

Developing a Learning Model Based on Hybrid Learning and PjBL

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Developing a Learning Model Based on Hybrid Learning and PjBL

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Abstract. Couple with high youth joblessness, school and undergrad commitment in educating and learning is right now declining. To have the option to think imaginatively and tackle issues in the material introduced by the teacher, understudies should consistently create groundbreaking thoughts in light of their opportunities for growth. To limit the substance of learning, the ongoing learning worldview is just instructor focused and by and large uninvolved. The model of electronic learning (e-learning) utilized in advanced education foundations, which exploits data and correspondence advances (ICT), gives an idea of learning in which customary learning is changed over into computerized learning, both regarding framework and content. project-based learning (PjBL) is one of the original learning techniques utilized, yet it hasn't an affected expanding understudy commitment, imagination, and efficiency, especially in project creation. The goal of this study is to decide the requirements of educators and understudies in regards to the execution of learning in the mixed media and activity innovation course. As indicated by the consequences of a review in light of a requirements examination, understudies expect the arrival of another learning model that can upgrade learning. The teacher expects another learning model that will boost learning in view of the necessities examination directed. The two educators and understudies want a learning worldview that works with joint effort in the utilization of data innovation and twenty-first-century abilities.

Catchphrase: Learning model, Cross breed learning, PjBL

1. INTRODUCTION

The Fourth Industrial Revolution, often known as Industrial Revolution 4.0, has begun in the modern world. The way people live, work and interact has changed greatly due to the industrial revolution. [1]. With new technology advancements that combine the physical and digital worlds, this revolution is taking place on an enormous scale, in breadth, and complexity, impacting every field, as well as the economy, industry, and government. The idea of the Fourth Industrial Revolution seeks for new models and methods of action when technology developments happen so quickly and take over various aspects of daily life. The hallmark of this current industrial revolution is the development of artificial intelligence, which has manifested itself in a variety of product forms and is capable of imitating the optimal operation of the human brain. These so-called "artificial intelligence" technologies consist of, among other things, supercomputers, intelligent robots, and driverless vehicles. As a direct consequence of the Fourth Industrial Revolution, significant advances have been made in a total of seven different areas of study, the most notable of which are artificial intelligence robots, nanotechnology, biotechnology, and quantum computing technology, as well as blockchain (which is similar to bitcoin), internet technology, and 3D printers [2]. Industrial Revolution 4.0 is a fundamental shift that has to be carefully prepared for since it calls for a number of essential talents that aren't now in high demand on the labor market. There will inevitably be fresh demands on the issue of revolution when there are significant changes over a short period of time. One of those needs is new capabilities. These talents are deep learning skills as well as fundamental skills. The following is a list of these abilities :

Table 1. Basic Skills dan Deep Learning Skills

<i>Basic Skills</i>	<i>Deep Learning Skills</i>
	1. <i>Global Citizenship</i>
	2. <i>Collaboration</i>
<i>Write</i>	3. <i>Character</i>
<i>Read</i>	4. <i>Communication</i>
<i>Count</i>	5. <i>creativity & Imagination</i>
<i>Remember</i>	6. <i>Real World Problem Solving</i>
	7. <i>Critical Thinking Knowledge Construction</i>
	8. <i>Use Of ICT For Learning</i>

There are several factors that affect the link between fundamental abilities and deep learning skills. However, the educational philosophy is the one that has the biggest impact on this connection. In fact, the philosophy of education is a subfield of philosophy that discusses how philosophy informs education [3]. The educational concept that serves as a compass for human growth is an invaluable resource. Because of this, now that we are living in the age of the 4.0 revolution in the industrial sector, we want an educational philosophy that directs us toward the requirements of this revolution.

Higher education institutions in Indonesia, which serve as a location for students to acquire information and competence prior to joining the world of employment, should have understood the significance of in-depth education for their student body by this point. It is no longer sufficient for colleges to provide their students with the information and skills necessary for basic functioning; instead, they must also initiate the development of abilities necessary for deep learning. Students in higher education need to be continually educated and prepared so that they can subsequently gain the deep learning abilities that are in high demand in this age of the fourth industrial revolution. Both professional and non-professional universities are included in this category.

E-learning is one method that may be used to implement one of the abilities necessary for deep learning, which is the use of technology for learning (also known as the use of information and communications technology for learning). According to Purnomo, the increased use of information and communications technology (ICT) and the internet in educational settings will assist in bringing the total number of students enrolled in educational settings to a higher level [4]. There will be an increasing number of pupils who can be accessed online. Along with an increase in quantity, quality also rises. As previously said, adding more students has the potential to lower the level of instruction they get. The availability of Internet technology can foresee this scenario.

The e-learning paradigm, also known as e-learning in higher education, makes use of information and communication technology (ICT) to create a notion of learning that involves a shift from conventional to digital learning, both in terms of system and content. It is generally feasible to give valuable "pedagogical" learning events or experiences through e-learning by significantly using communication and information technologies. As seen by the widespread use of e-learning in educational institutions, the concept is today widely accepted by society at large. There are several advantages to developing an online learning program, including the following: Very dynamic e-learning programs can be delivered in a range of appealing, interactive, and engaging presentation formats; they can also be accessed 24/7, so students can get the course materials information they need when they need it; and finally, each student can learn independently and can choose the format or learning model that best suits their background at any time.

Online learning still encounters a number of challenges during implementation, including the following: (1) there is no interaction between students during the learning process; (2) the teaching and learning process unquestionably requires a system that can perform the process in both directions; (3) feedback is unquestionably necessary for better and perfect learning outcomes; and (4) Even if e-learning makes it possible to get a lot of information, the learning process may be completed whenever and whenever, making it even less effective.

The development of mixed and blended learning models is the result of several obstacles to the adoption of e-learning. These two learning models were created in order to perfect e-learning, which mixes face-to-face and online instruction into a single course. As a result, these two learning models have the same characteristics, namely the percentage of provided face-to-face and online sessions. Through the use of face-to-face supported technology (including internet technology), which is utilized to facilitate activities, distribute content, and give value to students and others, the learning process is still carried out in traditional classrooms in blended learning. In contrast, blended learning combines face-to-face instruction with online learning, replacing a large portion of the face-to-face time.

Ino Angga Putra makes the following recommendation concerning the utilization of blended learning in order to pique the interest of students in the academic process: by utilizing the blended learning model, student activities are increased, which results in students becoming active and student-centered learners; the activities that teachers participate in during blended learning serve as facilitators and guides for students. [5]. Before introducing blended learning, though, the educational environment must be changed.

Additionally, Wahyudi argues that the blended learning paradigm is useful for both face-to-face and online learning. This strategy works well to raise students' interest in the lessons that teachers are teaching them [6].

Rusman et al explain that blended learning can improve the effectiveness of learning [7]. The results showed that students who used blended learning were twice as fast as the learning time compared to conventional students, 80% of these students did well and very well, and 66% of them did. they did not need any printed materials, the learning process using the web showed that the quality of the students far exceeded Compared to conventional classes, the students have great enthusiasm to go through the whole learning process.

Blended learning is also capable of improving learning outcomes, as Hendra said. D states that blended learning is implemented to meet the needs of students and teachers to create a learning model that uses information technology, so that the use of models learning can be more varied and help students and teachers take advantage of available facilities and be able to improve learning outcomes [8].

One of the innovative learning implemented is project-based learning (PjBL), but it did not have a big enough impact to increase student creativity, especially in project design. There is not much time and resources that students can use to explore, elaborate from various sources that can inspire students to come up with creative ideas. Learning also focuses only on face-to-face learning. Although they are project-based, they are limited to face-to-face meetings with speakers. The opportunity to ask questions is also limited during the face-to-face learning process. The willingness to generate creative ideas is also limited face to face.

Several empirical facts show the shortcomings of PjBL. Abidin states that PjBL has several weaknesses, namely: (1) it requires a lot of media and learning resources; (2) need teachers and students who are ready to learn and develop; (3) there is concern that students will only master one particular subject on which they are working [9].

According to Djamarah and Zain, the PjBL has several weaknesses, including: (1) the current program in Indonesia, both vertically and horizontally, has not supported the implementation of this model; (2) choosing the right unit topic based on student needs, sufficient facilities and required learning resources is not an easy task; (3) the topic is often so broad that it can obscure the unity being discussed [10].

2. RESEARCH METHODS

2.1 Development model

The category of research known as "need to do" includes research on research and development methods (sometimes referred to as "research and development" (abbreviated "R&D"). This refers to research whose findings will be utilized to facilitate the completion of the task. It is believed that if the work is aided by the R&D-related goods, it will be more effective, productive, and efficient. Thus, the thesis preparation is completed via the use of this research and development (R&D) strategy. Research and development (R&D) approaches are included into the sequential paradigm of integrated research procedures. According to Sadiman, research and development is a method or group of methods that may be used to create a new product or enhance an already existing one. This definition makes sense [11]. These items might also be computer programs for data processing, instruction in classrooms, libraries, or labs, or models for instruction, learning, direction, evaluation, management, etc. Books, modules, and other physical items or materials (hardware) used in classrooms or laboratories are examples of these goods, but they are not the only shape they might take.

2.2 Development procedure

2.2.1. Preliminary research (preliminary research step)

The purpose of this stage is to conduct an analysis of the primary concerns that contribute to the significance of the HLBP learning model. This process is broken up into two distinct sections, the first of which is the needs assessment, and the second is the literature review.

2.2.1.1. Needs analysis (needs assessment)

By analyzing the goals and content of the multimedia technology and animation course, student profiles, and learning resources, the requirements analysis in this research aims to create a rationale for the construction of the HLBP learning model. It also looks at how people have already learned to use animation and multimedia technologies. The four steps include the following ones:

1) A preliminary analysis of the blended learning model based on projects (HLBP).

The first phase in the investigation is required so that difficulties with learning multimedia and animation technologies may be found. These flaws lead to less effective learning outcomes for students. In order to get these details, interviews were carried out with professors who were responsible for instructing classes in multimedia and animation technology, in addition to an investigation into the documentation that was already present for the value archive, the program, and the SAP.

An analysis of the learning conditions of multimedia and animation technology have been carried out so far in order to obtain data on the requirement to develop the HLBP learning model. This analysis has included an examination of the learning objectives and content of multimedia and animation technology, an examination of student characteristics, and an examination of the learning resources that have been utilized. All of the actions that take place during this phase are geared toward accomplishing two specific goals: (1) determining whether or if there is a need to construct the HLBP learning model, and (2) gathering the necessary information to design an overview of the HLBP learning model.

2) Analysis of the objectives and contents of the multimedia technology and animation course.

The necessary learning objectives for multimedia and animation technology are established and prioritized at this level. This project learning model (HLBP) led to the production of HLBP learning resources, notably the Syllabus, SAP, and GBPP for the Multimedia Technology and Animation Course.

3) Analysis of student characteristics

Student characteristics may be described as individual traits or attributes that manifest themselves in the form of attained values in multimedia technology and animation as well as study habits of students. The useful archive is the source of the value that may be generated from the multimedia and animation technologies. The lecturers who have worked in the Computer Engineering Studies Program within the Faculty of Engineering at Asahan University and have instructed students in the areas of multimedia technology and animation provided the information that was used to compile this study guide.

4) Analysis of learning resources

An initial study of learning resources for multimedia and animation technologies was carried out with the purpose of determining what learning sources were accessible and could be utilized to transmit learning information, in addition to identifying the shortcomings of the various learning resources that were already in existence. The reason for developing HLBP learning models and HLBP learning tools will be the knowledge that was gathered from the outcomes of this activity.

2.3. Trial sample

Participants in this research project ranged from teachers to their own students. Validators in the process of developing this learning model include subject matter specialists in curriculum and learning models, educational media specialists, assessment specialists, and language specialists.

Only five or six students are enrolled in the Multimedia Technology and Animation class for the odd semester of 2019/2020. This is to accommodate the restricted practice examinations. This brief essay is a component of the formative evaluation process that is being used in the creation of the HLBP learning model. Other components of this evaluation process include the collecting of data through interviews, observations, and questionnaires.

2.4 Data collection instruments

Quantitative data make up this category of research findings; the research instruments that were used in this study were designed specifically to collect this sort of information. Research that is preliminary in nature has been conducted in order to collect data in the form of information on the requirements and goals that students have for their education in the areas of multimedia and animation technologies. The creation of this instrument was built on the indicators of the fundamentals and character of vocational learning in higher education as well as the national education standards (SNP). The pre-research instrument, which consists of a questionnaire on how to learn already-implemented multimedia and animation technology, also includes an evaluation of the present learning needs for this technology. Utilizing the Linkert scale's performance indicators, the fundamental research instrument analysis was created. On six students who were not part of the research sample, the scale's reliability and validity were evaluated.

2.5. Data analysis techniques

In this study, the data that were evaluated included the findings of data validation, data from field tests, and results from effectiveness tests. The analysis of the data obtained from this study was carried out by

employing descriptive approaches in addition to descriptive statistical analysis techniques. For the purpose of analyzing the test of learning outcomes, the descriptive statistical approach is utilized, but for the purpose of analyzing the findings of the questionnaire, the descriptive technique is utilized. In order to provide a description of the data obtained from the preliminary research investigation, descriptive methods are utilized. The analysis of the learning of multimedia and animation technologies that was carried out and the analysis of the needs in terms of learning of multimedia technologies and animation to the present time are both accounted for in the data that was collected in the form of data that resulted from the analysis. This data is analyzed in four stages: the first stage is the gathering of data, the second stage is the reduction of data, the third stage is the presentation of data, and the fourth step is the creation of conclusions.

3. Analysis And Result

3.1. Needs analysis

The objective of this step of the requirements analysis process is to better understand the needs of both students and instructors as well as the current learning environment. He must be able to explain the current situation in order to describe the relationship between it and the priorities and demands of the students regarding their development of 21st-century skills and the anticipated learning process for learning programming algorithms in "Higher Education." The research subjects for this study were students enrolled in the Computer Engineering Study Program at Asahan University's Faculty of Engineering.

The strategy employed for data collection involves distributing questionnaires in the form of questionnaires that have been verified for their reliability and validity. Questionnaires are used in this strategy. The research sample for this needs analysis will consist of up to 30 students who are already registered for classes.

The data collection questionnaire can be found in the appendix, along with the findings of the needs analysis questionnaire concerning the present condition of the learning process and a description of the priorities and requirements of the process. The appendix also contains the questionnaire that was used to gather the data. The requirements analysis indicates why this is the case based on a study of the research findings:

- 1) The existing circumstances surrounding the educational process demonstrate that the 21st century skill touch (thinking critically, communicating effectively, working together, and being creative) has not yet taken place. The average replies of students to the questionnaire that was provided provide a picture that may be extrapolated to paint a picture of the current state of affairs. Because the students' responses to the questionnaire as a whole yielded an average score of 2.45, it is safe to deduce that the present model of education being applied to pupils has not been able to address these four facets. Additionally, this aligns with the objectives and requirements of the students for their ongoing education. According to the results of the priority questionnaire and the students' requirements, we are aware that the average score is 4.45. This demonstrates that the pupils have a great deal of optimism towards the growth of learning in the years to come. In order to accomplish one touch of each of the four skills, it is necessary. The accompanying graphic, which provides further information, may be viewed here:

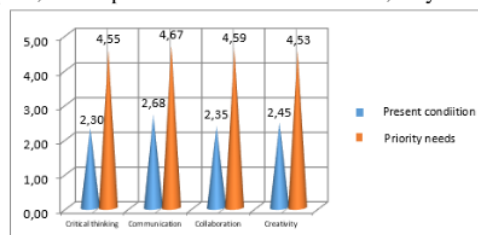
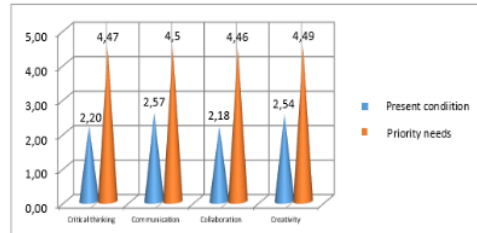


Figure 1. Analysis of student needs on the development of learning models

- 2) The teacher has also affirmed that the four abilities have not been damaged by the present learning model, as shown by the questionnaire on the current state of teachers, which can also be observed that the questionnaire is based on the current condition of instructors. This may be seen by looking at the median score of the needs assessment questionnaire that was distributed to educators, which was 2.37. The speaker's optimism that there will be numerous learning models that can develop the four talents is reflected in the speaker's responses to the questionnaire as well. Therefore, the educational process that takes place in the classroom is enhanced while using this paradigm. This may be seen by looking at the

mean score of the priority questionnaire in the area of teacher education, which was 4.48. The accompanying graphic, which provides further information, may be viewed here:



1 **Figure 2.** Lecturer Needs Analysis on Learning Model Development

The ADDIE development model was utilized by the researchers at all stages of the development process. This approach includes the following steps: analysis, design, development, implementation, and assessment. The phases are listed in this order. It is recognized that the learning model that is employed throughout the lecture process is not the most effective one possible due to the analysis step difficulties that were stated before. Therefore, it is not helpful for the students to evaluate the content that they have received in accordance with the unique learning characteristics of each individual. As a result, the researcher wants to design a learning model based on blended learning that can be adapted to the abilities that are anticipated. The researcher's description of the needs analysis that they had carried out was consistent with the steps of the Widodo & Jasmadi needs analysis, which were cited by Ashhar. These steps are as follows: (1) determine the skills that were formulated; (2) identify and determine the scope of the skill unit or part of the main skill; (3) identify and determine the knowledge, skills, and attitudes that are required; and (4) determine the model that will need to be developed.

The development of the abilities that are now anticipated for blended learning led to the decision to use a learning model that is based on blended learning. This assertion is supported by Daryanto, who contends that the availability of information technology can facilitate the dissemination of the content in more depth and draw the attention of students to the process of learning. [12].

A hybrid model that is built on learning is not only simpler and less taxing for its users, but it also removes the constraints of time and space that were previously imposed on them. It has been determined, in accordance with Choiron's theory that information technology is actually used in the implementation of learning, that the following can occur: (1) can expand and facilitate access to information in rapid learning; (2) can help visualize abstract material; (3) can display learning materials to make them more appealing; and (4) allows interaction with the material of interest [13].

4. CONCLUSION

1. According to the results of the needs assessment that was carried out, the students anticipate the introduction of a new learning model that can help them learn more effectively.
2. The instructor anticipates that the new learning model will be able to maximize learning on the basis of the requirements analysis that was carried out.
3. Both instructors and students anticipate a learning paradigm that facilitates cooperative endeavors in the use of information technology and the skills necessary for life in the 21st century.

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PAGE 3



Run-on This sentence may be a run-on sentence. Proofread it to see if it contains too many independent clauses or contains independent clauses that have been combined without conjunctions or punctuation. Look at the "Writer's Handbook" for advice about correcting run-on sentences.



P/V You have used the passive voice in this sentence. Depending upon what you wish to emphasize in the sentence, you may want to revise it using the active voice.



Possessive You may need to use an apostrophe to show possession.



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PAGE 4



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Prep. You may be using the wrong preposition.



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PAGE 5



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