Analysis of students' conceptual comprehension skills in fractional material in class v SD Negeri 06 Selakau

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Abstrak

Penelitian ini bertujuan untuk mendeskripsikan kemampuan pemahaman konseptual siswa pada materi pecahan kelas V di SDN 06 Selakau. Penelitian yang digunakan adalah penelitian kualitaif yang bersifat deskriptif. Subjek penelitian ini adalah siswa kelas V SD Negeri 06 Selakau. Objek dalam penelitian ini adalah kemampuan pemahaman konseptual siswa dalam mata pelajaran matematika di kelas V SDN 06 Selakau. Hasil penelitian didapatkan bahwa kemampuan pemahaman konseptual siswa untuk masing-masing kategori yaitu terdapat 16,6% siswa yang memiliki kemampuan pemahaman konseptual tinggi dan 33,3% siswa yang memiliki kemampuan pemahaman konseptual rendah sedangkan 50% siswa tersebut memiliki kemampuan pemahaman konseptual sedang. Dari hasil persentase per indikator yang tertinggi adalah 55,2% ketercapaian pada indikator menyajikan konsep dalam berbagai bentuk representatif matematis, sementara yang terendah ada pada indikator menggunakan, memanfaatkan, dan memilih prosedur atau operasi tertentu dengan 51,04% ketercapaian. Dengan demikian, sebagian besar faktor yang mempengaruhi siswa terhadap kemampuan pemahaman konseptual siswa yaitu siswa tidak mampu memahami soal dan konsep yang dimaksud oleh soal yang diberikan, serta masih mengandalkan jawaban dari teman dan bantuan orang tua.

Kata Kunci: Kemampuan pemahaman konseptual, Pecahan

Abstract

This study aims to describe students' conceptual understanding abilities in class V fraction material at SDN 06 Selakau. The research used is descriptive qualitative research. The subjects of this study were fifth grade students at SD Negeri 06 Selakau. The object of this research is the ability of students' conceptual understanding in mathematics in class V SDN 06 Selakau. The results showed that students' conceptual understanding abilities for each category were 16.6% of students who had high conceptual understanding abilities and 33.3% of students who had low conceptual understanding abilities while 50% of these students had moderate conceptual understanding abilities. From the results of the highest percentage per indicator is 55.2% achievement in the indicator of presenting the concept in various forms of mathematical representation, while the lowest is in the indicator of using, utilizing, and selecting certain procedures or operations with 51.04% achievement. Thus, most of the factors that influence students' conceptual understanding abilities are that students are unable to understand the questions and concepts referred to by the questions given, and still rely on answers from friends and parental assistance.

***Keyword**: Conceptual understanding ability, Fractions*

INTRODUCTION

According to (Nasution, 2017), mathematics is a branch of science that studies how to count, measure something with numbers, symbols, or numbers. According to (Alfia, N. N., Rakhmawati, 2018), mathematics as one of the basic sciences, both in terms of its foundation and reasoning, has an important role in efforts to master science and technology. According to (Ariyanto, 2011), explaining the importance of mathematics for elementary school students is useful for the benefit of life in their environment. The usefulness or benefits of mathematics for elementary school students is a clear one and does not need to be questioned anymore. Especially in the current era of science and technology development. However, there are still many elementary school students who find this subject difficult compared to other subjects. Because students feel confused by the formulas that are quite numerous and confusing. The material that students consider quite difficult to understand is fractional material. Fractional material is one of the materials taught in elementary school, starting from the lower grades to the upper grades, students have been introduced to fractional materials. Fractions according to (Heruman, 2010), are part of something whole. This part is usually marked with different shades or

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colors and this part is called the numerator. The whole part is referred to as a unit or denominator. Fractional material is considered difficult because students do not understand the correct concept of how to solve operational problems in the material (Nuraeni et al., 2023; Baharruddin, 2020; Ilmiyah, 2013). One of the mathematical operations that students consider difficult on fractional material is fraction multiplication operations. Because the teacher only explains how to solve the multiplication of fractions by multiplying the numerator by the numerator and the denominator multiplied by the denominator. This makes students not know the concept of completing the addition and subtraction operations of fractions correctly. This makes students reluctant to learn mathematics subjects in problem solving so that in learning activities they become passive and make students' understanding of the material low.

The low understanding of students' concepts of fractional material is also influenced by teachers who still use a direct learning model that has not been able to stimulate thoughts, feelings, attention, motivation, and is less interesting menarik (Batubara, 2019; Sulistyo et al., 2021). This makes students bored, bored, and even disliked mathematics lessons, especially in fractional materials. So that it cannot develop students' ability to think critically, realistically, and creatively. Teachers during learning activities are still using direct learning so that they cannot become facilitators and motivators so that students can develop the ability and skills to think critically, realistically, and creatively. This happened at SD Negeri 06 Selakau.

According to Indriyanti (2017: 8), understanding this concept is important because by understanding the concept, students can develop their abilities in each material. The problems that occur at SDN 06 Selakau include that students do not know the initial concepts to answer the questions given, then the mathematics learning that runs in the classroom is still centered on the teacher which causes students' understanding of mathematical concepts in fractional materials is still lacking because their initial knowledge is still lacking. Then it can be seen that during the learning process, students do not pay much attention to the teacher who is explaining the material using the direct learning model because from the beginning the teacher does not provide an understanding of the concept to the students. There are so many learning models that can be used to achieve students' understanding of concepts.

The research that is relevant to this study is the research conducted by (Sumantri, M.S & Unaenah, 2018) "Analysis of Mathematical Concept Understanding of Grade V Elementary School Students on Fractional Materials" The results of this study show that students' understanding of concepts is still low. There are still many students who have not reached the Minimum Completeness Criteria (KKM). There are 10 out of 24 students who are able to achieve KKM. This is due to the ability of the requirements that students do not have. The results show that students have not mastered the concept comprehension indicators, so it can be concluded that grade V students in the elementary school still have a lack of concept understanding of fractional material.

Based on the background description above, the author is interested in conducting research with the title "Analysis of Shiva's Conceptual Comprehension Ability in Class V Fractional Materials SDN 06 Selakau".

METHOD

The type of research used in this study is qualitative research. Qualitative research is research that involves analyzing data or information that is originally descriptive and not directly quantifiable (Indrawati, 2018:2). As for the research, descriptive (description research) is used. Descriptive research is generally carried out with the main objective, namely to systematically describe the facts and characteristics of the object or subject being studied appropriately (Sukardi, 2016). The analysis in this study is only carried out at the description level, namely analyzing and presenting facts systematically. This research method aims to describe the conceptual comprehension ability of students based on indicators of conceptual comprehension ability. The indicator of conceptual understanding ability used is providing examples and non-examples of a concept, presenting the concept in various forms of mathematical representation, and using, utilizing, and selecting specific procedures or operations.

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RESULTS AND DISCUSSION

From the research that has been conducted, the necessary data is obtained to describe students' conceptual comprehension ability on fractional material. The following will be explained the description and analysis of the data as well as the discussion of the results of the research conducted.

1. Research Results

Regarding the results and discussion of students' conceptual abilities and factors that affect students' conceptual comprehension abilities. This research is a qualitative descriptive research. Data collection was carried out directly to the school to 24 students at SD Negeri 06 Selakau. However, in taking test data, namely by depositing questions to class teachers, and conducting student interviews directly in class. The research was carried out on August 16, 2021. After a test of conceptual comprehension ability is carried out to students, then the test results are scored to then be further analyzed about the students' conceptual comprehension ability. After the data is analyzed, the level of conceptual understanding ability of students will be obtained as follows.

The level of students' thinking ability based on the test results is presented in the table below.

Table 1. Category Conceptual Comprehension Ability Level

Value Criteria	Category	Number of Students
$0 \leq 33$	Low	8
$34 \leq 66$	Keep	12
$67 \leq 100$	Tall	4

(Nazir 2005)

The table shows that 24 students belong to the group with low conceptual comprehension ability with a level of 33.3%, while the group with medium conceptual comprehension ability is 50%, and the group with high conceptual comprehension with a level of 16.6%. The presentation of the percentage of students' skill levels is presented in the following diagram.

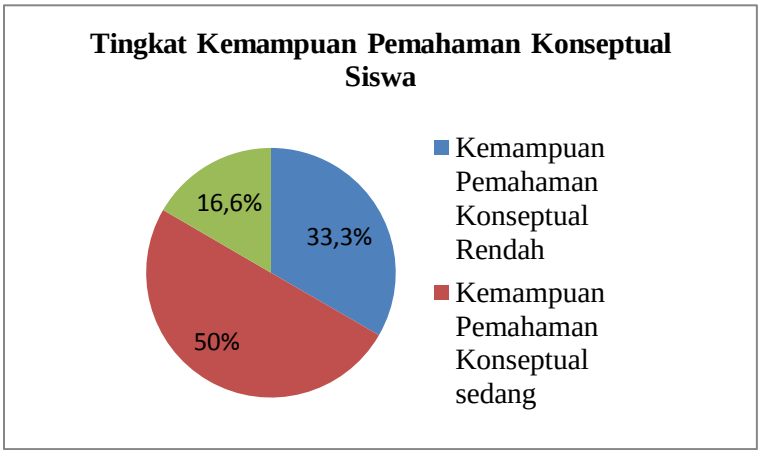

Figure 1
Conceptual Comprehension Ability Level Chart

Furthermore, when viewed from each indicator of students' conceptual comprehension ability, indicators (1) provide examples and non-examples of a concept, indicator (2) present concepts in various forms of mathematical representation, indicator (3) use, utilize, and choose certain procedures or operations. Students' conceptual comprehension abilities are presented in the following diagram.

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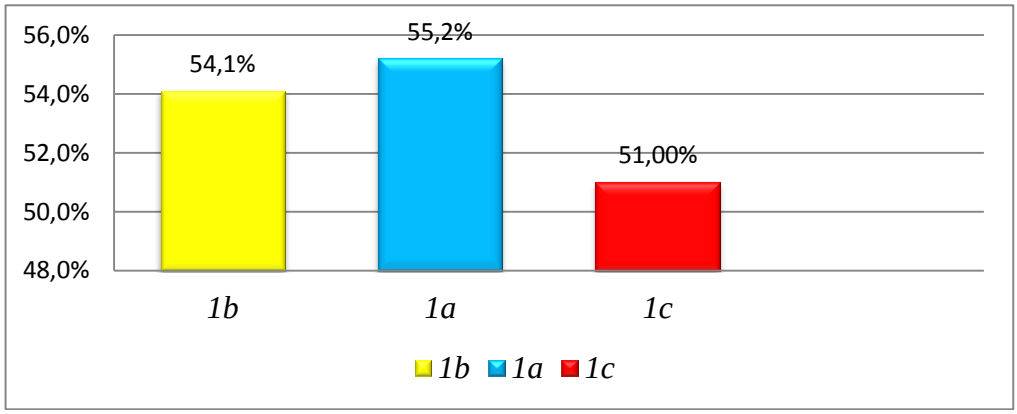

Figure 2

Chart of Conceptual Comprehension Ability Percentage per Indicator

Information:

1b : Providing examples and non-examples of a concept

1a : Presenting concepts in various forms of mathematical representation

1c : Use, utilize, and select a specific procedure or operation

2. Discussion

The data in this study can be obtained from giving a conceptual comprehension ability test and conducting interviews with students who are included in the conceptual comprehension ability category. The data obtained aims to determine students' conceptual comprehension ability and factors that affect students' conceptual comprehension ability in fractional material. The discussion in each problem formulation is as follows:

1) Students' conceptual comprehension ability

In this study, there are three categories of conceptual comprehension ability, namely high, medium and low. To find the category of students' conceptual comprehension ability, 3 *essay questions* were used consisting of 3 indicators of students' conceptual comprehension ability. After students work on the questions, students are then grouped by category according to the percentage of grades obtained. From these three categories, it was found that students' conceptual comprehension ability was still low. Based on the percentage of conceptual comprehension ability tests, it shows that 16.6% of students are in the category of high concept comprehension ability, 50% of students with medium concept comprehension ability and 33.3% of students are in low conceptual comprehension ability.

2) Conceptual Comprehension Ability per Indicator

Based on figure 2, it shows the results of the analysis of the conceptual understanding ability of each indicator. The indicators of conceptual comprehension ability consist of (1) providing examples and non-examples of a concept; (2) presenting concepts in various forms of mathematical representation; (3) using, utilizing, and selecting a particular procedure or operation.

a) Indicators provide examples and non-examples of a concept

Giving examples and non-examples is an indicator that measures students' ability to distinguish which are examples and which are not examples of the concept of fractions (Wardani. Sri., 2016). Therefore, it can be known that indicators give examples and non-examples are shown by the ability of students to distinguish which are included in the form of fractions and which are not included in the form of fractions correctly. In this study, the indicators of giving examples and non-examples occupy the lowest position, namely with a percentage of 54.1%, seen in question number 1b. Most students answered the questions on this indicator correctly and correctly, although there were some who still could not answer correctly. It was discovered by (Sumantri, M.S &

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Unaenah, 2018) Students who are able to answer questions on indicators that give examples and non-examples of fractions are 30%.

b) Indicators present concepts in various forms of mathematical representation
Presenting concepts in various forms of mathematical representation, namely indicators that measure students' ability to present the concept of fractions in the form of sequential circle drawings that are mathematical. (Wardani. Sri., 2016). Therefore, it can be seen that indicators present concepts in various mathematical representations are shown by the ability of students to make fractional forms that are used in the form of pie charts appropriately. In this study, the indicator presents concepts in various forms of mathematical representation with 55.2% seen from the students' answers in question number 1a. Some students answered indicator questions, presented concepts in various forms of mathematical representation appropriately and were able to make pie diagrams containing fractions correctly. This is reinforced by (Sumantri, M.S & Unaenah, 2018) which states that only 30% of students can answer the problem of conceptual comprehension ability indicators to present concepts in various forms of mathematical representation.

c) Indicators of using, utilizing, and selecting specific procedures or operations
Using, utilizing, and choosing a particular procedure or operation is the ability of students to solve problems by choosing and utilizing procedures that have been implemented (Wardani. Sri., 2016). Therefore, it can be seen that indicators of using, utilizing and choosing certain procedures or operations are shown by the ability of students to add mixed fractions and be able to calculate shopping prices accurately. In this study, the indicator of using, utilizing, and choosing certain procedures or operations occupies a low position, with a percentage of 51%. This is reinforced by research conducted by (Mukrimatin, N.A,. Murtono & Savitri, 2018) which shows that only 29.55% of students can answer questions that have indicators of conceptual comprehension ability to use, utilize, and choose certain procedures or operations.

Based on the description of the three indicators of conceptual comprehension ability, it can be concluded that the achievement of the indicator of students' conceptual comprehension ability with the highest percentage of the results of the conceptual comprehension ability test is to present concepts in various forms of mathematical representation with a percentage of 55.2%. Meanwhile, the indicator of conceptual comprehension ability with the lowest percentage is in the indicator of using, utilizing, and choosing certain procedures or operations with a percentage of 51%.

1) Factors that affect students' conceptual comprehension ability

Based on the results of the percentage of students' constitutional comprehension ability test, 6 students were taken as subjects to conduct interviews to find out the factors of conceptual comprehension ability. Of the 6 students, 2 students were taken with high category conceptual comprehension ability and 2 students with medium category conceptual comprehension ability and 2 students with low conceptual comprehension ability. From the results of the interviews of 6 students, there are factors that affect students' conceptual comprehension ability, namely external and internal factors. The internal factors in question are students who are unable to understand the material delivered by the teacher to solve the given questions, students lack confidence, students' desire to do problems, and lack of thoroughness in doing problems. While the external factor is that students still rely on their friends and parents in doing problems.

In the high category of conceptual comprehension ability in fractional material on the indicator of giving examples and non-examples of a concept, it is known that students who answer conceptual comprehension questions in a short way but produce correct answers and there are also answers that are not in accordance with the concept. Students are said to give examples and non-examples of a concept if they can answer the problem according to the command and can calculate fractions with certain operations. In the indicator of presenting concepts in various forms of mathematical representation, there are factors that affect students' conceptual understanding ability in solving fractional problems, namely students are able to answer fluently and do not ask for help from acquaintances or friends in answering the given

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problems. Based on the results of the interview, data was obtained that students who answered answered fluently, high confidence is to understand the concept of the material that has been given by the teacher.

For low conceptual comprehension skills in fractional materials found in indicators of using, utilizing, and choosing certain procedures or operations, it is known that students answer questions about conceptual comprehension skills in a short way but produce correct answers and there are also answers that are not in accordance with the concept. In the indicator of conceptual comprehension ability, there are factors that affect students' conceptual comprehension ability in fractional material, namely students are unable to use certain operations and cannot take advantage of certain procedures to solve the given problems. To solve problems, students still rely on books, parental guidance, and their older siblings so that students still have difficulty expressing their own ability to understand concepts and feel a lack of confidence (Putri, 2016; Riti et al., 2022; Sianipar, 2021). This is in line with the opinion of Sari (2018) stating that students still rely on answers from friends or cheat on the results of their friends' work, so that there is no confidence in answering questions in their own way.

Based on this exposure, it was concluded that factors that affect students' conceptual comprehension ability in solving fractional problems include internal factors, namely students do not understand the material given by the teacher, and do not understand the concepts of learning and students cannot take advantage of certain operations or procedures to answer the given questions. Meanwhile, external factors students do not check again in doing the questions and students still rely on answers from friends and parental help.

CONCLUSION

Based on the data of the results and discussion, it can be concluded that the conceptual understanding ability of class V students on the Fraction material in this case is as follows:

1. The students' conceptual comprehension ability for each category was 16.6% of students who had high conceptual comprehension ability, while 50% of students had moderate conceptual comprehension ability and 54.1% of students who had low conceptual comprehension ability. Of the percentage results per indicator, the highest is 55.2% in indicators presenting concepts in various forms of mathematical representation, while the lowest is in indicators of using, utilizing, and selecting certain procedures or operations with 51% achievement.
2. Most of the factors that affect students' conceptual comprehension ability are students are unable to understand the problems and concepts referred to by the questions given, and still rely on answers from friends and parental help.

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