DESIGN OF RESEARCH-BASED LEARNING MODEL AT UNIVERSITAS TIDAR

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Abstract

This study aims to generate a product of research-based learning model design at Universitas Tidar. The 21st century era, the learning process should be able to develop all the skills needed by students to be able to live in the 21st century. Therefore, it is necessary to develop a learning model design that is in accordance with the 21st century development, one of which is the research-based learning model. This study applied Research and Development (R&D) method, but limited to the expert validation stage. Instruments of test used were questionnaires to determine the feasibility and expert judgments related to the product being developed. The result indicates that valid and feasible stages of research-based learning activities have been composed to be implemented at Universitas Tidar based on the results of the expert judgments. The stages of learning activities include identifying the problem, framing the question, proposing hypothesis, investigating, analyzing the data, evaluating hypothesis, and communicating the result.

Keywords: Research-Based Learning Model, 21st Century Learning, Research-Based Learning Stages
INTRODUCTION

Vision of Universitas Tidar is to become a research-based university in developing science, technology, and art (IPTEKS) and entrepreneurship. To realize this vision, the first mission carried out is to conduct a research-based education. The purpose of the launch of this education or research-based learning (BBR) activity is to create and implement learning processes that lead to activities of analysis, synthesis, evaluation, and creation as well as to improve the abilities of students and lecturers in terms of assimilation and application of knowledge. In addition, it also aims to synchronize between the learning activities with the research development and the updated science. It intends to encourage the students and lecturers to be able to understand real life problems and possess the ability to solve the problems with scientific approaches.

This vision was proclaimed after Universitas Tidar changed its status from private university (PTS) to state university (PTN), precisely on April 1, 2014. Although has been proclaimed and enforced for more than 2 (two) years, the first mission has unfortunately not been manifestly implemented. This happened primarily due to the uncertainty of its implementation in the field.

The main issue or cause is the absence of understanding on BBR. Based on preliminary interviews with some lecturers and faculty leaders at Universitas Tidar, there are different interpretations of BBR; among others BBR is interpreted as (a) a learning by utilizing results of researches as the lecture materials, (b) a lecturing activity in the form of research activities such as collecting data, presenting the data, drawing conclusion, and others, and (c) a lecturing activity supported by most adequate learning resource which is the use of ICT. This disagreement raises reluctances from the lecturers to implement BBR.

The second issue is the absence of a system and/or guideline that is compiled and enforced to implement this program. The system covers philosophy, form, model, goal, benefit, condition, and evaluation that are appropriate for the research-based learning activities. Technically, this system regulates ways of planning, implementing, and evaluating the research-based learning/lectures.

Research-based learning activities are based on constructive learning that views learning as an active process in which learners construct new ideas or concepts based on prior and present knowledge, where learners select and transform information, construct hypotheses, and make decisions with references that are connected in cognitive structure. Research-based learning activities are all programs that develop research skills of the students and provide them with opportunities to practice these skills that enable them to conduct, with assistances, a research (Leeds, 2017). Meanwhile, according to Team GIHE (Griffith Institute for Higher Education), BBR is a learning approach that aims to help students establish intellectual and practical connection between research and their learning activities. According to Wardoyo (2013), BBR is a learning that requires the students to be able to figure out, explore (develop knowledge) to solve problems encountered, and test the validity of the knowledge.

Based on those explanations, research-based learning process is crucial to be developed and implemented in learning activities. In the process of developing learning activities, it needs to consider the condition of the learning environment where the learning process is carried out. Therefore, it is necessary to formulate research-based learning model activities that are appropriate to the learning environment conditions at Universitas Tidar. This study aims to design a research-based learning model activity at Universitas Tidar.

METHOD OF STUDY

Design of this study employed research and development method. In this study, a product of research-based learning model design at Universitas Tidar was developed.

In terms of data collection, questionnaires and interviews were used here. The questionnaires were distributed to as many as 4 different experts to fill out and then interviews were conducted to explore their responses regarding the design of research-based learning model activities which has been composed. Before the assessments were done, the researchers conducted literature studies to design a research-based learning model.
activities at Universitas Tidar. The data were then analyzed qualitatively.

RESULT AND DISCUSSION

Validation and revision of the research-based learning model syntax were done in 2 stages. First stage, looking for references of the research findings on research-based learning done previous researchers. The second stage, conducting open interviews to the experts within the FGD forum. The third stage, determining and validating the research-based learning model syntax.

On the first attempt, the researchers conducted a study on researches of research-based learning model with the scientific approach, which covers stages of observing, questioning, reasoning, testing, and communicating. This scientific approach is initiated by the Ministry of education and culture. Next, the researchers conducted research studies to explore the stages of research-based learning model activities that emphasize on problem solving activities.

The result of study on this scientific approach stage concludes that explicitly the scientific approach could be carried out to support learning activities in a research-based learning model; however, it still needs to be refined with more complex activities.

Then, some findings of previous studies on learning that emphasizes on problem solving activities can be inserted to complement the research-based learning activities. The first finding, according to Kinkead (2003), research-based learning is seen as an activity of students that leads to their original activities, where the lecturer guides and introduces the scientific stages (through an investigative activity) in a certain scientific field to the students. The second finding from Sarvery (2006), describes that research-based learning activities are considered as a learning process that is able to empower the students to integrate between theory and practice and also able to create solutions to a problem. The third study was done by Willison & O’Regan (2007) who reveal that research-based learning is a continuum of knowledge production in which this production can shift from something known to something commonly unknown. Based on the research by Willison, a taxonomy of research skills, hereinafter referred to as Research Skill Development (RSD) has been formulated. This taxonomy is current being developed by one of universities in Australia, Adelaide University.

Based on those previous studies, the researchers then limit this study on the nature of research-based learning. The limitation is that the nature of research-based learning focuses on the students’ original activities that integrate the theoretical and practical mastery, to solve contextual issues in order to be investigated through scientific activities in a learning activity scheme. This limitation is set so that the research-based learning can provide opportunities for students to figure out, explore, and develop knowledge and skills to solve problems faced by constructing intellectual and practical connection between research and their learning activities.

After the review of literature studies was done, assessment by experts were then carried out by distributing questionnaires and conducting open interviews to the experts. At this stage, 4 experts were interviewed. The initial step of this stage is the presentation of ideas by the researchers on research-based learning model concept, which is learning activities that emphasize on students’ original activities that integrate between the theoretical and practical masteries, to solve contextual problems in order to be investigated through scientific activities in a learning activity scheme. Afterward, the researchers asked for inputs from the 4 experts in the activity through open interviews and discussions in the forum. The discussion results can be seen in Table 1.

| Table 1 Results of Interviews and Discussions of the Research-Based Learning Model Concept |
| Expert | Script of the Interviews and Discussions |

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Expert 1 I agree with the concept. That research-based learning model should be carried out so that the students learn and the lecturers as facilitator in the learning activities. Activities conducted can bring research values into the classrooms, or the students can conduct research activities. One way is by displaying a phenomenon to be studied by students.

Expert 2 I agree with the concept. Research-based learning model must be able to make students active in the learning activities. Lecturers can include the values of “Active learning” in the implementation of research-based learning model.

Expert 3 One way to include the values of active learning is by applying several learning strategies or techniques that require students’ activeness. As in the cooperative learning.

Expert 4 Research-based learning model must be in line with values that are appropriate to be developed in the 21st century learning. Therefore, the stages to be developed must facilitate the abilities required for the 21st century.

Based on the activities in the literature review and input from the experts, the researchers then determined and validated the BBR model syntax. The formulated syntax design is as follows:

1) Identifying the problem
At this stage, students are asked to identify the problems presented by the teacher/lecturer.

2) Framing the question
At this stage, students formulate research questions as a basis for conducting investigative activities.

3) Propose hypothesis
At this stage, students formulate initial hypothesis. Also, students conduct literature studies as a basis and guideline to enable them in formulating the initial hypothesis (can be done by creating a mind map to lead to a hypothesis). Literatures studies aim to make the proposed hypothesis has a reasonable reasoning.

4) Investigating
At this stage, students conduct investigative activities to collect data either through experiment/non experiment activities.

5) Analyzing the data
At this stage, students analyze the data findings in the investigative activities. This analysis activity is directed to obtain an overview of the proposed hypothesis.

6) Evaluating hypothesis
At this stage, students evaluate hypotheses which have been formulated based on the results of analysis of the findings during the investigation stage.

7) Communicating the result
This activity is the final stage of the research-based learning model, where the students communicate the overall results in a systematical way and planned. To make it more systematic and planned, the teacher/lecturer better prepare an activity sheet for the students.

Results of validation regarding the syntax of BBR model are presented in Table 2. Validation is conducted to 4 experts by filling out the questionnaires distributed by the researchers. Overall, the result of syntax validation indicates that the stages formulated are in accordance with the values and initial concept of research-based learning model development.

Table 2 Results of Expert Validation Related to Syntax of BBR Model

<table>
<thead>
<tr>
<th>No</th>
<th>Rated aspects</th>
<th>Expert 1</th>
<th>Expert 2</th>
<th>Expert 3</th>
<th>Expert 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Suitability with the BBR model</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
In essence, the design of research-based learning model is to present contextual problems to be solved by students into the learning processes. The idea is that by presenting the contextual issues into the learning processes will bring several benefits, including: (1) it is able to make the learning process more meaningful (Bouillion & Gomez, 2001); (2) it is able to practice critical thinking skills and solve problems (Brundiers et al, 2010); (3) it is able to improve learning motivation (Basir et al, 2008); (4) it is able to foster the ability to apply concepts into the real world (Yanik & Sherin, 2016).

CONCLUSION

Based on the findings and data that have been analyzed, conclusions drawn are: Syntax of research-based learning model validated by experts has been arranged with stages of: identifying the problem, framing the question, propose hypothesis, investigating, analyzing the data, evaluating hypothesis, communicating the result.

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