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Development and Implementation of Problem Based Learning Models in Entrepreneurship Subjects

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Abstract
Students are the young generation who are the spearhead of the success of the development and economic growth of a country, therefore the output and outcome of a university receive serious attention. Graduates are currently required to be able to create creativity and innovation in solving problems in the real world. Therefore there is a shift in the learning process paradigm, from the conventional method to the Problem Based Learning method. One of the subjects related to creativity and innovation is the entrepreneurship subject and this study tries to apply the Problem Based Learning method to this subject. The method used is research & development (R & D) research method and the results obtained that the Problem Based Learning method significantly gives positive results both in terms of the implementation of the learning process and student evaluation results, namely a significant increase in the value of the pre-test and post-test.
Keywords: Development, Entrepreneurship Subjects, Implementation, Problem Based Learning

1. Introduction

The vision of the Faculty of Engineering, University of Muhammadiyah Jakarta (FT UMJ) was derived from the University's vision that is to make the University the Leading, Modern, and Islamic in 2025. From this vision there are three key words, namely leading, modern and Islamic. To realize the leading vision carried out by playing an active role in the university's chess darma activities at the national level, while Islam here is how in every learning process activities always apply Islamic values and noble character, while modern meant here is a goal to achieve a professional attitude by using information technology and being able to entrepreneurship. Furthermore, from the vision of FT UMJ it was revealed the vision of the Industrial Engineering Study Program of the Muhammadiyah University of Jakarta (IT FT UMJ) namely Making the Study Program Superior at the National Level by producing graduates who were professional, Islamic and entrepreneurial.

Students are the young generation who are the spearhead of the success of the development and economic growth of a country, therefore the output and outcome of a university receive serious attention. Graduates are currently required to be able to create creativity and innovation in solving problems in the real world. If this is not fulfilled, they will fail to compete in obtaining various business and employment opportunities. Moreover in Indonesia in 2015 the Asean Economic Community (AEC) has been put into effect, namely an economic collaboration between countries in Southeast Asia, where countries joining the AEC form a single market based in Southeast Asia that aims to can reduce various weaknesses in the competition in the world market. Indonesia is one of the countries that joined the AEC to feel a great influence on the development of the domestic industry, because with the enactment of the AEC, this will certainly automatically improve and create a more stringent "competitiveness", namely the countries of Southeast Asia can freely exit enter the Indonesian market. On the other hand, the AEC is actually a great opportunity for Indonesia to build relationships both in terms of infrastructure, social protection and national independence.

In carrying out economic activities, human resources (HR) play an important role because HR is the main actor of economic activity (Kurniawan & Budhi, 2015). The human resources needed today are not just skilled and competent, even with a bachelor's degree, are not strong enough to be able to compete with foreign workers unless provided with other knowledge that is more towards soft skills such as mastery of technology, independence and creativity.

In terms of mastering technology, of course engineering faculty graduates play a significant role in building connectivity in the infrastructure sector, where connectivity and innovation, which is an "competitive advantage" of an industry is an opportunity as well as a major cause of competition in the global market. Therefore, it requires engineering graduates who are in accordance with the criteria needed in the era of global competition and this is one of the responsibilities of educational institutions in this case higher education. To meet this need, at present almost all departments in universities include entrepreneurship courses in the curriculum, including Industrial Engineering Faculty of Engineering, University of Muhammadiyah Jakarta.

One definition of entrepreneurship is the mental and mental attitude that is always active, creative, independent, empowered, creative, intentional and humble in trying and creating something that has added value (Suryana & Bayu, 2012). From the above definition, the application of entrepreneurship subjects in the industrial engineering curriculum is expected to support independence, creativity and trigger student innovation so that this will also spread to other lectures. But the question arises, namely whether the application of courses in higher education including entrepreneurship courses can truly create students who will become independent, creative

and innovative scholars if the current education system still uses conventional methods. A study has found that as many as 83% of lecturers in FT UMJ IT give face-to-face lectures in a conventional way, namely the learning process is centered on the teacher / lecturer so that this tends to make students passive because communication is generally only one direction, namely from lecturers to students (Dewiyani, 2017) Of course conventional learning methods are not appropriate to be used in order to answer the increasingly diverse challenges today. Based on this, a new paradigm in the world of education is needed according to current needs, which is expected to produce graduates who are active, able to think, collaborative and innovative. To achieve this result, a learning method is needed that can trigger students to become familiar with problem solving, creativity and innovation. At present, the attention to education in the technical field is indeed getting special attention, the government intervenes through policies made (Heywood, 1995)

The Problem Based Learning method commonly known as the PBL method is an educational method that can encourage students to know how to learn and work with groups to find solutions to problems in the real world, problem simulations are used to activate students' curiosity before starting an object and preparing students to think critically. In order for this PBL method to succeed, it must also be supported by the use of interesting learning media such as interactive CDs, VCDs and other media to improve the quality of teaching and learning to be even better. In the PBL method the lecturer acts as a facilitator to provide direction and guidance to students in order to develop knowledge to find solutions to problems (ConleyM, Livingstone, & Meharg, 2006).

It has been explained in advance that Industrial Engineering Faculty of Engineering, Muhammadiyah University of Jakarta (FT UMJ) is one of the colleges that prints industrial engineering degrees in Indonesia. The Indusri Engineering Department FT UMJ has also applied entrepreneurship courses, by applying this subject it is hoped that it can generate motivation, independence and creativity of students not only in entrepreneurship courses but also in other fields. But at present this hope has not yielded results because based on the results of the tracer study found that there are still many FT UMJ graduates who work not in accordance with their competence because they are unable to compete with other universities, especially state universities. And based on interviews the researchers obtained information that they were many who lacked confidence and could not freely express opinions when a group discussion forum test was held. To overcome this problem, the background of this research is to overcome the problem of student creativity and independence, namely through developing a Problem Based Learning learning model in entrepreneurship courses. The application of the PBL model is expected to increase independence and creativity in order to produce Industrial Engineering graduates of FT UMJ who are independent, innovative, creative, critical thinking and responsive to real life problems so that they can compete in the era of globalization.

Formulation Of The Problem

The problem formulation of this research is "Design and development of Problem Based Learning learning models in order to increase student independence and creativity in entrepreneurship courses."

Research Purposes

The general objective of the research is to improve the competence, creativity and independence of FT UMJ University Industrial Engineering students so that graduates can compete in the globalization era, namely through the development of Problem Based Learning (PBL) learning models. While the specific objectives of this study are to:

1. Identify the data needed in the framework of designing and implementing entrepreneurship learning models based on Problem Based Learning (PBL) to improve the independence and creativity of industrial engineering students of FT UMJ
2. Creating an Entrepreneurship learning model based on Problem Based Learning (PBL) to improve the independence and creativity of industrial engineering students of FT UMJ

Method

This research uses Research and Development research method, where this research goes through procedures and trials in the field. Research and development methods are in principle a process for the development of an educational product and subsequently validated (Borg & Gall, 2003). The steps of small-scale development research take three main steps, namely pre-development, model development and model application. The steps taken in this research are the development stage and the model. At this stage the steps of model development and development of evaluation tools are carried out and then the following stages are implemented:

1. early stage field testing and evaluation
2. revision of the results of the initial field test
3. advanced stage field testing and evaluation
4. refinement of test products.

In order to collect research data that is needed, an instrument is developed according to the data and information needs collected. Data analysis techniques used in this study consist of quantitative and qualitative. Quantitative was analyzed using quantitative descriptive statistics while quantitative was analyzed by describing it narratively. The procedure for analyzing qualitative data is carried out through three stages: the process of data reduction, data presentation, and decision making.

Results and Discussion

a) Results of Development of Semester Learning Plans (RPS)

Semester learning plan (RPS) is a learning planning document that is prepared as a guide for learning activities for one semester in order to meet the learning outcomes imposed on a particular subject (Kemenristekdikti, 2016). Entrepreneurship RPS using PBL method is arranged based on needs tailored to student-centered learning and based on the identification and needs analysis that has been done then the results obtained that RPS in 1 semester consists of 4 learning cycles. Each learning cycle consists of 4 meetings consisting of:

- group determination, problems and learning topics
- integration of knowledge between students
- final problem solving
- integration of knowledge between groups through class presentations and evaluation.

Then each cycle is given a trigger problem that will be completed in four meetings, so that in one semester there are 4 triggers of the problem to be resolved. The RPS that has been tested in FTUMJ Industrial Engineering consists of 4 trigger problems, namely:

- Entrepreneurial character and aspects of production.
- Creativity and innovation
- Communication and motivation
- Leadership and organizational theory

Then Based on the description of the learning activities as described above, the initial learning model for entrepreneurship courses was prepared as follows: (Figure 1)

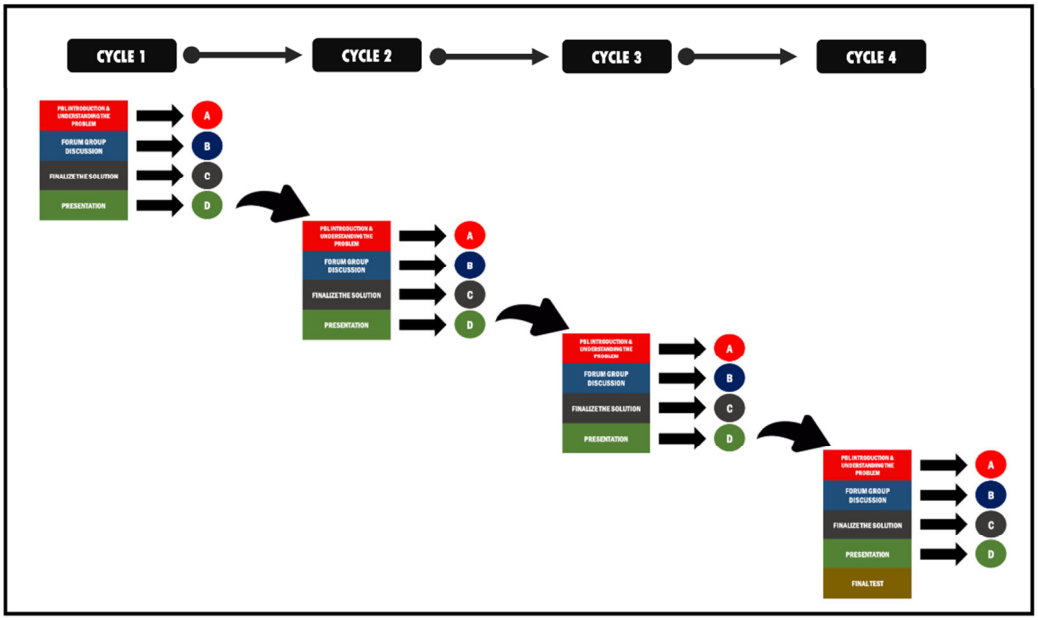

Figure 1. Initial Model of PBL Entrepreneurship

After the first cycle runs, the reliability and effectiveness of the Problem Based Learning model in entrepreneurship learning is carried out and the following results are obtained:

b) Expert Trial Results:

- Material selection from the four cycles of 80% Problem Based Learning fulfills the rules
- Formulation of material and descriptions, as well as examples of questions given have clarity values above 85%
- Formative and summative tests and feedback have met the required requirements (85%)
- The quality of learning interaction between students and facilitators is good enough with a value of 78%
- There is ease in accessing, consistency of tests with learning objectives is good, as well as feedback

c) **Small Group Test Results:**
Small group trials were given to 10 students to get input that could update the learning model for entrepreneurship courses. The results of the small group trial are as follows:
- 82% of students were enthusiastic about learning the Problem Based Learning method
- The feedback provided is appropriate because users can solve practice questions with an average value of 80%

d) **Field Trial Results**:
The Problem Based Learning learning model in entrepreneurship courses was tried out to larger groups. The purpose of this trial is to see the effectiveness and benefits of the Problem Based Learning method. The class used consists of experimental class (class A) and control class (class B). The data obtained consisted of the responses of lecturers and students as well as the results of the existing tests in each cycle are as follows:

a. Lecturer Response Results
- 90% of lecturers stated that the Problem Based Learning method in the entrepreneurship subject was interesting and could be used properly
- The material for each cycle is 88% according to the needs of students

b. Student response results
- 90% of students feel comfortable and happy in the implementation of the learning process Problem Based Learning even tends to enjoy the learning process in each cycle.
- 88% of students want material other than entrepreneurship to use the Problem Based Learning method Based on expert input and the results of the trial, the model is improved as shown below: (Figure 2)

- Figure 2 Model of PBL Entrepreneurship that has been refined

Development of PBL learning models in entrepreneurship courses:
From the results of the research that has been done, the learning model using the Problem Based Learning method in the entrepreneurship subject is a learning method and model that needs to be applied as a substitute for conventional learning methods that are currently not suitable for application in the learning process. Because through the Problem Based Learning method the lecturer can raise the spirit of student learning in class. But it should be noted that this learning requires supporting facilities such as computer and wifi devices that have sufficient speed to gather the knowledge needed by each student.

The effectiveness of PBL learning models in entrepreneurship courses:
This study also proves that 80% of students feel a difference in achieving the competency of the material being

studied. Students are more enthusiastic in learning and trying to find out the contents and things related to entrepreneurial learning material. To determine the effectiveness of learning using the Problem Based Learning method in this study used two classes, namely the experimental class and the control class, then carried out the implementation of classroom action, namely the implementation of a scenario consisting of 16 meetings divided into four learning cycles that have been formulated in the class experiment, while in the control class conventional learning methods are still applied. Furthermore, students who are in the experimental class and the control class both consist of students who have the same or homogeneous ability, this is to know how much influence the learning outcomes using the problem based learning method significantly. Therefore a homogeneity test was conducted on the control class and experimental class using SPSS software. Based on the SPSS output obtained a significance result of 0.308 and because the value is greater than 0.05, the data distribution meets the requirements of homogeneous data. Furthermore, the implementation of the first cycle class action was carried out in four meetings and the fourth meeting was evaluated. The implementation of the first cycle was carried out on March 5 2018 and March 30 2018. The experimental class and control class were chosen randomly, namely class A was chosen as the experimental class and class B was chosen as the control class. In this first cycle, students are expected to understand the material of entrepreneurial character and aspects of production. At the beginning of the learning, a pre-test is given about the material of entrepreneurial character and aspects of production. At the fourth meeting students were given a post-test and then the difference test was conducted between the pre-test and post-test scores. After completing 4 meetings in the first cycle, data collection was carried out by evaluating students of entrepreneurship subjects. From the calculation, the average pre-test of the experimental class is still low and not much different from the control class, namely 62.93 (experimental class) and 60.93 (control class). Then the researchers brainstormed with students following entrepreneurship courses and found that they did not know much about the material of entrepreneurial character and aspects of production so that they filled in the answers only to what they knew so far. Then after learning as much as 4 times a meeting it can be seen that the post-test results of both the experimental class and control class experienced an increase of 74.73 (experimental class) and 62.40 (control class). From these results it appears that the experimental class has a higher average value than the control class. Furthermore, the pre-test and post-test were carried out in cycle 2, cycle 3 and cycle 4 both for the experimental class and the control class with the following results as the following table: (Table 1)

Table 1. Evaluation results

Learning Cycle	Post Test Value	Pre-Test Value
Cycle 2	75.47	63.47
Cycle3	77.00	68.67
Cycle 4	79.53	63.40

Conclusion

Currently conventional methods are inadequate in the application of learning that aims to create creative and innovative students. This study proves that the application of the learning model with the Problem Based Learning method significantly gives positive results both in terms of the implementation of the learning process and the results of student evaluation, namely a significant increase in value between the pre-test and post-test. This is because students can build their own knowledge they need to solve problem solutions based on students' different perspectives.

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