

Formative Evaluation for the Development of Blended Learning Models

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Abstract: The development of learning models in this study is intended to determine the effectiveness of learning models using formative evaluation. This research uses formative evaluation aiming to examine the feasibility of constructional-based blended learning model in the Civics course. This formative evaluation will present the results of the feasibility test of constructional-based blended learning models in the Civics course to become a prototype of learning development through the following stages: (1) review of expert Civics materials, (2) review of learning design experts, (3) revision of instructional media experts. The results of this formative evaluation as a need analysis for the fulfilment of the feasibility of the learning model development is based on the finalization of the learning model. The results of this feasibility test are carried out by 2 (two) PKn material expert reviews, 2 (two) review of learning design experts, and 2 (two) revised learning media experts. Based on the results of the formative evaluation it can be stated that the constructional-based blended learning model in the Civics course is declared feasible to test its practicality for the students to solve the problem of learning Civics courses at the Education Faculty of Islamic University of North Sumatera at this time.

1 INTRODUCTION

Modifications and variations in current learning are characterized by the rapid development of information and communication technology (ICT). The effect that accompanies the development of ICT can be seen from the development of computer and internet-based learning models which are now known as e-learning. E-learning is one of the innovations in learning technology that integrates information technology and communication with learning content (Ali, Uppal & Guliver, 2018: 2). E-learning is a form of distance education that uses electronic media as a medium for delivering material and communication between lecturers and students (Abuhassna & Yahaya, 2018: 304-3045). Thus e-learning learning activities are learning activities carried out individually or in groups that are done online or offline through networks or personal computers and other electronic devices.

The use of e-learning has advantages and disadvantages. The advantages of e-learning are as follows: (1) availability of e-moderating facilities where lecturers and students can communicate easily

through internet facilities on a regular basis or at any time and anywhere without being limited by distance, place and time, (2) lecturers and students can use teaching materials such as structured and scheduled modules via the internet, (3) students can learn and reflect again on the subject matter at any time and anywhere if needed remembering the teaching materials stored on the computer, (4) if students need additional information related to the material they study, they can access the internet, (5) lecturers and students can hold discussions via the internet which can be followed by a large number of study participants, (6) changes in the role of lecturers and students from passive to active, (7) learning is relatively more effective and efficient (Kattoua, Al-Lozi, & Alrowwad, 2016: 756). E-learning learning is very helpful learning process, especially in the delivery of material because it can attract students' interest in participating in the lesson and students are motivated to understand the contents of the subject matter.

The use of e-learning is inseparable from the following shortcomings: (1) lack of interaction between lecturers and students, (2) the tendency to ignore academic aspects or social aspects and

instead encouraging business or commercial aspects, (3) the learning and teaching process tends towards training rather than education, (4) changing the role of the lecturer from the one who previously mastered face-to-face learning techniques to master the learning techniques using ICT (*Information Communication Technology*) (Kattoua, Al-Lozi, & Alrowwad, 2016:756). Although e-learning can be used in learning activities independently, the presence of lecturers is very meaningful where the presence of the lecturer serves to support and assist students in the learning process (Maurer, 2017).

Looking at the existing studies, the biggest obstacle to using e-learning is the process of direct interaction between lecturers and students (Sirkemaa, 2014:176-177). It is realized that a learning process occurs from the existence of a two-way communication process between students and lecturers. This is the fact that causes e-learning programs do not always get satisfactory results. E-learning only occurs interaction between students and lecturers in cyberspace (Traxler, 2017, 2-4). Besides that, often the material is abundant and fully available and students can also study anytime and anywhere, as long as they are connected through the network, but still the level of use of e-learning materials is low. Learning independently using e-learning requires feedback and two-way interaction between lecturers and students. The feedback on the two-way interaction between the lecturer and the student is certainly done through face-to-face learning.

Face-to-face learning is learning where the lecturer teaches by conveying information and knowledge to achieve certain learning goals for a number of students through face-to-face meeting activities at certain times and places (Ananga & Biney, 2017:168). Face-to-face learning has advantages and disadvantages. The advantage of this face-to-face learning is that lecturers can convey information quickly, material that is abundant and clearly decomposed with a large number of learning groups. (Chawinga, 2017:1-2). While the weakness of face-to-face learning is more emphasized on one-way communication in which to control students' understanding of learning material is very limited and communication is created in one direction so that knowledge possessed by students will be limited (Jacobs, 2013).

Based on the problems as explained above, a settlement effort is needed to cover the weaknesses of face-to-face learning and e-learning by using a blended learning model. A model is interpreted as a pattern that can fundamentally show a complete

picture of something that will be done and the results to be achieved (Klein, Pacheco, & Righi, 2017: 440). In learning activities, learning models are needed as an effort to enable students to understand or master a particular theme so that the learning objectives to be conveyed can be achieved. At present, with the advancement of the lecturer paradigm with various learning models, a blended learning model is designed.

Blended learning model is a combination of face-to-face learning models with e-learning models (Dewi et al, 2018: 90). Blended learning model is also interpreted as a face-to-face learning model that is supported by e-learning-based learning models so that the learning process will run optimally because the advantages of both models will be complementary from each of the two learning model deficiencies. (Galvis, 2018). Blended learning model is defined as a learning model that combines strategies for delivering learning using face-to-face activities, computer-based learning (offline), and online computers (internet and mobile learning) (Sari et al, 2018: 163-164).

Looking at the opinions above, it can be interpreted that blended learning model can combine face-to-face learning with computer-based learning. That is, learning with a learning technology approach with a combination of face-to-face learning resources with teachers and those contained in computer media, cellular or iPhone phones, satellite television channels, video conferencing, and other electronic media so that students and lecturers can work together to improve quality learning. The main objective of this blended learning model is to provide opportunities for various characteristics of students so that they can learn independently, continuously so that learning activities become more effective, more efficient, and more attractive (Lee, 2016). Blended learning model is the best choice to increase effectiveness, efficiency, and greater attractiveness in interacting between students in diverse learning environments (Rivera, 2017:81-83). Blended learning models offer learning opportunities for students so that they can learn better both together and separately, as well as at the same time or differently (Nortvig, Petersen, & Balle, 2018:47-49). Blended learning models offer learning opportunities for students so that they can learn better both together and separately, as well as at the same time or differently (Suliman et al, 2018:55-56). Therefore, the blended learning model provides learning facilitation that is very sensitive to all differences in psychological characteristics and student learning environment.

Seeing so much usefulness of using blended learning model, before being used as a standard learning model it is necessary to evaluate it so that the learning model is truly tested for effectiveness as a standard prototype learning model. Before becoming a learning model, this blended learning model needs to be designed so that learning conditions and learning activities and how to use various learning resources can be well designed. The need for a blended learning model is designed in advance because a learning design emphasizes learning processes and conditions that serve as a reference framework to identify abilities or capabilities that are learning outcomes and produce blueprints that can be copied and imitated based on the size set. So the prototype is the initial form (example) of the product or standard size of an entity in this blended learning design. In this case, the prototype is a functional version of the learning unit which is usually still in the form of a draft that has been completed and its content component is integrated and still needs to be tested for effectiveness and efficiency through the testing stages. The test stages are done by using formative evaluation. Formative evaluation is defined as a consideration of the weaknesses and strengths of a learning model in the stages of its development with the aim of revising the learning model to increase its effectiveness and attractiveness (Udoukpong & Okon, 2012:205-207). Dick & Carrey (2005:276) suggests that formative evaluation is a design process to obtain data that can be used to review learning design to be more efficient and effective. Another definition of formative evaluation is the activity of assessing to find feedback where the results of the feedback are used to improve the assessment process being carried out (Gloria et al., 2018:2). Based on this formative evaluation an overview of the successes and failures of the blended learning model will be obtained, that has been made for the next appropriate actions taken to correct the failures that have been found.

The main concept underlying the formative evaluation carried out in the development of a learning model is the process of obtaining data which is then revised so that the learning model is more efficient and effective. The emphasis in formative evaluation is on data collection and analysis and revision of learning products. When the final version of learning is produced, other evaluators may collect data to determine its effectiveness. There are 3 (three) formative evaluation procedures which can be seen in Figure 1 below:

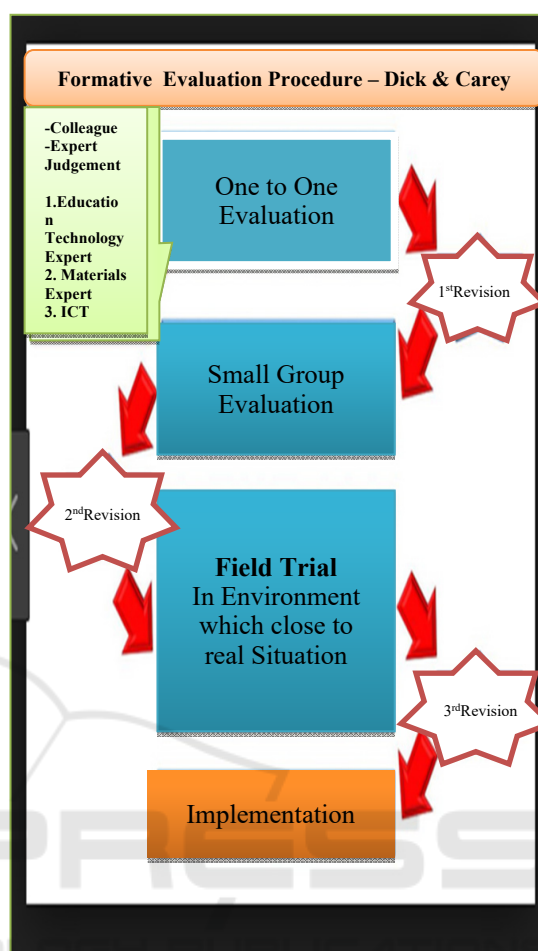


Figure 1: Formative Evaluation Procedure.

In Figure 1 above it can be seen that 3 (three) formative evaluation procedures are: (1) One to One Evaluation (Individual Evaluation); in this stage the learning design team collaborates with students to obtain data to revise learning material, (2) A Small Group Evaluation, student groups representing the target population who study learning materials, (3) A Field Trial, this stage emphasizes the testing of the procedures needed for the application of learning materials in real situations. The three phases of formative evaluation above must be preceded by a review by experts who are not directly involved in learning development projects but have expertise relevant to the learning material being developed. The review of experts in this study is seen from: (1) review of Civics material experts, (2) review of learning design experts, (3) review of instructional media experts. The role of experts in formative evaluation is to provide reviews or opinions for improvements and changes in the first draft of the design. Opinions from these experts are

recommended as recommendations in improving existing learning models.

In individual evaluations, the purpose of individual formative evaluation is to identify and remove striking errors in learning and to get early indications and reactions of students to the contents of the learning material developed. This can occur through direct interaction between developers of blended learning models and students. Furthermore, small group evaluations are carried out to see the effectiveness of changes and identify the remaining problems after individual evaluations are conducted and to determine whether students can use learning materials without interacting with lecturers.

2 METHODOLOGY

2.1 Research Design

This research uses mixed methods research. Mixed methods research is a research design that provides philosophical assumptions in showing direction or giving instructions on how to collect data and analyze data and a combination of quantitative and qualitative approaches through several phases of the research process (Creamer, 2018:11). Data Analysis uses SPSS version 24.0 For Windows.

2.2 Sample

This study describes the results of the feasibility test of constructional-based blended learning models in the Civics course to become a prototype of learning development. This research activity is in the context of retrieving data and processing data from: (1) expert material on learning *Pancasila* and CivicsCourse, (2) design experts learning course for *Pancasila* and Civics, (3) media experts learning *Pancasila* and Civics Course. This study describes the results of the feasibility test of constructional-based blended learning models in the Civics course to become a prototype of learning development.

2.3 Instrument

The instrument used in this study is developed by researchers. Instrument in this study depends on the number of research variables studied in which the indicators have been determined. Based on these indicators research instruments are formulated. Indicators for instruments for experts in learning CivicsCourse are as follows: (1) Clarity of learning objectives, (2) Accuracy of material coverage, (3) Quality of practice questions, (4) Digestibility of

material and logical exposure, (5) Use of language, (6) Ease of understanding of language, (7) Exploration, (8) Illustration.

Instruments for learning design experts can be seen from the following indicators: (1) The accuracy of topic selection, (2) Suitability of material with learning indicators, (3) Training provision, (4) Consistency of Tests with learning indicators. Learning media expert instruments are outlined with the following indicators: (1) Execution orders on e-learning, (2) Consistency with program flow, (3) e-learning sustainability, (4) system efficiency, (5) display accuracy, (6) Server management, (7) Consistency between parts of the lesson, (8) Easy modification.

2.4 Data Collection and Analysis

Before doing the data analysis, the research is first tested for validity and reliability testing of research instruments using the help of SPSS 24 for Windows program. The results of the validity test of constructional-based blended learning models in the Civicscourse by experts on Civicslearning material on the quality of blended learning models can be seen in Table 1 below:

Table 1: Score of Expert Evaluation of Learning Materials About the Quality of Learning Models constructional-based Blended Learning Models in Civics Courses.

No	Assessment Indicator	Validator			V= Σs = S1+ S2	Criteria
1	Clarity of learning objectives	5	5	5	1,00	Valid
2	The accuracy of the material coverage	5	5	5	1,00	Valid
3	Quality of practice questions	5	4	5	0,92	Valid
4	Material digestion and logical exposure	4	5	4	0,83	Valid
5	Use of language	5	5	5	1,00	Valid
6	Easy understanding of language	5	5	5	1,00	Valid
7	Authorization	4	4	4	0,75	Valid
8	Illustration	5	5	5	1,00	Valid

Referring to Table 1, it can be seen that the validity test according to the material expert shows that the quality of the Civics course learning model is from the aspect of the quality of the majority

learning material in the "Valid" criteria. Expert validation results of this subject matter indicate that constructional based blended learning model in Civics courses can be used in the next research activity.

Learning design experts validate the product on aspects of learning design including the aspects of content feasibility which consist of the quality of learning design, presentation aspects which consist of information design quality and interaction quality, and graphic aspects which consist of presentation quality and presentation design quality. The results of the validation in the form of an assessment score of the Civics course learning model component on the quality aspect of constructivist based blended learning model design can be seen in the following Table 2:

Table 2: Assessment Score of learning models By Learning Design Experts Regarding Quality Aspects of Design Blended Learning Model Based on constructivist course of Civics.

No	Assessment Indicator	Validator			V= Σs= S1+ S2	Criteria
		1	2	3		
1	The accuracy of topic selection	4	4	4	0,75	Valid
2	Suitability of material with learning indicators	4	5	4	0,83	Valid
3	Training	5	4	5	0,92	Valid
4	Consistency Test with learning indicators	4	5	5	0,92	Valid

Based on the assessment of the learning design experts contained in Table 2 it is about the quality aspects of the majority learning design stated in the criteria "Valid". The design expert validation results of this lesson indicate that constructional blended learning model in Civics course can be used in the next research activity: Media experts learning of *Pancasila* and Civics course validation aspects: command execution on e-learning, consistency with program flow, e-learning sustainability, system efficiency, display accuracy, server management, consistency between parts of learning, easy modification. The results of the validation in the form of an assessment score of a constructional blended learning model based on Civics course on

programming aspects can be seen in the following Table 3:

Table 3: Score of Expert Evaluation Learning Media Model of constructional -Based Blended Learning in Civics Courses by Learning Media Experts.

No	Assessment Indicator	Validator			V= Σs= S1 + S2	Criteria
		1	2	3		
1	e-learning execution	5	5	5	1,00	Valid
2	consistency in the line of the program	4	4	5	0,83	Valid
3	Continuation of e-learning	5	4	5	0,92	Valid
4	System efficiency	5	5	4	0,92	Valid
5	Display accuracy	5	5	4	0,92	Valid
6	Server management	5	4	4	0,83	Valid
7	consistency among parts of learning	5	5	5	1,00	Valid
8	easy modification	4	4	4	0,75	Valid

Evaluation from instructional media experts in Table 3 shows constructional learning based on blended learning models in the majority of Civics course in the "Valid" criteria. The results of the media expert validation study show that constructivist based blended learning models on Civics course could be used in the next research activity.

3 RESULT

Formative evaluation results by material experts, learning design experts and learning material experts on each aspect of assessment as a whole are determined by the average score in their respective categories. As for the average percentage of the results of formative evaluation by material experts, learning design experts and software engineering experts will be described as follows.

a. Formative Evaluation Results for Civics Expert Learning Material

Expert learning materials conduct formative evaluation of a blended learning model based on constructivist subjects of civic education from the

quality aspect of learning material, which can be seen in Table 4 below:

Table 4: Percentage of Average Results of Formative Evaluation on the Quality of constructional Based Blended Learning Models in CivicsCourse.

No	Categorization	Average Percentage	Criteria
1	Aspects of learning material	0,94	Valid
2	Aspects of learning strategies	0,87	Valid
3	Aspects of learning delivery systems	0,92	Valid
Mean		0,91	Valid

b. Formative Evaluation Results of Learning Design Experts

Learning design experts conduct formative evaluations of constructional learning based on blended learning models on civics course on the quality aspects of learning design which can be seen in Table 5 below:

Table 5 : Average Percentage of Formative Evaluation Results on Quality Design of Constructivistic Blended Learning Learning in CivicsCourse.

No	Categorization	Average Percentage	Criteria
1	Quality of learning design	0,85	Valid
2	Quality of information design	0,92	Valid
3	Quality of interaction design	0,92	Valid
4	Presentation Design Quality	0,88	Valid
Mean		0,89	Valid

c. Formative Evaluation Results of Learning Media Experts

Formative Evaluation Results Media Learning Experts Learning media experts conduct formative evaluation of constructional learning based on blended learning models on civicscourse on aspects of the quality of learning media, which can be seen in the following Table 6:

Table 6: Percentage of Average Results of Formative Evaluation on the Quality of Learning Media Model of constructional -Based Blended Learning in Civics Course.

No	Categorization	Average Percentage	Criteria
1	Programming	0,90	Valid
2	Technical quality or appearance	0,92	Valid
Mean		0,91	Valid

4 ANALYSIS

The results of formative evaluation by material experts, learning design experts and instructional media experts on each aspect of assessment as a whole are analyzed to determine whether or not feasible, a constructional construct based blended learning model is developed in the Civics course. The results of the formative evaluation analysis of the learning material experts assess the constructional based blended learning model in the Civics course based on three aspects: the quality of learning material, the quality of learning strategies and the quality of the learning delivery system which show the average percentage of formative evaluation of 0.94 in each aspects of the quality of learning material, 0.93 on the quality aspects of learning strategies, and 0.91 on aspects of the delivery system of learning including the Valid category as a whole, which means the learning model in the Civics course can meet the demands of learning needs. The results of the assessment of the Civics Education subject learning material developed show some minor errors in the form of typing errors in Modules 01.02,03.04,05,06 and 07, not a concept error and could be corrected through revisions. The learning model in the Civics course by learning material experts is declared feasible to be tested for practicality and field trials with revisions in the wrong section. Formative evaluation of learning design experts on aspects of the quality of learning design show an average percentage of 0.89 included in the Valid category, which means the physical appearance of the learning model of functional civics course for improving student learning motivation.

Furthermore, formative evaluation of instructional media experts on the quality aspects of design of a blended learning model based on constructivist shows an average percentage of 0.91, including the Valid category, which means the regulation of the content of learning takes into account the aspects of interaction between student

participants and learning so that a condition can be facilitated to facilitate learning. . This shows that the interactive learning media developed have an attractive appearance so that they can arouse students' interest in learning.

Based on the results of the formative evaluation of experts in learning civics course, design experts, and instructional media experts, it is stated that the civics course learning model deserves to be field tested with revisions according to the suggestions put forward, namely in the discussion group there is no student list. Comments from the learning design experts summarized show that the Civics course learning model can be accepted and in general or valid. The results of the analysis of the problems raised by the experts in Civics learning materials are described as follows:

- a) There is a misconception about the order of presentation of Civics course and group subject matter so that the sequence or presentation sequence is not well arranged, which is originally the learning device group at the end between the other groups.
- b) There is a typing error in the sentence below the picture on the opening page, namely "click on the group of learning devices to enter the opening page."
- c) All presentation of Civics course material should be given an introduction and supporting media.

5 CONCLUSION

Formative evaluation of constructional-based blended learning models in the Civics course is the result of a feasibility test to become a prototype of learning development pursued through the following stages: (1) review of Civics material experts, (2) review of learning design experts, (3) revision learning media experts.

The results of this formative evaluation as a needs analysis for the fulfillment of the feasibility of the learning model developed based on the finalization of a constructional-based blended learning model in the Civics course.

Based on the results of the formative evaluation, experts in Civics learning material obtained, an average value of 0.91 validation which indicates that the constructional-based blended learning model in the Civics Education course could meet the demands of learning needs.

Formative evaluation of learning design experts on aspects of the quality of learning design shows an

average percentage of 0.84, which means that the physical appearance of the Civics learning model makes it easy for students to obtain the desired information.

Furthermore, formative evaluation of instructional media experts on the quality aspects of design of a constructional blended learning model based on shows an average percentage of 0.91, which means that the regulation of the content of learning takes into account the aspects of interaction between students and learning so that a condition can be created to facilitate learning.

6 RECOMMENDATION

Formative evaluation results of experts in learning Civics, learning design experts and instructional media experts indicate that constructional-based blended learning models in the Civics course can meet the demands of learning needs, providing convenience for students to obtain the desired information, and creating capable learning conditions, facilitating learning. Therefore the results of this study can be recommended for testing to students in order to solve the problem of learning Civics course at the Faculty of Education of the Islamic University of North Sumatra at this time.

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