

Implementation of Creative Entrepreneurship Learning Model Based on Discovery Skills to Improve PSTE Students' Entrepreneurial Skills in Science Learning of Energy Material

Hadi Mulyono, Idam Ragil Widiyanto Atmojo*, Hasan Mahfud, Riky Rivaldi Pratama

Primary School teacher Education, Faculty of Teacher Training and Education Universitas Sebelas Maret

hadimulyono@staff.uns.ac.id, idamragil@fkip.uns.ac.id*

Abstract. Creative thinking skills are essential skills for 21st-century life. Creative thinking skills are closely related to the ability to produce creative ideas to compete globally. The purpose of this research was to improve creative-thinking skills using the Creative Entrepreneurship Learning Model-Based Discovery Skills (CEL-BaDiS). This type of research is classroom action research with the implementation of three cycles and each cycle consists of two lesson process. Each meeting consists of four steps of planning, action, observation and reflection cycles. The data was collected by using several techniques such as observation, interview, documentation and creative thinking test. The interactive model was used to analyze the data. The assessment of the research showed that both students' creative thinking and teacher's performance increased gradually. Based on the results of the research, it can be concluded that the CEL-BaDiS learning model can improve creative thinking skills on energy material.

Keywords: *creative thinking, CEL-BaDiS, science education introduction*

INTRODUCTION

Entrepreneurial skills are one of the skills to be mastered by students. Entrepreneurial skills must start with creative-thinking skills. Creative thinking is divided into four parts, namely: fluent thinking (fluency), flexible thinking (flexibility), original thinking (originality), and thinking in detail (elaboration) [Perry, 2017] [Srikoon, 2018] [Miller & Dumford, 2015]. These thinking skills are not only about students being able to understand concepts, memorizing material, but also how they can find ideas, solve problems in new ways, classify things according to their categories, and create something new or modify [Bacanl, 2011] [Jankowska & Karwowski, 2018] [Kim, 2016]. Entrepreneurship in science learning must begin with creative-thinking skills, namely thinking to solve problems systematically with the development of ideas.

Based on the interview results with PSTE (Primary School Teacher Education) Lecturers on May 3, 2019, it is known that the entrepreneurial skills of PSTE students are still relatively low. PSTE students are less able to give more than one idea or ideas that were not previously found in books. They still find it difficult to answer questions using their own ideas.

Based on the interview results with PSTE students on May 16, 2019, science is classified as a subject that develops students' ideas or soft skills a lot. The lecturer provides ample scope in the development of their soft skills, but PSTE students do not actively participate in learning. The data is supported by the result of the questionnaire given to all PSTE students in the fourth semester (30 students) by 87% (26 students) arguing that the lecturer has given space to students to develop entrepreneurial skills, but they do not utilize the facilities provided. The observation of entrepreneurial skills through predetermined indicators shows that the PSTE students'

entrepreneurial skills are still relatively low. This was obtained from the results of the pretest conducted. Only 10% or 3 PSTE students were categorized as quite creative, 23.3% or 7 students less creative and 66.6% or 20 students not creative out of 30 PSTE students.

The problems found in interviews and observations are obstacles in supporting the entrepreneurial skills of PSTE students. There needs to be an improvement from the low entrepreneurial skills. Several researches have shown that innovative and cooperative learning models can enhance entrepreneurial skills. Adi Sifa Muhammad's research [2018] has applied the Project Based Learning model to improve entrepreneurial skills. The research conducted by Sulistiyono [2017] is to improve entrepreneurial skills through Biology learning based on Speed Reading-Mind Mapping. Then, we need an innovative learning model that can improve entrepreneurial skills of PSTE students. The learning model to be applied must be able to provide stimulus to PSTE students to be creative in creating ideas such as in the research conducted by Harini Widyaningtyas [2011] who uses the creative problem-solving learning model. One learning model that can enhance entrepreneurial skills is the Creative Entrepreneurship Learning Based on Discovery Skills (CEL-BaDiS) learning model [Atmojo, 2019].

The CEL-BaDiS learning model consists of 6 stages beginning with the associating stage. Associating is an activity to process information collected through the review of articles and reference books that are consistent with the material provided by the teacher. The association stage will form a link in the memory or five senses. Associative thinking skills can be empowered so that PSTE students are able to synthesize the information obtained [Sumen, 2016]. The second stage is the questioning stage, the activity of asking questions about information that is not understood or a statement to obtain additional information about what is understood [Reza, 2011]. The third stage is the analyzing stage, the decision-making activity on a problem by linking the relationship of each component, so that a conclusion can be drawn. The fourth stage is the creating stage, the process of formulating by referring to the process predicting various possibilities that occur to create a hypothesis in overcoming a problem based on certain criteria. The fifth stage is the communicating stage, the delivery of information in writing or verbally as important input for PSTE students so that lessons become effective [Mohd & Halim, 2014] [Anderson, 2018]. The last stage is entrepreneurial persuasion and networking. Persuasion is the activity of persuading or inviting individuals or groups to do something according to what they want to earn a profit. Networking is the activity of finding and testing various ideas through a network of individuals with different backgrounds and perspectives [De Kruijf & D Jan, 2015] [Carvalho & Goodyear, 2017]. Entrepreneurship skills need to be possessed by elementary school students, this is because in this skill there are aspects that students need to have to face the 21st century in the form of self-confidence, creative and innovative thinking [Atmojo, 2019].

Based on the findings, this research aims to improve PSTE students' Entrepreneurial skills. The benefit of using the CEL-BaDiS learning model is to stimulate PSTE students' entrepreneurship skills to increase. This research can be used as a reference for other researchers related to efforts to improve entrepreneurial skills.

METHOD

This research was conducted on PSTE (Primary School Teacher Education students UNS Surakarta. It had been conducted for 7 months, from April to October 2019. The research approach used is Classroom Action Research, a type of research conducted by Wardananti

(2016). The research was conducted in three cycles, each consisting of two meetings. The data used in this research were qualitative and quantitative data. The qualitative data was in the form of observations, interviews, and documentation. The quantitative data in this research was in the form of students' entrepreneurial skill test results. The data was collected using observation, interviews, entrepreneurial skill test and documentation. The entrepreneurial skills test results were used to categorize students based on their creativity levels. They are categorized as creative if they reach a score of more than 75, creative 51 to 75, less creative 26 to 50, and creative 25. The data was validated using content validity. The data was analyzed by Miles-Huberman (2015) interactive analysis through four stages of data collection, data reduction, data presentation, and conclusion/verification.

RESULTS AND DISCUSSION

The pre-test results show that most students do not have good entrepreneurial skills. The pre-test results are described as follows:

Table 1. Frequency Distribution of Entrepreneurship Skill Pre-test Score

No.	Interval	Median	f	%	
				Relative	Cumulative
1	0-11	5.5	2	7	7
2	12-23	17.5	8	27	34
3	24-35	29.5	11	37	71
4	36-47	41.5	3	10	81
5	48-59	53.5	5	16	97
6	60-71	65.5	1	3	100
Total			30	100	
Mean Score = 31,1					
Completeness = 0%					
Lowest Score = 0					
Highest Score = 66,67					

Based on the data above, the lowest score on the student's entrepreneurship skill pre-test is 0 and the highest score 66.67. The mean score is 31.1 with a classical completeness of only 0%. After implementing the CEL-BaDiS learning model on energy material, the PSTE students' entrepreneurial skills increased from the pre-test.

The results of the entrepreneurial skill test in the first cycle are described in the following frequency distribution table:

Table 2. Frequency Distribution of Entrepreneurship Skill Score in Cycle I

No.	Interval	Median	f	%	
				Relative	Cumulative
1	50-57	53.5	4	13.33	13.33
2	58-65	61.5	9	30	43.33
3	66-73	69.5	2	6.67	50
4	74-81	77.5	5	16.67	66.67
5	82-89	85.5	8	26.67	93.34
6	90-97	93.5	2	6.67	100
Total			30	100	
Mean Score = 72,16					
Completeness = 33.33%					
Lowest Score = 50					
Highest Score = 91,67					

Table 2 shows that the mean score of the students' entrepreneurial skills has increased compared to the pretest score. The mean score of the students' entrepreneurial skills in the first cycle is 72.16 with classical completeness of 33.3% or 10 students who meet the completeness. The increase in the mean score and classical completeness has not yet reached or met the research performance indicators that have been set so that the second cycle was conducted. The results of the second cycle of the entrepreneurial skill test are outlined in the following frequency distribution table:

Table 3. Frequency Distribution of Entrepreneurship Skill Score in Cycle II

No	Interval	Median	f	%	
				Relative	Cumulative
1	50-57	53.5	2	6.67	6.67
2	58-65	61.5	7	23.33	30
3	66-73	69.5	0	0	30
4	74-81	77.5	1	3.33	33.33
5	82-89	85.5	17	56.67	90
6	90-97	93.5	3	10	100
Total			30	100	
Mean Score = 78,33					
Completeness = 66.67%					
Lowest Score = 50					
Highest Score = 91,67					

Based on the data description from Table 3, the mean score of the students' entrepreneurial skills in the second cycle is 78.33 with a classical completeness of 66.67% or a total of 20 out of 30 completed students. The research performance indicators have not yet been reached so the next cycle was conducted. The explanation regarding the frequency distribution of the scores in cycle III is as follows:

Table 4. Frequency Distribution of Entrepreneurship Skill Score in Cycle III

No	Interval	Median	F	%	
				Relative	Cumulative
1	50-57	53.5	1	3.33	3.33
2	58-65	61.5	2	6.67	10
3	66-73	69.5	2	6.67	16.67
4	74-81	77.5	0	0	16.67
5	82-89	85.5	20	66.67	83.34
6	90-97	93.5	5	16.66	100
Total			30	100	
Mean Score = 83,1					
Completeness = 83.33%					
Lowest Score = 50					
Highest Score = 91,67					

The data description on the scores of the students' entrepreneurial skills in Table 5 shows that the mean score in the third cycle is 83.1. In cycle III, the action was stopped because the

classical completeness was more than 80%, that is 25 students got creative criteria (83.33%). Learning in cycle III has been successful and the research performance indicators have been achieved with no significant obstacles.

Based on the treatment in cycle I to III, it shows that the CEL-BaDiS learning model can improve the entrepreneurial skills of PSTE students in UNS. The CEL-BaDiS learning model can empower creativity and enhance entrepreneurial skills. Improvement of entrepreneurial skills can be done by facilitating students' learning to develop their imagination, providing opportunities for thinking, encouraging them to express their ideas, and giving opportunities to obtain new information. These can be optimized with the CEL-BaDiS learning model [Ersoy, 2014][Babalıs, 2012][Çetinkaya, 2014]. This is as stated in Atmojo's research that the CEL-BaDiS learning model can improve the entrepreneurial skills of PSTE students in the Faculty of Teacher Training and Education of UNS.

CONCLUSIONS

Based on the description of the findings, it can be concluded that the implementation of the CEL-BaDiS learning model can improve the entrepreneurial skills of PSTE students. This is evidenced by that data that shows an increase in entrepreneurial skills in each cycle. The percentage of entrepreneurial skills in the pre-action was 0%. The percentage in the first cycle is 33.33%, the second cycle 66.67%, and the third cycle 83.33%. The findings provide theoretical implications as knowledge, insight, and a reference for the similar research. This research also has practical implication for the learning process in the form of improving entrepreneurial skills in the form of self-confidence, creative and innovative thinking after the implementation of the CEL-BaDiS model.

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