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1 Enhancing Students' Critical Thinking Skills Through Problem-Based Learning

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Many researchers claim that speaking is one of the most difficult skills for students to master. In speaking class, many students are unable to speak and express what they think critically. To address this issue a research project was conducted using a problem-based learning model.

This research was a collaborative classroom action research project aimed at finding out whether the use of problem-based learning could improve the students' critical thinking skills in speaking in the subject, Professional Speaking. Thirty-eight students in the 2nd semester of IAIN Metro-Lampung participated in this research project. Data were collected by using speaking tests, observation checklists and field notes, then analysed by using percentage formula for the quantitative data (the students' pretest scores and posttest scores). The approach advocated by Miles and Huberman (1994) for data reduction, data display and data conclusion was used for the qualitative data.

The result of the research showed that the use of problem-based learning in teaching professional speaking could improve the students' critical thinking skills. In the speaking process, the students were not only more motivated, but also more active in doing the tasks both individually and in group discussion. In short, problem-based learning improved students' critical thinking skills in speaking.

Introduction

Good speaking skills are one of the most important aspects of being able to communicate well. For this reason, students are taught the subject of English speaking with the aim that students will have the ability to speak and communicate in English well. However, getting students to speak English is a difficult job for English teachers in Indonesia. It needs a long process of practice and learning. To be able to speak properly requires many aspects that must be mastered by students. Having good vocabulary is one of the requirements that must be filled to be able to speak well, and students in this era are also required to have the ability to think critically and think creatively.

An important focus of language learning in accordance with learning in the 21st century is critical thinking skills. For success in today's world, students require core academic subject knowledge and understanding, in addition to other skills such as critical thinking and problem solving, creativity and innovation, communication and collaboration (Thaiposri & Wannapiroon, 2015). Nowadays, the main point of education is not to teach reading, writing or arithmetic, but it is to teach how to use thinking skills such as not only creativity but also qualified problem solving skills (Runco, 2014), scientific and technological literacy skills (Tortop, 2013) because these are the skills that are required for sustainability and lifelong education in addition to basic education.

Critical thinking is define as the intellectual thinking skills like analyzing, reasoning, problem solving, creative thinking, making judgement and good decision maker (Hussin. *et al*, 2019). Critical and creative thinking are connected to each other, in producing an effective thinking and problem solving. For that reason, teaching higher order cognitive abilities such as critical thinking has always been the ultimate

goal of education (Spendlove, 2008). Tuzlukova and Prabhukanth (2018) stated that critical thinking is an important skill for our students' academic, personal, work and civic life. Bringing critical thinking in classrooms is beneficial as it deals with real life situations (Gandimathi & Zarei, 2018).

1 In real learning, helping students to be able to think critically in the learning process, especially for learning speaking is not an easy thing to do. Based on the results of the observations made in the professional speaking subject, it can be concluded that there are many obstacles both in the learning process and the learning outcomes obtained by students. The learning process of speaking is due to the lack of students' participation in learning activities. Most of students are reluctant to speak English aloud. Only few students are active in the learning process, such as answering questions or asking questions about things that they do not know. This happens because it is caused by several internal and external factors.

As we know, internal factors are very influential in the success of one's learning. Internal factors that prevent students participating less in the learning process include low learning motivation, lack of self-confidence, and low of critical and creative thinking skills. On the other hand, external factors also influence the success of the process and students' learning outcomes. External factors that influence including the teacher's role in the learning process, the use of various media, techniques, strategies, and learning models.

In the speaking process, ideally students have an active role in the learning process, so that the learning process becomes more meaningful. However, a good communication process between lecturers and students in the learning process is needed. Students are expected to be able to use critical thinking skills in expressing the ideas in completing their assignments. Beside to think critically during the learning process, students are also expected to be able to use their ability to think critically in solving the problems they face in real life. For this reason, a lecturer's creativity is needed in applying various techniques, media or learning models to encourage students to think critically in the learning process, especially learning professional speaking.

Many learners have not grasped the meaning of thinking as an objective of learning and education, and thus questions, which require thinking, are challenging. In modern world, to increase students' capacity for problem solving and critical thinking is presented as a goal of education in all fields (Paul & Elder, 2012). Problem-based learning model is considered as an appropriate learning model to be applied in order to improve students' thinking abilities in the speaking learning process. According to Tiwari et al. (2006), problem-based learning is the best teaching strategy to enhance critical thinking skills and it is supported by proof from empirical studies. Problem Based Learning (PBL) is defined as a pedagogical approach which uses cases and problems as departure points in order to accomplish the intended learning objectives (Tortop and Ozek, 2013). Students' problem solving, self-directed, collaborative learning skills and motivation levels are aimed to be developed during the problem solving process (Hmelo-Silver, 2004). Problem-based learning is a student-centered approach to learning which enables students to participate in small group work during the learning process in order to foster deeper learning. In the PBL approach, students encounter the problem-solving situations in small groups. Students' critical thinking skills are fostered through their group discussion (Yuan et al., 2008). In this capacity, several advantages for students learning are claimed for problem-based learning model to increase critical thinking ability.

Problem-based learning (PBL) is a pedagogy where students gain knowledge about a subject through solving an ill structured problem (Lapus & Fulgencio, 2020). Problem-based learning is a motivating, challenging and enjoyable learning approach (Norman and Schmidt, 2000). Recent research has highlighted Problem-based learning (PBL) is considered a student-centered instruction approach in which

inspired students to apply critical thinking through simulated problems in order to study complicated multifaceted, and practical problems that may have or not have standard answers (Huan & Wang, 2012). Problem-based learning is often theorized to promote students' higher order thinking skills, especially reasoning skills (Savery, 2006). Problem-based learning challenges students to solve authentic problems in information rich settings. They can construct their own solution that contributes to the most effective experience learning.

Piau (2004), points that critical thinking is a discipline manner of thought that a person uses to evaluate the validity of something (statements, new ideas, argument, research, etc). Some authors explain that critical thinking is the process of an individual taught to reason in improving the solution. Thus, the analytical process of reasoning must arrive at logical, rational, and reasonable judgments, within a given framework, and must agree with specific principles of thinking, as proposed by Facione (2006): Analysis (identifying and examining ideas and arguments), Inference (drawing conclusions), Interpretation (clarifying meaning through categorization and translation), Self-regulation (self-assessment and reflection), Explanation (justifying results, arguments or procedures), Evaluation (assessing arguments).

Based on the above definition, critical thinking ability is possibly nurtured by problem-based learning, through the process of problem solving, particularly within group brainstorming sessions (O'Grady and Alwis, 2002). During these sessions, students critically consider one best possible solution for the problem at hand. The process is mediated by a facilitator, who is responsible for probing their meta-cognitive thinking, in making any decision (Wee, 2004). It is believed that probing questions may engage students in a systematic cognitive process that promotes the development of the students' reasoning ability. In addition, other processes, such as discussion, debating, sharing, and teaching one another, creates a platform for students to experience an environment that is conducive for critical thinking to grow (Wee, 2004). Similarly, students develop their critical thinking, especially reasoning skills through the process of interaction, reflection, and feedback in the problem solving or in the formative assessment process (Savery and Duffy, 2001). Erdogan (2019) stated that Teaching critical thinking and problem solving effectively in the classroom is vital for students because today's citizens must be active critical thinkers if they are to compare evidence, evaluate competing claims, and make sensible decisions. Critical thinking is applicable whenever people are called to make a decision or resolve a problem (Linda, 2014).

Problem-based learning is challenging, and enjoyable learning approach that has resulted from the process of working towards understanding or resolving a problem. A problem-based learning model, promotes learning through the concept of 'learning by doing', which creates an opportunity for students to learn by experiencing the process of problem solving. The lecturer in Problem-based learning acts as a facilitator and monitors students' progress, stimulates their meta-cognition, sets the tone and plays a major role in setting group norms conducive to learning. In this study, problem-based learning was used to improve students' critical thinking skills in speaking subject.

Methodology

This research is categorized as action research which is collaborative in nature. The aim of this study is to show the improvement of the process of speaking and the improvement of the students' critical thinking. The action research method consisting of four steps outlined by Kemmis and McTaggart (Burns, 2010) was used in this research: planning, action, observation, and reflection. The participants were thirty-eight students in the 2nd semester of IAIN Metro-Lampung. Data were collected by using speaking tests, observation checklists and field notes, then analyzed by using percentage formula for the quantitative data (the students' pretest scores and posttest scores). The approach advocated by Miles and Huberman

(1994) for data reduction, data display and data conclusion was used for the qualitative data. Two cycles of action research were used.

Finding and Discussion

The Improvement of the Process of Speaking Skills

The learning process of speaking using problem-based learning is expected to improve students' critical thinking skills. Based on the results of observations and field notes that have been made by the lecturer and collaborators in the first and second cycles, it appeared that students' critical thinking skills have increased. The activities used in the problem-based learning model involved orienting students to the problem, organizing students for study, assisting independent and group investigations, developing and presenting artifacts and exhibits, analysing and evaluating the problem solving process, students showed an improvement in their speaking in English. Critical thinking skills observed included six levels of thought processes; analysis, inference, interpretation, self-regulation, explanation, and evaluation.

The first stage in implementing a problem based learning model was orienting students to the problem, there was an improvement from the first cycle to the second cycle of students' response toward the explanation from the lecturer about the steps of problem based learning model. The two cycles showed the students' enthusiasm in doing the task. The second stage involved organizing students for study. In this stage, at the first cycle they still confused how to do the task, but at the second cycle they showed a good improvement. The third stage of problem based learning was to assist independent and group discussion. In this stage, for both cycles students also showed their good improvement. They participated in group discussion and made some experiments about the problem that they had to solve well. The next stage was develop and present artifacts and exhibits. In both cycles, the students were so motivated to finish their task. They did very well activities. The improvement of both cycles were so good. The last stage was evaluation. The students were confident to show the result of their problem solving. It can be seen from both cycles.

The students' attitudes in these two cycles taught using the problem-based learning model were very different than before they did the process of speaking lesson without problem-based learning model. The students' motivation to get involved in the process of speaking lesson was getting better than before. They were serious in the process of learning. Most of students looked so enthusiastic in doing the task. They were active in their group discussions. They explored their critical thinking skills in solving the problems that they had to solve. They could analyse the problems briefly, made some inferences and also interpreted the problems better. They could make their self-regulation, made the explanation of the result of their problem solving, they could also evaluate the statements, perceptions, event someone believe. They could be problem solvers.

The Improvement of Students' Critical Thinking in Speaking

The students' critical thinking skills improvement on the first and second cycle of the action research can be seen from the result of the implementation of problem-based learning model. If we compared the students' critical thinking skills in the first cycle and the second cycle, there was an improvement in their speaking. The all aspects of students' critical thinking in speaking were improved. The five aspect of critical thinking skills were; analysis, inference, interference, self-regulation, explanation, and evaluation.

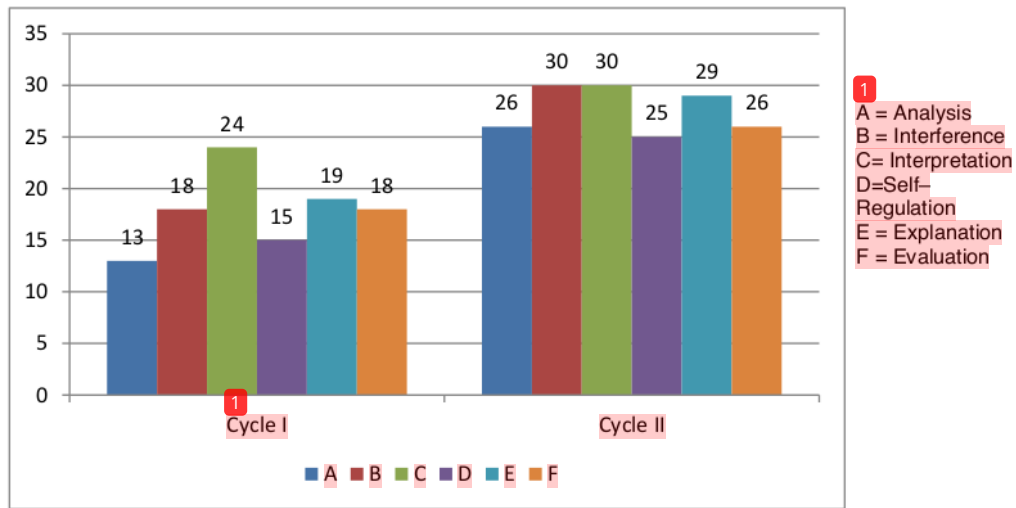


Figure I. The Improvement of Students' Critical Thinking

From the figure above we can conclude that all the aspects of students' critical thinking were improved. Analysing improved from 13 students who got correct answer at the first cycle to 26 students at the second cycle. Interference, this was also improved from 18 students to 30 students who answered correctly. Interpretation also showed a good improvement, from 24 students in the first cycle became 30 students at the second cycle. Self-Regulation also showed an improvement in both cycles. The next Explanation improved from 19 in the first cycle to became 29 students in the second cycle. The students also showed very good improvement in Evaluation.

If we compare the students' pretest results where they only achieved 60.50 to their posttest results after participating in problem-based learning that they achieved 84.30, we can conclude the students' critical thinking skills in speaking were improving. The improvement of the students' critical thinking skills in speaking can be seen from the following diagram.

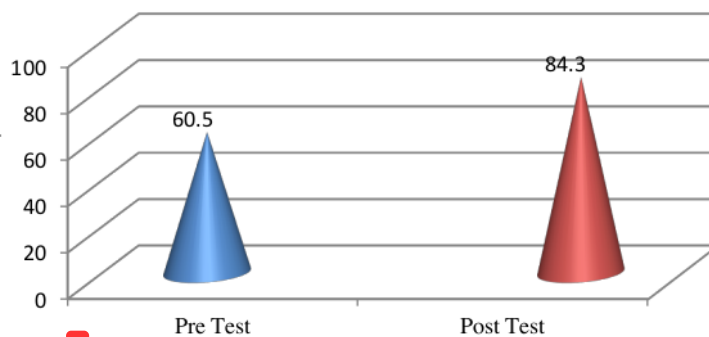


Figure 2: The Improvement of the Students' Speaking skills

Conclusion

The use of the problem-based learning model was effective in improving students' critical thinking skills in speaking. The students' classroom interaction in the process of speaking instruction and the students' critical thinking skills were improved through the implementation of problem-based learning model.

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