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The Validation of Instrument Models for Blended Learning Assessment to Accommodate Instructional Domains

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Abstract

This paper describes the validation of an instrument model for blended learning assessment that accommodates three learning domains. This model is urgently developed because of the extent of the blended learning application in universities. The validation of the instrument of blended learning assessment is carried out with two methods that are validation through validator and validation through trials to the students. The validator provides an assessment through the process of judgment validity, including a substantive assessment and display to two validators. The assessment result of the validator shows that the model is valid with a slight revision. Meanwhile, the trials for students are conducted by taking into account 20 students with 96% of the valid group questions. It can be concluded that the instrument models used to assist the three learning domains are valid and applicable.

Keyword: assessment instrument, blended learning, learning domain

I.   INTRODUCTION

The 21st century, there are various innovative learning programs invented to improve learning processes and outcomes (Harari, 2018; Jacobs, 2010; Lai & Viering, 2012). One of them is learning that combines face-to-face meetings in class with distance learning based on online learning which is more commonly known as blended learning (Bersin, 2004; Eryilmaz, 2015; Watson, 2008). Online learning cannot be done as a whole because there are still some values need to be maintained. Some of these values can only be obtained through face-to-face interaction in the classroom. This fact provides an opportunity for blended learning to be able to combine the advantages of face-to-face and online learning (Bersin, 2004) and cover the lack of face-to-face by integrating online learning and vice versa. However, the extent of blended learning application is still questioned in the form of assessments in the combination of face-to-face meetings with online learning (Koç, Liu, & Wachira, 2015). For example, the teaching and learning formula in the Learning Theory class is done with 43.53% online learning formula and 56.47% face-to-face meeting formula. The formula was obtained from 1) the results of the 2014-2015 study entitled Formulation of the Application of Blended Learning Strategies in Implementation of the Curriculum in the Educational Technology study program, Faculty of Education, Universitas Negeri Padang (Bentri, Zen, & Rahmi, 2014), and 2) the results of a 2015 study entitled the students' understanding Ability using Blended Learning in the Educational Technology Study Program, Faculty of Education, Universitas Negeri Padang (Bentri, Hidayati, & Rahmi, 2016) dan 3) some research during 2015-2016 about the Design of Blended Learning Messages in Higher Education (Rahmi, Effendi, & Ansyar, 2017).

However, the application of the formula meets obstacles in carrying out the assessment and evaluation after the blended learning was applied. Since learning is done in a combination of face to face and online learning, the assessment carried out must follow every activity that students do during the lecture. In the application of blended learning in the subject of Theory of Learning and Learning assessment and evaluation is carried out through online and direct examinations in class. Also, the Mid-test Examination is conducted in the class with the open-book method, while the Semester Final Examination is conducted online by sending e-mail papers to each student to the e-mail of lecturer lecturers.

Furthermore, the issue of assessment is also related to the goals of three learning domains during the implementation of blended learning. The learning domains are an important aspect of measuring, assessing, and evaluating learning outcomes (Anderson et al., 2001). Learning that only prioritizes certain domains has not yet achieved full learning objectives. Based on these problems, an assessment model needs to be developed in blended learning that can accommodate the learning domain. This article aims to explore the results of the validation of the blended learning assessment model that can accommodate the learning domain in college.

II.   RESEARCH METHOD

This research is a series of R&D with the ADDIE model (Branch, 2009). This specific article explained the third stage, namely Development. The data were collected through quantitative methods. The instrument used was a blended learning assessment book product assessment sheet that accommodates the learning domain to the validator. The instrument included indicators: a) the basis of model development, b) objectives and c) type of assessment. The validator evaluated the product in the form of a book that was arranged based on the stages of needs analysis design stages. The data validations were obtained from two validators from evaluation experts. The data were analyzed using descriptive techniques to answer the level of validation provided by the two experts.

III.   FINDING AND DISCUSSION

The model of the blended learning assessment instrument was a guidebook that contained the book's foundation model, objectives, type of instrument, assessment techniques and assessment models in each learning domain. The validation of the blended learning assessment instrument was carried out with two methods, namely validation through validator and validation through testing to the students.

a.   The Validation of the Validator Assessment Sheet

The following data were the validation result of the assessment instrument model for blended learning.

Table 1. Validation Result

No.	Statements	Validator 1	Validator 2
1	Table of content on the model	5	4
2	Philosophical principle of the model	5	4
3	The theoretical principle of the model	5	5
4	Juridical principle of the model	5	4
5	The goals of the model	5	5
6	Types of assessment on the model	5	5
7	Assessment techniques of the model	5	4
8	The blended learning assessment model accommodates three learning domains	4	5
9	The blended learning assessment model involves face-to-face lecture modes	5	5
10	The blended learning assessment model involves an online learning mode	5	4

The validation results through the validator scored 4.9 and 4.5. Qualitatively, the validator provided input on the instrument that had been made. The following points were input from validator 1:
   a)   It is necessary to include the page for each instrument model
   b)   On the weekly assignment assessment sheet there was no description of the aspects assessed, => a, b, c, d, e ...?
   c)   A scoring rubric was needed in each noncognitive assessment sheet.
Next, suggestions from validator 2 were related to the blended learning assessment instrument model, including:
   a)   Proportion/structure of semester credits and lesson schedule for face-to-face lessons and online learning
   b)   Explain to the model whether this instrument functioned as a supplement or complement
   c)   The model books also needed to list instrument lattices

The Validation of the Trials given to the students

Furthermore, based on data analysis, it obtained question validity like the following table.

Table 2. The Validity of Quiz Questions in the Learning theory Subject

Questions	Frequency	Percentage
Valid	48	96
Invalid	2	4
Total	50	100

Table 2 showed the distribution of valid and invalid items. Out of the 50 items, there were 99.96%, or 48 valid questions and 4% or 12 invalid questions. It could be meant that the 48 items followed the validity criteria for a question. The valid question items could be used to test students' cognitive achievements.

The way to investigate the validity of the blended learning assessment instrument model that can accommodate the learning domain was carried out by using a 'panel' discussion consisting of experts in the field of Learning Theory and experts in assessing. The method was done to assess the feasibility of the model, while the instrument was assessed through trials to students. The Unit of Measurement material was suitable with the Unit of Measurement Preparation material which meant that the measuring unit instrument had content validity. Meanwhile, its construct validity was related to the construction or concept of the field of science that would be tested for its validity of the measuring instrument. The construct validity referred to the suitability of the measurement results and the ability to be measured (Yusuf, 2017). The existed of the construct validity of Learning Theory measurement tool was proved to show that the score produced by a measuring instrument reflected the same construct with the ability to be measured.

A measuring instrument was said to have high construct validity if the results of the measuring instrument followed the measured behavioral characteristics. In other words, the alignment of the details of the ability in a measuring instrument with details of the ability to be measured could be seen if the instrument was described. The construct validity could be done by identifying and pairing items with specific objectives intended to uncover certain levels of cognitive aspects. As in content validity, to determine the level of construct validity, the preparation of items can be done based on the measuring tool grid.

IV.   CONCLUSION

A valid model of the blended learning assessment instrument is constructed from the whole components of a scoring system. The validators assess the developed products based on assessment characteristics that have been developed from the assessment component itself. If the learning process is carried out with a blended learning system, the authentic assessment also needs to be done in each face-to-face activity and online learning.

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