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Improving students' activeness and critical thinking skills through problem based learning

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Abstract: This research is aimed to increase the activeness and critical thinking skills of students by applying the problem based learning model. The type of research is classroom action research. The research was conducted at the Accounting Education Study Program, Faculty of Teacher Training and Education, Islamic University of Riau. The research subjects were 1st semester students, who took the Introduction to Management course for the 2020/2021 academic year. The data in this study were obtained from observation sheets and test instruments. The data analysis technique used descriptive analysis for aspects of activeness and critical thinking skills. The results showed that the average of students' activeness in the first cycle reached 74.5% (fair category) and in the second cycle students' activeness reached 86% with good category. Then, students' critical thinking in the first cycle reached 77% in the Fair category, and in the second cycle it gained 86% in the good category. Therefore, there is an increase in students' activeness and critical thinking skills by applying the problem based learning model. Based on the research findings, the researcher would like to propose the following suggestions namely: 1) Making the students more motivated during online learning by using problem-based learning, 2) Appreciating the students' ideas to make them more confident, 3) The research was only composed of two cycles, so that the next researchers can carry out more than two cycles to maximize student's activeness and critical thinking. This study also still has limitations, namely, the questions used are only in the form of essay questions and have not used varied question instruments.

Keywords: Activeness, critical thinking, problem based learning.

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INTRODUCTION

Education is inseparable from the curriculum, educators, students, teaching methods and facilities, including learning media. Factors that affect students' learning outcomes are also very diverse, complex, and interconnected. These factors include their personality, social interactions with peers, teachers, family and society (Bertolini et al., 2012). They have a role in improving and encouraging students to think, act and behave. In learning activities, thinking is a process that every student experience at all levels of education, with no exception to university students**.** Simultaneously, activeness does not only involve being in the classroom, but also participating during the learning activities. The problem facing the Accounting Education Study Program, especially second semester students, is that only 2 out of 11 students are active and have fairly good cognitive skills. Others are still passive to answer the questions and problems given. As a result, students become less active and not accustomed to answering questions critically according to their own abilities. However, activeness and critical thinking skills are very important for students. Ideally, effective learning occurs when the teachers and students interact by using learning resources. Therefore, learning does

not only focus on results, but also through processes that provide behavior change in students and apply them. It can be indicated by activities such as asking, answering or giving feedback from the teacher or friends in the class. By showing this activity, students indirectly train their ability to think. Because it is impossible to give a response, ask or answer without going through the process of thinking first. Activeness is a mental and physical activity, that requires both doing and thinking (Sardiman, 2011). Aspects of activeness in the learning process include; a) courage, b) participation, c) creativity, d) learning independence (Ahmadi & Supriyono, 2013). Therefore, overcoming this problem needs a learning model that can increase activeness and critical thinking.

Critical thinking is developed with student-centered teaching methods (Snyder & Wiles, 2015). The problem-based learning model is one of the solutions to train students' critical thinking through various activities, so that students can empower, hone, test, and develop their thinking continuously. Rusman (2014) also stated that this learning model focuses on critical thinking and students' active participation in learning. The stages in implementing problem based learning are; 1) giving orientation about problems to students, 2) organizing students to conduct research, 3) assisting individual and group investigations, 4) presenting the results of discussions, and 5) evaluating progress in problem solving (Mariani & Kusumawardani, 2014). Problem based learning is oriented to problem solving to achieve the desired learning objectives (Botty & Shahrill, 2015). Problems in this approach also become a stimulus for students in learning activities (Orozco & Yangco, 2016). The concept of the problem used in problem-based learning is a real problem that exists in everyday life (Maryati, 2018). The results of previous research have shown that problem-based learning is quite effective in developing students' abilities and, students also have character values instilled in learning activities such as responsibility and cooperation (Ramadhan, 2021). The application of problem based learning is also able to provide a conducive environment for developing skills and attitudes (Hande et al., 2014). Similar results were also explained by Cahyaningsih & Asikin (2015) that students were shown to be active when solving problems. In addition, increasing student activeness by applying problem based learning is also followed by increased learning outcomes (Astuti & Junaidi, 2013). Most of the previous studies on critical thinking skills were examined at the elementary and middle school levels with the field of mathematics. Meanwhile this research was conducted on university students with social studies, especially in Introductory Management course. Therefore, the researcher intends to conduct this research to increase students' activeness and critical thinking skills by applying problem-based learning model.

METHOD

The type of research is classroom action research, which was conducted at the Accounting Education Study Program, Universitas Islam Riau. It was implemented in November 2020. The research subjects are first semester students of the 2020/2021 academic year in Introductory Management course, with communication and motivation materials. The implementation of classroom action research is carried out in four stages, namely; 1) planning, 2) implementation action, 3) observation, 4) reflection. Techniques used to

collect data include observation, tests, and documentation. Descriptive analysis is used to analyze the data which aims to obtain data on the improvement of students' activeness and critical thinking. The data processing is carried out as follows:

$$\text{Percentage} = \frac{Student's\ activeness\ score}{Total\ score} \times 100\%$$

To make it easier to analyze and measure student activity, the assessment categories in Table 1 are needed as follows.

Table 1. Interval of Students' Activeness Scores

Interval (%)	Category
86-100	Very hihg activeness
76-85	High activeness
66-75	Moderate activeness
56-65	Low activeness
<55	Very low activeness

Data processing of students' critical thinking is done after learning outcomes are obtained through the implementation of the problem based learning model. Calculations are carried out as follows:

$$\text{Value} = \frac{Student's\ total\ score}{maximum\ score} x\ 100$$

To make it easier to analyze and measure students' critical thinking skills, the following assessment categories in Table 2 are needed as follows.

Table 2. Critical Thinking Skill Interval

Interval (%)	Category
86-100	Very high critical thinking
76-85	High critical thinking
66-75	Moderate critical thinking
56-65	Low critical thinking
<55	Very low critical thinking

Classical and individual completeness is achieved when 85% of all students have reached the criteria of 75.

RESULTS AND DISCUSSION

A. Description of Cycle I Implementation

The application of learning in the Introductory Management course cycle 1 through the Problem Based Learning model is described as follows:

1. Planning Stage

The planning stage was carried out on October 26, 2020. Classroom action research was conducted online using Google Classroom, Google Meet, and Whatsapp group platforms. Before taking action, the

researcher prepared a learning implementation plan, lecture program unit, teaching materials, and essay questions as a reference for teaching and learning activities.

2. Action execution

First Meeting Cycle I

The first meeting was carried out on Wednesday, November 4, 2020 using google meet. The time allocation was 100 minutes. The first 15 minutes were done for preparation and opening. Previously, the researcher had provided direction to students before doing online learning. At this meeting, only 10 students were able to attend via Google Meet, while 1 student could not attend.

The core activity took place for approximately 70 minutes. In this activity the researcher delivered several points related to communication for approximately 20 minutes and continued with Q&A session. Furthermore, the researcher provided a case study related to current communication issues. The case needed to be solved by the student independently and group. The researcher gave 20 minutes' time and instructed students to solve problems offline and take notes. Students submitted their task via Google Classroom. After 20 minutes, students returned to google meet to present their ideas and conduct questions and answers regarding their presentation. Students must try to understand by paying attention to the explanations and asking questions, so that the more students actively express opinions, the students will also be more trained to speak (Amir, 2013). When it was implemented, only 6 students expressed their opinions without being called on. Meanwhile, the other 4 students did not dare to speak up.

The closing took approximately 15 minutes. The researcher informed the students who had not presented their ideas to prepare for the next meeting and said that there would be a quiz. The delivery of the closing activity aims to evaluate self-efficacy and strategies that need to be done to overcome obstacles in the learning process, and to find solutions in subsequent learning activities (Amalia & Putra, 2019). The activity at this meeting is still quite adequate, because some students did not want to ask questions and respond during learning.

Second Meeting and Quiz In Cycle I

The second meeting was held on Thursday, November 11, 2020. The learning began with an opening and linked it to the previous meeting for approximately 15 minutes. After that, it continued with the students who had not performed to convey their thoughts. This activity was held for approximately 20 minutes and followed by a question and answer session. After all students took part, the researcher conducted an online test, namely by giving essay questions through Google Classroom and giving a time limit of 60 minutes.

3. Observation

Based on the observation in the first cycle, problem based learning has begun to increase activeness and critical thinking. However, the implementation and results have not been maximized, because some students only paid attention and did not ask any questions, and they were hesitant to express their opinions.

4. Test Results

The level of student mastery is determined by the test results and discussion. In the discussion result cycle 1, some students did not ask questions or give arguments when learning. As for the test results which consist of 4 essay questions, there are 2 students who have sufficient marks, and 2 students have less marks.

5. Reflection

a) It is necessary to motivate students to be more courageous in expressing their opinions.

b) It is necessary to train students' thinking so that they can answer problems or questions properly.

B. Description of Cycle II Implementation

1. Planning Stage

Action planning activities II consist of learning tools such as learning implementation plans, lecture program units, teaching materials, and making essay questions as a reference for carrying out teaching and learning activities.

2. Action execution

First Meeting Cycle II

The implementation of the action at the 1st meeting was held on Wednesday, November 18, 2020 online. The time allotted for the first meeting was 100 minutes. The first 15 minutes are done for preparation and activities to open the lesson. In the implementation of learning in cycle II, 10 students can take part in learning at google meet.

The core activity was carried out for 70 minutes, in this activity the researcher delivered material points related to motivational material for 20 minutes and continued with questions and answers with students. Next, the researcher gives a problem in the form of a case study related to motivational problems, which must be solved by students independently and group. In this activity, the researcher gives 20 minutes of time and directs students to solve problems offline and take notes. Students' thoughts are also sent via Google Classroom. After 20 minutes, students rejoined google meet to convey the results of their respective thoughts and conduct discussions and ask questions. In the presentation, 9 students have dared to express their opinions without being appointed first. Meanwhile, 1 student needed to be asked to express his opinion. The activeness of students in learning turns out not only to build the courage to ask questions, but also to improve the mental aspect (Hotijah et al., 2020). Closing activities carried out 15 minutes. In this activity, the researcher told the students that there would be a quiz at the next meeting. The activity at this meeting was already high, because most of the students had the courage to express their opinions without being asked.

Quiz Implementation in Cycle II

The second meeting was held on Thursday, November 24, 2020. The lesson began with an opening y and linked it to the previous meeting for approximately 15 minutes. Next, a quiz was conducted for cycle II. The researcher carried out this quiz online, namely by giving essay questions in google classroom with a time limit of 60 minutes.

3. Observation

Based on the observation in cycle II, the implementation of learning has increased the activeness and critical thinking of students. It showed a better improvement as many students were more active in asking questions and giving answers.

4. Test Results

The level of student mastery is determined from the test results and student activiteness. In cycle II, most of the students were actively asking and answering questions, as well as giving arguments in learning. In the quiz results which consist of 4 essay questions, there are 2 students who still have sufficient scores.

5. Reflection

a) When students ask questions and express their ideas, it is necessary to give appreciation so that other students are also motivated.

b) Educators still need to control students' activities when offline, so that they can finish their activities on time.

C. Analysis of Action Result

1. Student Learning Activities

Based on the observation sheet in the first cycle, it can be seen that the activeness of students during the implementation of class actions using the problem based learning model is quite good, it can be seen based on the following Table 3.

Table 3. Average Percentage of Students' Activeness in Cycle I

No	Activity	Frequency
1	Attention and listened to the explanation	10
2	Searched for sources of information and solutions to the problems	7
3	Asked and answered	8
4	Give arguments	6
5	Collected assignments	10
	Total score	41
	Maximum score	55
	Average	74,5%
	Category	Moderate

Based on the table 3, it can be seen that the activeness of students during the first cycle, 10 students had paid attention and listened to the explanation well, 7 students had searched for sources of information and solutions to the problems, 8 students asked and answered, 6 students were able to give their arguments without being asked first, and 10 students collected assignments in the form of case studies. Overall, the average of student activeness in the first cycle reached 74.5% in the Fairly Active category.

Table 4. The Average Percentage of Students' Activeness in Cycle II

No	Activity	Frequency
1	Attention and listened to the explanation	10
2	Searched for sources of information and solutions to the problems	9
3	Asked and answered	8
4	Give arguments	10
5	Collected assignments	10
	Total score	47
	Maximum score	55
	Average	86%
	Category	Very High

Based on the table 4, it can be seen that 10 students had paid attention and listened to the explanation well, 9 students had searched for sources of information and solutions to the problems posed, 8 students asked and answered, 10 students were able to give their arguments without being appointed first, and 10 students collected assignments in the form of case studies. Overall, the average of students' activeness in the second cycle reached 86% in the good/active category.

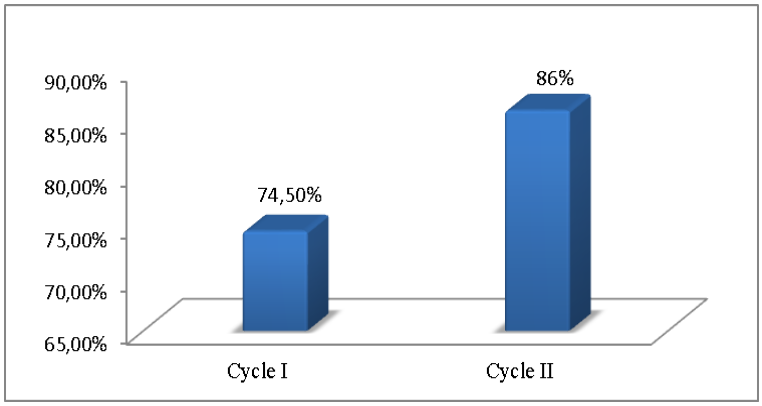

Fig 1. Students' activeness in cycle I and cycle II

From the figure 1, it can be seen that the students' activeness in the first cycle compared to the second cycle increased, the average in the first cycle was 74.5%, and it became 86% in the second cycle.

2. Students' Critical Thinking Skill

Based on the observation sheet in the first cycle, it can be seen that the critical thinking skills of students during the implementation of class actions using the problem based learning model is quite good, it can be seen based on the following table 5.

Table 5. Students' Critical Thinking in Cycle I

No	Level of Mastery	Category	Frequency
1	86-100	Very Good	-
2	76-85	Good	6
3	66-75	Fair	2
4	56-65	Poor	2
5	<55	Very Poor	-
Total			10
Average			77%
Category			High

The table 5 explains that students' critical thinking skills based on the test result in cycle I, 6 students are "Good", 2 students are fair, and 2 students have "Poor" category. Overall, the average critical thinking skill of students is 77% in the high category.

Table 6. Absorption and individual mastery of students in cycle II

No	Level of Mastery	Category	Frequency
1	86-100	Very Good	-
2	76-85	Good	8
3	66-75	Fair	2
4	56-65	Poor	-
5	<55	Very Poor	-
Total			10
Average			86%
Category			Very high

The table 6 shows that 8 students have good critical thinking skills, and 2 students have fair level critical thinking skills. Overall, the average of students is 86% in the Good category.

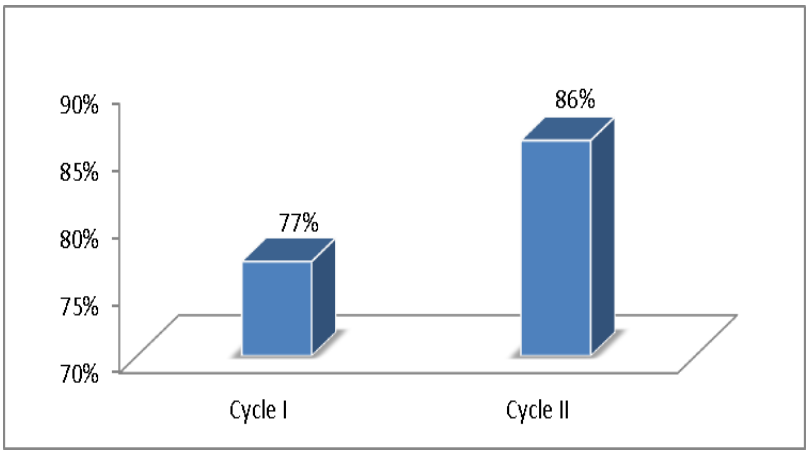

Fig 2. Students' critical thinking skills in cycle I and cycle II

From the figure 2, it can be seen that the critical thinking skill of students in the first cycle is 77%, and there is an increase in the second cycle to 86%.

Discussion

This study appplied a problem based learning model with the aim of increasing the students' activeness and critical thinking skills in the Accounting Education Study Program. The research was carried out in 2 cycles. Based on the results of data analysis in the first cycle, it was found that students' activeness reached 74.5% with Fair category. Meanwhile, the students' critical thinking skill reached 77% with Fair category. This demonstrates that the actions in the first cycle can not be categorized as successful. Some of the factors include; 1) students still feel hesitant to express their opinions, 2) students have not been able to answer problems or questions properly. Therefore, this research is continued with cycle II. In order to get an increase in cycle II, the researcher needed to correct the shortcomings in the previous implementation by means of; 1)

encouraging and motivating the students more so that they do not hesitate to express their opinions, 2) getting used to giving questions based on problem solving. This is in line with Suprijono (2010) which stated that several efforts can be made to make students more active, for instance increasing their interest and motivation.

In the second cycle, students' activeness in learning was better, reaching 86%. Meanwhile, students' critical thinking skills also increased to 86%. This means that the actions in cycle II have succeeded in increasing the activeness and skill of students to think critically, because they have reached the minimum completeness criteria of 85%. To improve activeness and critical thinking skills, it is not only the responsibility of educators. Apart from the willingness of the students themselves, the role of parents and family will determine their success as well (Opeer, 2012). The findings of this study are also in accordance with previous studies that the application of the problem based learning model can improve students' critical thinking skills (Satwika et al., 2018). Problem based learning can create a conducive environment and affect the ability of students to apply their knowledge (Masek et al., 2011). In addition, the learning atmosphere is more lively because students are required to participate actively in thinking and expressing their thoughts (Wynn et al., 2014).

In this research, the obstacles found were the limited direct communication between students and lecturers due to online learning. This causes difficulties in controlling students as a whole. In carrying out classroom action research, especially problem-based learning models, researchers also need to pay attention to time management (Fitriani, 2021). This learning model requires a relatively long time, especially when it is implemented online. In addition, educators also need to adjust the learning model used with material that is relevant to everyday life (Yulianto et al., 2017).

CONCLUSION

Based on the findings and discussion of this research, the researcher draws some conclusions such as; 1) Students' activeness in the first cycle was 74.5%, and it increased to to 86% in the second cycle, 2 Students' critical thinking in the first cycle was 77%, and it increased to 86% in the second cycle, 3) The activeness and critical thinking skill of students can be increased by applying the problem based learning model. Concerned with the results above, the researcher would like to propose some suggestions; 1) Making the students more motivated during online learning by using Problem Based Learning, 2) Appreciating the students ideas to make them more confident, 3) The research was only composed of two cycles, so that the next researchers can carry out more than two cycles to maximize students activeness and critical thinking. This study also still has limitations, namely, the questions used are only in the form of essay questions and have not used varied question instruments.

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