

The Models of Assessment to Accommodate Instructional Domain in Blended Learning

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Abstract—This article is written as a report of the design phase of assessment instrument models of blended learning in higher education. This study is to identify the assessment models which accommodate three instructional domains, namely: cognitive, affective, and psychomotor. It is important work to be designed and developed remembering the massive increase of the blended learning implementation, especially in higher education and the complexity of the skills must be mastered by the undergraduate students to survive in a digital era. The design stage of this research is based on the framework of ADDIE Model, states that the design should be conducted with the result of need analysis, such as a) undertaking an inventory task, b) composing performance objectives, c) generating testing strategies, and d) considering the effectivity and efficiency of developed instruments. From the findings, it then was drawn a result the map of a brief design of blended learning assessment model. Therefore, the researchers embody it to be triangle formation involving self-assessment, peer assessment, and lecturer assessment. This triangle model is expected to accommodate the three domains of learning in the implementation of blended learning assessment.

Keywords—instructional design; blog; learning interactivity; early childhood

I. INTRODUCTION

Blended learning is the most natural and logic evolution in the timeline of learning [1]. It constantly develops because of its own characteristics which combine the prime methods of face-to-face meeting and online learning [2]. However, in the case of conducting only purely online class without committing a face-to-face session, it will lead to the negative results, for instances, the students feel bored and are difficult to maintain the motivation [3]. Therefore, blended learning has become one of the elegant solutions meet the need of students and lecturers as the online learning basically facilitates the necessity of technologies and the meetings in the class will accommodate the needs of social interaction among learning society. The implementation of blended learning at the same time can be both an opportunity and a challenge to instructional designers in integrating the digital and innovation advancement with participation in the class.

The finest blended learning application is a combination between face-to-face meeting in the class and online learning which acknowledges learning contexts and the development of relevant material organization [1,4]. There is the number of related studies discussed these topics, such as model, media, strategy, and blended learning content development [5-7]. The research about blended learning has also been through blended learning assessment [8,9]. This study evaluated the blended learning implemented. Yet, from the researcher's study roadmap, it is necessary to possess a measurement model which accommodate the three realms of learning, especially for a course of Learning Theory (*Teori Belajar dan Pembelajaran*) [5-7,10].

This model is becoming essential to be designed and developed regarding the massive implementation of blended learning, specifically in higher education and the complex skills should be owned by the students to survive in the digital era. Thus, the assessment of implemented blended learning is important to be assessed and evaluated. The evaluation is a process of creating the assessment of the development and learning value in blended learning [9]. This article will discuss the process of assessment model design which accommodates three learning field namely, cognitive, affective, and psychomotor.

II. METHOD

The object of this research is a blended learning assessment instrument in higher education. In this study, the researchers design the instrument based on the result of need analysis with the support of conceptual references. In the meantime, the researchers consist of a curriculum expert, an instructional design expert, a blended learning expert and digital literacy expert. The design of this model refers to some stages of ADDIE, that the conducted design is based on the results of need analysis by doing several steps which can be seen as diagram below:



Fig. 1. The steps of assessment design for blended learning.

III. RESULT AND DISCUSSION

The evaluation of blended learning is an assessment process of the learning implementation. To undertake the evaluation, it is necessary to have an assessment instrument in a framework of the blended learning assessment model. This model covers the strategies to explore the instructional process including assessment techniques both test and non-test. This instrument consists of an objective test, constructed-response tests, direct testing, scientific analysis, performance rating, rubric, portfolio, exhibition, questionnaire, interview, and observation.

Based on the result of need analysis, the assessment type which will be applied to this study is the multiple-choice question, short-answer question, rubric, portfolio, survey, interview, and observation. All instrument is utilized to assess the three domains of learning such as cognitive, affective, and psychomotor [11-13]. Meanwhile, this instrument will be applied through three kinds of assessment, namely, self-assessment, peer-assessment, and lecturer-assessment [14]. The more detailed instrument and assessment types which are designed to accommodate the learning domain can be seen from the table below:

TABLE I. THE MAP OF ASSESSMENT OF BLENDED LEARNING IN HIGHER EDUCATION

Domain	Types of Instruments [11]	Types of Assessment			Course Learning Objectives	Blended Learning Instruments	
						Face-to-Face Instrument	Online Learning Instrument
Cognitive	Objective test (multiple choice, true-false, matching) Constructed-response test (short-answer question, essay, problem-solving question)	Self Assessment	Peer Assessment	Teacher/Lecturer Assessment	Understanding the fundamental concepts of learning theories and its implication in learning		
						2	1
Psychomotor	Direct testing Scientific analysis Performance rating Rubric Portfolio Exhibition				Students can communicate the ideas of comprehension towards learning theories	6	7
Affective	Survey Interview Observation				Students conduct the task with honest, respectful, cooperative attitudes and solve problems with others		
						10, 11	9

Table 1. Attempts to describe the assessment and usable instruments applied in blended learning in higher education. The various colors and numbers in the table show the instruments is to certain domain distinguished from the types of self-assessment, peer-assessment, and lecturer-assessment implementation. The detail explanation can be read as follows:

A. Self-assessment

The definition of self-assessment is a kind of student's ability to follow, analyze, and assess their own performances based on the specific criteria and find out the strategies to increase the progress. The blended learning assessment involves a collaborative process where internal and external condition is consistently observed and assessed and the ability to maintain the student's motivation [15]. Besides, it is also explained that three domains of metacognition involving knowledge, monitoring, and motivation which relating to the research process, academic disciplines, and

expectations. The monitoring of cognitive dimension implies the awareness and willingness to reflect the learning process. Meanwhile, the setting of metacognition concentrates to the psychomotor domain of learning experiences. It involves strategy work to reach a meaningful learning result. In the utilization of assessment should consider the abilities and experiences which are needed to assess themselves appropriately. Instead of conducting it alone, this assessment shall bring the other types of assessment altogether, such as peer-assessment and lecturer-assessment. Nevertheless, this self-assessment is a key process to assist students reflecting, understanding, and taking an action and responsibility to learn or activities they are conducting.

B. Peer-assessment

Peer-assessment is a kind of assessment which allows a student to assess other students in a learning session. In addition, this type also can give a consideration to be utilized in determining one's grade in group work, as well as level,

score, quality of product and tasks of learning activities [16,17]. In the process of effective blended learning assessment, all students can be both students and teachers at the same time. Therefore, they can engage in giving opinion and suggestion in designs, facilities, and learning process directions. This assessment provides feedback to students on the tasks performed [18]. Nonetheless, peer-assessment give the students a greater and more authentic opportunity to learn from the other students, for example, to see and comment on other students' works.

C. Lecturer-assessment

To date, lecturer-assessment inclines to lead as well as to limit the high-level summative assessment of activities, such as mid-term test and a final examination. The role of the lecturer in a blended learning situation is to give an ongoing and meaningful assessment to assist students developing their required metacognitive skills and part of the strategies to take responsibilities in the current learning they have attended. Hence, a lecturer should put greater emphasis on summative than formative assessment. There are seven criteria of good assessment, such as [19] a) assisting to explain a term of goals, criteria and standard oriented works, b) facilitating development of self-assessment and reflection in a learning program, c) giving a great quality of information to students about their learning process, d) encouraging the emerge of dialogue between lecturers and students in learning environment, e) encouraging students to have high motivation, f) giving opportunities to cover the gap between an ongoing and expected work, g) giving meaningful information which can be applied in the learning process to lecturers.

The technology integration in the implementation of blended learning assessment varied and collaborated among blog, wiki, and social media applications in higher education can give chances to students to strengthen the principle of good assessment. Also, the trend to engage technology and the internet to increase the creativity, sharing information, and especially, collaboration among students. As the result, the researchers create a brief design of blended learning assessment model. The researchers then synthesize it into a model which comprises of self-assessment, peer-assessment, and lecturer-assessment. This triangle model can be utilized to accommodate the three learning domains to implement blended learning.

IV. CONCLUSION

The assessment model of blended learning in higher education is designed to accommodate the learning domains which can be applied through self-assessment, peer-assessment, and lecturer-assessment. There two kinds of instruments can be utilized in this study namely test and non-test. Those tests comprise of objective test, constructed-response test, direct test, scientific analysis, performance rating, rubric, portfolio, exhibition, questionnaire, interview,

and observation. Based on the need analysis, certain instruments used in the blended learning are a multiple-choice question, short-answer question, rubric, portfolio, survey, interview, and observation.

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