The Development of Android Applications in Junior High Schools as Learning Media in Astronomy Course in SMP Cendekia Insani

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ABSTRACT

This Research have a purpose to exploring teachers’ preference on development of learning media integrating assessment with android application as online assessment in science learning in SMP Cendekia Insani. Research and development use an ADDIE Model. Steps of ADDIE Model is Analysis, Design, Development, Implementation and Evaluation. Analysis is the steps description process of what is going to be taught and forms the basis of all other steps. Design is determine the process of have an information and development a strategy of analysis the problem. Development the component of multimedia are prepared during this phase. Implementation is development result is applied in learning process to know it’s the quality. Evaluation is the last step to evaluation and have a data to improve a research. This research have a result of most of the teachers prefers the online assessment that integrated with android application rather than the conventional one especially in the online learning environment nowadays.

INTRODUCTION

The development of technology implementation in the world of education continues to run as part of supporting the progress and dynamics of changing times. This is especially important given the rapid increase in the COVID-19 pandemic that began in March 2020. To continue carrying out learning activities, most schools end up doing virtual learning or even stopping for a moment to adjust to situations and conditions (Asari et al, 2019); (Sánchez-Cruzad, 2021).

Based on this experience in learning activities in this pandemic era 1 year ago majority do it online, a teacher was encouraged to innovate in learning activities through the integration of ICT. Part of learning activities finally adapts to online learning through the creation of learning video media, collaborative learning media, communication media for students and parents, to online assessments. This shows that technological proficiency
for implementation in learning is no longer an option but a necessity (Sánchez-Cruzado, 2021).

According to the International Literacy Association (ILA), digital literacy is the potential to identify, comprehend, interpret, create, compute, and communicated using visual, audio, and digital materials to have across disciplines in many contexts. The capability of reading, writing, and communication be able to connect with each other and empower to reach up to things that were never thought to be possible (Duriyyah dan Zuhdi, 2018).

Assessment is part of a learning process have a goals to develop both the evaluator and the subject being evaluated. The evaluation is held to determine and measure the abilities of students who have been acquired or developed through the learning process. The outcome of the evaluation is in the form of information that can be used to the evaluated learning process and respond to the reciprocal relationship between teacher and students. The activities that can be carried out through assessment include class observation, discussion, homework, and test (Khairil dan Mokshein, 2018).

Students at the primary school and middle school level are currently part of the gen-Z who are already active users of social media and gadgets. In their daily activities, they are active use a gadget that is a connection to internet access, so the exchange of information become wide and faster. That can be the advantage of the education sector, the teachers can conduct teaching and learning activities can join collaborative and connect with students to provide a meaningful learning experience (Khairil dan Mokshein, 2018).

SMP Cendekia insani is junior high school located in panarukan district, Situbondo about 80 km from Jember. During pandemic Covid 19 the teaching and learning activity was carried out only using Whatapp Group. The teacher share teaching material related to books, student exercise and others. The integration about technology in learning activities is limited to powerpoint media in classroom. The purpose of this assistance program is explore the teacher preference in variation of learning media and develop the Android application.

Therefore, integrated ICT into the learning process can help the engagement of students as well as stimulate and improve the digital literacy and technology literacy of students. To keep up with the needed 21st-century skill, teachers have to begin a transformation from conventional assessment to an online assessment that is needed in this online era. Online assessment is an assessment activity carried out in the online learning process in the form of formative and summative assessments. Involve ICT, online assessment have to give actual data, cover complex assessment and support resource and time efficiency and to support reciprocal learning activities in the class (Khairil dan Mokshein, 2018).

In the implementation of online assessment, teachers tend to apply efficiency, technology effectiveness, and interactive media that use. Media that use in creating online assessments have facilitation from one of an e-learning platforms, web basic until android based application and which can be adapted with a type of assessment and evaluation desired. However, after it was often limited access with a variety of facilities that used when to create web-based online assessment should purchase when would to use, development of application-based online assessments could be operated on gadget became more attention (Calixto et al, 2021); (Mardiana et al, 2021).
METODOLOGY

Type of the research is research and development. Method that use in this development research is ADDIE Model. Steps of ADDIE Model is Analysis, Design, Development, Implementation and Evaluation. The model procedure is given below:

Analysis

Evaluation

Design

Implementation

Development

Figure 1. Steps of ADDIE Model

The implementation of ADDIE Model is this research because of a model can process considers the customer problems and challenges learner to deliver solution. (Mahoney, 2018). The Research ADDIE Model is a Instructional design model is valid for education has a relatively simple model (Arkun, 2008). Development model used in this research is a systematic learning design models and rests on the theoretical foundation of learning design. In below has been tell about steps in ADDIE Models that is (1) Analysis, (2) Design, (3) Development, (4) Implementation and (5) Evaluation. Analysis is the steps description process of what is going to be taught and forms the basis of all other steps (Arkun, 2008). In this steps is determine knowledge and search a problem and design a solution for problem. Design is determine the process of have an information and development a strategy of analysis the problem. Development the component of multimedia are prepared during this phase. In this research we make a android application the stage of make a android application is:
Figure 2. Step To Make A Android Application

Implementation is development result is applied in learning process to know it’s the quality. Evaluation is the last step to evaluation and have a data to improve a research. In this study, we tried to train and evaluate many teachers in Cendekia Insani Junior High School to develop an android application with ADDIE model of development that can be used as an online assessment in the subject of astronomy. An instrument that was used in this research consisted of a Likert scale observation sheet containing a list of questions to measure the teacher’s response after attending this training. The Likert scale has the 1 until 5 points for representation preferences teachers. The data obtained then analysed and presented in graphic form.

RESULTS AND DISCUSSION

The stages of ADDIE Model divided into five part namely Analysis, Design, Develop, Implementation, and Evaluation. The complete information about stages of development android application described as follows.

1. Analysis stage

At the analysis stage, the researcher made observations to collect information and data at the school. There are several things that are carried out when carrying out observations including analyzing problems related to student learning activities, analyzing material and research sites, and analyzing student characteristics. Based on the results of observations that have been made, it shows that the research location was chosen because the school has not implemented electronic-based student worksheets in the learning activity.
Based on the results of interviews with science teachers at SMP Cendekia Insani that in learning activities teachers never use android applications as a learning media. Analysis of the depth of the material is based on the books used in learning activities, in this case we use books with revised K13. The textbook used presents the material as a whole so that students can easily get information, so that it can have an influence on students’ critical thinking skills. Based on the results of interviews, the results of material analysis, as well as the results of studies from previous studies as a basis for researchers to carry out product development in the form of Android applications as one of the information technology-based learning media.

Figure 3. The literature of in Junior High School

2. Design stage

At the design stage, the researcher designs a product from the analyze stage, namely making a product design for developing blended learning-based android applications to obtain valid, practical, and effective applications. At this stage, the initial design is carried out using the existing template in PowerPoint, followed by entering questions which are then integrated into the scoring using the i-Spring software. The final stage of this android application design is to export a ppt file that is integrated with i-spring into an android application with the help of web to apk software. The results of product design development of android applications on astronomical material were tested on a limited basis to observe what things need to be improved related to product improvement.

Figure 4. Design stage of making Android Application Process
3. Development stage

The development stage is the third stage in making android applications for learning activities. things that are developed in making this application begin with the development of astronomical material which is the main material as a topic in this android application. Astronomical material was chosen because in this material there are many things that need to be clearly described related to the structure of celestial bodies with extreme sizes on a macroscopic scale and very far distances from our observations on earth. the next development is on the powerpoint template used, the development of the powerpoint template can be developed by redesigning it using an open source-based application so as to produce a theme that fits the astronomy material. Further development is in the preparation of questions. The questions arranged are adjusted to the learning outcomes contained in the lesson plan to achieve the learning objectives.

![Figure 5. The Development of Android Application in Astronomy course](image)

4. Evaluation stage

There are two kinds of evaluations carried out at this stage which include formative and summative evaluations. In practice, formative evaluation is carried out at each stage of development, while summative evaluation is carried out at the end of development research activities with the aim of knowing the responses of students and teachers after using android applications in learning activities.

CONCLUSION

The Development of Android application in SMP Cendekia Insani using ADDIE model is a brand new experiences for Teacher in SMP Cendekia Insani. After the development of Android Application the teacher have understood about development process of making android application as learning media. The teacher have curiosity and motivation in designing android application and highly motivated to developed it.
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