Developing a Blended Learning Model at *RMIK* Study Program of *STIKes Hang Tuah* Pekanbaru

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Abstract—Based on learning observations at RMIK study program, there were obstacles to learning Health Information engineering, namely the lack of learning motivation of students participating in learning which led to low learning outcomes. One effort to overcome these obstacles is to develop and implement a blended learning model on ICT learning. This study aims to formulate planning, implementing, and testing the effectiveness of learning with a blended learning model in Health information Engineering subjects. The method used in this study is the ADDIE Research and Development model. The population is all semester one students of the RMIK study program. The results described that the developed blended learning model was suitable as an alternative model of classroom and could improve students' learning motivation.

Keywords—ADDIE, Blended Learning Model, Motivation.

I. INTRODUCTION

The development of information and communication technology is so rapid and has changed the order of human life today. The education world is criticized for being slow to respond to this change compared to industry. The p21 organization in the United States is one of the 21st century education framework developers and many make it as a reference. Three skills that must be possessed in the 21st century according to p21 are: (1) life and career skills, (2) learning and innovation skills, (3) information media and technology skills. More specifically for learning and innovation skills, there are 4 competencies that must be possessed (known as 4C), namely: Communication, Collaboration, Critical Thinking, and Creativity.

Many experts based on the research found that with the application of blended learning models students participate more in learning and obtaining high learning outcomes [1], [2]. Students have greater control over the learning process and foster critical thinking attitude [3]. Learning with blended learning models emphasizes student-centered learning and encourages great interaction between students [4], [5], [6].

II. METHOD

The method used in this study was designed in accordance with the objectives to be achieved and displayed as shown in Figure 1 :

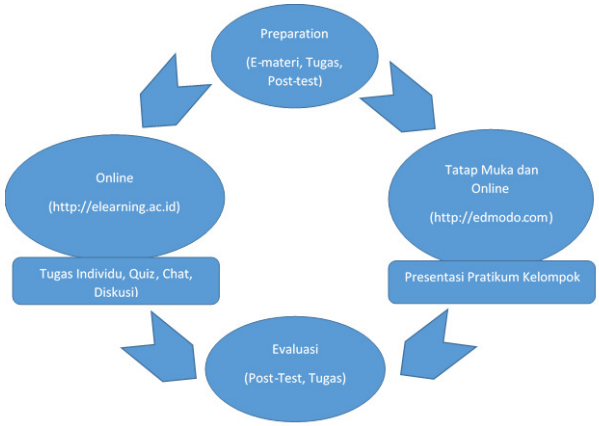

FIG1. LEARNING DESIGN OF BLENDED LEARNING MODEL IN HEALTH INFORMATION ENGINEERING COURSE (AMRIL, 2018)

III. RESULTS AND DISCUSSION

The results of data processing are the development of blended learning model and the implementation of learning with blended learning model in health information engineering courses in the medical record study program and health information on *STIKes Hang Tuah* Pekanbaru obtained the following data:

TABLE 1. STAGES AND PROCEDURES FOR DEVELOPING BLENDED LEARNING MODELS ON *TIK*

No	Stage	Activity	Description of activities	Results
1	Analysis	1. Proving gaps and reviewing literature.	1. Investigating the need for a blended learning model on TIK 2. Conducting initial research to identify problems by distributing questionnaires to students who have attended TIK courses 3. Surveying and interviewing with lecturers	1. The philosophical, psychological, historical and theoretical foundation of the BL model 2. The results of preliminary research and research are relevant regarding the need for BL

			regarding the learning system used 4. Analyzing theories and concepts related to the BL model 5. Analyzing the implementation of learning carried out 6. Analyzing lesson plan 7. Analyzing research results that are relevant to the BL model	models on TIK
		2. Determining product development	1. Analyzing the purpose of the BL learning model book 2. Identifying development procedures and tasks that need to be involved to achieve the objectives of the model book	1. The purpose of writing a model book in BL 2. List of task procedures performed
		3. Confirming the use of the model book.	1. Identifying the initial knowledge of model book users 2. Identifying the skills and attitudes of model book users	Study of the initial knowledge and ability of students to learn with the BL system
		4. Identifying the resources needed.	1. Identifying the characteristics of the BL environment 2. Identifying the learning tools needed include planning learning, teaching materials, e-learning, presentation media and assessment sheets as well as BL model guidelines for lecturers 3. Analyzing the availability of e-learning facilities	1. List of learning resources that can be utilized 2. List of learning media that need to be developed in optimizing learning resources
		5. Determining the model of BL system.	1. Analyzing supporting factors in the use of model books, learning planning, teaching materials, e-learning,	Data from surveys and interviews regarding the use of models in BL

			presentation media and assessment sheets 2. Conducting a feasibility analysis	
		6. Developing a plan for developing BL models.	Developing a schedule for the design, development, implementation and evaluation process of the BL model	Schedule of the BL model development process
2	Design	1. Inventory tasks	1. Identifying important tasks carried out in the achievement of development products (models) 2. Translating the results of the needs analysis on the BL model book 3. Translating the needs of students and learning objectives for the teaching materials used in BL by using a model guide 4. Designing learning procedures and tasks to achieve learning objectives 5. Determining the format of teaching materials (digital) 6. Gathering references on the BL learning model to achieve learning goals 7. Determining the right BL model strategy	1. Notes on assignments or learning activities that help students in the learning process 2. Notes on face-to-face learning systems
		2. Developing work objectives	1. Designing the BL model needed by students 2. Designing learning models according to needs analysis	1. Writing a draft book for the BL model 2. Design of learning 3. Writing draft learning tools, teaching materials, presentation media, learning and lesson plans

		3. Determining strategies	1. Determining and designing product validation instruments (models), practical instruments and instrument validation instruments 2. Determining the stage of individual trials and limited trials	1. Instrument: validation, practical, effective and instrument validation 2. Trial schedule
3	Development	1. Product content	1. Producing BL model 2. Analyzing lesson plan and learning tools, teaching materials, e-learning, presentation media 3. Making a website 4. Making development instruments 5. Validating products and instruments by experts / experts 6. Conducting product and instrument revisions	Book content of models and learning tools
		2. Developing a guidebook for BL.	Producing BL model guides	Book model
		3. Choosing and developing supporting media	Developing teaching materials, e-learning, presentation media in BL	Teaching materials, e-learning, presentation media in BL
		4. Producing and validating instruments	Validating instruments: model validation instruments, practicality validation instruments, effectiveness validation instruments.	Instrument validation, model validation, learning device validation.
		5. Conducting formative revisions	Validating the BL model: 1. Completion of validation instruments by experts 2. Conducting expert interviews, follow-up of the	Revision of the model book based on input from experts.
			instruments filled by experts	
		6. Limited trial	Trial of learning planning, teaching materials, e-learning, presentation media and lesson plans developed based on the BL model. 1. Conducting practicality assessment of the BL model by filling in the practicality tools by the user on the use of RPP, teaching materials, websites, presentation and assessment media. 2. Conducting interviews with users to find out how RPP, teaching materials, e-learning, website, presentation and assessment media are used.	The results of the trial were available to 8 lecturers
4.	Implementation	1. Preparing lectures	1. Implementing the BL model in *TIK* courses 2. Observing the implementation of the BL model, proposing students to the learning material as a result of the implementation of the BL model	1. Learning device 2. Rules for lectures 3. Lecture guide with BL model
		2. Preparing students	The preparation for implementing the BL model is valid, practical and effective	Lecturer guide and student guide
		3. Implementing	Implementing the BL model, RPP, e-learning, teaching materials, presentation media	E-learning activities, assignments, discussions, documentation
		4. Limited practicality test	1. Distributing practicality, motivation questionnaires to students who have participated in the BL model. 2. The course lecturers observe	Practical and effective test results.

			the use of lesson plan	
5.	Evaluation	1. Assessing the quality of the development process	Making observations while learning takes place	
		2. Assessing the quality of product development	1. Completion of instruments by experts that validate the BL learning model. 2. Completion of instruments by lecturers regarding the use of BL models. 3. Testing the cognitive abilities of students after using the BL model	1. Validation instruments and analysis results 2. Practical instruments and results of analysis 3. Test of learning outcomes (Quiz) and analysis results.
		3. Revision of BL model.	Improving BLmodel and learning media based on evaluation of pratical and effective tests.	Blended Learning Model on *TIK*

IV. CONCLUSION

The results of this study indicate that students who attend lectures with a blended learning model get learning outcomes far beyond the target and have high learning motivation. In line with the research of Gomez & Igado, [7], which argued that Web-based education with blended learning model has high potential to produce quality learning and provide students with high learning motivation. The results show that effective learning can occur in a blended learning environment. The results of this study are in line with other studies which show that students' learning outcomes with blended learning models are parallel [8] or slightly higher than face-to-face learning [9, 10, 11].

Blended learning approach is a learning approach that is widely used in various educational institutions and is an alternative learning to help students improve learning outcomes. In general, the results of this study reinforce the view that a blended learning environment is student-centered learning through empowering students to take more responsibility in their learning and increase their involvement and participation in learning.

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