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Development Of Project-Based Blended Learning (Pjb2l) Model To Enhance The Ability Of Technopreneur In Higher Education

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Abstract: Competition era of Industrial Revolution 4.0, the development of technology and information, and less learning approach lead to increased skills are challenges in education today. This research aims to develop innovative learning models by combining Blended Learning and Project-Based Learning (PjB2L) on the ability of technopreneur. Research development refers to Four-D design. The study sample consisted of 100 students were divided into experimental and control class. Product research is the development of the learning model with an average score of 4.08 in the category of valid and e-learning in the form of Moodle with an average percentage of 84, 17% in good criterion. The results showed the ability of technopreneur in the experimental class has an average value of 80.36 better than the control class with an average value of 72.60. The learning process becomes more interesting, varied, facilitate communication between lecturer and students, and make it easier to access information. The PjB2L model in this study was designed to provide business incubation for students (tenants) so as to encourage the creation of technology-based start-up Bussines. PjB2L model is able to reduce the intensity students in the use of electronic media to play but more emphasis on promoting learning.

Keywords: Blended Learning, Project-Based Learning, Technopreneur, Research and Development.

1. Introduction

Intense competition in the era of the Industrial Revolution 4.0 is characterized by the use of ICT in education. A quick response can be made in education that adapts to the new literacy movement that includes: digital literacy, technology literacy, and literacy humans [1]. Learning oriented to the 21st-century digital lifestyle, thinking tools, learning research, and knowledge work [2]. The learning process performed by the class teacher, teaching through lecture method using textbooks has been necessary to develop be more attractive. The paradigm of student-centered learning, making students can access knowledge not only from teachers and books. But it can through other media such as the internet, television, other mass media. Preliminary study of the learning process conducted in STKIP PGRI Nganjuk Indonesia shows: (1) learning is still centered on teachers, (2) the application of learning approaches that are less leads to improving skills, (3) lack of lectures and students in the use of technology. Interview results to the lectures and students showed 63% of learning is still dominated by lectures. Only 37% are able to and have to apply ICT in learning. At least lecturers use of ICT impact on the quality of learning. As examples of student complaints: (1) the material is abstract can not be visualized (2) the learning time is long enough for information and knowledge presented lecturers delivered through lectures, (3) take a long time to acquire feedback from lecturers related evaluation task that has been given. For example, all departments in STKIP PGRI Nganjuk Indonesia have implemented entrepreneurship courses. But the learning process on this course is only theories and principles of entrepreneurship. Learning is done through a lecture and presentation. So students only focused on knowledge alone. Lack of learning focused on improving the skills aspect has not been widely implemented. Thus, learning innovation needs to be done in order to graduated from collage have qualified skills in entrepreneurship, following the development of science and technology, ready to plunge into the world of work, and have competitiveness in the era of industrial revolution 4.0. Based on the background of the problem, many innovative learning that can be developed. For example, by applying the learning model nor blended learning teaching Project Based Learning (PjBL). Model blended learning allows students to access a variety of resources in the online platform, while the PjBL provides students the opportunity to work in a team, practice to manage projects, stimulate creativity, ideas, and problem-solving skills [3]. More effective blended learning models are applied in learning because it has an average score higher than usual to-face learning [4]. The implementation of blended learning models significantly increased student satisfaction in learning and be able to construct knowledge for the better. In his research, the media used to support e-learning is Moodle [5]. Whereas in excess of project-based learning, can improve students' skills, improving the ability to communicate and collaborate, emphasize problem-solving skills and apply the knowledge gained in dealing with life problems[6]. The dependent variable in this study is the ability of technopreneur applied on entrepreneurship courses. Entrepreneurship education in higher education is a compulsory subject. Outcomes of this course is expected to prepare the student for independent dare, dare to start a business, not a job seeker, but makers of employment. Various innovations are needed to support the millennial generation to be able to self-employed so th can reduce unemployment. Current conditions based on data from the Central Statistics Agency (BPS) until February 2019, the rate of unemployme in Indonesia reached 5.01%, or about 6.82 million people. Based on the results of Population Research Center (P2K) LIPI, labor problems should immediately look for a solution is the lack of labor competencies. Many strategies can be done Universities in improving entrepreneurship education, well integrated into the curriculum as well as through student activities. As stipulated in the Indonesian Presidential Regulation No. 5 of 2012, the ability of techno into concrete steps the government in reducing the unemployment rate as stated in the application-based curriculum Indonesian National Competence (SKKNI). Education concept

Technopreneurship the backbone of sustainable development [7].

1.1. Problem Formulation

Conventional learning through lecture and not entirely centered on the teacher can no longer be relied upon. The concept of learning that is needed today is an educator should be able to develop a wide variety of learning methods, utilizing a variety of learning resources, and the utilization of technological advances. Besides the final outcomes of learning must be observed that the students who pass completely ready and have the skills. The problems were taken in this study are:

1.1.1. What is the procedure integrated blended learning model development Project Based Learning models to improve the ability of technopreneur in Higher Education?
1.1.2. How is the effectiveness of the development of an integrated model of blended learning model of Project-Based Learning to improve the ability of techno in Higher Education?

1.2. Objectives of this Research

1.2.1. To develop subjects integrated blended learning model based PjBL models to improve the ability of technopreneur.
1.2.2. To determine the effectiveness of development courses integrated blended learning model based PjBL models to improve the ability of technopreneur.

2. Theoretical Orientation

2.1. Blended Learning

Blended learning is a combination of traditional learning process through face to face with technology supported learning. The combination referred to as web-based learning, streaming video, audio communications synkronus, and asynkronus. The concept, blended learning combines various styles of delivering both direct and indirect instruction, learning model and collaborative learning style, and introducing a range of selection of media as a tool in the learning process [8]. Blended learning is a concept of learning that combines classroom sessions face to face (traditional) with elements of e-learning [9]. In Outline, there are 3 stages of blended learning models, namely: (1) Phase seeking of information, including the process of finding information sourced from share-based sources of technology, (2) acquisition of information, includes cooperative and collaborative processes carried out by students to find, understand, and confront the ideas they have, (3) synthesizing of knowledge, is a process of constructing knowledge through an assimilation and accommodation process that refers to the results of analysis, discussion, and conclusions obtained [10]. The advantages of the blended learning model of learning that can improve the performance of learners, facilitate interaction, facilitate access to communications, and improve skills in mastering digital media [11] [12]. It can be seen from the increasing number of online learners in learning, as well as online discussions. Blended learning combines face-to-face and e-learning can actively engage learners and allows learners get feedback. Some activities can be applied in blended learning, namely: face-to-face teaching, student interaction with course content, peer group interaction, group discussion and exchange of ideas, Accessing e-libraries, virtual classrooms, online assessment, an e-tuitions, Accessing and maintaining educational blogs, webinars, viewing expert lectures in YouTube, online learning through videos and audios, and virtual laboratories [8].

2.2. Project-Based Learning

Project-Based Learning(PjBL) is a project-based learning model with the characteristics of learners to provide more flexibility to analyze issues, reviewing the literature, conduct the experiment, giving students the opportunity to work and critical thinking in constructing a learning experience, as well as the peak produce valuable and realistic works. Project-based learning is an instructional models based on having students confront real-world issues and problems that they find meaningful, Determine how to address them, and then act in a collaborative fashion to create problem solution [9]. The study of PjBL that implementation combining with Internet technology such as hyperlinks, hypertext and hypermedia. The results showed an increase in the effectiveness of learning [13] [14]. The use of information and communication technology can facilitate students to learn outside the classroom through online forums, LMS, e-mail, social media so that communication skills and collaboration will increase. The step of PjBL learning as developed by The George Lucas Educational Foundation consists of: (1) Start with the essential question, (2) Design a plan for the project, (3) Create a schedule, (4) Monitor the student and the progress of the project, (5) Assess the outcome, and (6) Evaluate the experience. In detail, the steps of learning in PjBL into three learning stages, namely: instructional planning phase of the project, the implementation phase of the project learning, and learning evaluation phase of the project is the final phase of PjBL learning method [15]. The project-based Learning model of excellence centered learning, improve the ability to collaborate, train manage projects, and apply the knowledge acquired in school to real problems in life. It is integrated with the application of ICT, it can improve problem-solving skills, critical thinking, knowledge integration, information technology, communication skills facilitate teamwork, enhance co-worker interaction, develop team spirit, and encourage students to complete joint projects [6].

2.3. Ability Technopreneur

Technopreneurship derived from the combination of the word "technology" and "entrepreneur" [16]. Techno is a form of entrepreneurial activity that heavily utilize technological factors as the main part of its activities both within the micro-scale enterprises, small, medium, or large [17]. In the concept of techno, entrepreneurship development starts from innovation in the field of technology and not just focused on high-tech. But also the application of knowledge to the work of the (human work) such as the application of accounting, economic order quantity, online and offline marketing. Utilization is not limited to information technology alone but all the technology that supports entrepreneurship. According to the Directorate General of Higher Education in 2013 which explains the technopreneurship profile can be viewed from the aspect (1) creativity, (2) a commitment to work, (3) independent, (4) dare to take risks, (5) achievement motivation, (6) future orientation, (7) opportunities, (8) leadership spirit, (9) managerial ability, (10) and personal skills [18]. In the sphere of education, implementation

technopreneur values combined with the competence of each skill. Application of the values technopreneur in learning can improve the aspect of skills, especially in the manufacture of engineering products as the application of [illegible] expertise [19]. Education technopreneur contains methods and activities that support motivation, competence and experience. The educational program aimed at gaining insight techno and individual skills in improving business success [20]. Application of the technopreneur values in universities is a positive effort in preparing human resource competitiveness. The environment is very influential in the formation of technopreneur. Universities have an important role in improving technopreneur [20]. Technopreneurship diffusion of technology and education will increase the effect of potential growth and development of innovative-technological startup. The emphasis of education Technopreneurship is creativity and ability to innovate sustainable. An effective way to accelerate the commercialization of innovation or invention from a university that is managing a framework Technopreneurship (technological entrepreneurship), which enables the execution of an agreement between the university and industry agreement on a commercial level [22].

3. Method

The experiment was conducted in STKIP PGRI Nganjuk. The study design development being done refers to the development of Four-D model that includes define, design, develop, and disseminate [17]. Development scheme as shown in Figure 1.

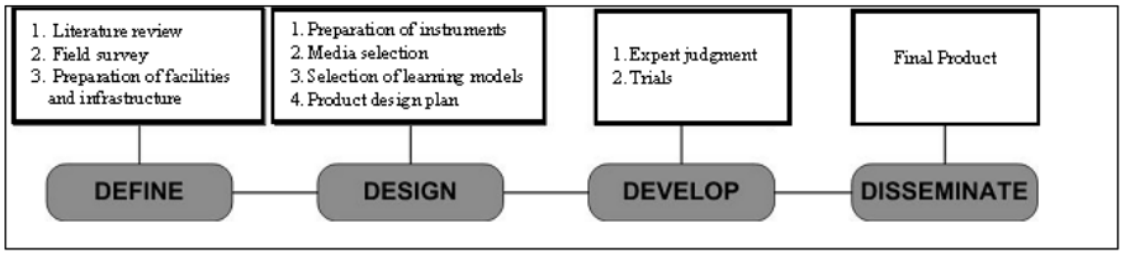

***Figure 1**: Schematic Model Development*

The technique of collecting data using questionnaires, observation, testing, and documentation. Mechanical analysis of scores in the form of a questionnaire using Likert scale with the categories: a score of 1 (very much less, a score of 2 (less), a score of 3 (enough), a score of 6 (good), and a score of 5 (very good). The test model using posttest -only control group design. The total sample of 100 students was divided into experimental class of 50 students and 50 students of the class taking control with a purposive sampling technique. Testing the effectiveness of the models developed using the Independent sample T-Test.

4. Data Analysis and Results

4.1. Data Analysis

The development phase of the validation study model starts learning model development component that is Blended Learning and Project-Based Learning is presented in Figure 2.

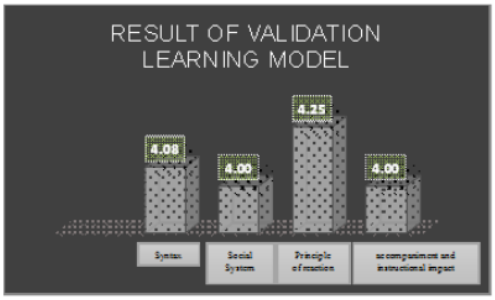

***Figure 2:** Model Validation Study*

Based on Figure 2, the learning model validation refers to the 4 (four) indicators of syntax, social system, social principles, and the impact of instructional companion. In the aspect of valid syntax in the category with an average score of 4.08, the aspect of the social system in a valid category with an average score of 4.00, the aspect of the principle of valid social category with an average score of 4.25, and aspects of the impact of instructional companion invalid category with an average score of 4.00. Rate includes implementation syntax development steps of 2 (two) models of blended learning and project-based learning in the classroom learning process as outlined in the lesson plan. The next stage after that is a validation of model validation such as media that can be presented in Figure 3 below.

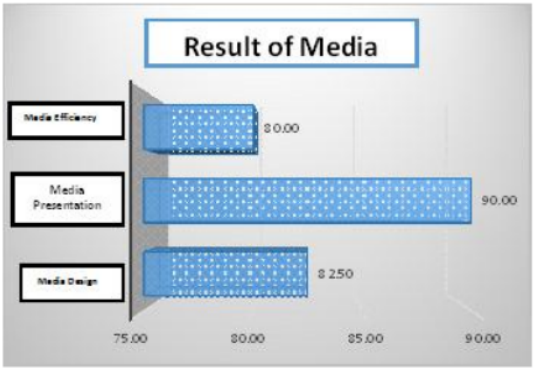

***Figure 3:** Result of Media Validation*

Based on Figure 3, media validation is done by filling the questionnaire sheet on the aspects outlined in the graphics feasibility were three indicators, namely (1) the design of media, (2) the presentation of the media, and (3) the efficiency of the media. Lessons are conducted in this study using a Learning Management System (LMS), which serves to regulate the administration of the organization of learning in e-learning model. The medium used is Moodle. Assessment on the design of the media have an average percentage of 82.50% (both criteria). Rate E-learning (Moodle) includes a display, colors, layout, use of letters, pictures, and attractiveness. Assessment at the presentation of the media has a percentage of 90.00% (criteria very well). Which includes the management of Moodle, video presentation, the ability of the media to raise motivation and entrepreneurial abilities of learners. While the assessment of media efficiency has an average percentage of 80.00% (good criteria), which includes Moodle effectiveness, reliability, maintainable, usability, convenience, and ease of program menus.

***Table 1**. Questionnaire Results The appreciation of Learning Model Development*

Score Prosentase of Every Aspect				Mean Score
Attention	Attraction	Enjoyment	Application	
89,90	93,20	86,40	86,40	88,98
Very Effective	Very Effective	Very Effective	Very Effective	Very Effective

Based on Table 1, is the result of the appreciation of the students towards learning model was developed that Blended Learning and Project-Based Learning with the help of Moodle E-Learning media. The results are obtained in aspects of attention has a percentage of 89.90% with very effective criteria, interest aspects of 93.20% with very effective criteria, aspects of 86.40% with very effective criteria and application aspects of 86.40% with very effective criteria. It can be concluded that 88.98% students gave a positive appreciation of the learning model was developed.

***Table 2**. Means and SD of the Control and Experimental Groups of Post Test Scores*

Group Statistics					
	Group	N	Mean	Std. Deviation	Std. Error Mean
Technoprenuer Ability	Control	50	72.6000	8.06099	1.14000
	Experiment	50	80.3600	9.90724	1.40110

Based on Table 2, the ability to control a class techno tested on 50 students had an average value of 72.60 and the same treatment in the experimental class of 50 students has an average value of 80.36. It can be concluded that the average grade experiment better than the control class. effectiveness test model using Independent Sample T-Test values obtained Sig. (2-tailed) 0.000 (less than 0.05) in the control class and experimental class. So based on the decision of the test can be concluded that there are differences in the ability of techno between control class and experimental class.

4.2. Result

The model developed in this study are blended and project-based learning or abbreviated PjB2L. Model framing blended learning concept combining learning with direct instruction, the instruction does not direct, collaborative, and using ICT. While the model project-based learning is the concept of systematic learning, emphasis on practical skills and product-oriented. The result of the combination of both syntax as shown in Figure 4.

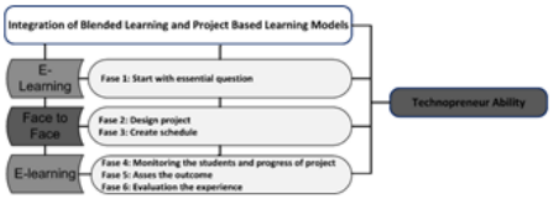

***Figure 4**: Combination Model Blended Learning and Project Based Learning (PjB2L)*

Based on Figure 4, face-to-face learning is carried out in full in the classroom, so students can interact with lecturers and colleagues. This face-to-face interaction can help communication skills between students and lecturers effectively, facilitate the feedback process, and be able to motivate learning [8]. In the implementation of face-to-face class, the learning process is carried out using the project-based learning step. The use of E-learning in this study uses Moodle with the address http://e-kwu.stkipnganjuk.ac.id/ The Moodle feature contains (1) login & logout which is an incoming and outgoing media link, (2) a course that contains lecture material, (3) a quiz containing practice questions, (4) a chat containing a means of discussion between lecturers and students that can be done online, (4) Exam contains exam questions, (5) downloads contain download links on teaching materials, videos, animations, worksheets, and questionnaires. The use of Moodle as e-learning is a tool that is able to combine face-to-face learning and online learning. However, the use of e-learning is like a double-edged knife. If the teacher is not active in this virtual space, students will not get benefit. The e-learning platform does not replace face-to-face learning but as facilities and tools [23]. But if the lecturer in using e-learning does not play an active role, students will not be able to achieve the expected learning goals.

Learning scenarios with the PjB2L model can be explained as follows:

4.2.1. Phase 1: Start with the essential question. Activities in this phase are giving motivation to students. The assignment is given in the form of a project to gather information on inspiring figures in the field of technopreneurship. Individual assignments sent via the Moodle platform.

4.2.2. Phase 2: Design a plan for the project. Phase 2 activities contain project planning that refers to tasks in phase 1 (one). Project planning is done face to face in class. This is done to facilitate lecturers in providing guidance.

4.2.3. Phase 3: Create a schedule. After phase 2 is approved by the lecturer, students make a schedule for the project with a predetermined time. In this phase, students must make the best possible schedule so they can collect assignments on time. In Moodle, lecturers can set a time limit as desired. So,

when students who are late in collecting assignments they will not be able to upload via the Moodle application.

4.2.4. Phase 4: Monitor the student and the progress of the project. In this phase, students have started working on projects according to the planned scheme. When there are problems, students can consult offline by asking directly to the lecturer. In addition, discussions can also be done online through Moodle by utilizing the Discussion and Chat Forum menus. The final stage of phase 4 is sending project assignments through Moolde.

4.2.5. Phase 5: Assess the outcome. After the assignment in phase 4 is received by the lecturer, an assessment is carried out. The scoring system can also be done offline and online. Online system through Moodle by utilizing the Grades menu. On the Grades menu, the lecturer can do an assessment and provide input on the task being done.

4.2.6. Phase 6: Evaluate the experience. The final phase in this activity is in the form of evaluation. Students are asked to provide criticism and suggestions for the learning process. Lecturers act as facilitators by giving conclusions from the material that has been delivered. Next, the lecturer gives a new assignment for the next material.

Based on Table 2, the degree of effectiveness of the developed model is measured from the test results on the abil of technopreneur models. Statistical analysis showed the difference between the experimental class with control class. This difference lies in the average value of the experimental class is better than the control class. Learning the experimental class that implements the model PjB2L more effective than the control class, which only applies the usual learning model face. Excess PjB2L models not only allow students to access a wide range of knowledge of the online learning platform, but with the given project it will be able to provide students the opportunity to work in a team, to stimulate creative ideas, and problem-solving sk Students are more confident and independent so that the learning process in the classroom is more enjoyable and effective [3] [24]. This study ses E-learning in the form of open source is Moodle. The use of E-learning in the learning model developed to facilitate the management and tracking of students' activities and improved access to new information [25]. Blended learning is combined with a smartphone by leveraging social media [26]. The findings of this study showed an increase in the quality of learning, the massive interaction between lecturers and students, during class teaching students to focus more attention to the explanation of lecturers, learning becomes more interesting because of the knowledge obtained is useful in everyday life. More striking findings indicate that e-learning is able to change the mindset of students who initially just using a smartphone to play, social media, etc, it is now slowly starting to turn into a smartphone to learn. If a student is having trouble, then exchange information through Moolde (chatting), both among the students and the lecturer. So we can conclude that PjB2L learning model developed with the support of e-learning in the form of Moodle able to have a positive impact on students.

5. Conclusion and Recommendations

Innovative and effective learning that is needed in the face of developments in the world of education. This research is the development of the learning model that combines syntax, Blended Learning and Project-Based Learning or called (PjB2L). The effectiveness of the learning model developed tested the ability of technopreneur. The result shows the differences between the experimental group treated with PjB2L learning with control class ted with ordinary face learning. Ability technopreneur the experimental class has an average value of 80.36 better than the contr class with an average value of 72.60. Media in the form of e-learning is used in the form of Moodle. Learning mix by integrating the concept of project-based to-face and onlin oncept online, shows significant results and is able to improve the effectiveness of the learning process. In general, this study supports the concept of online learning pioneered by the government in Indonesia, namely distance learning (ODL). Online learning provides easy access for students to learn and seek information f n anything, anytime, and anywhere. On the other hand, project-based learning can improve students' ability to get better. It's time to apply the concept of learning colleges are able to have a real impact and is based on the skills of its students. PjB2L models can be applied to other subjects so as to improve students' skills.

6. Acknowldgment

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