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Research paper

Creating a Blended Learning Model for Online Learning System in Indonesia

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Abstract

Online system born out of technological advances benefits the world of education. This system utilizes the internet to disseminate information and act as a communication tool. The application of Blended Learning is generally able to improve the result of the learning process by changing learning habits and methods in many countries. By involving 7 e-learning instructors and 235 respondents, a formative research was conducted to investigate the increase in learning characteristics, i.e. innovation, compatibility and complexity to determine the appropriate model for the application of Blended Learning in an online learning system (SPADA) in Indonesia. The result of this research can be used as a guideline in the lesson plan design component, learning experience management and the balance interaction between lecturers and students during the learning process.

Keywords: *E-Learning, blended learning, SPADA*

1. Introduction

The use of technology has spread in many fields including to the field of education. Technology allows the introduction of an electronic-based learning system where students can do their own learning through the use of internet. This learning model is called e-learning. The e-learning method has been popular for the past 20 years [1], for not only virtual classes, but also independent courses. The method also allows learning to be conducted in an unlimited space and participants [2, 3]. In its development, e-learning is commonly combined with a face-to-face interaction [4]. The method of combining online classes by using the digital technology and face-to-face interactions is commonly known as Blended Learning [5].

The application of the Blended Learning Model was, in fact, not as simple as we thought it would be [6-9]. The learning design and blended patterns need to be created meticulously by combining a face-to-face and an online interaction [10-12]. Every pattern applied is always based on student's needs and a continuous evaluation [13-15].

Many universities offer various teaching- and learning-based online applications where students are allowed to choose the courses they can take in one semester. These applications also provide a feature that allows the students to obtain a pass certificate from the courses they have just completed.

This learning system, however, highly depends on the lesson plan designed by course lecturers and the implementation of the online course done by the management, and also communication between lecturers and students. Therefore, to obtain a maximum result from the learning process, various efforts are needed to improve the performance of the online learning system known as *sistem pembelajaran daring* (SPADA) in Indonesia.

Although the Blended Learning model is able to improve the performance of the SPADA system applied in many universities in Indonesia, this system is not necessarily suitable for whole components of learning. This research showed that the Blended Learning model was the most suitable model for the online learning system in Indonesia.

2. Research Method

To determine the strategy of the Blended Learning Model on SPADA context, lecturers from a few universities in Indonesia are asked to offer Blended Learning courses. Students from other universities may also take the courses in the form of credit loan which allows them to transfer the credit they earn from the Blended Learning program to their own programs in their own university. The following Figure 1 shows a flow chart explaining a formative method [16].

In the e-learning learning model applied to SPADA, it is initially aimed at leveling learning quality in several universities in Indonesia. The inequality of the learning process is strongly influenced by the educational resources owned by each college. In applying e-learning, universities that have good quality education resources can offer certain courses that can be attended by students from other universities.

Courses offered by the college are first selected to ensure the quality in the SPADA system.

In applying blended learning in one of the courses offered in SPADA, creating a tentative model must be done first. Using the tentative model as the base form, the model is created using a combination of learning aspects and developed after inputs on different cases were given by a total of 7 instructors involved in the SPADA system. The inputs were applied on the available tentative model to become an instructional design model. After that, each tentative model is equipped with the instructional design model tested onsite to obtain data of the blended learning application in the SPADA system. Data is collected in three stages and the data from each stage are used for the one-on-one

evaluation of the model until the final model for the Blended Learning application is obtained.

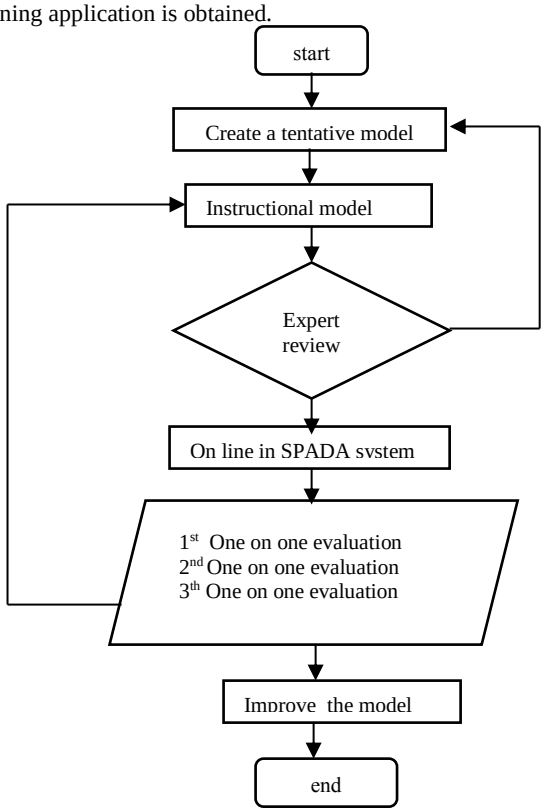

Fig. 1: Flow Chart of Formative Model

45 respondents were involved in the first data collection, 120 in the second and 65 in the third. Questionnaires and rubric assessments based on the Perceived Characteristics of Innovation (PCI) proposed by Rogers (1983) were used as the research instrument. For each data collection, a one-on-one evaluation was done by involving 5 lecturers as the model evaluators by using assessment aspects, namely innovation, compatibility and complexity.

The process starting from tentative model to one-on-one evaluation is repeated until a suitable final model is obtained. The final model may be affected by the respondents or the evaluation result.

3. Creating a Blended Learning Model on SPADA System.

The framework created by researcher is a mixed-learning conceptual model known as mixed learning quadrant. As can be seen in the flow chart above, synchronized or unsynchronized learning category can affect the developed model. In this stage, the role of instructional design is important since the instructional design can make decision about the design planning from the tentative model. By combining synchronized or unsynchronized strategies with the forms affected by situation and condition, the result influences the final model created. The creation of courses using the blended learning application must contain (Table 1):

Table 1: The content of subject using blended learning

	The content of subject	
	synchronized	unsynchronized
Subject Description	✓	
Concept Understanding		✓
Model Understanding		✓
Analysis	✓	✓
Problem solving or solution	✓	✓

The setting of learning model launched in the SPADA system is adjusted to facilities available in each campus implementing the system. The learning model offered by each campus must fulfill the requirement of balance between a synchronized and unsynchronized learning. In a synchronized learning (SL), minimum requirements for the learning model are the presence of lecturer, discussion, workshop, seminar, lab practice, and visits or excursions, while for the online synchronized learning, facilities such as a virtual class with a sufficient teleconference facility and a good internet access must be available in the campus. Table 2 elaborates the quadrant of blended learning between synchronized and unsynchronized quadrants where the difference between the two only lies in the type of learning, namely independent and group learning.

Meanwhile, the outcome criteria in the blended learning model in Indonesia's SPADA system may be connected to the learning strategies applied in the campus system. This is related to the facility aspect of the campus implementing the system or commonly referred to as learning modality. Aside from learning, learning experience is also used as consideration and gives an added value to the application of the model developed. The following Table 3shows the relationship between outcome - learning modality - learning experience and the quadrant in the blended learning in SPADA system.

As seen in the Table 3 remembering comprehension and analysis learning outcome utilizing the available facilities can be implemented in the synchronized learning strategy. Also, for the application of theories in classes, evaluation and creativity of students are more appropriate when conducted using the synchronized learning strategy in a blended learning method.

The class material available in the system must first pass expert's reviews in order to fulfill the quality learning standard. If it passes the requirement, the material is uploaded in the system, otherwise, the material is revised until it passes the requirement and uploaded into the system.

Table 2: Blended learning quadrant setting in SPADA Indonesia

	Blended Learning Setting			
	Synchronous Learning		Unsynchronous Learning	
Quadrant	Live Synchronous Learning (LSL)	Virtual Synchronous Learning (VSL)	Self-Directed Asynchronous Learning (SAS)	Collaborative Asynchronous Learning (CAL)
Learning activity	• Lecture • Discussion • Practice • Workshop • Seminar • Lab practice • Field trips • et cetera	Virtual class Audio-conference Video-conference *Web-based* conference (webinar)	• Reading • Watching (video, *webcast*) • Listening (audio, *audio cast*) • Online Study • Simulation • Drill and practice • Test/quiz • Journal/ publication (wiki, blog, etc.)	Participating in discussion forum Online assignment (individual or group) Group research/ project et cetera

Table 3. Blended Learning Strategy Options

Learning Outcomes (Anderson & Krathwol)	Learning Modality (Smaldino *et. al.*)	Learning Experience (Dale)	Blended Learning Strategy		
			Synchronous		Asynchronous
			LSL	VSL	(CAL/SAL)
Remember	Read	Abstract	-	-	✓
Comprehend	Hear		-	-	✓
Analysis	See	Iconic	-	-	✓
Apply	Active participation	Enactive		✓	-
Evaluate	Modeling and applying	Concrete	✓	✓	-
Create	Direct practice, real experience		✓		-

Each material uploaded must fulfill the established criteria and be structured, starting from the material itself to tests and reviews of teaching and learning process. Table 4. shows the teaching and learning activities in Indonesia's SPADA system applying the blended learning model.

Table 4: The teaching and learning activities in Indonesia's SPADA system

no	Activities	Manual (face to face)	online
1	Course material	✓	✓
2	Tutorial		✓
3	Practice	✓	
4	Field study	✓	✓
5	Task	✓	
6	Demonstration	✓	
7	Discussion		✓
8	Examination	✓	✓
9	Review		✓

The material downloaded from the web can be used by learners as references, while teachers may confirm the adequacy of the material provided. The required tentative model is as follows:
Each stage of the learning model can be adjusted to the condition based on the result of the review of students. From the initial model given, the review of each model is done 3 times. From the review result, blended learning strategy can determine the ideal learning model.

5. Discussion

The result of the one-on-one review at the end of each learning process allows each model applied in the SPADA system to be improved. The evaluation of the model in blended learning is conducted after the model is first applied on the SPADA system. The next evaluation is done after the model has been improved and used in the next semester. This is done after adjustment has been made to the condition of the facilities, the lecturer and the student in the application of the learning model. By involving a total of 235 respondents, the assessment of the model includes class duration, strategies applied by the lecturers and the media used. The evaluation on desired result and student hope can be seen in the following Table 5:
The respondents provided comments on the desired result and hope column to allow the model of the blended learning to be improved. In the assessment, the level of satisfaction of the students in the learning model is also assessed using the contents of level 1 (poor), level 2 (fair), level 3 (good) to level 4 (very good). The result of the first to the third assessment can be seen in the following data (figure 2.)

Table 5: The evaluation on desired result and student hope on the SPADA system

Aspect	Desired Result	Hope
Class duration	Scheduled but less timely	Scheduled and timely
Learning strategy	knowledge transfer takes place in the classroom	knowledge transfer takes place in the classroom and online
Media used	Interactive board not available	Interactive board and internet available

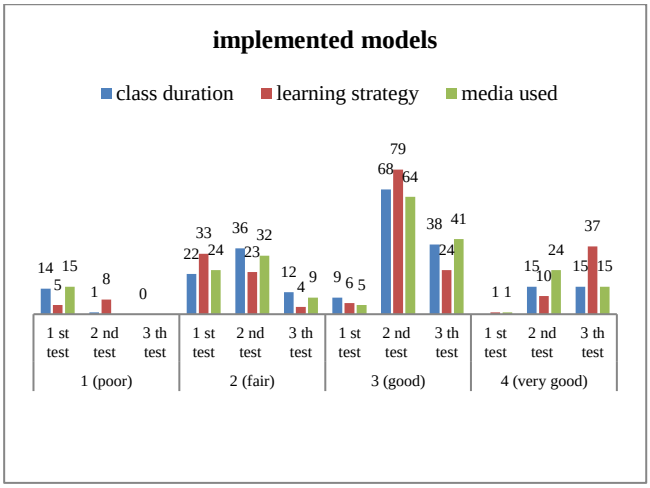

Fig. 2: The result of satisfaction of the student in the implemented model

From the assessment given by the respondents, several aspects are found to have made an improvement. One example is the class duration aspect. On the first evaluation (first model), 14 respondents assessed that the learning model was "poor" while others thought it was fair. On the second evaluation (first improved model), there was no respondent that gave a "poor" assessment and 68 respondents gave a "fair" and "good" assessment.
This study also measured the perception of respondent to the innovativeness of the model. It was measured using Rogers Perceived characteristics of innovaton (PCI). In the assessment of innovativeness also uses the level of satisfaction from 1 to 4, while the assessment aspects of advantage, compatibility, complexity to observability, data assessment result can be seen as the chart below (figure 3.)

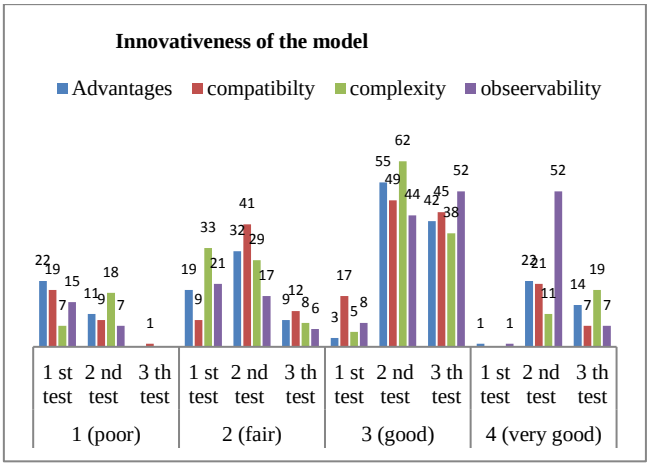

Fig. 3: The result of perception of respondent to the innovativeness of the model

Meanwhile for the learning strategy, improvement is done based on the first assessment result. The improvement is made in the

second to the third process on the SPADA system. This involves expert review so as to get a new model and an appropriate learning strategy.

On the first evaluation (first model), 6 of 45 respondents assessed that the learning model was "poor" while others thought it was fair. On the second evaluation (first improved model), only 6 of 120 respondents gave a "poor" assessment while 23 respondents gave a "fair" assessment and 79 respondents gave a "good" assessment. This indicates that the second model has significantly improved.

The increased satisfaction of the model after the improvement is seen in the second and third evaluation on learning strategy as shown in the following Figure 4.

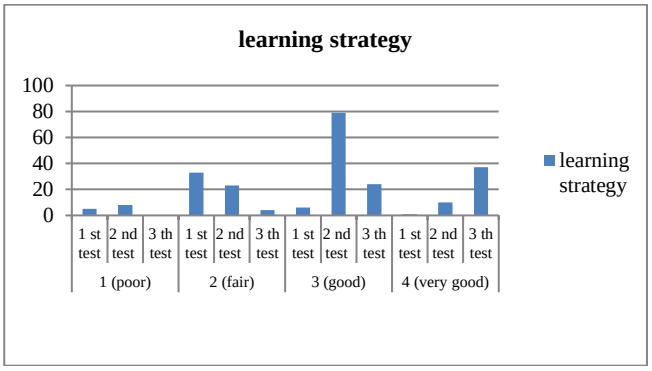

Fig. 4: The result of evaluation on the learning strategy aspect.

For the improvement of blended learning application related to media used, this process uses respondent's perception about the ideal media usage. Although this is highly dependent on the facilities and infrastructure of university that implements the SPADA system, by adding facilities such as interactive board, audio visual room and internet access, it becomes qualified, by providing improved quality of blended learning as illustrated in the result of evaluation below (figure 5).

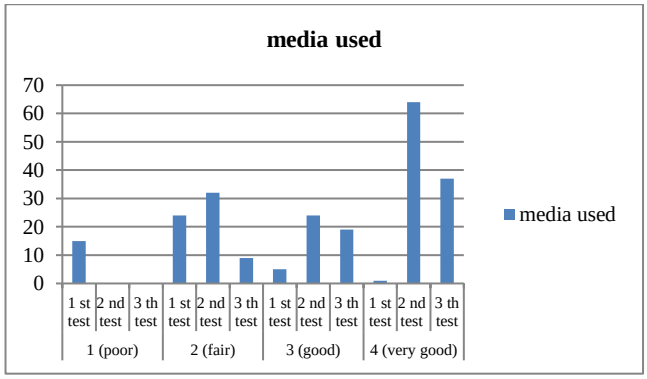

Fig. 5: The result of the evaluation on the media used aspect.

There are factors whose percentage do not change including the media used such as in Figure 5 above. This indicates that these aspects highly depend on external factors outside the content of the classes offered such as interactive board facility or internet access used.

6. Conclusion

The goal of the Blended Learning model for the online learning system is to optimize the achievement of the learning objective. The optimization of e-learning in SPADA is done by combining the synchronous and asynchronous learning from the Blended Learning model aspect. The model must have innovative characteristics, such as easy to use, logical and systematic, interactive and appealing. Furthermore, the model can be tested easily by other peer instructors.

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