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An Effect of Using Group Investigation Method to Improving Critical Thinking Skill

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Abstract: Students' critical thinking ability can be enhanced through an effective learning process. To achieve this, the learning process must be designed to engage students in the classroom actively. The effort to achieve these results involves improving the quality of learning through effective teaching materials. Learning involves more than just acquiring information from lecturers; it encompasses various activities and actions to achieve better student learning outcomes. For instance, providing tasks that stimulate students to think critically, incorporating methods and learning models into the teaching process, is essential. The learning process is fundamentally a teaching-learning process that underscores the significance of experiential learning to gain valuable insights. This research aims to identify the process and outcomes of implementing the group investigation learning model to enhance critical thinking skills. Students' critical thinking is crucial as, during the learning process, students formulate ideas about the problems presented in their studies. Some students face challenges in thinking creatively when learning in English. They struggle to express their ideas, lack vocabulary, and find it challenging to generate ideas to solve problems when asked to discuss topics in English. Examples of these topics include educational issues and the impact of technology on students.

Keywords: Critical thinking, Group investigation, Lesson study

INTRODUCTION

Education is fundamentally an interaction between educators and students aimed at achieving specific goals. In the field of education, the teaching and learning process serves as the core component of the overall educational system, with teachers playing a central role in guiding and educating students. However, the implementation of education can encounter challenges, such as issues in the learning process, particularly in the

interaction between teachers and students. Often, students may not fully engage in the learning process, and some face difficulties thinking creatively, particularly when learning in English. Challenges may include expressing ideas, a lack of vocabulary, and difficulty generating solutions when discussing topics in English. Consequently, students require assistance in constructing information to enhance their critical thinking skills.

One effective method for improving critical thinking skills is through collaborative learning. Collaborative learning facilitates students working together, contributing to each other's thoughts, and taking responsibility for achieving learning outcomes both as a group and individually (Zubaidah, 2010). Collaborative learning encompasses various types, with one notable example being the Group Investigation technique. In Group Investigation, students progress through six stages: identifying topics and organizing students into groups, planning assignments, conducting investigations, preparing final reports, presenting findings, and evaluating outcomes (Slavin, 2005).

Critical thinking skill is the ability to manage information and identify problems so that individuals can determine the causes of issues, assess the impact of an incident, and create solutions and conclusions (Budianti, 2018). According to Ennis (in Fisher, 2009), critical thinking is a sensible and reflective thinking that focuses on deciding what to believe or do. The ability to think critically provides a more precise direction in thinking, working, and helps more accurately determine the interrelationship of something with others. Therefore, critical thinking is essential in problem-solving and finding solutions. The development of critical thinking skills involves integrating various components of capability development, such as observation, analysis, reasoning, judgment, decision-making, and persuasion. The better the development of these capabilities, the more effective individuals will be in solving problems.

Critical thinking indicators can be explained through behavioral aspects expressed in the definition of critical thinking. Based on the definition of critical thinking, there are some activities or behaviors that indicate critical thinking. Critical thinking is a directional and clear process used in mental activities such as problem-solving, decision-making, persuading, analyzing assumptions, and conducting scientific research. It is the ability to argue in an organized way and systematically evaluate the weight of personal opinions and the opinions of others (Johnson, 2012).

Furthermore, Glaser (in Kowiyah, 2012) defines critical thinking as an attitude of being disposed to consider, in a thoughtful way, the problems and subjects within the range of one’s experience, encompassing knowledge of the methods of logical inquiry and reasoning, along with some skill in applying those

methods. Critical thinking calls for a persistent effort to examine any belief or supposed form of knowledge in the light of the evidence that supports it and the further conclusions to which it tends. The purpose of critical thinking is to evaluate the best actions or beliefs. The focus of the critical thinking framework is the thought process that involves gathering information and applying criteria to consider a different set of actions or views.

The Group Investigation (GI) technique is a collaborative learning approach involving students in the planning phase, including determining the topic and the investigative method. The GI method necessitates students working together in groups, choosing topics for study, and subsequently presenting their findings to the class (Salamah et al., 2016). The advantages of Group Investigation (GI) include the ability for students to work freely, encourage initiative, be creative and active, boost self-confidence, learn problem-solving, foster enthusiasm and a sense of community, enhance collaborative work, improve communication skills with peers and teachers, learn systematic communication, respect others' opinions, increase participation in decision-making, and train students to be accountable for their answers (Barkley, 2014).

The Group Investigation learning model (GI) falls under the category of cooperative learning models, a learning strategy involving students in small groups interacting with each other. The Group Investigation (GI) learning model by Wena (2009) is considered one of these cooperative learning models. Thus, the Group Investigation learning model (GI) exhibits characteristics of a cooperative learning system. Group Investigation (GI) learning is a form of cooperative learning where group members are responsible for mastering the subject matter and collaborating with other group members. According to Sharan (2014), the Group Investigation (GI) model emphasizes group heterogeneity and cooperation, representing a complex method in group learning that requires students to utilize high-level thinking skills.

The Group Investigation Model (GI) is student-oriented, with the aim of preparing students as information experts capable of effectively communicating their knowledge to friends and other group members. Additionally, the Group Investigation (GI) model seeks to cultivate a spirit of teamwork within groups to promote active, effective, creative, and enjoyable learning. According to Slavin (1995), there are six stages in applying the Group Investigation (GI) model: (1) grouping stage, (2) planning stage, (3) investigation stage, (4) organizing stage, (5) presenting stage, and (6) evaluating stage.

According to Sharan (2014), the Group Investigation (GI) model offers several advantages. This model facilitates active engagement of both teachers and students within small working groups, emphasizing the principles of small

group investigation. The interaction within these groups serves as a platform for the application of foundational knowledge, discussion skills, and an understanding of group dynamics, thereby fostering student exercises and activities. Furthermore, the GI model encourages students to develop their ideas, focus on assigned tasks, and engage in the comparison and discussion of diverse perspectives. Social interaction becomes a vital tool for students to cultivate and construct new knowledge acquired through group investigations. The collaborative nature of group investigations enables students to interact with fellow researchers, covering various aspects of a common theme and interpreting it through cooperative information exchange. Additionally, the model motivates students to take an active role in determining what is learned and how it is learned, sparking personal interest in searching for necessary information during the investigation. This process is facilitated through shared responsibility and interaction among group members, contributing to a comprehensive and enriched learning experience.

The Group Investigation model plays an essential role in learning activities, including learning planning, information collection, discussion activities, and the exchange of thoughts and ideas among group members to find solutions to problems (Zulaeha, 2015). Through these activities, students are trained to enhance their critical thinking capacity. The Group Investigation learning model effectively increases learning efficiency and the students' preparation knowledge process (Christina & Kristin, 2016). According to Wahid (2019), this model guides the development of critical thinking skills, encouraging the identification of root problems and the logical resolution of issues in preparation for tough global competition. Additionally, to meet international competition demands, students need to be more innovative, creative, communicative, collaborative, think critically and analytically, and be capable of solving real-life problems. The advantages of the Group Investigation (GI) model lie in processes and learning outcomes such as student-centered learning and improved student achievement. However, it also has some weaknesses in the learning process, such as a complex and challenging learning model and a lengthy presentation time due to students being less willing to express opinions in front of their classmates.

RESEARCH METHODOLOGY

This research employs True Experiment Design, specifically falling under the category of experimental research. The subjects were divided into two groups: the experimental group and the control group. The experimental group underwent treatment using the Group Investigation (GI) model, while the control group received non-Group Investigation (GI) treatment, consisting of lectures and question-and-answer sessions. The participants in this study were students majoring in Information Systems at the Institute of Technology Business and Language Dian Cipta Cendikia. The research design employed is a pre-test post-test control group design.

The process of selecting the experimental and control groups involved combining all the students from the 22-SI and 21-SI classes, totaling 60 students. The determination of the experimental and control groups was done randomly, followed by administering a pre-test to assess the students' initial abilities. Subsequently, the two classes were selected as the experimental and control groups through a random drawing process. This methodology aimed to demonstrate the suitability of the chosen learning model and its impact on critical thinking ability. The detailed research design is presented in the table below.

Table 1. Research Design

Group	Pre-Test	Treatment	Post-Test
Experimental Group	O1	X	O2
Control Group	O3		O4

The data collection techniques used in this study involve testing students' critical thinking skills, conducted through both pre-tests and post-tests. The pre-test is administered to assess the initial critical thinking skills of students in both the experimental and control classes. This assessment takes place before these classes receive lecture materials and the Group Investigation learning model (GI) treatment.

The post-test, conducted in both the experimental and control classes, aims to measure the change in students' critical thinking skills after the implementation of the Group Investigation model (GI). This comparison is made with the pre-test results to evaluate the effectiveness of the treatment. Additionally, the study utilizes observation instruments, including two observation sheets: one for the implementation of the Group Investigation learning model (GI) based on the stages of the RPS and observed by one person, and another for assessing critical thinking ability with five indicators observed by two observers.

The observation instruments undergo a validation process, with initial validation by an instructional expert. After incorporating suggestions from the validator, a second validation is performed, resulting in approval of the improved observation sheet. The validation results indicate that the observation sheet is deemed very good, receiving a score of 5.

This research is classified as quasi-experimental, as the treatment given to the research subjects is not fully controlled. The experimental group receives treatment using the Group Investigation (GI) model, while the control group undergoes non-Group Investigation model treatment with the same subject matter.

In terms of data collection techniques, the study utilizes a test of students' critical thinking skills, conducted through both pretests and posttests. The pretest aims to assess the early critical thinking skills of

students in both the experimental and control classes before receiving lecture materials and the treatment of the Group Investigation (GI) learning model. The posttest in both classes aims to determine the change in critical thinking skills after implementing the Group Investigation model (GI), compared to the pretest results. The critical thinking ability research instrument in this study consists of five problem-solving questions.

RESULT AND DISCUSSION

The impact of the Group Investigation (GI) learning model on enhancing students' critical thinking abilities can be evaluated by comparing the mean values of the gained critical thinking ability. The observed data from critical thinking assessments during the learning activities in each meeting of the experimental group indicated a noteworthy increase. Conversely, the control group also exhibited an improvement, though it did not reach statistical significance.

The research findings strongly indicate that the Group Investigation (GI) learning model has a substantial influence on students' critical thinking abilities. This positive effect is attributed to various factors. First and foremost, the experimental class demonstrated a higher level of activity compared to the control class. This heightened activity was particularly evident in the experimental group's students who actively expressed their opinions. The willingness to voice opinions is recognized as a fundamental aspect of critical thinking skills. Chance (cited in Hidayati, 2014) highlights that critical thinking encompasses the ability to analyze facts, generate ideas, defend opinions, make comparisons, draw conclusions, evaluate arguments, and solve problems. In the context of this research, the increased student engagement in expressing opinions contributed significantly to the observed improvement in critical thinking.

Another contributing factor to the success of the GI learning model was the students' ability to identify and define the problem topic. This identification was facilitated by using pictures provided by the lecturer. Thirdly, the structured discussion activities implemented in the experimental class played a pivotal role. The Group Investigation-based discussions trained students in articulating and expressing their opinions effectively. These discussions required each student to engage in meaningful communication, constructive argumentation, and be accountable for their statements, all supported by relevant evidence.

In summary, the positive impact of the Group Investigation learning model on students' critical thinking abilities can be attributed to increased student activity, the effective identification of problem topics, and the structured discussion activities that fostered articulate expression and

accountability. These findings underscore the significance of pedagogical approaches that actively involve students in the learning process, encouraging critical thinking skills to flourish.

CONCLUSIONS

Based on the formulation of the problem and the results of the research, it can be concluded that the implementation of the Group Investigation (GI) model, which consists of grouping, planning, investigation, organizing, presenting, and evaluating stages, was generally executed fairly well. The critical thinking ability of students in the System Information faculty before the implementation of the Group Investigation model was generally categorized as non-critical, both in the experimental group and the control group. However, there was an increase in students' critical thinking skills to a critical level in the experimental group after receiving the Group Investigation model treatment, while the control group experienced an increase to a less critical level. The implementation of the Group Investigation (GI) model has a significant influence on the critical thinking ability of students in the System Information study program at Institut Teknology Business and Language Dian Cipta Cendikia Kotabumi.

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