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Feasibility Test of Learning Media with Blended Learning Model and Augmented Reality-Assisted MOOCs

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FEASIBILITY TEST OF LEARNING MEDIA WITH BLENDED LEARNING MODEL AND AUGMENTED REALITY-ASSISTED MOOCS

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Abstract

This study aimed at testing the feasibility of Learning Media with Blended Learning Model and Augmented Reality-assisted MOOCs. The research was conducted at Bengkulu University in 2020. The research instrument consisted of a questionnaire to test the validity of the material, a questionnaire to test the validity of the blended learning model, and a questionnaire to test the validity of augmented reality-assisted MOOCs used in learning media. Each of the three questionnaires was filled out by 3 validators. The results of this study indicated that the 3 instruments used were valid. This was evidenced by the results of the validity calculation which states that all questions are valid and no questions are issued. The results of this study showed that the learning media developed was feasible to use both in terms of material, blended learning model design, and in terms of the augmented reality-assisted MOOCs used.

Keywords: *Blended Learning; MOOCs; Augmented Reality.*

A. Introduction

Currently, the world has come into the era of the 5.0 generation industrial revolution which is marked by increased connectivity, interaction and development of other systems, information and digital technology, artificial intelligence, and virtualization (Nilasari, 2019). In the era of revolution 5.0, the internet is not only for information but for living our life, an era where all technology is part of humans themselves and technological developments can minimize gaps in humans and economic problems in the future (Suryadi, 2020). One of the fundamental implications of the challenges of the industrial revolution 5.0 is in the element of education. The rapid and massive development of technology requires the education sector to be able to adapt to the digitalization of the growing education system (Sukarno, 2020). However, the birth of society 5.0 is expected not to change the role of teachers or instructors in teaching moral education and model for students (Nastiti & Abdu, 2020).

The phenomenon of networking in the virtual world has transformed into a new cultural condition in our contemporary society in Indonesia. The Digital report in 2018 showed that essential insights into the internet, social media, mobile, and ecommerce used around the World shows 132.7 million internet users, 130 million active social media users, 177.9 million mobile device users, and 120 million social network users. of the total 265.4 million population of Indonesia (Sabri, 2019). In the world of education, the term Massive Open Online Course (MOOC) is now known (Ismail et al., 2018).

MOOC is one of the latest innovations in the world of education which is growing rapidly. Through MOOC we can enlarge knowledge or learn easily because MOOC is an online learning space, anytime and anywhere (Busri et al., 2019). As technology advances rapidly, the courses at MOOCs are designed concerning different learning theories and pedagogies, which can meet the needs of multiple learners and benefit massively (Rafiq et al., 2019). MOOC has expanded online learning to a large scale around the world, presenting new opportunities as well as new challenges (Praherdhiono et al., 2018). Thus, there are two characteristics of

the MOOC model, namely; (1) Utilization of internet and web networks as a means of distance learning activities. (2) There is a large number of participants and a large learning scale (Johan, 2016).

Learning with technology can also be done by applying the concept of blended learning. The concept of blended learning is a mixture of learning patterns (Priono et al., 2018). It can also be said that blended learning is a direct learning collaboration with e-learning-based learning tools (Khoiroh et al., 2017). The blended learning approach helps create a shared understanding of concepts important to the learning culture and provides opportunities to strengthen them in a dynamic classroom setting (Fandianta et al., 2013). Blended learning has advantages, including (1) Flexibility, meaning that students can contribute to discussions at a time and place that they choose individually. (2) Participation, meaning that all students can participate in the learning process because they can arrange the time and place to participate. (3) Learning has more time so that it can be more careful in arguing and reflecting more on its views and opinions (Prayitno & Masduki, 2017). Blended learning can show better differences in terms of motivation, interest, and student learning outcomes compared to other methods, especially methods indirect learning (Usman, 2018).

One of the uses of other technologies in the education sector is the use of AR (AR) technology (Siahaan et al., 2019). AR is an inseparable part of future education. AR technology is believed to change and become an increasing trend in learning in the future (Risdianto, 2019). AR is the incorporation of 3D projects into a real environment. With AR technology we can turn 2D images into 3D so that they look realistic (Risdianto et al., 2020). AR technology can connect the virtual world and the real world directly if it is supported by technological devices such as computers and Smartphone's (Setiawan & Nugraha, 2017). However, the potential of this technology requires careful attention so that it can be utilized to increase educational success (Camellia, 2019).

One alternative that can support the learning process is the use of media (Sakti et al., 2012). The term media used in the field of teaching or education is called educational media or learning media (Putri et al., 2019).

Learning media is the media used in the learning process as a channel of messages between teachers and students so that teaching goals are achieved (Marianda et al., 2014). Examples such as video, television, computers, diagrams, printed materials, and teachers can be said to be media if the medium carries a message that contains the purpose of teaching (Johar et al., 2014). Other media such as the use of ICT-based learning media (Information and Communication Technologies) or often referred to as the use of technology-based media (Sriwahyuni et al., 2019).

In learning, learning media innovations are needed that are effective, efficient, interesting, easy to make, and close to students' daily lives (Device et al., 2019), and must adapt to the conditions in the field and the times. Conditions where learning cannot be done conventionally completely as it is today, the blended learning model is the most appropriate to use. For online learning that is carried out remotely, learning that utilizes videos such as learning through MOOCs is certainly very helpful in the learning process. However, one of the obstacles that will be experienced when learning online is the problem with the internet network. One alternative that can be used as a solution to these problems is by utilizing a technology because with this technology learning media can be accessed without using the internet network. However, learning media innovation cannot be done arbitrarily. It is necessary to test and assess the feasibility of the developed media. The assessment is carried out by competent people in the field that is the focus of learning media innovation. Based on these problems, it is necessary to test the feasibility of learning media with blended learning models and Augmented Reality-assisted MOOCs.

B. Method

This study aims to test the feasibility of Learning Media with Blended Learning Model and Augmented Reality-assisted MOOCs. The study was conducted at Bengkulu University in 2020. This study used 3 instruments in the form of a material validation questionnaire, a blended learning model design validation questionnaire, and an augmented reality-assisted MOOCs validation questionnaire. Each questionnaire has a

different number of question items. The material validation questionnaire consists of 15 question items, the blended learning model design validation questionnaire consists of 14 question items, and the augmented reality-assisted MOOCs validation questionnaire used consists of 17 question items. Each questionnaire is filled out by 3 validators are lecturers who are experts in the field of material, an expert in blended learning model design, and experts in MOOCs. Each validator is given access to be able to see the learning media developed so that the validators can provide an assessment of whether the learning media developed is suitable for use.

The questionnaire was made using a modified Likert Scale.

Table 1: Likert Scale Calculation

Evaluation	Scale Value
Very Good/Very Clear	4
Good/Clear	3
Fairly Good/Sufficiently Clear	2
Very Bad/Very Unclear	1

Before the further analysis is carried out to determine whether or not the media developed is feasible, the data from filling out the questionnaire is first used to test the validity and reliability of the items in the questionnaire itself. Valid or not the data is seen from resulting Va. To find the magnitude of Va we can use the formula.

$$V_a = \frac{\Sigma_1^3 A_i}{n}$$

Where $\Sigma_1^3 A_i$ is the number of acquisition scores while n is the number of items.

The Va value that we get is then adjusted according to the following validity interpretation table.

Table 2: Interpretation of Validity

No	the size	Criteria
1	$1 \leq V_a < 2$	Invalid
2	$2 \leq V_a < 3$	Less Valid
3	$3 \leq V_a < 4$	Valid

To find the reliability of the data we use the formula

$$R \text{ eliabilitas} = \left(\frac{k}{k-1}\right)\left(1 - \frac{\Sigma\sigma_n}{\sigma_t}\right)$$

Where k is the number of items, $\Sigma\sigma_n$ is the number of item variants,

and σ_t is the total variance.

The data is said to be reliable if rcount > rtable. From this data will be obtained quantitative data, which is then processed and interpreted, and concluded qualitatively. After testing the validity and reliability of the items, then the percentage of answers from each validator on each item is calculated. To calculate the percentage, the following formula is used:

$$\text{Persentase} = \frac{\sum(\text{Jawaban x bobot tiap pilihan})}{\text{n x bobot tertinggi}} \times 100\%$$

Information:

$\sum$: Amount

n : Number of validators

Weight of each choice (in the questionnaire in this study): 4/3/2/1

The highest weight (in the questionnaire in this study): 4

As a provision in giving meaning and making decisions, the provisions described in table 3 are used

Table 3 Conversion of Achievement Levels with a 5 . Scale

Achievement Level	Qualification	Information
90%-100%	Very good	No Need to Revise
75%-89%	Well	No Need to Revise
65%-74%	Enough	Revised
55%-64%	Not good	Revised
0%-54%	Very Not Good	Revised

Source: Sudjana (2005) in Jurisman(2015)

The last stage carried out in this research is to test the feasibility of learning media. The data from the validation results by the validator on the learning media were analyzed by calculating the percentage using formula 3 where n is the number of questionnaire items. After obtaining the percentage, it is then adjusted to the qualifications of the product assessment, whether the

product is in the very feasible category, feasible or not. The following is a table of qualifications that can be used.

Table 4. Qualifications of Product Assessment

Achievement Stage (%)	Qualification
67-100	Very Feasible
33-66	Feasible
0-32	Not Feasible

C. Result and Discussion

1. Result

In this study, before the feasibility test, the validity and reliability of each instrument used in the study were tested. The validity test is carried out to know the extent to which the accuracy and accuracy of a measurement instrument in carrying out its measuring function. So that the data obtained can be relevant/ following the purpose of the measurement, while the reliability test is carried out to know the consistency of the scores achieved by the same person when they are retested with the same test on different occasions, or with a set of equivalent items (equivalent items) are different, or under different test conditions. The following is a comparison of the results of the validity and reliability tests of the 3 instruments used in this study.

Table 5: Comparison of Validity and Reliability Test Results from the Three Instruments (Validation Questionnaire)

Material Validation Questionnaire	Blended Learning Model Design Validation Questionnaire	AR-Assisted MOOCs Validation Questionnaire Used
Valid with a value of Va=3.48 from a Maximum Score of 4 Reliable with an rcount of 1.08, which is greater than rtable, which is 0.9969	Valid with a value of Va=3.76 from a Maximum Score of 4 Reliable with rcount 1.35 which is greater than rtable, which is 0.9969	Valid with a value of Va=3.74 from a Maximum Score of 4 Reliable with rcount 1.25 which is greater than rtable, which is 0.9969

In more detail, the following table will present a graph of the questionnaire data validation of the blended learning model design from 3 validators.
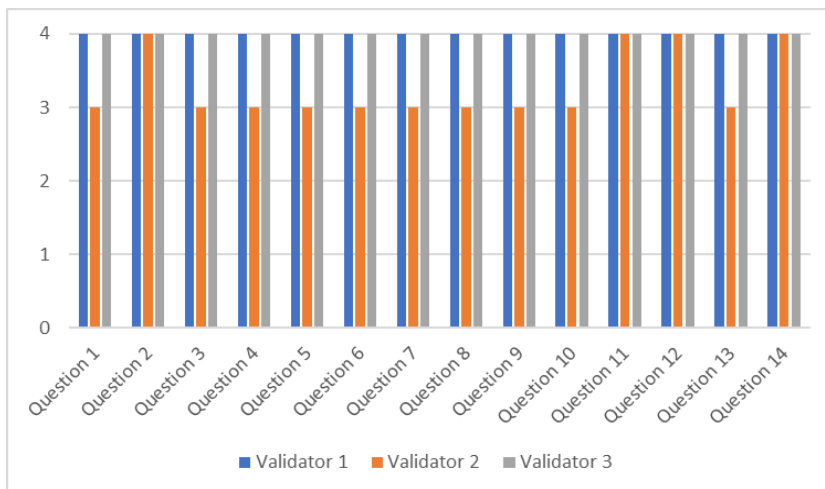
Figure 1. Graph of the Data Validation of the Blended Learning Model Design Validation

In addition to the validation questionnaire data for the blended learning design model, the following graphs of the augmented reality-assisted MOOCs validation questionnaire data are also presented.
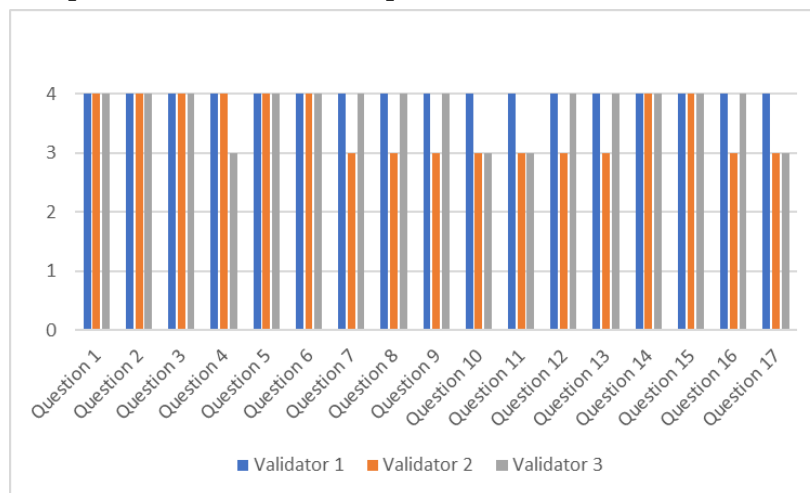
Figure 2. Graph of Augmented Reality-Assisted Moocs Validation Questionnaire Data Used

The last questionnaire that was analyzed was the material validation questionnaire. The following is a graph of material validation questionnaire data.
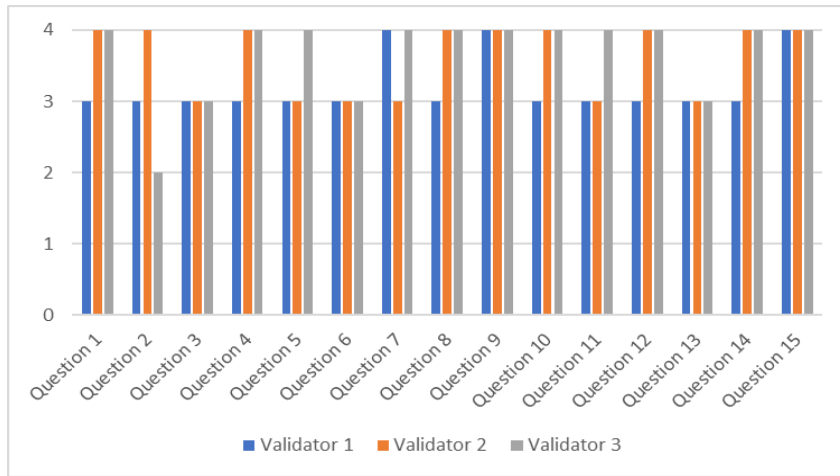
Figure 3. Graph of Material Validation Questionnaire Data

The following are the results of the assessment of the learning media products used to determine the feasibility of the product.

Table 6: Results of the Feasibility Assessment of Learning Media

Rated aspect	Validator 1	Validator 2	Validator 3	Percentage	Qualification
Material Aspect	48	54	55	87.22%	Very Worthy
Aspects of Blended Learning Model Design	56	46	56	94.04%	Very Worthy
Aspects of MOOCs	68	59	64	93.62%	Very Worthy

2. Discussion

In this study, the feasibility test was carried out using a research instrument in the form of a questionnaire. The three instruments used were valid with the highest level of validity is the blended learning model design validation questionnaire, then the AR-assisted MOOCs validation questionnaire used, and the lowest was the material validation questionnaire. Besides being valid, the questionnaire used is also reliable with the highest level of reliability is the blended learning model design validation questionnaire, then the AR-assisted MOOCs validation questionnaire used, and the lowest in the material validation questionnaire.

Each data item is then processed into a percentage. From the questionnaire data on the design validation of the blended learning model,

it is known that 66.7% of validators answered the description of the course name very clearly (4) and the rest answered clearly (3), for the question of 100% validator's learning achievement the answer was very clear. For the next seven questions, namely regarding learning objectives, material for each meeting, access time, description of the learning process, assessment or assessment, materials or content provided, and completeness of learning tools obtained the same percentage of answers, namely 66.7% validators answered very clearly and the rest answered clearly. The next aspect that is validated by using a design validation questionnaire for this blended learning model isblended learning model components. For the first 3 items, namely offline/ Online face-to-face learning information, items regarding Online content (video-based) and offline (AR) and items regarding assessment (quiz) obtained the same percentage of answers, namely 100% validators answered very clearly.

Meanwhile, for 1 other item, it is about the collaboration featureobtained a percentage of answers of 66.7% validators answered very clearly and the rest answered clearly. Based on the answers to each item, 66.7% of the validators concluded that this learning media was suitable for use in research without revision and the rest concluded that learning media was suitable for use in this research with revisions. These results are in line with the results of research conducted by Prayitni et al. (2017) that Blended learning media with the flipped classroom model is a suitable medium for students to use, with a score of 88.50% for material experts and 92.5% for media experts.

The next questionnaire that was analyzed was the augmented reality-assisted MOOCs validation questionnaire that was used. The first aspect is about learning resources with the question itemsThe existence of learning resources that can be accessed online/offline is answered with a score of 4 or very well by all validators. Next is the aspect of interactive features,The first 3 items in this aspect are The availability of the learning video feature, the availability of the material download feature, and the availability of the contact feature were answered very well by all validators.

While the next 1 item is regarding the Availability of Interactive Features as much as66.7% of validators answered very well and the rest answered well. The next aspect of this questionnaire is the aspect of appearance. The first item in this aspect is about The layout (MOOC system layout) got very good answers from all validators. For the next 3 items, namely regarding the quality of the images used, the quality of the learning videos made, and the quality of the text usedobtained the same percentage of answers, namely 66.7% validators answered very well and the rest answered well. Next is the aspect of the composition of the material with question items, namely regarding the systematics of the material presented by 100% of the validators answered very well.

The next aspect is the information aspect, on the item Availability of teacher profile information as much as66.7% of validators answered well and the rest answered very well. The next 2 items are about the existence of learning information and the existence of information on learning outcomes to obtain the percentage of the same answers that is equal to 66.7% validator answered very well and the rest answered well. The last item of this aspect is regarding the information on learning topics was answered very well by all validators. The last aspect of the questionnaire validation of the augmented reality-assisted MOOCs used is the language aspect. The first item, which is aboutThe suitability of the language used was answered very well by all validators. For items regarding the accuracy of the language used66.7% of validators answered very well and the rest answered well. And the last item is the absence of ambiguous word meanings gets an answer of 66.7% of validators answered well and the rest answered very well.

From the results of the assessment of all items, the validator concludes that this learning media is suitable for use in research without revision. This result is in line with the results of the research conducted by Busri et al. (2019) that the MOOC Physics online learning media for work and energy materials can be applied as an effective learning tool, this is because MOOC media can be accessed anytime and anywhere. With

MOOC, students and teachers can carry out the learning process without face to face (Busri et al., 2019).

The third questionnaire is a material validation questionnaire. In this questionnaire, the first aspect assessed is the learning aspect. The first item on the learning aspect is about the completeness of learning tools, 66.7% gave a score of 3 which means it is clear and the rest gives a maximum score of 4 which means it is very clear. The next item is the suitability of the steps of learning activities, 33.3% answered very clearly, 33.3% answered clearly and the rest answered quite clearly. For items regarding the clarity of learning assessment and regarding the effectiveness of the materials and teaching materials used in the MOOCs learning system, 100% of validators answered clearly. For clarity of course description, 66.7% answered very clearly and the rest answered clearly. The last item in this aspect, namely the clarity of learning outcomes, was answered clearly by 66.7% of the validators and the rest answered very clearly.

The second aspect of this questionnaire is the language aspect which consists of 2 question items, namely the clarity of the sentences used in the MOOCs system and the appropriateness of the language used in the delivery of video material. Both items were answered very clearly by 66.7% of validators and the rest answered clearly. The next aspect is the aspect of material truth. The first item asked in this aspect is the suitability of the material with the topic answered very clearly by all validators. For the systematics of presenting the material, the suitability of the MOOCs display, and the clarity of the material provided, 66.7% answered very clearly and the rest answered clearly. On the contrary, for the suitability of the learning video and the suitability of the test questions for each material, 66.7% answered clearly and the rest answered very clearly. The last item in this aspect is the availability of learning resources, 100% of validators provide clear answers. From the score he gave to all the items contained in this questionnaire, 66.7% of the validators stated that this learning media is eligible to be used in this research without revision and the rest stated that it is suitable for use in this research with revisions.

The percentage of answers from each validator is calculated using formula 3. The results obtained in the material aspect for validator 1 are 80% of a maximum of 100%, for validator 2 that is 90% of a maximum of 100%, and validator 3 is 91.67% of a maximum of 100% so that in this aspect the average percentage obtained is 87.22% of the maximum percentage of 100% which means it is in the very feasible category. Next is the aspect of the blended learning design model, the percentage for validator 1 is 100% of a maximum of 100%, for validator 2 is 82.14% of a maximum of 100%, and validator 3 is 100% of a maximum of 100% so that in this aspect an average percentage is obtained The average is 94.04% of the maximum percentage of 100% which means it is in the very feasible category. The last is the AR-assisted MOOCs aspect, the percentage for validator 1 is 100% from a maximum of 100%, for validator 2 is 86.76% of a maximum of 100%, and validator 3 is 94.11% of a maximum of 100% so that in this aspect it is obtained the average percentage is 93.62% of the maximum percentage of 100% which means it is in the very feasible category.

D. Conclusion

The learning media developed are suitable for use in this study both in terms of material, blended learning model design, and in terms of MOOCs assisted by augmented reality used. In the blended learning model validation questionnaire, 66.7% of the validators stated that the learning media was suitable for use in research without revision and the rest answered that it was suitable for use in research with revisions. In the MOOCs validation questionnaire assisted by augmented reality used 100%, the validator stated that the learning media was suitable for use in research without revision and in the material validation questionnaire, 66.7% of the validators stated that the learning media was suitable for use in research without revision and the rest answered that it was suitable for use in research with revisions.

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