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APPLICATION OF APP INVENTOR WEBSITE IN ANDROID-BASED PHYSICS LEARNING

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ABSTRACT

This study aims to produce physics learning media for class XI high school on the subject matter of optical devices based on android using the MIT app inventor. This research is a Research and Development study using the 4D (Define, Design, Develop and Disseminate) method which starts with the creation of a .apk format-based installer program on the MIT App Inventor website. This program can be used easily by beginners. The user does not need to write or remember instructions because the user only chooses and organizes the choices available on the website so that the user easily develops the application by finding the appropriate blocks. Validity Testing on featured and content in the program is done by experts. Products are revised according to the team's recommendations until the product is feasible to be tested on students. The feasibility and response of the use of the program are done by the teacher, then tested on 10 students in small group trials and 30 students in large group trials. The research results obtained from validation that the program has been declared valid and can be used as a medium for learning physics. Based on the validation test obtained a percentage of features by 97,7% and the percentage of content by 94,95%. The feasibility of an Android-based learning program using the inventor app on material optical equipment by physics subject teachers based on teacher responses of 3.725 and learners of 3.765 in the feasible category. Based on the trial data, the product has been declared suitable for use by teachers and students as a medium of learning in schools and as a medium of independent learning.

Keywords: App inventor; Medium of Learning; Android

INTRODUCTION

App Inventor is an open-source and web-based system that enables the development of mobile applications for Android OP. Inventor app is an Online Development Environment (ODE) developed by Google Inc. and the Massachusetts Institute of Technology (MIT in 2012. App inventor is a visual drag-and-drop programming website. Furthermore, it depends on the App inventor or user himself. This programming can produce and develop educational applications for mobile phones. App inventors depend on Programming known as block-based programming, App Inventor helps teachers and students create applications on Android devices that are fun, fast prototyping with educational games and quizzes for classmates.

The advantage of the Inventor App is that it can be used easily by beginners. The user does not need to write or memorize instructions because the user only chooses the options in the organized Inventor App so that the user easily develops the application by finding the appropriate blocks. The product of the Inventor App is also an offline-based application so that when learning takes

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place students can take lessons without being interrupted by an unstable internet network.

Based on observations at SMA Al Washliyah 1Medan where 73.3% of the 30 students were less interested and thought that physics was boring because learning was still face to face and also only using media in the form of blackboards and markers (Marti, 2009; Nikensasi & Kuswardayan, 2012); Spall, Stanisstreet, Dickson, & Boyes, 2004). Teacher-centered learning with media that is only in the form of markers and blackboards results in passive learning so that students become bored and not interested in the lesson (Keller & Suzuki, 2004; Mohammad Yazdi, 2012; Moreno & Mayer, 2002; Rau, Gao, & Wu, 2008). The learning process has changed from conventional to digital learning. This is due to the rapid development of technology so that learning can take place more actively and not rigidly in the classroom system (Baran, 2014; Ma, Gu, & Wang, 2014; Chen & Huang, 2017; Lubans, Smith, Skinner, & Morgan, 2014; Perdikuri, 2014). The use of technology-based media at Al Washliyah 1 Medan Private High School did not go well even the teacher did not utilize the existing technology even though overall students and teachers already had an android.

METHODS

The method used in the use of App inventor is by making media with the APK format. Through the MIT App Inventor website as illustrated in the diagram below.

After completing the contents of each screen, the products are designed according to needs and blocks are carried out to run the products as needed. In the sixth layout, a quiz with multiple choices is added and when students finish answering the quiz the score will be immediately displayed. Quizzes are not limited so that students can concentrate fully on working on the quiz but quizzes can not be done randomly.

After the product is finished, the product is then tested for its validity by content experts and features experts so that the percentage of validity values and suggestions and input by experts are used to improve the product. After the product is declared valid by content experts and features experts, the product is tested on a small group of 10 students to see how students respond to the product being developed. The last stage is testing the product to a class of students and sees the response.

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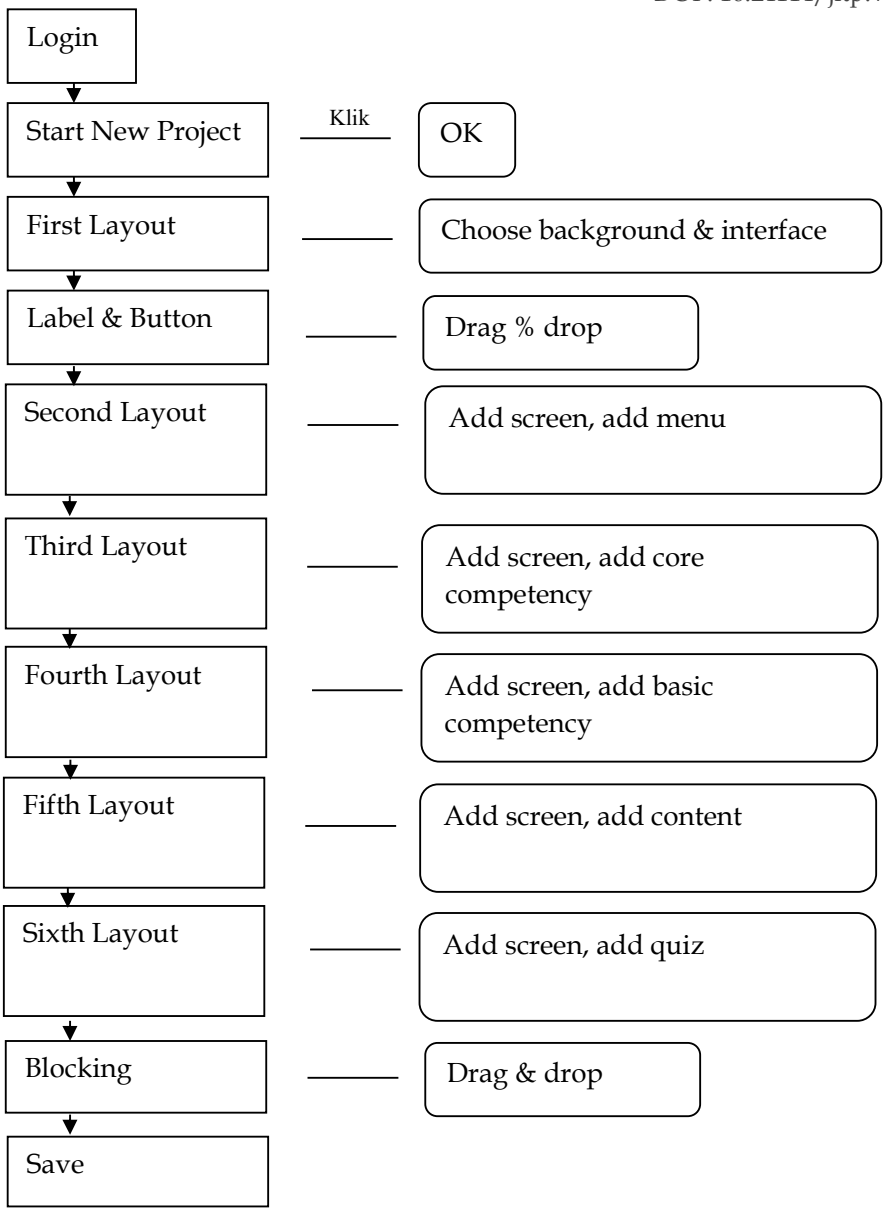

Figure 2.1 Diagram of the product manufacturing process

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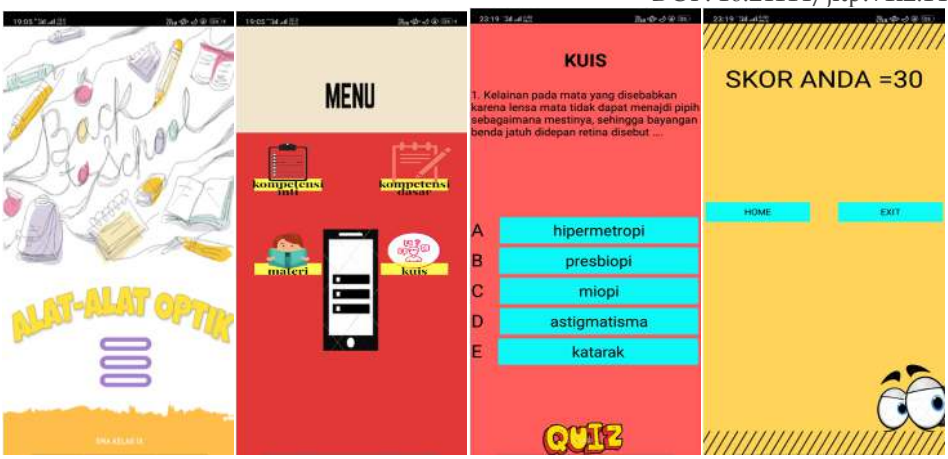

Figure 2.2 Homescreen display **Figure 2.3 Menu display** **Figure 2.4 Quiz display** **Figure 2.5 Quiz score display**

RESULT & DISCUSSION

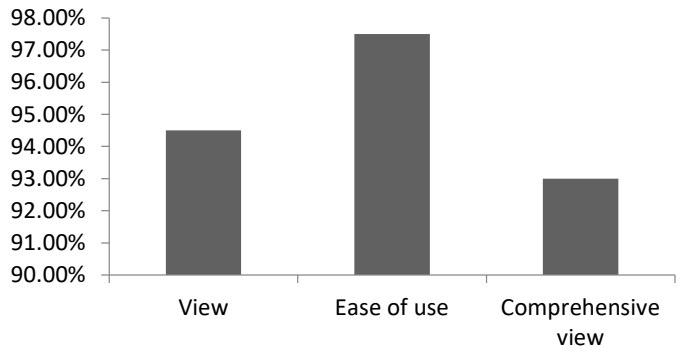

Figure 3.1 Test results by expert features

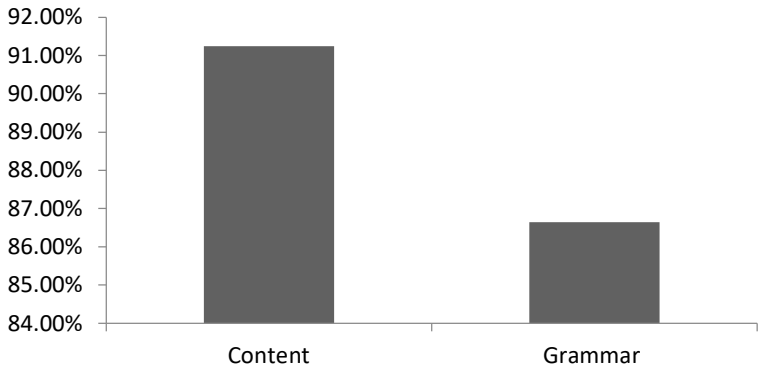

Figure 3.2 Test results by content experts

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The validation data are obtained by the expert features team was 97.7%, including very valid criteria. The validation data are obtained by the content expert team was an average of 94.95% including very valid criteria. The development of Physics learning media based on Android as a reinforcement of student character gets a mean assessment score of 4.3 resulting from the assessment of expert features, content experts and teachers. So that this assessment is included in the very valid criteria (Astuti, Sumarni, & Saraswati, 2017). The development of instructional media in the form of an android-based educational game as a support capacity for independent student learning has resulted in the feasibility of the developed media by 93.2% included in the excellent category because the product can be easy to use, interesting, simple, the contents of the material are also complete and can be used in the process learning (Pusvyta Sari, 2015).

A small group trial was conducted involving 10 students from SMA Al Washliyah 1 Medan. When trying out a product, at first the students were confused because it was the first time using an Android-based media but a few moments later the students began to enjoy it. The feasibility test examines the material delivered on the android-based learning media and the language used and the students' interest in the media used. The results of the feasibility test showed the number 3,495 which means that the media used were declared appropriate by the students.

The next trial was conducted involving 30 students from SMA Al Washliyah 1 Medan. Students are very enthusiastic about using the products that are tested. The feasibility test examines the media used and the interests of the students. The results of the feasibility test showed the number 3,765 which means that the media used were declared appropriate by the students because the product was considered to be attractive and could increase the interest of students in learning (Efendi, 2018).

CONCLUSION

The research results are obtained from validation that the program has been declared valid and can be used as a medium for learning physics. Based on the validation test obtained a percentage of features by 97,7% and the percentage of content by 94,95%. The feasibility of an Android-based learning program using the inventor app on material optical equipment by physics subject teachers based on teacher responses of 3.725 and learners of 3.765 in the feasible category. Based on the trial data, the product has been declared suitable for use by teachers and students as a medium of learning in schools and as a medium of independent learning.

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