An Empirical Study on The Effects of Pedagogy Learning Tools Entrepreneurship With Product-Based Learning Approach, Learning Readiness, and Locus of Control: A Case From Engineering Education in Indonesia

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Abstract—The condition of educated unemployment is a major problem especially in developing countries. However, entrepreneurship pedagogy learning tool with product-based learning approach, learning readiness and locus of control is assumed to be a factor influencing entrepreneurial learning outcomes that could interfere with the phenomena. The purpose of this research is to describe and test the effects of learning tools with approaches to product-based learning, learning readiness and locus of control on entrepreneurial learning outcomes. The population is all students who take entrepreneurship courses in Universities with the samples were 215. This research tool is a Likert Model scale. Data were analyzed using descriptive statistics, simple regression and multiple regressions. The findings of the study indicate that there is a effects of entrepreneurship pedagogy, learning tools with a product-based learning approach towards the results of entrepreneurial teaching bells, learning readiness, contribute to entrepreneurial learning outcomes, locus of control contributes to entrepreneurial learning outcomes and there are contributions tool for learning entrepreneurship pedagogy with a product-based learning approach learning readiness.

Index Terms—entrepreneurship pedagogy learning tool with approach product based learning, learning readiness, locus of control, entrepreneurship learning outcomes.

1 INTRODUCTION

The Indonesian Central Statistics Agency (BPS) reporting employment conditions in Indonesia during showed that the level of open unemployment of university graduates rose by 1.13 press en compared to February 2017, from 5, 18 percent to 6.31 percent[1]. This emphasizes that undergraduate college graduates can no longer simply rely on a diploma to find a job, but is required to have the competencies and skills possessed, in order to find employment that matches their interests and talents. One alternative to overcome this problem is to instill an entrepreneurial spirit in students from an early age. The main capital in entrepreneurship is the will and tenacity to earnestly run a process or business. In entrepreneurial activities, not only with strong determination, but more than that competence, skills, and knowledge in managing a business are also very important, so both things must be balanced [2]. The study of entrepreneurial education is based, on a large scale, on conceptual understanding of entrepreneurship and learning. Findings of research by Othman, Othman & Ismail shows that there is an increasing demand for entrepreneurship education and entrepreneurial skills, it shows that globalization has affected the demand for entrepreneurship education and entrepreneurial skills among university graduates [3]. Entrepreneurship education is related to learning for entrepreneurship, learning through entrepreneurship, and learning about entrepreneurship [4]. In addition, educational entrepreneurship is seen as a transfer of ideas; that, in fact, has been explained as the transfer of knowledge and skills learned to new situations [5]–[8]. Entrepreneurship education is based on two different approaches. The first approach is about creating a company or job. The second approach focuses on individuals and aims to improve students' entrepreneurial attitudes and behaviors in the form of learning outcome.

In economic development in Indonesia, entrepreneurship has a very important role. Entrepreneurship is able to find new innovations and ideas in managing available natural resources. There are some experts who argue that entrepreneurship is a process of developing and applying creativity and innovation in solving problems and being able to see opportunities to create a business [6], entrepreneurship is a process to create something new and different [5] entrepreneurship is a value manifested in behavior that is used as the basis of resources, goals, tips, processes and business results. Learning tool is the main part of a learning process so it is important to be examined again in the form of

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needs analysis [9]. If you look at the high unemployment rate for graduates of higher education, it's indicating that the learning process is weak. No exception to the entrepreneurship learning tool, it is very necessary to do need analysis. Tool pedagogic entrepreneurship learning it allows to be integrated into entrepreneurial learning in higher education, besides competency development models must be designed appropriately to be enhanced the ability to promote them to be effective entrepreneurs [10]. The findings presented in this paper contribute to the development of the entrepreneurial learning process in engineering education. This paper explains that in the development of entrepreneurial learning processes are needed a series of variables which together contribute, including product-based entrepreneurial pedagogy learning tools, learning readiness and internal locus of control. This paper recommends a learning model that considers the combination of pedagogic skills by the lecturer and the condition of the student's internal locus of control, thus opening the opportunity for developing entrepreneurial skills to the next level.

2 LITERATURE REVIEW

2.1 Learning Outcomes Entrepreneurship

Entrepreneurial learning outcomes are statements that describe the knowledge or skills to be acquired students from tasks, classroom or entrepreneurship learning programs [11], [12]. In simple terms entrepreneurship learning is defined as how the process of knowledge transfer and changes in attitudes and the right mindset about entrepreneurship. Entrepreneurship learning is an important concern because it is closely related to entrepreneurial theory, ways of teaching and entrepreneurial teaching strategies. Entrepreneurship teaching is the process of facilitating individuals with concepts and skills to be able to recognize business opportunities and have insight, confidence and the ability to act [7], [13], [14]. Entrepreneurship teaching aims to inspire students, arouse emotions, and change mindset [15], [16]. In addition, learning outcomes are abilities acquired by individuals after the learning process takes place, which can provide changes in behavior in terms of knowledge, understanding, attitudes and skills so that students become better than before [17] from the opinions of the experts above, it can be concluded that the results of entrepreneurial learning are the abilities obtained by students after the learning process of entrepreneurship takes place which makes him from not knowing the part to knowing and that involves the psychological elements of the individual.

2.2 Pedagogical learning tools entrepreneurship with approach product-based learning model

Learning tools are things that must be prepared by the teacher/lecturer before implementing the learning. Learning tool is a tool or equipment to carry out a process that allows educators and students to carry out learning activities. While learning pedagogy entrepreneurship is a learning pattern carried out by educators in linking the theory of classroom teaching with students' competencies to make decisions in entrepreneurship [18]–[20]. Furthermore, Ganefri [21], [22]formulated that entrepreneurship pedagogy is the ability of an educator in designing or compiling, delivering and organizing an interesting learning process, as well as conducting an objective assessment in accordance with the objectives and character of entrepreneurship learning that has been formulated. The product-based learning model is defined as procedures or steps that need to be done by educators to facilitate learners to actively learn, participate and interact, with the orientation of the competence to produce either the goods or services required [18] . The product-based learning model is a learning model that provides opportunities for learners to develop skills in higher education [23]. This capability in the form of critical thinking skills, and work together [24], [25], are highly relevant to the development of learners to the learning experience they gain [26], In the process of learning with this product-based learning model, students is required to act as giving rise to important questions relating to the product to be created. Model-based learning products consists of syntax or steps in the learning process, which according to [18] in the learning model based on this product syntax or step sequence of lessons consists of 9 steps: 1) Analysis of curriculum and characteristics of students; 2) Identification and analysis of products; 3) Make important questions about the product; 4) Map questions; 5) Analysis of equipment requirements and materials from the product to be made; 6) Making a schedule for making products; 7) Product manufacturing process; 8) Regular evaluation; and 9) Making a Business Plan. Based on previous opinions, it can be concluded that the tool of learning entrepreneurship pedagogy with a product-based approach is an equipment that must be accompanied by educators in designing or compiling, delivering and organizing an interesting learning process, as well as carrying out an objective assessment in accordance with the objectives and character of entrepreneurship learning by using a product-based learning model.

2.3 Learning Readiness

Learning is to be understood as acquiring knowledge or skills through experience, learning, or by being taught wherever and whenever [27], [28]. Readiness to learn is the beginning of a learning condition that makes it ready to give a response / answer that is in all-students achieve certain learning objectives. Readiness as learning readiness is a condition of someone who has been prepared to carry out an activity. The purpose of conducting an activity is learning activities, such as preparing course material is in accordance with the schedule, prepares the body condition to be ready when studying in class and prepares other defense equipment [15]. This understanding gives the meaning that readiness for learning is a condition of self that has been prepared to do learning activities or with other languages as a number of levels of development that must be achieved by someone to be able to receive a new lesson. Learning readiness is closely related to maturity. Readiness to receive new lessons will be achieved if someone has reached a certain level of maturity, then he will be ready to receive new lessons.

2.4 Locus of Control Internal

Locus of control is divided into two, namely internal locus of control and external locus of control [29]. Internal locus of control believes that they have control over their destiny. They tend to believe in their own abilities while students who have an external locus of control have the view that the results they achieve are controlled by external forces such as luck, chance, fate, or others. Furthermore, Macejka [1], [30] explained that people with internal locus of control believe that they can control activities related to their lives, while people with external locus of control tend to believe that real power is in a power outside themselves like coincidence or luck and the determination of their lives. Furthermore, according to Gbonee [1], [30]. The internal locus of control is explained as the results of events are contingent upon one's own behavior, whereas external locus of control is the generalized expectancy that outcomes are determined by chance, luck or fate or powerful.

3 METHODS

This study uses quantitative methods of descriptive correlation type. The instrument used is a Likert model scale for each variables. The research populations in this study are students who follow entrepreneurship courses in Higher Education in Indonesia as many as 464 people, a sample of 215 people. Sampling process is based on the universities that have an entrepreneurial courses in Indonesia. The majors that involved in this research were taken randomly that consist of students. The strength of the sampling process is measured by considering statistical power, that avoiding α and β errors from the sample taken and the analysis performed. The measuring and sampling process uses G Power Analysis Software, so that obtained an alpha probability error type of 0.05 and statistical power of 0.90 for 160 samples. Thus, sampling that consists of 215 from the total population meet the statistical requirements.

TABLE 1

RELIABILITY AND VALIDITY OF THE INSTRUMENT (LOGIT SCALE)

	Learning product-based entrepreneurship pedagogy	Learning readiness	Locus of control
Mean	1.07	1.37	1.12
SD	.43	.56	.77
Separation Index	2.56	3.23	2.09
Reliability	.87	.91	.89
Cronbach α	.89	.94	.90

Data is collected through questionnaires that consists of learning product-based entrepreneurship pedagogy, learning readiness and locus of control. The measurement of validity, reliability and statistical data analysis were using the Rasch model approach (in logit scale), which use the Winstep software as shown in Table 1. The Research data were analyzed with descriptive statistics and multiple regressions. Data analysis was assisted by using the SPSS version 22.00 program.

4 RESULT

Before carrying out the data analysis process, it is necessary to test for normality, linearity, and multi co-linearity where the results are as follows (Table 2).

TABLE 2

NORMALITY, LINEARITY, AND MULTI CO-LLINEARITY TEST

No.	Variable	Normality[a]	Linearity[b]	Multicollinearity[c]
1	Y	0.200	-	-
2	X^1	0.200	0.000 (X^1 => Y)	1.199
3	X^2	0.200	0.000 (X^2 => Y)	1.199
4	X^3	0.200	0.000 (X^3 => Y)	1.199

a. Normality testing is done using the Kolmogorov-Smirnov method. This means that the four research variables are normally distributed.
b. It was obtained results that relate the independent variable (X^1,X^2, & X^3) with the dependent variable. The result is linear.
c. There is no multicollinearity between the variables of learning tools for entrepreneurship pedagogy with a product-based learning approach, learning readiness and internal locus of control. Furthermore, the results of hypothesis testing can be seen in the following table.

TABLE 3

SUMMARY MODEL

Model	R[a]	R Square[b]	Adjusted RSquare[c]	Sig[d]
1	0.538 [a]	0.290	0.286	0,000 [a]
2	0.610 [a]	0.372	0.369	0,000 [b]
3	0 .326 [c]	0 .106	0 .100	0,000 [c]
4	0.554 [d]	0.307	0.301	0,000 [d]

a. Predictors: (Constant) , X^1
b. Predictors: (Constant) , X^2
c. Predictors: (Constant) , X3
d. Predictors: (Constant) , X^1. X^2, X3

The table 3 is a table to test the effect of learning tools entrepreneurship pedagogy with a product-based learning approach, learning readiness and locus of control internal to entrepreneurial learning outcomes. The analysis showed that the tool of learning entrepreneurship pedagogy with a product-based learning approach, learning readiness and internal locus of control are jointly able to predict 30.7 percent of student entrepreneurial learning outcome variables (R2 = 0.307), as well as the results in the table also showed statistically significant (Sig = .000).

5 DISCUSSION

Learning tools that enable learning of entrepreneurship pedagogy related to products and related to entrepreneurship lectures certainly tend to improve their civic learning outcomes [12], [19], [22], [23]. The product-based entrepreneurship pedagogy tool is a procedure or steps that need to be taken by educators to facilitate students to actively learn, participate and interact, with competency orientation to produce products that are either goods or services needed[18]. Student learning outcomes are driven by the effectiveness of students and lecturers in the learning process. The results of research by Kusumaningrum[23] show that product-based

learning methods are effective in improving the learning process activities, with the percentage of lecturer responses reaching 91 percent and the percentage of student responses reaching 93 percent. Based on the previous explanation, it can be concluded that product-based learning in higher education is able to predict whether or not student entrepreneurship learning outcomes. Based on the results of data analysis showed that the significance of the variables of learning readiness towards entrepreneurial learning outcomes. Abu Taleb [15] reveals that when the most of students have the readiness to learn which is good, then in the learning process it will be good which has an impact on the learning outcomes. Individual readiness will bring individuals to be ready to respond to situations faced through their own methods. Preparedness is the overall individual circumstances that make it ready to respond or reply in the manner of bitumen to a particular situation. Certain conditions in question are physical and psychological conditions, so that to achieve a maximum level of readiness requires physical and psychological conditions that support each other's readiness in the learning process. Readiness of the individual as a great student in the learning process and will determine the quality of student learning achievement mighty. Readiness is the desire and ability to do something; it also refers to an environment in which individuals or institutions have been prepared for future assignments. On this basis, successful entrepreneurship depends on the willingness and entrepreneurial ability, and on environmental conditions[30], [31]. Readiness of themselves students is very important for success in learning activities. The success of the students doing readiness before attending the lecture can determine the success of students in learning, so it will affect the results of entrepreneurial learning students[17]. Based on the results of research and analysis that has been carried out, it proves that there is an internal contribution of locus of control to entrepreneurial learning outcomes. This showed that internal locus of control has a role in improving student learning outcomes. Othman[30] suggests that students who see themselves are controlled internal locus of control tend to succeed in school. The presentation gives meaning that students who tend to the internal locus of control will do their best to achieve what they want [17], [32]. Students who know themselves well will be able to control themselves well, because knowing themselves will improve their learning outcomes. Students with internal locus of control have the characteristics of like to work hard, always think effectively and have a perception that if they want to succeed they must try. Students who have the confidence that they participate in influencing all the results achieved in their lives, of course, also have the power to solve learning problems. It is inversely proportional to students who tend to external locus of control, when faced with problems, they tend to give up and rely on fate. If it is left unchecked it will cause students not to try to achieve better learning outcomes[16]. The results showed that product-based learning, learning readiness and locus of control jointly contribute significantly to entrepreneurial learning outcomes. The discovery was made based on sequence analysis of the data that the regression coefficient of 0.554. The coefficient of determination (R Square) product-based learning, readiness to learn and locus of control internal to entrepreneurial learning outcomes students that is equal to 0.307. That is, the effects of the variables of product-based learning, learning readiness and locus of control together internal to the learning outcomes of students entrepreneurship 30.7 percent, while the rest (100% -30.7% = 69.3%) is explained by other variables not examined in this study. Like, the research of Ganefri & Hidayat[20], which shows that the use of product-based learning can improve learning outcomes. The results of this study revealed that the product-based learning entrepreneurship pedagogy tool, learning readiness and locus of control together can be influential factors on student entrepreneurial learning outcomes. The use of product-based learning will have an impact on the ability of students in this case in the form of learning outcomes[33]. This stands for that product-based learning applied in learning will affect the learning outcomes obtained by pupils in engineering education[4], [5], [18].

6 Conclusion and Recommendation

Based on the findings and discussion of the results of the research, it can be concluded that the product-based entrepreneurship pedagogy learning tool, learning readiness and internal locus of control jointly contribute significantly to entrepreneurial learning outcomes. That is, the product-based pedagogy of entrepreneurship learning tools, learning readiness, and internal locus of control have a significance toward entrepreneurial learning outcomes. That is, the high and low level of entrepreneurial learning outcomes are not only influenced by one variable, but is influenced jointly by the product-based entrepreneurship pedagogy learning tools, learning readiness, and internal locus of control. The recommendations in this survey to the Lecturer to apply the product-based learning process to the entrepreneurship pedagogy-learning tool, the need for increased learning readiness and internal locus of control for students in engineering education, and for university leadership to be capable to offer total support to lecturers or related parties to hold entrepreneurship pedagogy learning training programs for pupils in higher education.

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