

Application of *Small Group Discussion* Method for Improving Students' Critical Thinking Ability in Integral Material

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Abstract

The purpose of this study is to analyze the implementation of the Small Group Discussion learning method in improving students' critical thinking skills on the topic of integrals. This study employs a Classroom Action Research (CAR) design, conducted through four iterative stages: planning, action, observation, and reflection. The research subjects are students of Politeknik Muhammadiyah Tegal, focusing on enhancing their critical thinking skills using the Small Group Discussion method. Data were collected using various instruments, including pre-tests, learning outcome tests, interviews, and observations. The results indicate that the average learning score in Cycle 1 fell into the "moderate" category, with an average score of 60.26%. In Cycle 2, the results improved to the "high" category, with an average score of 78.21%. In Cycle 3, the average score significantly increased to 85.90%, which is classified as "very high." Therefore, the implementation of the learning process in Cycle 3 was deemed highly successful.

Keywords: *Integral, Critical Thinking Skills, Small Group Discussion*

INTRODUCTION

Education is one of the formal educational institutions in Indonesia. Many parents entrust their children's higher education to college after completing high school, in the hope that their children can gain better knowledge. Tegal Muhammadiyah Polytechnic, as one of the private universities in the region, has a vision to improve the quality of education, especially for the local community. Therefore, effective management of the learning process is very necessary to ensure that educational goals can be achieved optimally. In the learning process, the role of educators in designing learning plans is very important. This includes choosing the right learning methods and approaches so that the message is delivered delivered can be understood well by students (Irawansyah, 2022). By implementing appropriate learning methods, it is hoped that this can have a positive impact on students' critical thinking abilities.

In reality, there are various differences between students. Student learning activities are influenced by two main factors. First, internal factors originating from within the student himself, including aspects such as attention, observation, response, imagination, memory, thinking ability, talent and motivation. Second, external factors originating from the student environment, including lecturer competence, supporting facilities, curriculum, learning environment, leadership in the classroom, and education costs (Adawiyah, 2019).

To achieve the desired educational goals, it is necessary to carry out learning activities that are designed within a certain time frame, through steps aimed at changing students' initial conditions into the expected ideal conditions (Christiani, 2014). A quality education process requires effective and efficient interaction between educators and students. Therefore, educators must be able to choose a learning model that is appropriate and relevant to the material being taught. As key figures in the learning process, educators act as planners, implementers and evaluators. Educators also act as motivators whose job is to create an active and enjoyable learning atmosphere. Meanwhile, students are expected to become active learners, namely individuals who are physically and mentally involved in the learning process. Active learners tend to be more interested in hands-on experiments than just observing. However, deep practice, conventional learning methods are still often used. Conventional teacher-centered learning is often no longer in accordance with the aims and content of the curriculum. This, whether consciously or not, can influence the learning process in the classroom and have an impact on student learning outcomes. To increase academic achievement, both in cognitive, affective and psychomotor aspects, it is very important to choose the right learning method and in accordance with the principles of effective learning (Christiani, 2014).

One method that can be applied is the Small Group Discussion method. According to Mulyasa (Christiani, 2014), this method is a form of discussion technique. By using the method *Small Group Discussion*, students can communicate directly with a smaller group of members, so that interactions become more effective. Apart from that, this method allows students to share information and experiences with each other in solving a problem.

Students gain more experience and knowledge through various activities, both inside and outside the classroom. The characteristic of the Small Group Discussion method is that learning is carried out in small groups consisting of 3-5 students, with the aim of discussing and exchanging information and knowledge between group members (Dewi et al., 2023). This method allows students to be actively involved in the learning process. Small Group Discussion is a learning method that divides students into small groups consisting of 3-5 people, with the aim of encouraging individual cooperation in groups, developing critical thinking skills, and increasing personal responsibility in the group (Zulham et al., 2023). This method is a structured form of independent learning, which trains students in certain disciplines, such as time management, utilizing various resources, and conducting discussions (Zulham et al., 2023). *Small Group Discussion* helps students to develop problem solving skills related to theory or everyday life problems (Arifin et al., 2021).

Characteristics Small Group Discussion methods (Ahmad & Nurma, 2020) include: 1) each student is aware of himself as a member of the group; 2) each student has the same goal, namely the group goal; 3) there is a sense of mutual need and dependence between group members; 4) there is active interaction and communication between group members; 5) collective action is taken as a form of shared responsibility within the group.

The steps in the learning model *Small Group Discussion* (Pratiwi et al., 2020) are as follows: (1) The lecturer divides students into small groups consisting of 3 to 5 people, (2) The lecturer provides reading material or problems for each group, (3) Students are asked to discuss the reading material or problem, (4) Each

group is asked to write down the important points (key words) from the results of their discussion on a piece of paper in front of the class, (5) Each group appoints a spokesperson, (6) The spokesperson is asked to present the results of the discussion their groups, with time restrictions so that each group gets equal opportunities, (7) Other groups are asked to provide comments, responses, or questions, (8) The lecturer provides summary or reinforcement of material that has been discussed.

Law-Law no. 20 of 2003 concerning the National Education System states that "National education functions to develop abilities, shape character, and advance a dignified national civilization in order to make the life of the nation intelligent. The aim is to develop the potential of students to become individuals who believe and are devoted to God Almighty, have noble character, be healthy, knowledgeable, skilled, creative, independent, and be a democratic and responsible citizen." (Dewi et al., 2023). One of the abilities that needs to be developed in students in higher education is the ability to think critically.

Critical thinking is a reflective assessment process that aims to produce interpretations, analysis, evaluations and conclusions, as well as providing explanations regarding evidence, concepts, methodology, criteria or conceptual considerations (Rositawati, 2019). Learning to think critically helps students develop other skills, such as increased concentration, deeper analytical skills, and better critical thinking skills (Sukmayadi et al., 2024). Critical thinking is one of the important skills needed in the 21st century (Ngatminiati et al., 2024).

Learner Ranging that relies on memorizing theory is no longer relevant to current needs and conditions. Therefore, every individual must be able to think critically and creatively to be able to face a situation that continues to develop (Sunaryo et al., 2024). Indicators of critical thinking skills include interpretation, analysis, evaluation and inference. These indicators are further divided into several sub skills: (1) Inference; to understand and express the meaning or importance of data, criteria, or rules. Sub Skills inference includes categorizing, deciphering meaning, and explaining

significance. (2) Analysis; to identify relationships between statements, questions, concepts, descriptions, or other forms of representation. Sub Skills analysis includes examining ideas, identifying arguments, and recognizing reasons and claims. (3) Evaluation; to assess the credibility of a statement or representation. These skills also help in problem solving strategies. Sub Skills evaluation includes assessing the credibility of claims and assessing the quality of arguments. (4) Inference; to identify and ascertain the elements necessary to draw logical conclusions. Sub Skills This inference includes testing evidence, conceptualizing alternatives, and drawing valid or logically valid conclusions (Prihartiwi et al., 2020).

METHOD

The subjects in this research were 1st semester engineering students in the 2023/2024 academic year at the Muhammadiyah Tegal Polytechnic. The learning method applied in this research is *Small Group Discussion*. Meanwhile, the object of this research is to assess students' critical thinking abilities.

Study This was implemented through three cycles to observe improvements in student learning outcomes. Each cycle consists of: 1. Planning, which includes determining learning materials. 2. Implementation, which includes the entire process of teaching and learning activities using methods of recitation. 3. Observations, which are carried out simultaneously with the learning process, including student activities, material development, and the learning outcomes achieved. 4. Reflection, which involves analyzing learning outcomes and preparing improvement plans for the next cycle. The data analysis technique used by researchers includes the following steps: 1. Collect data as a source of information to formulate problems. 2. Group the data collected from each activity in the implementation cycle. 3. Analyze data based on the level of student involvement during the learning process. 4. Use the results of data analysis to design corrective actions in the learning process.

RESULTS AND DISCUSSION

Results The research is explained in the form of stages of the learning cycle carried out during the teaching and learning process in the classroom. To obtain an overview of student activities during the learning process, analysis was carried out on the results of observations obtained from the three cycles that had been carried out. According to Arikunto's opinion (Rejeki & Wantoro, 2024), the criteria for student learning activities are divided into 5, namely very high (85-100%), high (69-84%), sufficient (53-68%), low (37-52%) and very low (20-36%)

Student Activity

In the first cycle, the average student learning interest score reached 57.69%, student learning attention score was 57.69%, and student learning participation was recorded at 65.38%. So, the student activeness score in the learning process in the first cycle was an average of 60.26%. Based on these results, it can be concluded that the level of student activity is still considered sufficient (Rejeki & Wantoro, 2024). The author believes that this is caused by students who are not yet familiar with the learning approach being applied.

In the second cycle, the average student interest score reached 76.92%, showing an increase of 19.23% from the first cycle. The average student attention score was 80.77%, an increase of 23.08% compared to the first cycle. The average score for student learning participation was recorded at 76.92%, an increase of 11.54% from the first cycle. Student learning activity scores averaged 78.21%. Based on these results, it can be concluded that the percentage of student activity is high (Rejeki & Wantoro, 2024), with an increase of 17.95% from the first cycle. The author believes that this is caused by students who are starting to get used to the learning approach being applied.

On third cycle, the average student interest score reached 84.62%, an increase of 7.7% compared to the second cycle. The average student attention score was 88.62%, an increase of 7.69% from the second cycle. The average student learning participation score was recorded at 84.62%, an increase of 7.7% from the second cycle. Student activity scores averaged 85.90%. Based on these results, it can be concluded that

the level of student activity is very high (Rejeki & Wantoro, 2024), with an increase of 7.69% compared to the second cycle. The author believes that this increase is caused by students who are starting to enjoy the learning approach applied.

CONCLUSION

Based on calculations, it is known that the total score obtained from implementing learning in cycle 1 was 16, with an average score of 60.26%. Therefore, in cycle 1, the implementation of learning was categorized as sufficient. In cycle 2, the total score obtained was 20, with an average score of 78.21%, so that the implementation of learning in cycle 2 was categorized as high. However, in cycle 3, the total score obtained reached 22, with an average score of 85.90%, which means that the implementation of learning in cycle 3 can be categorized as very high.

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