

Implementation of Project-Based Learning Methods to Increase Students' Creativity

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Abstract: Waste management is the responsibility of all elements in society, as well as prospective university students for primary school teachers. This research aims to: describe the process of developing PjBL model to grow the creative character as prospective university students for primary school teachers (PSTE) in conservation education courses, produce a PjBL model to grow the valid creative character as prospective university students PSTE in conservation education courses. This developmental research used the Four-D models. The model consists of four stages of development that Define, Design, Develop and Disseminate. The results showed the development process of the development of the PjBL model to foster creative characters of prospective university students for PSTE, particularly in conservation education courses on Waste Management material passed 4D development stage. The PjBL models developed in arising the creative character of prospective university students for PSTE in conservation education courses declared as valid by the validator. The implementation of creative characters is shown through the project activities done by the students and the creation of waste-based project. The final results showed the PjBL model to foster creative character which developed through the 4D stages passed the criteria as valid and practical.

Keywords: creative characters, conservation education courses, project-based learning

I. INTRODUCTION

Every year 11.2 billion tons of solid waste are collected worldwide. In upcoming years, the amount of accumulated waste will continue to increase together with growing population, an urbanization rate, overall economic and GDP/GNI per capita growth, an increase in production and consumption, and changes in a consumption pattern (Fallis, 2013).

The increasing population and urban activity in Indonesia result in an ever-increasing solid waste generation. The increase of volume and type of waste without proper management is a widespread problem found in most Indonesian cities. Most capital cities in Indonesia are yet to fully implementing the mandates of government regulation Law No. 18/2008, about solid waste management. Law No. 18/2008 changes the paradigm from waste dumping to waste recycling (Raharjo, Matsumoto, Ihsan, Rachman, & Gustin, 2017).

Semarang State University is a University that has a vision of conservation and international reputation. The meaning of conservation-oriented is the perspective and attitude of behavior oriented to the principles of conservation (preservation, maintenance, preservation, preservation, and development) of natural resources and socio-cultural values. UNNES in implementing "Tridharma Perguruan Tinggi" refers to the principles of conservation (protection, preservation, and sustainable use) of natural resources and cultural arts, as well as being environmentally friendly.

Thus, the development of UNNES as a conservation-oriented university contains a number of objectives. First, to support the government's efforts to implement the management of living natural resources and ecosystems. Second, protect, preserve, and utilize natural resources in a sustainable manner in the environment of UNNES and its surroundings through educational activities, research, and service for the

creation of a balanced ecosystem in it. Third, foster mental attitudes, behaviors, who are responsible and the participation of all UNNES citizens in efforts to conserve biodiversity, and preserve the environment and the arts and culture (Wibowo, 2017).

One of the pillars of conservation that is used as a foothold for campus residents in thinking, acting and acting is a pillar of values and character. The values and character of conservation have been developed by each faculty and become shared by all UNNES citizens. Values and characters include inspirational values, humanist values, caring values, innovative values, creative values, sportsmanship values, honest values, and fair values (Wibowo, 2017).

Creativity is essentially the ability to make new combinations based on data, information, or elements that already exist, both knowledge or experience (Munandar, 2012). Creativity can also be interpreted as a tendency to develop or introduce ideas, alternatives, or opportunities that will be useful in solving problems, communicating between people, and serving oneself and serving others. One important feature of a creative work is the element of novelty. Creative characters are only owned by people who always think creatively. Creative thinking has the characteristics of fluency, flexibility, originality, elaboration, and redefinition (Guilford, 1950).

In general, the development of creative character can be carried out through personal approaches, drivers, processes and products. Creativity cannot be released with the environment. In developing creativity, each individual must do many forms of interaction with the environment to stimulate new ideas. Every individual need encouragement to be able to come up with new ideas. Encouragement from outside the self or external encouragement can be in the form of appreciation, praise, intensive, promotion, and other forms of appreciation. The involvement of someone in various activities will

also help the emergence of creativity in him. Involvement in an activity is a form of process approach. Therefore, in order to form creative characters, everyone in a group must be involved as much as possible in every relevant activity. Involvement in each activity for the individual will give meaning to himself of the awareness of participation in the creation of a product. The feeling of participating in the process of creating this product will encourage oneself to think of creating new ideas.

Project Based Learning (PjBL) is a learning method that uses projects / activities as a medium. Students carry out exploration, assessment, interpretation, synthesis, and information to produce learning outcomes. Project-based learning is a method of learning that uses problems as a first step to gathering and integrating new knowledge based on experience in actual activities. Project Based Learning is designed to be used in complex problems that are needed by students in conducting investigations and understanding them.

PjBL was chosen because with this model students can solve problems in daily life with real activities. So that it can develop creativity in producing a product. The results of the study revealed that students who learned science by project-based teaching strategies perceived their classroom learning climate as significantly more Satisfying and Enjoyable, with greater Teacher Supportiveness, and the Teacher-Student Relationships as significantly more positive (Hugerat, 2016).

Students as prospective elementary school teachers must have provisions to be creative teachers. From this background, the researcher will study the research under the title Growing the Character of Creative Elementary Teachers through the Project Based Learning (PjBL) Model in the Conservation Education Course on waste management material.

The research objectives are as follows: describe the process of developing PjBL models to foster the creative character of elementary school teacher candidates in Conservation Education courses, produce a PjBL model to foster the creative character of elementary school teacher candidates in a valid Conservation Education course.

II. METHOD

The type of research method used in this research is the type of research and development methods. Research and development methods can be interpreted as a scientific way to research, design, produce and test the validity of products that have been produced (Sugiyono, 2016). This study uses the Four-D Model suggested by Thiagarajan, Semmel, and Semmel (1974).

This model consists of 4 stages of development, namely define, design, develop, and disseminate or adapted into a 4-D model. The instruments used in this research are validation sheets, observation sheets and questionnaires. Data analysis techniques using qualitative descriptive percentage analysis and quantitative analysis.

III. RESULT AND DISCUSSION

The four stages of development Project Based Learning Model namely: define, design, develop, and disseminate or be adapted into a 4-D model are as follows:

1. Defining Phase

Includes a preliminary analysis of the problems faced in the research, namely the development of the Project Based Learning model for elementary school teacher candidates; concept analysis of the PjBL model developed; material analysis included in the PjBL model developed; analysis of project forms in the model.

2. Design Phase

Includes the preparation of RPS, SAP and Worksheets; literature study to choose the right material for the PjBL model that is intended for prospective elementary teacher students; making the initial design of the model as draft I.

3. Development Phase

The consists of expert validation, limited trials, field trials. The developed model has integrated the character material in the Waste Management material, and delivered in project planning. The RPS, SAP, worksheet and evaluation formats developed are valid (an average score of 3.85), but they still need improvement. The PjBL model that has been validated by experts is then tested on six students, to know the level of readability of teaching materials and worksheet. The test results show that worksheet has a very high level of readability, this is obtained from the results of questionnaires by the six students obtained an average score of 33. Improvements made are by completing punctuation. Field trials: have been conducted starting at the 5th until 12th meeting in April-June 2019 conducted in group 55 Conservation Education Courses totaling 38 students.

4. Dissemination Stage

The deployment stage of the PjBL model is carried out for all classes of Conservation Education courses in The Departement of Primary School Teacher Education Semarang State University. The activity steps of the PjBL model developed are as follows (Figure 1).

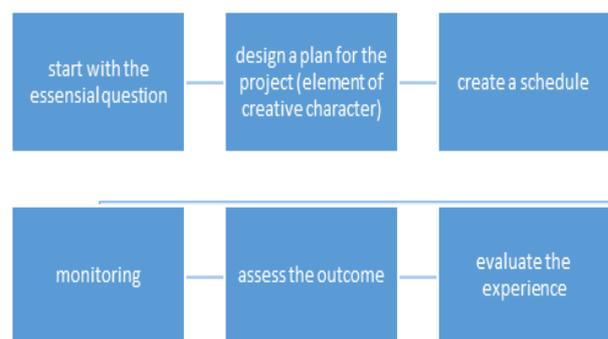


Figure 1
The activity steps of the PjBL

After the pretest, the lecture is continued with preliminary activities, then the core activities are continued. At the core activities of students who at the previous meeting each student was asked to bring at least 3 different goods / places / packaging, then in groups they discussed the code / symbol that was out of the package by using worksheet (Figure 2). The results of the discussion refer to a conclusion, where the majority of packaging always has a mark in the trash or a recycling

code. Then the lecturer guides the student where finally a major problem arises: if all objects that are not used are thrown away in the trash then there will be another problem, which is about waste.



Figure 2
Discuss Identifying Packaging Marks

The activity begins with a fundamental question about waste problems. This is in accordance with research by Chiang and Lee (2016), the results showed that project-based learning not only improved vocational school students' learning motivation, but facilitated their problem-solving abilities. In the design activities of a plan for the project students discuss to determine the waste management project and then consult with the lecturer. Lecturers do not give limits to students, but the products to be made must have elements of creative character including the accuracy of problem solving (flexibility) with the problems presented, novelty of project ideas and active involvement when working on projects (elaboration).

From the discussion topics that emerged were the manufacture of lamp cups using cardboard boxes, flowers and flower vases made of plastic and cigarette packs, woven craft from straws, ornaments from plastic water to mineral water glass, purses from straws, bags from used cups of mineral water, shelves cardboard books, lamp holders from colorful bottle caps, origami from newspaper and used calendars (Figure 3; Figure 4). Followed by create a schedule, monitor the students and progress of the project the lecturer monitors each project development meeting. Assess the outcome, the results of the elements of creativity show the element of flexibility obtained an average score of 4, an average novelty score of 3 and an elaboration element with an average score of 3.5.

Evaluate the experience, at the end of the project activity lecturers and students reflect on the activities and results of the projects that have been carried out. From the results of the reflection, it was found that the creative character was always carried out from the initial stages of planning to the product results, this was in accordance with the research (Wulandari, Hartati, Pasetyaningtyas, 2017) The results showed that characterization is a habit so it must be developed continuously in learning.

After completing the project activities, the lecturer gives a post-test and gives a questionnaire in response to learning. Results of practical responses to the use of Project Based Learning models in learning Conservation Education courses can be seen from the ability of students

to use worksheet during lectures as well as the ability of project activities which are provision for prospective elementary school teacher students and in social life in solving waste problems. Also supported by the results of responses from students through a questionnaire obtained an average score of 3.3 included in the criteria very well. Students feel happy because students can be more active in learning and can develop student creativity.



Figure 3
Some Basic Project Materials



Figure 4
Sample Project Product

IV. CONCLUSION

The Project Based Learning model to foster creative character developed through the 4D Define, Design, Develop, and Disseminate stages meets valid criteria, fosters creative character and practical.

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