DIAGNOSIS OF DIFFICULTIES FACED BY STUDENTS OF MATHEMATICS EDUCATION PROGRAM AT IAIN LHOKSEUMAWE IN UNDERSTANDING INDEFINITE INTEGRAL

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Info article

Abstract

Understanding the concept and solving problems in indefinite integral material is the problem most often faced by students during the learning process so that an analysis must be made of the types of learning difficulties faced by students in indeterminate integral material. The purpose of this study is to identify what problems students face when solving indeterminate integral problems. The results are expected to provide an overview of the types of learning challenges faced by students while studying. This research uses a case study approach. The research subjects were 20 students from the second semester of unit 1 of IAIN Lhokseumawe's Tadris Mathematics study programme. The results showed that there are three learning difficulties faced by students, namely (1) Type I (Rigour) described students are less careful in solving indeterminate integrals for problem number 1 is as many as 4 students (20%) and problem number 2 is as many as 3 students (15%), (2) Type II (Concept Understanding) described Students do not understand the concept of indeterminate integral rules for question number 1 as many as 5 students (25%) and question number 2 is as many as 13 students (65%), and (3) Type III (Calculation Process) described students are wrong in performing indeterminate integral calculation operations for question number 1 as many as 9 students (45%) and question number 2 is as many as 2 students (10%), out of 20 students only two students do not experience difficulties.

INTRODUCTION

Learning is very important for life because it allows us to understand things that are useful so that we do not experience difficulties, learning is also the main activity of academic activities (Syahdan lubis, 2021). However, according to Afi Parnawi (2019) learning is the process of creating or changing behavior through practice or practice. In the learning process, the process is more important than the end result (Faizah, 2017). The process of achieving optimal cognitive, affective, and psychomotor development is the goal of learning. So it can be concluded that the purpose of learning is to ensure that learners achieve the best development in these three aspects (Husein, 2020).

According to Slameto (2003) learning is an effort made by a person to change his overall behaviour as a result of his own experience in interaction with the environment. Similarly, Markamah (2023) learning is actually a collection of activities oractivities carried out consciously with the aim of creating changes in oneself. These changes can include increased knowledge or skills derived from one's experiences and senses. In thiscase, the intended changes must be normative, which means that changes to the norms orvalues that are relevant and accepted by society must be understood and obeyed. Therefore,learners' learning can be considered incomplete if they do not show positive behavioralchanges after learning, have not mastered new skills, or have not increased their knowledgeand insight. People cannot survive and adapt to technological advances and the timeswithout learning. Nonetheless, it cannot be denied that there are always challenges andchallenges in human life, as well as challenges faced by learners, such as challenges inlearning. This is due to the fact that many learners are not interested or motivated to learnmath, so they make mistakes when solving math problems (Fajar Surya , Sofia Edriati, 2023).

The definition of learning difficulties was first put forward by The United States Office of Education (USOE) in 1977 known as Public Law (PL), which is almost identical to the definition put forward by The National Advisory Committee on Handicapped Children in 1967. According to Hallahan, Kauffman and Lloyd, specific learning difficulties are impairments in one or more basic psychological processes that include understanding and using spoken or written language. These impairments can appear in the form of problems with listening, thinking, speaking, reading, writing, keeping, or counting (Yeni, 2015). It is difficult for students to solve problems is a sign of learning difficulties. To be able to solve problems, students must have relevant knowledge and be able to combine their skills to solve them. In addition, expertise in linguistic, algorithmic, conceptual, schematic, and strategy is also required (Lilianti, Adam, Asrul, 2020). According to Raharjo (2020) a person's intellectual ability does not determine learning difficulties. There are people who have high intelligence but low academicachievement, but other people have low intelligence but high academic achievement. So, aperson's level of intelligence is not the determinant of success, but there are other factorsthat can affect it. Learning difficulties are also influenced by gender and subject or material (Nurhidayah, 2020). According to Yunus (2021) learning difficulties is a translationof the English term Learning Disability, which means inability to learn, inability to completedevelopmental tasks, and inability to master material. It is expected that educators play animportant role in dealing with learners' learning difficulties due to the fact that learners areoften unable to overcome their learning problems (Munirah, 2018). Lecturers should haveknowledge on how to detect students'

learning problems and provide them with appropriate solutions to overcome their learning problems.

Research on calculus learning difficulties (Hesty Marwani Siregar, Titi Solfitri, Syofni, 2023) found that students' overall learning achievement was low in area and volume integral materials, with a value of 38.44%. They were also in the moderate category on integral area 47.04 percent and on integral volume 34.31%. Nurul Hidayah's research results (2021) showed that students' learning difficulties in calculus II integral material courses indeterminate integral and definite integral. There are two learning difficulties: difficulty understanding the concept, namely difficulty understanding and looking at the meaning of the problem and not understanding the application of the formula; difficulty solving problems, namely difficulty in writing problems with less accuracy, difficulty understanding the steps to solve problems, and difficulty in understanding.

According to Bambang (2019) The results showed that students with medium and high positive mathematical dispositions faced the same five types of challenges: (1) difficulty drawing graphs, (2) difficulty determining the area to be searched, (3) difficulty determining the integral boundary, (4) difficulty using the integral formula, and (5) difficulty understanding the integral. Students with low positive mathematical disposition also faced the five challenges. In two types of difficulties, there is a trend or tendency for the percentage to increase, and a decrease in percentage in one type of difficulty. However, in the other three types of difficulties, the percentage fluctuated. An additional study was conducted by (Monariska, 2019) and the results showed that students' mathematical abilities determine their difficulties in solving integral problems. These abilities include students not understanding the basic theorems of calculus, especially the concept of derivatives. Students experience a number of problems, including errors in understanding the problem, errors in process skills, and errors in managing time and working on the problem carefully, which causes the problem not to be solved properly. There are two main causes why students face difficulties in learning integral material. The first is the lack of experience in working on integral problems, and the second is the students' lack of understanding of the concept of the basic theorem of calculus. It is expected that the curriculum, learning approach, and teaching material development will be improved after the analysis and research of this problem is completed.

Initial observations show that students have difficulty with integral material, which is part of the integral calculus course, which is a compulsory course in the tadris mathematics study program at IAIN Lhokseumawe. Understanding the concepts and solving problems in the course are the most frequent problems faced by students during the learning process. Therefore, an analysis must be conducted regarding the types of learning difficulties faced by students in the integral calculus course, as well as the efforts made by students to overcome these difficulties. In the field of education, the term "diagnosis" is relatively new and refers to efforts to find and investigate the causes, types, and characteristics of students' learning difficulties (Mulyadi, 2010). This shows that diagnosis includes all actions or activities carried out by educators to find learning problems in their students.

It is highly recommended for educators to identify (carefully recognize symptoms) phenomena that indicate possible learning difficulties in their learners before making alternatives to solve the problem of learning difficulties. Such a process is known as diagnosis, and its purpose is to identify the "type of illness", or learning difficulty that the

student is experiencing (Muhibbin Syah, 2013). The diagnosis process is carried out to identify possible learning problems in learners before offering alternative solutions to the problem. Not always learning activities carried out by everyone can take place naturally. Sometimes everything is smooth, sometimes not. Sometimes I can quickly understand what I am learning, and sometimes it feels very difficult (Maemonah, 2022). Learning difficulties are conditions in the learning process that are characterized by certain obstacles in achieving learning goals. These obstacles can be psychological, sociological, or physiological problems during the learning process (Darimi, 2016). If a student shows certain learning failures in achieving their learning goals, a student can be suspected of having learning difficulties.

Based on these findings, the researcher is interested in conducting further research on "diagnosis of learning difficulties of mathematics tadris study programme students of IAIN Lhokseumawe on indefinite integral material". This study aims to identify what problems students face when solving indefinite integral problems in integral calculus. The results are expected to provide an overview of the types of learning challenges that students face while studying.

RESEARCH METHODS

The type of research used is *case study* research with a qualitative approach. This research was conducted on February 20, 2024 at the Tadis Mathematics study program, Faculty of Tarbiyah and Teaching Sciences, Lhokseumawe State Islamic Institute.

The subjects of this study were second semester students of unit one who had learning difficulties in the Integral Calculus course of indeterminate integral material. In this study, in determining the subject of research carried out with certain considerations, where the taking of this research subject is by selecting students who are included in the criteria who have difficulty learning indeterminate integrals, which can be seen from the students' answers on the worksheet of the problems that have been given, and from the results of student interviews related to difficulties such as lack of accuracy, not understanding the concept and difficulty in performing calculation operations. This research procedure is the preparation, implementation, and closing stages. In its implementation, researchers used mathematical problems of indeterminate integral mathematics to see students' difficulties in solving indeterminate integral problems. The steps of research implementation carried out by researchers are 1) Preparation: determining the time of the research, determining the research subject, preparing test instruments and interview sheets. 2) Implementation: distributing diagnosis test questions, collecting test results, interviewing students regarding the answer sheets that have been done 3) closing: researchers analyse the data from the test results and interviews of students by presenting the results of student answers and interviews then the results are analysed and associated with the findings obtained by other researchers. Furthermore, make a report. The data source that becomes the reference for researchers is students in solving diagnosis test questions. Instruments or research tools interview guidelines and diagnosis tests. In this study, data validity was carried out by means of data triangulation. Data triangulation is comparing and matching data from test results and interviews. Data collection techniques In the process of collecting data, researchers conducted research in accordance with planning through the following stages: (1) Diagnosis Test Questions and (2) Interviews. The data analysis techniques used are: (1) Data reduction,

(2) data presentation, (3) *Conclusion Drawing/Verification.*

RESEARCH RESULTS AND DISCUSSION
RESEARCH RESULTS

There were 20 students who took the test out of 25 students in the second semester of unit one, where there were 5 students who did not attend the diagnosis test. The diagnosis test is given to see the location of student errors which are then analyzed to determine the difficulties faced by students. The following is a table of diagnosis test results:

Table 1
Diagnosis Test Results

No.	Respondents	Diagnosis Test Score	No.	Respondents	Diagnosis Test Score
1	S1	62.5	11	S11	50
2	S2	75	12	S12	25
3	S3	25	13	S13	87.5
4	S4	50	14	S14	37.5
5	S5	62.5	15	S15	37.5
6	S6	25	16	S16	50
7	S7	25	17	S17	37.5
8	S8	75	18	S18	37.5
9	S9	62.5	19	S19	25
10	S10	25	20	S20	37.5

Based on table 1, it can be seen that the diagnosis test scores are still below average, based on the criteria for assessing learning outcomes according to to Suharsimin Arikunto (2011) The scale is 80% - 100% very good category, 70% - 79% good category, 60% - 69% medium category, 50% - 59% less category and 0% - 49% very less category.From table 1, it is obtained that 1 student is in the very good category, 2 students in the good category, 3 students in the medium category, 3 students in the less category and 11 students in thevery poor category, it can be seen in Figure 1 below:
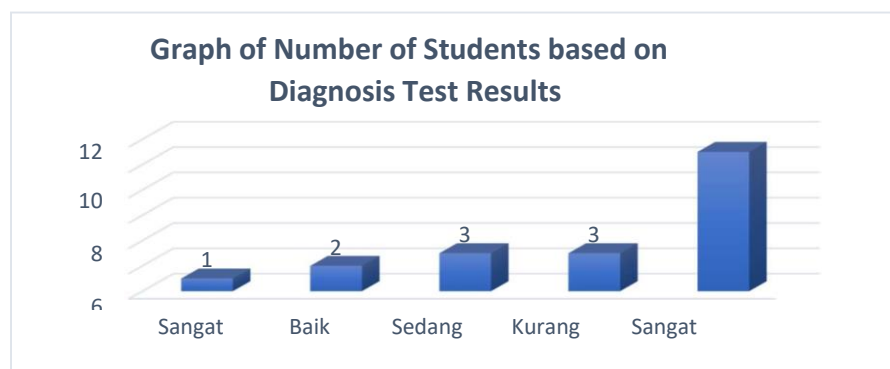
Figure 1
Graph of Number of Students based on Learning Outcome Assessment Criteria

From Figure 1, it is obtained that the average student is in the very poor category, possibly due todifficulties in understanding the concept of indefinite integrals, difficulties in accuracy in solvingintegrals and of course and difficulties in the calculation process of indefinite integrals. The following are the results of the category of errors made by students in solving indeterminate integral problems, can be seen in table 2 below:

Table 2
Categories of errors made by students

No	Respondents	Error Location		No	Respondents	Error Location	
		1	2			1	2
1	S1	None	Concept Error	11	S11	Less Thorough	Less Thorough
2	S2	Concept Error	Counting Error	12	S12	Counting Error	Concept Error
3	S3	Counting Error	Concept Error	13	S13	Concept Error	None
4	S4	Concept Error	Concept Error	14	S14	Counting Error	Less Thorough
5	S5	Counting Error	None	15	S15	Less Thorough	Concept Error
6	S6	Counting Error	Concept Error	16	S16	Concept Error	Concept Error
7	S7	Counting Error	Concept Error	17	S17	Counting Error	Less Thorough
8	S8	Concept Error	Counting Error	18	S18	Less Thorough	Concept Error
9	S9	None	Concept Error	19	S19	Counting Error	Concept Error
10	S10	Counting Error	Concept Error	20	S20	Less Thorough	Concept Error

From the results of table 2, it is obtained that there are three difficulties experienced by students, namely counting errors, conceptual errors and lack of accuracy. The results of the description of student difficulties in problem number 1 can be seen in table 3 below:

Table 3
Description of Student Difficulties in Problem Number 1

Description of Student Difficulties	Difficulty Type	Respondents	Total	Percentage (%)
Students are less careful in solvingindefinite integrals	I	S11,S15, S18, S20	4	20
Students do not understand the concept of indefinite integral rules	II	S2, S4, S8, S13, S16	5	25
Students are wrong in performing indefinite integral calculation operations	III	S3, S5, S6, S7, S10, S12, S14, S17, S19	9	45

Difficulties are divided into 3 types, namely difficulty in accuracy, difficulty in understanding conceptsand difficulty in calculation operations. From table 2, it is obtained that including type I difficulties asmany as 4 (20%) students, type II difficulties as many as 5 (25%) students, and type III difficulties asmany as 9 (45%) students, while only 2 (10%) students did not experience difficulties. From these results, it can be said that the average student is in the category of difficulty level III, which is wrongin calculating the indefinite integral. Next will be presented about the results of the description of difficulties in question no. 2 is:

Table 4
Description of Students' Difficulties in Problem Number 2

Description of Student Difficulties	Difficulty Type	Respondents	Total	Percentage (%)
Students are less careful in solvingindefinite integrals	I	S11, S14, S17	3	15
Students do not understand the concept of indefinite integral rules	II	S1, S3, S4, S6, S7, S9, S10, S12, S15, S16, S18, S19, S20	13	65
Students are wrong in performing indefinite integral calculation operations	III	S2, S8	2	10

From table 4, it is obtained that including type I difficulties as many as 3 (15%) students, type II difficulties as many as 13 (65%) students, and type III difficulties as many as 2 (10%) students, whilethose who do not experience difficulties are only 2 (10%) students. From the results of questions number 1 and 2, it can be said that the average student is in the category of difficulty level II, namely not understanding the concept of indefinite integral rules, so that to overcome this difficulty there needs to be a learning approach, learning media so that students understand the concept of indefinite integral rules. This is reinforced by the findings of other researchers, they found that students cannot analyse or evaluate algorithms when solving integral problems and cannot find or justify concepts (Ario, 2018;

Zetriuslita, 2016). Some of the mistakes made when solving integral calculus problems are as follows: (a) when solving anti-derivative problems, i.e., not adding the constant C to the integrating steps and the integrating result; (b) when solving definite integral problems using definitions, i.e., errors in solving problems using the basic theorem of calculus combined with the use of generalised powers; and (c) in solving problems related to the basic theorem of calculus, errors in solving substitution integral problems, and errors in modelling u, i.e., errors in solving problems using the basic theorem of calculus combined with the use of generalised powers (Dewi Rahimah, 2012). Students may make these errors because they do not understand important concepts in calculus. However, understanding these concepts is essential to identify the solution of mathematical problems and the initial process to improve their abilities (Nila Kesumawati, 2008).

To reduce the errors that students often make when working on problems, the right steps must be chosen to help students overcome learning difficulties must be adjusted to the conditions and abilities of students, teacher assistance to students, and school facilities that support an ideal learning environment. The diagnosis test uses indefinite integral material consisting of two items. The types of errors that students make when solving the diagnosis questions determine their level of difficulty. The results of the diagnosis test conducted by second semester students of unit 1 of the Tadris Mathematics Study Programme at IAIN Lhokseumawe are presented below:

a. Student's lack of accuracy error

Lack of accuracy of students when working on problems often occurs. Such as misinterpreting the meaning of the problem, or not realizing their mistakes because theyare in a hurry. Errors due to students' lack of accuracy are as follows:

Figure 2
Lack of Accuracy of Students in Solving Problems No. 1 and 2

Based on the answers of the subjects S11 and S14 who were wrong in answering the questions number 1 and 2 given. This can be seen in the answer to question number 1 where S11 is correct in using the concept of indefinite integral but when integrating S11 is wrong where when there is still an integral S11 has integrated for $\frac{1}{x^{1/2}}$, For quation number 2, subject S14 made a mistake when entering the results of the calculation into the integrator, which is $\int \frac{3y}{\sqrt{4}} \frac{dy}{4y}$ should be $\int \frac{3y}{\sqrt{u}} \frac{dy}{4y}$. Based on the results of the interviews S11 and S14 stated that they were less careful in solving the problem.

b. Errors Lack of Mastery of Student Concepts

Understanding the concept of students greatly determines how students solve problems.

Students' difficulties in learning indeterminate integrals can be seen from the mistakes made by students on the test results and interviews on their mastery of the concept are as follows.

Figure 3
Lack of Mastery of Students' Concepts in Solving Problems No. 1 and 2

Based on the results of the answer to question number 1 for subject S8, it can be seen that subject S8 made a misconception, namely the absence of dx in the integral and incorrect addition of ranks, namely in the section $\int (x^4 - 2x^2 + 1)x^{-\frac{1}{2}} = \int x^{-\frac{4}{2}} - 2x^{\frac{3}{2}} + x^{-\frac{1}{2}}$, the real answer is $\int (x^4 - 2x^2 + 1)x^{-\frac{1}{2}}\, dx = \int x^{\frac{7}{2}} - 2x^{\frac{5}{2}} + x^{-\frac{1}{2}}\, dx$ So it can be said that for the concepts of integral and power, S8 does not understand. The results of the answer to question number 2 for subject S4 that subject S4 made a misconception, namely not using a memorization, it should be initialized $u = 2y^2 + 5$, because $(2y^2 + 5)^{1/2}$ cannot be factored like the results of S4's answer. Based on the results of interviews conducted with subject S8 for problem number 1, it is known that subject S8 forgot to write dx and was mistaken about the concept of multiplication, while subject S4 for problem number 2, it is known that subject S4 does not understand the concept of integral for memorization and the concept of factoring.

c. Error in Calculation Operation
    Students' calculation operation skills are very important because calculation skills are the main requirement in completing a calculation operation, but there are still students who are wrong in doing calculations.

Figure 4
Errors in Calculation Operations of Learners in Solving Problem No. 1 and 2

Based on the results of the answer to question number 1 for subject S3, it can be seen that subject S3 did not write $\int$ and dx was also miscalculated, namely $\frac{x^4}{x^{1/2}} - \frac{2x^3}{x^{\frac{1}{2}}} + \frac{1}{x^{\frac{1}{2}}} = x^{\frac{9}{2}} - 2x^{\frac{5}{2}} + x^{\frac{1}{2}}$, which should be $\frac{x^4}{x^{1/2}} - \frac{2x^3}{x^{\frac{1}{2}}} + \frac{1}{x^{\frac{1}{2}}} = x^{\frac{7}{2}} - 2x^{\frac{5}{2}} + x^{-\frac{1}{2}}$ so it can be said for the calculation of integral subject S3 miscalculation. The results of the answer to question number 2 for subject S2 that subject S2 miscalculated, namely $\int \frac{3}{4} u^{-\frac{1}{2}} du = \frac{3}{4} \left[\frac{1}{1-\frac{1}{2}} u^{-\frac{1}{2}+1} \right] + C = \frac{3}{4} \left[\frac{1}{\frac{3}{2}} u^{\frac{3}{2}} \right] + C$ the correct one is $\int \frac{3}{4} u^{-\frac{1}{2}} du = \frac{3}{4} \left[\frac{1}{1-\frac{1}{2}} u^{-\frac{1}{2}+1} \right] + C = \frac{3}{4} \left[\frac{1}{\frac{1}{2}} u^{\frac{1}{2}} \right] + C$, so it can so it can be said that the S2 subject experienced a miscalculation. Based on the results of interviews conducted with subject S3 for question number 1, it is known that subject S3 forgot to write $\int$ and dx and miscalculated the rank, while subject S2 is known to be wrong in the calculation. $1 - \frac{1}{2} = \frac{3}{2}$, which should be $1 - \frac{1}{2} = \frac{1}{2}$.

DISCUSSION

Based on the results of diagnosis tests and interviews conducted on second semester students of unit 1 of IAIN Lhokseumawe's Tadris Mathematics study program, it can be seen the difficulties experienced by students in solving problems on indefinite integral material. The results of the data analysis obtained show the types of student difficulties. These student difficulties are certainly not without cause, there must be things that cause them. The following is a discussion of the results of the diagnosis of the data obtained, namely:

Type I Difficulty (Rigor)

Based on data triangulation, it was found that: Type I difficulties are difficulties because students' accuracy in working on problems is still not thorough. Based on the analysis of student answer sheets, there are students who are not careful in solving the problem, and forget to make dx. The reason is because students tend to rush in answering the questions given and are also indifferent in re-examining the results of the work. Based on interviews with students, it was found that in the learning process, lecturers in the learning process used the lecture method accompanied by giving example problems but sometimes rarely repeated the explanation given. There are several student errors in working on math problems and one of them is translation error. Translation errors are errors that convert information into mathematical expressions or errors in giving meaning to a mathematical expression (Lubis, 2021). This is experienced by students who have difficulty in accuracy because students are not careful and thorough in reading what the question asks so that students make mistakes in answering questions because students are in a hurry to solve problems and sometimes lack of interest in double-checking the results of their work.

Type II Difficulty (Concept Understanding)

Based on data triagulation, it was found that: Type II difficulties are concept understanding difficulties. Concepts are very important in learning mathematics. Because mathematics is a science that has an abstract object of study, concepts are the basis for understanding mathematics. The results obtained show that students do not understand the concept of integration by means of memorization and the concept of multiplication. Based

on interviews with students, it is known that in learning activities, lecturers still use the lecture method, students who do not understand or are late in capturing the lecturer's explanation do not ask. S11 is not rather confused when solving integrals and cannot distinguish problems that can be solved directly with problems that must use memorization. Conceptual errors experienced by students as in the research findings above are obstacles in achieving learning objectives. Conceptual errors can occur due to learning methods that are less attractive to learners (Rohmah, 2023). According to Aisyah, based on the results of research analysis on the low learning outcomes of students, this is due to the learning process which is dominated by traditional learning (Aisyah, 2017). So, methods that are monotonous and do not make students active are one of the causes of students not understanding the concept of indefinite integrals. The learning process of students also determines the success of students in understanding concepts in mathematics. Usually students only learn at school by listening to the teacher's explanation, seeing how to solve the example problems given by the teacher and then taking notes, when they have been given a problem that is different from the example problem but with the same way of working, students are immediately confused about how to do it. This is because students do not repeat the material obtained at school when they get home. Learners also lack practice in working on similar sample problems to train their skills.

Difficulty Type III (Calculation Process)

Based on data triagulation, it was found: In the process of instilling mathematical concepts in students, it is not easy because in class each student has different understanding abilities and with different personalities. There are students who are not yet proficient in performing integral calculation operations. Students are wrong in performing calculation operations. Students are said to be wrong in performing calculation operations because when answering questions students make mistakes in summing powers in the form of fractions. In Barner's theory in Herman Handoyono, it is stated that learning mathematics is learning about mathematical concepts and structures contained in the material being studied and looking for relationships between these mathematical concepts and structures (Eci, 2021). It is known in Barner's theory the importance of knowing structures and concepts in learning mathematics. Learners' errors at the *process skill* stage (calculation process) occur when students can determine the operations to be performed, but cannot write down the operating procedures. The *process skill* stage often occurs in students who make mistakes in performing mathematical procedures, the error occurs starting at the understanding stage so that the *process skill stage* also produces incorrect solutions but not errors in the mathematical procedures. There are also many students who write the final answer briefly and cannot represent the information asked in the problem as a whole (Ryanti Nur Ika Puspaningrum, Euis Eti Rohaeti, 2020). Mulbar (2022) suggests that there are several student errors in working on math problems and one of them is calculation errors. Calculation errors are errors in mathematical calculations such as adding, subtracting, multiplying, and dividing. Julkaida (2021) that students have difficulty in the calculation process due to their lack of ability.

CONCLUSION

Based on the results of research in answering the formulation of the problem, then obtainedsome conclusions as follows: Difficulties experienced by second semester students of unit 1 of IAIN Lhokseumawe's Tadris Mathematics study program in indeterminate integral material, namely errors in accuracy, understanding of concepts and calculation processes. For accuracy errors where students are mistaken in integrating and mistaken in entering the memorization number, while for concept understanding errors students still forget in making dx and calculating the concept of multiplication and are still confused about what method to use to solve the integral so that there are still errors in integral concepts, then for calculation errors students make mistakes due to miscalculation of fractional powers. This research needs to take the right steps to help students overcome the learning difficulties experienced to reduce the mistakes that students often make in working on problems. The steps chosen must be based on the conditions and abilities of students, lecturer assistance to students, and university infrastructure that supports the creation of ideal learning conditions. The steps chosen are expected not to pressure or make students feel uncomfortable, because if students feel happy and comfortable while learning, it indirectly encourages students to be excited and interested in learning so as to increase student understanding, slowly reducing the mistakes that students often make. Based on the research results and conclusions, the authors would like to propose several suggestions: (1) Referring to the results of this study, it is hoped that lecturers who teach integral calculus courses can do mathematics learning well and invite students to understand existing concepts properly and correctly, (2) Referring to the results of this study, it is hoped that students will increase the number of practice problems given by lecturers, and be more courageous in asking questions when they feel the explanation is unclear or left behind directly to the lecturer.

Recommendations in this study that can help overcome students' difficulties in understanding indefinite integral material are (1) the use of scaffolding in learning so that it can help students in understanding concepts and solving complex problems, (2) the development of interest in learning will foster interest in learning by increasing practice problems can help overcome students' difficulties in understanding indefinite integral material, (3) the use of assistance or material sources, lecturers can use various strategies to facilitate students in understanding the material. For example, lecturers can use various learning resources such as textbooks, online materials, learning videos, and others to expand students' ability to understand the material.

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