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A Guide for the Creativity in Modifying Problem-Solving Based Learning Media of Students of IKIP-PGRI Pontianak

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ABSTRACT

This research aimed to 1) describe students' creativity in modifying problem-solving based learning media, 2) develop a guide for students' creativity in modifying problem-solving based learning media, and 3) assess the accuracy of usage of the guide for students' creativity in modifying problem-solving based learning media. It employed a research and development method and a research design which was adapted from Borg and Gall's model. The subject of research was a group of college students in semester VI academic calendar 2017/2018 who were taking micro-teaching courses in IKIP PGRI Pontianak. Data were collected using observation and questionnaires. The data were analysed using a series of interactive model analysis: data reduction, data presentation, and conclusion drawing. The results showed that: 1) a guide for students' creativity in modifying problem-solving based learning media was well developed according to pre-planned stages; 2) the students' creativity in modifying problem-solving based learning media were in "good" category; and 3) the usage of the guide for students' creativity in modifying problem-solving based learning media was deemed appropriate as 60% students managed to modify their learning media.

Keywords: guide, creativity, learning media, problem-solving

INTRODUCTION

Initially, curriculum merely referred to an achievement of competence. Later, in an attempt to qualify college graduates in Indonesia, the government issued a Presidential Decree (Perpres) No. 08 Year 2012 on Indonesian National Qualifications Framework (INQF). Later it became a reference in developing learning achievements for graduates from every education level nationwide.

Given the INQF, our perspectives on individual's competence, hopefully, may be changed. Competence is a set of knowledge, skills and behaviors which must be possessed, reflected and mastered by teachers or lecturers in conducting their professional tasks. This is in line with the Regulations of the Republic of Indonesia No. 14 Year 2005 regarding teachers and lecturers on Paragraph 1 Clause 10.

After the INQF curriculum was implemented, college students in education programs will take school internships three times. In this research, the internships were conducted in the Faculty of Languange Education and Literature and the Faculty of Natural Sciences Education and Technology of IKIP PGRI Pontianak during semester IV, VI and VII. The objectives of the internships were: 1) to enhance teachers' competence as professional teachers, 2) to train mature thinking, 3) to integrate theories and facts in the field, and 4) to shape graduates' competence according to the stakeholders' need.

The students, during the internships, performed several activities. In the first internship, they observed school culture and management. In the second intership, they examined existing curriculum, the development of learning apparatus and assessment system, and observed learning

activities. In the third internship, they practiced teaching in class. Students who managed to finish all internships were the ones who had finished and passed the micro-teaching courses.

Micro-teaching courses allow teacher candidates to practice and master basic teaching skills easily, quickly and accurately before mastering advanced, complete ones (Samion et. al., 2016). During their teaching training, students were expected to show creativity in delivering materials using selected media.

Creativity is a process which requires stability and application of three essential aspects such as analytical, creative and practical thinkings (Makmur, 2015). Creativity can be identified when students manage to see numerous possibilities and assumptions and discover new ways and strategies for solving certain problem (Ricardo et. al., 2014). This is in line with the objectives of Higher Education based on the Regulations No. 12 Year 2012 concerning Higher Education on Paragraph 5 point a about developing students' potentials in order to become individuals who are faithful towards the Almighty God, good hearted, healthy, knowledgeable, skilled, creative, independent, competent, and cultured for the sake of nation's interests.

Sternberg posits that in developing creative thinking ability, there are several strategies that can be used, i.e. 1) redefine problem, 2) question and analyze assumptions, 3) sell creative ideas, 4) generate new ideas, 5) see both sides, 6) identify and solve problems, 7) take calculated risks wisely, 8) tolerate ambiguity, 9) develop self-efficacy, 10) discover true passions, 11) postpone satisfaction and 12) develop creativity model (Manurung & Surya, 2017).

Several factors which impede the development of creative thinking, according to Munandar, are overly controlling teachers, memorizing learning mechanism, student's psychological condition and learning process which may be unchallenging and poorly stimulate students' competence (Fadilah, 2016).

Students' creativity which is assessed in micro-teaching courses is related to how it shapes learning media they would make and use. According to Association for Educational Communications Technology (AECT), learning media is any means used to deliver messages (Falahudin, 2014). Miarso (Rusman, 2012) defines learning media as any means used to deliver messages and stimulate learner's thinking, feeling, attention and will, evoking deliberate, goal-oriented and controlled learning process.

A good learning media is supposed to be acceptable for learners. Therefore, students were asked to modify existing learning media which would allow them to deliver the materials well. A different learning media usually attracts students' learning interests during a learning process.

In order to achieve such ideal, a guide for developing students' creativity in modifying learning media is required. Such guide must be able to improve students' creativity in modifying or create a different media from the existing ones. One of available methods which can be used to develop students' creativity is problem-solving method.

According to Hamalik, problem-solving method is a mental and intellectual process for identifying and solving problem based on accurate data and information, so a sound conclusion can be drawn (Winarso, 2014). Problems, according to Ormrod (Patnami, 2013), are categorised into 2 types, namely 1) well-defined problems, those that have straight-forward, clear goals and information needed to solve and provide right answers and 2) ill-defined problems, those that have uncertain, unclear goals and information which possess multiple possibilities for answers.

Sani (2013) argues that a problem-solving strategy is very beneficial for students since it trains student's creative thinking in facing personal and collective problems that need to be solved alone or in group. Therefore, the usage of problem-

solving method is expected to improve students' creative thinking capability in modifying learning media.

Based on the explanation above, the aims of this research, therefore, were 1) to develop a guide for students' creativity in modifying problem-solving based learning media according to pre-planned stages; 2) to observe students' creativity in modifying problem-solving based learning media; and 3) to observe accuracy of usage of the guide for students' creativity in modifying problem-solving based learning media through students' capability in modifying learning media.

RESEARCH METHOD

This research belonged to Research and Development category, meaning that it was conducted to produce certain products and test their effectiveness. Its framework and model components were developed based on real situations or conditions and assessment from college students who took micro-teaching courses.

The research was conducted in the Teacher Training and Education - Institute of the Republic of Indonesian Teachers Association (IKIP PGRI) of Pontianak, using students in semester VI academic calendar 2017/2018 who took micro-teaching courses as the research subject. In the academic calendar 2017/2018, the students who took micro-teaching courses were from the Faculty of Natural Sciences Education and Technology and the Faculty of Language Education and Literature.

The design of research consisted of three activities: preliminary research, product development and effectiveness test adapted from Borg and Gall's model (2003: 569).

The technique and tool for collecting data used in this research were observation and questionnaires. Data were analysed using the interactive model analysis which consisted of 3 steps: 1) data reduction, a process of selecting and simplifying data taken from the field; this process was performed throughout the research; 2) data presentation, a set of structured information which provides possibilities for conclusion drawing and action-making; and 3) conclusion drawing, where a conclusion is drawn and verified on its reliability, robustness and fit during the course of research.

RESULTS AND DISCUSSION

A guide for developing students' creativity was developed based on several steps explained above. Before it was developed, a preliminary research was conducted to measure students' creativity based on 4 dimensions, such as 1) fluency of thinking, 2) flexibility, 3) elaboration and 4) originality.

The preliminary research resulted in data as presented in Table 1 below:

Table 1. A Summary of the Result of the Preliminary Research

No.	Aspects Measured	Categories	
		High	Needs Improvement
1	Fluency of Thinking	45,45%	54,55%
2	Flexibility	69,52%	30,48%
3	Elaboration	60,43%	39,57%
4	Originality	49,73%	50,27%

Table 1 presents how students' creativity, in the preliminary research, is viewed from four dimensions: 1) fluency of thinking shows that students' creativity needs improvement of 54,55%, 2) flexibility shows that students' creativity needs improvement of 30,48%, 3) elaboration shows that students' creativity needs improvement of 39,57% and 4) originality shows that students' creativity needs improvement of 50,27%.

The data collected from the preliminary research became one of underlying factors in developing a guide for students' creativity in modifying learning media. The development of guide for students' creativity later moved on to the problem-solving stage. This stage consisted of four steps: 1) Problem Identification, 2) Brainstorming, 3) Evaluation and Selection, and 4) Implementation.

The first step, problem identification, involved providing explanation for students pertaining to problems proposed in order to make them understand which solution was expected from them. The step was conducted to observe the fluency of thinking dimension of students' creativity.

The second step, Brainstorming, was where students were free to give their opinions on various problem-solving strategies. No rejection of ideas was done here. The objective was to generate ideas, show opinions on possible solutions for the problems being faced as many as possible. This step was conducted to observe the flexibility, elaboration and originality dimensions in students' creativity.

The evaluation and selection steps were conducted after a list of ideas was generated. The students and lecturers evaluated and selected the ideas regarding problem-solving strategies, so in the end an optimal idea was chosen. These steps were conducted to observe the fluency of thinking and flexibility dimensions of students' creativity.

In the implementation step, students presented the learning media they made and showed the way to use it in front of the class. The supervisory lecturers gave their comments on that. This step was conducted to observe the fluency of thinking, flexibility, elaboration and originality dimensions of students' creativity.

The implementation of testing the guide for students' creativity was performed in the Faculty of Language Education and Literature of Indonesian Language Education Program. The results showed that 27,27% students succeeded in modifying the learning media while the rest of them (72,73%) needed improvement. See Figure 1 for a detailed information.

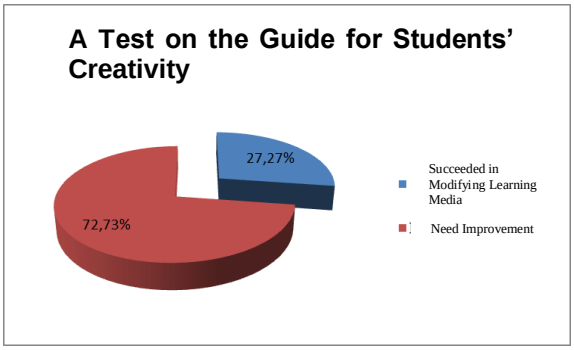

Figure 1. A Test on the Guide for Students' Creativity

The results of test were then evaluated and improved. The results of evaluation suggest that: 1) the students had not fully understood the explanation on the problems given by the lecturers in modifying learning media; 2) the lecturers did not employ the steps in the guide for students' creativity in modifying the problem-solving based learning media. This was caused by the lecturers' inability to memorize the order of the steps.

Based on the results of evaluation, several revisions for the guide were made. After that, the guide for students' creativity in modifying the problem-solving based learning media was ready to be implemented.

The implementation of the guide for students' creativity in modifying the problem solving based learning media was conducted in the Faculty of Natural Sciences Education and Technology of Information Technology Education and Computer program. With the help of several observers during the implementation process, it was found that 60% students succeeded in modifying the learning media while 40% students needed improvement. This showed that students' creativity belonged to the 'good' category. The results of implementation are presented in Figure 2.

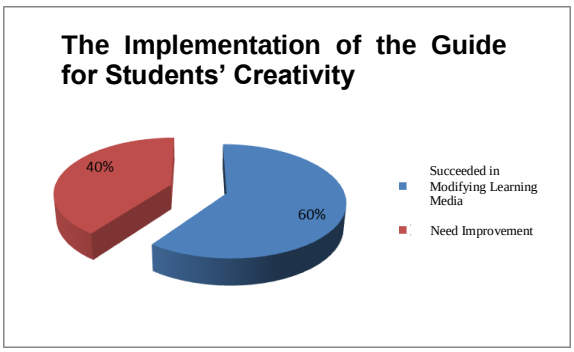

Figure 2. The Implementation of the Guide for Students' Creativity

From the series of activities performed, starting from the testing step up to the implementation of the guide for students' creativity in modifying problem solving based learning media, it can be seen that there is an increase in the creativity of the students of IKIP PGRI Pontianak in modifying the learning media. This finding is in accordance with the ones by Hidayati (2017) whose research was titled "The Implementation of a Problem-Solving Method to Improve Creativity and Achievement in learning Statistics." The results of her research showed that there was an increase in creativity through the usage of a problem-solving method.

From the results of this research it can be concluded that the guide for students' creativity in modifying problem solving based learning media was appropriate for improving students' creativity. This was supported by the percentage of students who succeeded in modifying their learning media.

CONCLUSION

The results of research show that 1) the guide for students' creativity in modifying problem-solving based learning media may be developed well according to pre-planned steps; 2) students' creativity in modifying the problem-solving based learning media belonged in the 'good' category, and 3) the usage of the guide for students' creativity in modifying the problem-solving based learning media was appropriate as 60% students succeeded in modifying their learning media.

This research is far from complete. A further evaluation on the guide for students' creativity in modifying learning media is required. It is also recommended for other researchers who wish to implement the guide that they must properly understand the content of the guide so, hopefully, they could provide explanation for students far more easily.

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