berbeda subjek memilih menyamakan penyebut dengan mengalikan kedua penyebut pada soal. Langka kreatif selanjutnya jika soal dengan penyebut berbeda yaitu penyebutnya berbeda kemudian subjek menyelesaikan soal dengan cara kali silang dan penyebut dikalikan dengan penyebut lalu subjek dapat menyederhanakan bentuk pecehan dengan sama-sama dibagi satu bilangan

Kata Kunci: *Berpikir Kreatif, Profil Siswa, Memecahkan Masalah Pecahan*

INTRODUCTION

Educational problems always arise along with developing and increasing student abilities. The existing situation and environmental conditions, the influence of information and culture, as well as the development of science and technology. In addition, teachers should also

be able to improve their teaching performance in schools. This is because the teacher is one of the determining factors in shaping the nature of students as skilled intellectuals. In the teaching and learning process, teachers who only teach without paying attention to students for the material presented will get negative reactions from students, so that feedback from students does not occur, namely low student learning outcomes

On the subject of fractions, many high school students have difficulty understanding fractions and their operations. This is because the fraction is a concept that is still abstract. Especially in the matter of fractional arithmetic operations including addition operations. Usually students are less able to add fractions because the concept of adding fractions is different from adding whole numbers. Adding fractions is very important because the first arithmetic operation taught is addition. If students already understand how to add fractions, then other arithmetic operations (subtraction, multiplication, and division) will be easier to understand. In addition, problems about fractions are very important because they are directly related to students' daily lives

Learning mathematics mastery of the concept of counting operations is the basis for developing children's ability to count, because concepts in mathematics are interconnected, so that a concept is compiled based on previous concepts and will become the basis for subsequent concepts. Basic knowledge of every number operation is the basis of all number operations. Various physical models will help children develop a broader concept of operation. A combination of basic facts and an understanding of place value and other mathematical properties can help children perform number operations.

The formulation of the problem in research is how students think in solving fractional problems. The purpose of this study was to determine the students' thinking process in solving fractional problems. This research is expected to provide benefits in the form of information about students' thinking processes in solving fraction problems so that it can be used as a reference for educators in general in teaching fractions material.

RESEARCH METHOD

This study uses a qualitative approach. According to Laxy, the qualitative approach is the data collected not in the form of numbers but data from interview scripts, field notes, personal documentation, memo notes and other official documents (Moleong, 2004:131). In this paper, the author uses a qualitative descriptive method where in fact the type of qualitative

research is not really qualitative or is still heavily influenced by deductive-quantitative views (Bungin, 2008:27).

Descriptive approach studies problems in society, as well as the procedures that apply in society and certain situations, including about relationships, activities, attitudes, views and ongoing processes and influences. of a phenomenon. The author uses this type of qualitative research. Qualitative research is data collected not in the form of numbers but data from interview scripts, field notes, personal documentation, memo notes and other official documents (Moleong, 2004: 123).

Place of Research This research was conducted at Ibnu Khaldun Junior High School Banda Aceh. The implementation of this research began in July 2020. According to Margono (2010: 118) "population is all data that is of concern to us in a scope and time that we specify". Meanwhile, according to Sukmadinata, the population is "a large group and area that is the scope of research". Population is the subject of research. In this study, the population was all students of Class VII SMP Ibnu Khaldun Banda Aceh which consisted of a number of people.

The subject is part or representative of the population, this is similarly conveyed by Margono who stated that the subject is "as part of the population, so it can be concluded that the sample is part of the population (Margono, 2010: 121). The technique of taking the subject is done by using purposive sampling (taking the subject based on its nature). This sampling was only carried out in class VII, therefore the author limited this research to only class VII, which consisted of 150 student.

Data collection instruments are information about a thing, it can be in the form of something that is known, or is considered, or assumed. Or a fact that is described through numbers, symbols, codes, and others. The research instrument is a tool chosen by researchers in data collection activities so that their activities become systematic and easier (Arikunto, 2010: 160). The main instrument in this study is the researcher himself while the auxiliary instruments used in this study are test guide sheets, and interview sheets.

The main instrument in this research is the researcher himself. Researchers find and collect data on students' mathematical understanding in building a material through observation and task-based interviews. As the main instrument, researchers interact directly with research subjects to obtain the desired data.

Test guide, which is a tool in the form of a written test regarding fractional number material. This written test is in the form of a description test with a number of questions. The

test questions used are questions to trigger students' thinking processes taken from questions about students' mathematical understanding of fractional number material.

Interviews are data collection techniques used to obtain verbal statements by way of face to face with people who can provide information to researchers (Mardalis, 2007: 64). Interview guidelines are guidelines used during the interview process in the form of an outline of questions to be asked to research subjects, which aims to find as much information as possible about what, why, and how related to the given problem.

Data collection techniques in this study used three data collection techniques, this was done to obtain data in the form of written procedural steps from problem solving, as well as a direct description of the procedures used in solving problems, and then it will be supported by the results of interviews conducted by researchers. . The techniques used will be explained as follows:

Tests are various questions or exercises and other tools used to measure skills, intelligence knowledge, abilities or talents possessed by individuals or groups (Arikunto, 2010: 193). The researcher gave a test to collect information about students regarding the problem process in the fractional number material so that it could be seen how students worked on the material. The form of the test that is planned to be used in this study is a test with story questions because it can make it easier for researchers to identify problems that are the focus of research.

Several tests are used to determine the consistency of students' abilities, in the sense that students solve problems completely with their own abilities. The tests carried out by researchers are:

a. Researchers conducted tests on students' mathematical understanding abilities to determine students' mathematical abilities. This is done to determine the students' ability to understand the material of fractions, as well as to determine the subject of research. After the subject is obtained, the subject will be divided into three groups, namely students with high, medium and low abilities.

b. Researchers conducted a problem-solving test to see how far the students' mathematical understanding of the fractional number material was. This is done to see students' mathematical understanding, whether in the form of conversion (translation), giving meaning (interpretation) or extrapolation. It is the process of students' mathematical understanding that will later become the data needed in this research.

This interview was used to collect as much qualitative data as possible from subjects related to students' mathematical understanding abilities on fractional number material in the

form of story questions. Interviews in this study used open, unstructured and separate interviews at different times for each research subject. In order to obtain the appropriate data, the information during the interview between the interviewer and the subject was recorded to avoid loss or loss of information. By taking into account the provisions of the selection of research subjects, the number of research subjects is determined. Student people. This method is used to get data about students on the ability to understand mathematically on fractional number material.

RESULT AND DISCUSSION

Fractions material is indeed one of the mathematics materials favored by students, many students like fractions apart from being easy, fractions can also be applied in everyday life, when students work on math problems, of course, students can solve problems correctly along with the results of student answers on the subject

No	Hasil Wawancara
Peneliti	Oke, sekarang coba kamu jelaskan jawabannya
Subjek	$\frac{1}{4}$ x 24 = $\frac{24}{4}$ = 6
Peneliti	kenapa bisa dapat $\frac{24}{4}$? kamu buat
Subjek	karena 1 x 24 = 24 dan penyebutnya tetap 4, jadi $\frac{24}{4}$ = 6
Peneliti	Soal selanjutnya
Subjek	$\frac{6}{8}$ - $\frac{4}{7}$ = $\frac{42}{56}$ - $\frac{32}{56}$ = $\frac{10}{56}$
Peneliti	bagaimana cara mendapatkan penyebut 56?
Subjek	jadi disini gak sama penyebutnya, jadi dikali biar sama penyebutnya.
Peneliti	dikali berapa?
Subjek	8 x 7 = 56 dan 6 x 7 = 42
Peneliti	kenapa $\frac{6}{8}$ sama dikalikan 7 ?
Subjek	karena jika penyebut dikalikan 7 pembilang juga dikali 7
Peneliti	4 x 8 = 32 , 7 x 8 = 56 . jadi penyebutnya sudah sama 56 , 42 – 32 = $\frac{10}{56}$
Subjek	Soal selanjutnya

Peneliti	$\frac{1}{4} + \frac{3}{8}$ dikali silang 1 x 8 = 8, 3 x 4 = 12 penyebutnya 4 x 8 = 32 jadi penyebutnya sudah sama.
Subjek	jika penyebutnya sudah sama gimana?
Peneliti	langsung ditambah 8 + 12 = $\frac{30}{32}$. sama-sama dibagi 4
Subjek	kenapa sama-sama dibagi 4?
Peneliti	karena $\frac{30}{32}$ masih bisa dikecilkan sama-sama dibagi 4 maka $\frac{5}{8}$
Subjek	Soal selanjutnya
Peneliti	$\frac{1}{3}$ x $\frac{4}{5}$ penyebutnya kan belum bisa sama. Jadi dikalikan 3x5 = 15
Subjek	$\frac{5}{15}$, 4 x 3 = $\frac{12}{15}$ penyebutnya sudah sama-sama 15 , 5+12 = $\frac{17}{15}$
Peneliti	$\frac{5}{8}$ - $\frac{5}{12}$ penyebutnya kan ini belum sama. 8 x 12 = 96 penyebutnya sudah sama
Subjek	5 x 12 = 60 , 8 x 5 = 40
Peneliti	selanjutnya ?
Subjek	60 – 40 = $\frac{20}{96}$ jadi bisa dikecilkan sama-sama dibagi 4
Peneliti	kenapa harus dibagi 4?
Subjek	karena 20 bisa dibagi 4 dan 96 juga bisa dibagi 4 jadi, sama dengan $\frac{5}{24}$
Peneliti	sudah yakin dengan jawabannya?
Subjek	sudah yakin.

Peneliti	$\frac{1}{4}$ x 20 = $\frac{1x20}{4} = \frac{20}{4}$
Subjek	Kenapa bisa per-4 ?
Peneliti	5 x 12 = 60 , 8 x 5 = 40
Subjek	Karena 20 ini penyebutnya juga 4 maka $\frac{20}{4}$ jadinya $\frac{20}{4}$ =5
Peneliti	karena 20 dibagi 4 sama dengan 5.
Subjek	karena 20 bisa dibagi 4 dan 96 juga bisa dibagi 4 jadi, sama dengan $\frac{5}{24}$

Peneliti	sudah yakin dengan jawabannya?
Subjek	sudah yakin.
Peneliti	Selanjutnya
Subjek	$\frac{5}{8} - \frac{1}{2} = 8$ x 2= 16 , 5 x 2 = 10, 1 x 8= 8
Peneliti	Jadi?
Subjek	penyebutnya udah sama yaitu 16, maka $\frac{10-8}{16} = \frac{2}{16}$, jadi bisa sama-sama dibagi 2
Peneliti	Jadi dapatnya $\frac{1}{8}$
Peneliti	Soal selanjutnya
Subjek	$\frac{1}{3} + \frac{2}{4}$ = 3 x 4 = 12 maka udah sama penyebutnya.
Peneliti	Lalu?
Subjek	1 x 4 = 4, 2 x 3 = 6, Jadi ditambah $\frac{4+6}{12} = \frac{10}{12}$, bisa sama-sama dibagi 2 sama dengan $\frac{5}{6}$.
Peneliti	Udah yakin sama jawabannya?
Subjek	Iya
Peneliti	Ok
Peneliti	$\frac{2}{3}$ x $\frac{1}{6}$ penyebutnya kan belum bisa sama. Jadi dikalikan 3x6 = 18
Subjek	$\frac{12}{15}$, 3 x 1 = $\frac{3}{15}$ penyebutnya sudah sama-sama 15 , 12+3 = $\frac{15}{15}$=1
Peneliti	$\frac{4}{3}$ - $\frac{1}{6}$ penyebutnya kan ini belum sama. 3 x 6 = 18 penyebutnya sudah sama
Subjek	4 x 6 = 24 , 3 x 1 = 3
Peneliti	selanjutnya ?
Subjek	$24 - 3 = \frac{21}{18}$
Peneliti	kenapa bisa dapat $\frac{21}{18}$
Subjek	karena 24-3 + 21 dan 18 sudah sama penyebutnya jadi hasilnya $\frac{21}{18}$
Peneliti	sudah yakin dengan jawabannya?
Subjek	sudah yakin.

A.   Validasi Hasil Tes Wawancara

Soal	Tes I	Tes II
1	a. Can understand test 1 No. 1 and finish correctly b. Can explain the product of two fractions c. Can state the reason that multiplication is the denominator times the numerator times the numerator.	a. Can understand test 2 No. 1 and finish correctly b. Can explain the product of two fractions c. Can state the reason for choosing the denominator of the multiplication of these fractions
2	a. Can understand test 1 No. 2 and finish properly b. Can mention that the denominator is different c. Can explain to equalize the denominator by multiplying.	a. Can understand test 2 No. 2 and finish properly b. Can mention that the denominator is different c. Can explain to equalize the denominator by multiplying
3	a. Can understand test 1 No. 3 and finish correctly b. Can identify that the denominators are different c. Can solve by crossing times and multiplying the denominator by the denominator d. Can simplify fractions by equally dividing by one number	a. Can understand test 1 No. 3 and finish correctly b. Can mention that the denominator is different c. Can explain to equalize the denominator by multiplying
4	a. The next step is to equate the denominators b. Equating the denominators is done by multiplying the 2 known denominators in the problem c. Can perform fraction addition operations correctly	a. Can understand test 2 No. 4 and finish properly b. Can explain the product of two fractions c. Can state the reason that multiplication is the denominator times the numerator times the numerator.
5	a. Can understand the problem well b. Can identify that the denominators are different c. The step taken is to unite the denominators by multiplying two of the known denominators of the problem d. Determine the result by cross e. Can simplify by dividing the result by a number	a. Can understand the problem well b. Can identify that the denominators are different c. The step taken is to unite the denominators by multiplying two of the known denominators of the problem d. Determine the result by cross e. Can simplify by dividing the result by a number

B.   DISCUSSION

In question number 1, the learning outcomes of the RN subject are: The subject answered correctly. The subject reads with his finger as a pointer to what is known from the problem, then the subject can understand the problem well and complete the subject correctly.

In question number 2, the learning outcomes of the RN subject are: The subject reads the question in a low voice by correctly answering the question in his own language. Subjects can answer questions well and can understand and solve correctly. The subject can also state that the denominators are different and the subject can explain the problem by equating the denominators by multiplying.

In question number 3, the learning outcomes of the RN subject are: The subject seems to think while looking at the question then the subject begins to answer the question carefully. The subject is able to solve the problem correctly in the right way. The subject can understand the problem and can identify that the denominator is different then the subject solves the problem by means of a cross and the denominator is multiplied by the denominator then the subject can simplify the form of fractions by equally dividing by one number.

In question number 4, the learning outcomes of the RN subject are: the subject can understand the questions well. The next step is to equate the denominators. Equating the denominators is done by multiplying the known denominators in the problem and then being able to perform fractional addition operations correctly. So the subject can solve the problem correctly and correctly. In expressing questions, the subject answers briefly and smoothly.

In question number 5, the learning outcomes of the RN subject are: Can understand the question well, the subject can identify that the denominator is different. The step taken is to unite the denominators by multiplying two of the known denominators of the problem. Subjects can also determine the result by cross product and simplify it by dividing the result by a number. Then the subject expresses confidently that the answer is correct.

Difficulties and failures experienced by students are not only sourced from the lack of students' abilities, but there are other factors that also determine the success of students in learning mathematics. These factors can come from outside the students themselves, including the family environment, relationships, learning techniques and learning strategies applied by teachers in teaching and learning activities. These factors greatly affect student learning achievement.

Hamdani, argues that learning achievement is evidence of the success that has been achieved by someone. Thus, learning achievement is the maximum result achieved by a person after carrying out learning efforts. Student achievement can be expressed in the form of report

cards in each semester. Learning achievement can be known after evaluation. The results of the evaluation show the high or low learning achievement of students which will be submitted to parents in each semester. For mathematics lessons, students are expected to. (Hamdani,2011:137).

According to Erman Suherman mathematics is the queen or source of knowledge from other sciences, in other words mathematics grows and develops for itself as a science, and can serve the needs of science in its development and operations (Suherman, 2001:29). Many sciences whose discoveries and developments come from mathematics. For example, in modern physics and chemistry, the formulas used in these sciences are discovered and developed through the concept of calculus, especially about differential equations. From the example given by Erman Suherman, it can be concluded that mathematics is important to learn at all levels of education, because mathematics can help students to learn other sciences

CONCLUSIONS AND SUGGESTIONS

A. Conclusions

From the description of the research results that have been described in the previous chapter, it can be concluded that:

1. Profile of creative thinking on the problem of multiplying two fractions, the subject chooses a rare completion by multiplying the denominator times the denominator and the numerator times the numerator.

2. Profile of creative thinking in solving problems with different denominators the subject chooses to equalize the denominator by multiplying the two denominators on the problem.

3. The profile of creative thinking on the subject matter of fractions states that the subject identifies that the denominator is different then the subject solves the problem by means of a cross and the denominator is multiplied by the denominator then the subject can simplify the form of the fraction by equally dividing by one number

4. The profile of creative thinking on the subject matter of fractional numbers indicates that the denominators are different. The step taken is to unite the denominators by multiplying two of the known denominators of the problem. Subjects can also determine the result by cross product and simplify by dividing the result by a number.

B. Suggestion

1. This fraction material is very useful for students, and these fractions can be applied by students in everyday life. Therefore, it is hoped that students will be able to understand more deeply the material about fractions.

2. For prospective researchers to be able to conduct more optimal research by minimizing the weaknesses that exist in this study, so that this research becomes a more quality research in the future.

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