



Development of Android Based Practical Learning Media with VR Commando 3D on Handball Learning Materials

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Abstract

This study aims to develop an Android-Based Practical Learning Media with VR Commando 3D in Handball Learning Materials to Improve Students' Critical Thinking. The Android-Based Practicum learning media with VR Commando 3D which was developed with the help of the VR Commando 3D application will be tested on odd semester students who take the Handball course, Physical Education Study Program, FKIP UNIB. This study will use the Research to the 4D (four-D) research and development model by collecting research data using a questionnaire based on the Likert scale. There are three questionnaires that will be distributed in this study, namely a material expert questionnaire, a media expert validation questionnaire, and a user response questionnaire. The purpose of distributing the questionnaire was to determine the feasibility of developing Android-Based Handball media with VR Commando 3D that the researchers made. As a result, the total score obtained from the combined validation of material experts, media, and users is 139.5 or an average score of 4.1 which means that the Android-Based Handball Learning Media with VR Commando 3D that the researcher developed is in the feasible category. used in learning activities.



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INTRODUCTION

The pandemic has made learning from home the best choice to stop the spread of the coronavirus. However, online learning has recently become a polemic for the government, educators, students, and parents themselves. Of course this is related to the assumption that the learning process tends to be considered less meaningful and learning outcomes become less comprehensive. Therefore, innovation both in terms of methods and media is needed to deal with the era of free learning amidst the still rampant spread of the coronavirus.

Indoor handball games (with 7 players) are growing rapidly and gaining popularity, because the pattern of the game is very interesting. The game takes place at a fast, dynamic tempo accompanied by spectacular tactics and techniques from the players and also the ball ends with shooting movements that are carried out quickly, hard and precisely. Handball shows high movement skills combined from running, jumping and throwing the ball. A handball player must have high ability in coordination, agility, speed and endurance and strength.

S1 Physical Education Study Program FKIP Unib has one of the mandatory courses, namely the Handball Orpillary course with a weight of 2 credits. This Preferred Sport (Orpil) is given in the odd semester (III) with learning outcomes, namely students are able to know and understand and carry out handball sports properly and correctly. Handball itself has basic techniques that must be developed so as to create a good quality game. The techniques in playing handball are: Dribbling, Passing, Catch, and Shooting. (Madou, 2014) the basic skills of handball games consist of : 1) Running

2) Jump 3) Catch the ball 4) Passing the ball 5) Dribbling 6) shoot

Physical education is a learning process through physical activity designed to improve physical fitness, develop motor skills, knowledge and behavior of healthy and active living, sportsmanship, and emotional intelligence. The learning environment is carefully arranged to promote the growth and development of all domains, physical, psychomotor, cognitive and affective for each student. The experiences presented will help students to understand why humans move and how to perform movements safely, efficiently, and effectively. From many opinions about the notion of physical education, it can be concluded that physical education is an educational process that utilizes planned physical activities systematically directed at developing and improving individuals organically, neuromuscularly, perceptually, cognitively, and emotionally within the framework of the National education system.

In the observation of the learning of the handball course, it was shown that most of the students of the Physical Education Study Program FKIP UNIB were still unfamiliar with the game of handball. In addition, some students tend to emphasize scoring activities rather than implementing quality games through the implementation of Handball playing exercises. This is of course worrying because the main purpose of the handball course is for students to be able to carry out handball sports well so that quality games are created. However, the facts that occurred during the observation showed that most of the students of Physical Education Study Program FKIP Unib during the handball game tended to lose and while dribbling. This shows that for basic handball technique training, students tend to be weak, especially during the current

Covid-19 pandemic, they must self-isolate at home by doing Physical Distancing (Keeping Distance) for an undecided time. Technology has an important role in the world of education, for example Virtual Reality technology which offers simulations for students in learning science with an environment that feels like reality. Virtual Reality is a technology that enables users to interact with a computer-simulated environment, an actual environment that is imitated or an environment that only exists in imagination (Sihite et al, 2013).

This research was taken because there is not much availability for the development of learning media using Vr Commando, especially in handball material. This is what prompted researchers to develop this Android-based learning media. The selection of one particular teaching method will affect the type of appropriate teaching media, although there are still various other aspects that must be considered in choosing media, including objectives, types, tasks and responses, which are expected to be mastered by students after teaching takes place and the learning context and characteristics. students (Abdullah, 2017). In line with this opinion, an interactive learning media is needed in representing a material to be given to students in the independent era of learning who tend to be technology literate.

The learning media in question is an android-based learning media. Android is an operating system for Linux-based mobile devices that includes an operating system, middleware and applications. Android is currently the most widely used operating system on mobile phones ranging from low end to high end classes. This is because of the policies it implements so that anyone can use it to run their cell phone (Rahmawati & Abdulmanan,

2019). It can be concluded that the android system itself can reach all parties, so that by creating android-based learning media, it can be said that besides being relevant to the needs and habits of students who are close to technology, it also has no limitations in terms of users.

Najib, et al (2019) said that with the presence of learning media, the teacher's position is no longer the only source of learning, but as a facilitator. Even at this time the media is believed to have a position as a source of learning that concerns the entire environment around students. This situation also makes researchers want to develop android-based learning media in the form of VR Commando 3D for Handball Game material.

This study will use the Research to the 4D (four-D) research and development model. method which aims to produce a certain product, which in this study is a product as a handball learning media in order to improve the level of skills and student learning outcomes. This research will produce the main output in the form of articles published and additional outputs in the form of enrichment of teaching materials by adding several presentation slides of research results in other relevant handball courses as well as applications. installed on the smartphone.

METHODS

This research refers to the 4D (four-D) research and development model. The research and development carried out will produce a product in the form of Android-based learning media with handball learning materials. By using 4D model steps. The 4D research and development model consists of 4 main stages, namely definition,

designing, developing, and disseminating.

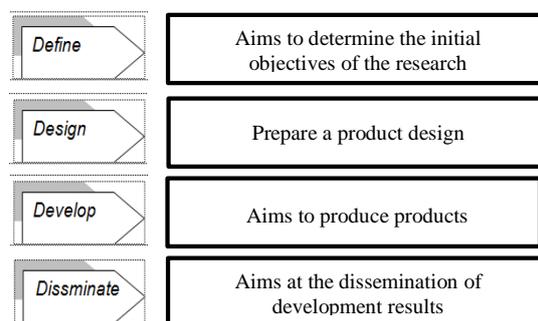


Figure 1. Stages of 4D Model Development According to Thiagarajan

Mulyatiningsih (2014) expressed his opinion that the 4D model and ADDIE basically have similarities. The difference from this model lies in the development activities in the 4D model which ends with the dissemination stage whereas in the ADDIE model after development it still goes through stages with implementation and evaluation stages. The 4D model does not include the stages of implementation and evaluation which are considered rational at the stages accompanying the process of product creation, evaluation and improvement. The 4D model was chosen for this research and development because the stages in the 4D model are very clear, concise and simple in every step.

Participants and Sampling

The population of this study were all students of the Physical Education Study Program FKIP UNIB T.A. 2022/2023. While the samples in this study were 5th semester students who took the Handball game course, Physical Education Study Program, FKIP UNIB.

Place and time of research

This research was conducted at Bengkulu University on odd semester students T.A. 2022/2023 Physical

Education Study Program FKIP UNIB. The time of the study was carried out from May to November 2022.

Data collection technique

There are three questionnaires that will be distributed to collect data in this study, namely a material expert questionnaire, a media expert validation questionnaire, and a student response questionnaire. The purpose of distributing the questionnaire was to determine the feasibility of developing learning media that the researchers made. In addition, there is also a technical test in the form of giving questions to students which aims to find out the extent to which students understand the material after the Android-based handball learning media with VR Commando 3D is tested.

Data analysis

The analysis of the data used in this study is questionnaire data for material experts and media experts as well as a student response questionnaire conducted with five rating scales, where the highest score is 5 (strongly agree) and the lowest score is 1 (disagree). (gulo 2013) to calculate the average total score of each questionnaire, the following formula is used: $\bar{X} = \frac{\sum X_i}{N}$. The score obtained is then converted according to the table reference below:

Table 1. Conversion of scores on a scale of five.

| Value interval | Category |
|--|----------------|
| $X > X_i + 1,8 S_{bi}$ | Strongly agree |
| $X_i + 0,6 S_{bi} < X \leq X_i + 1,8 S_{bi}$ | Agree |
| $X_i - 0,6 S_{bi} < X \leq X_i + 0,6 S_{bi}$ | Just Agree |
| $X_i - 1,8 S_{bi} < X \leq X_i - 0,6 S_{bi}$ | Disagree |
| $X \leq X_i - 1,8 S_{bi}$ | Don't agree |

RESULT

The development of an Android-Based Practical Learning Media with VR Commando 3D to improve students' critical thinking has been tested on 34

Physical Education students who take the Handball course. The results of the distribution of material expert questionnaires, media expert questionnaires, and student response questionnaires showed that in the form of Android-Based Practical Learning Media with VR Commando 3D this was feasible to be used in handball learning activities. In addition, there were also trials conducted on students, the results of which showed an increase in students' understanding of the Handball teaching material after using Android-based VR Commando 3D learning media with the help of applications so that students got learning outcomes with good average scores. The following is an explanation of the stages of carrying out research using the Research and Development (R&D) method that the researchers have done.

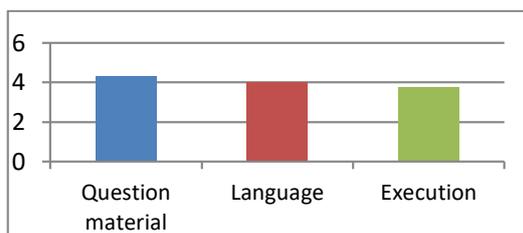


Figure 2. Bar Diagram of Material Expert Validation Results

The validation of the material carried out by the lecturer in charge of the Handball course aims to assess the feasibility of the questions that represent the material used in the VR Commando 3D learning media through a questionnaire. Before using this questionnaire, CV (content validity) has been calculated where the result is 0.875, which means that this material expert validation instrument can be used. The questionnaire uses a Likert scale with 5 alternative answers where the highest score is 5 (strongly agree) and the lowest score is 1 (strongly disagree). This questionnaire consists of 16 statements which are grouped into 3 aspects,

namely the material aspect, the language aspect, and the implementation aspect.

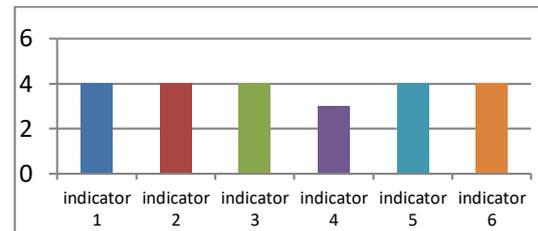


Figure 3. Bar Diagram of Media Expert Validation Results

The purpose of holding the validation of the media is to assess the feasibility of the VR Commando 3D Handball learning media that the researchers made. Before using this questionnaire, CV (content validity) has been calculated, where the result is 0.83, which means that this media expert validation instrument can be used. This validation is carried out by the lecturer in charge of the Handball course because the teacher who is also the user is the party who will feel the benefits of this media in the future. Just like the validation carried out by material experts, the validation results from media experts are also based on the Likert scale. Where the answer strongly agrees (SS) gets a value of 5 and for the lowest number, namely 1 if the chosen one strongly disagrees (STS) in the questionnaire distributed by the researcher. This questionnaire consists of 1 aspect, namely the appearance and use of learning media which consists of 6 indicators in the form of statements

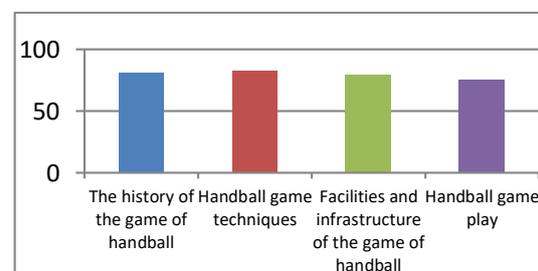


Figure 4. Bar chart of the results of the 3D VR Commando learning media trial

Next is the trial stage 3 and stage 4 which the level of difficulty of the

questions is categorized as high. In the trial phase 3 with the material Facilities and infrastructure for handball games. The average value obtained by students in this material is 79.3. Not much different from the trial stage 3 with the material for the rules of the handball game, the results of the trial at stage 4 showed that students obtained an average score of 75.8 for the discussion of the rules. All of the trials conducted by the researcher from the 1st phase of the trial to the 4th trial showed good results, namely the four trials obtained an average score of 79.89. This means that the transformation of Handball material into the form of Android-based Commando 3D VR learning media provides a fairly good understanding for students or users. This is in line with the results of the validation of materials and media, where the learning media that the researchers created obtained results that were suitable for use in learning. The following are the results of trials conducted on 34 students in the form of a bar chart.

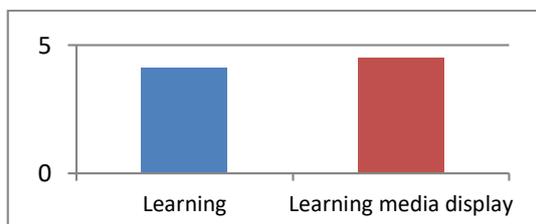


Figure 5. Responses

The figure above shows the results of user responses, namely students. There are 7 statements in aspect 1 and 5 statements for aspect 2. In the first aspect, namely the learning process, the final score obtained for the seven aspects is 28.9 or obtains an average score of 4.1 which means the first aspect is in the very category. worthy. Next is the second aspect, namely the display and use of learning media, the final score obtained for the five aspects is 22.6 or an average of 4.5,

which means that this second aspect is also included in the very feasible category.

The results of the preparation of this media are then validated by media experts as well as material experts and learning media users. Overall the results of the three validations are summarized in the table below:

| No | Assessment Aspect | Total score | Average Score | Category |
|--------------|----------------------------|--------------|---------------|---------------|
| 1 | Material expert assessment | 65 | 4,06 | worthy |
| 2 | Media expert assessment | 23 | 3,8 | worthy |
| 3 | User ratings | 51,5 | 4,29 | Very worthy |
| Score | | 139,5 | 4,1 | worthy |

DISCUSSION

The selection of android-based learning media in handball material uses Vr Comando as this research so that it can improve the quality of learning media, especially this android-based. The modern era, which requires technology, presents teaching staff who must be literate with technology, so special strategies are needed so that these activities feel easy and increase understanding for teaching staff. Therefore this study aims to provide knowledge and options to teaching staff regarding Android-based learning media using Vr Comando which is expected to improve quality in the field because they will be dealing directly with students. If the teaching staff is able to handle and understand about Android-based learning media using Vr Comando, the atmosphere will feel comfortable and not too worried even though it needs further handling and is useful for improving the quality of teaching staff, the objectives of developing Android-based learning media using Vr Comando will be easy to achieve. as well as the level of professionalism of the teaching staff in

teaching using Android-based media has become more qualified.

CONCLUSION

The conclusions that researchers can formulate from the development of learning media for vr commando 3d android-based handball assisted by the proprofs application are as follows :

1. This research and development adapts the learning model consisting of 4 main stages. However, it should be underlined that the research that adapts the 4d model is only carried out until the development stage. Where at this stage there are only product trials that have been validated by material experts and media experts to students. This research procedure consists of the defining stage, the design stage, and the develop stage.
2. Overall the total score obtained from the combined validation of material experts, media, and users is 139.5 or obtains an average value of 4.1 which means that the vr commando 3d learning media handball that the researcher developed is in the category suitable for use. In learning activities.

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