

Android-Based Physical Fitness Assessment Application for Student of Senior High School 1 Kudus

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Abstract

The purpose of this study is producing an android application product which makes it easier for physical education teachers and students to measure physical fitness. The problems of the study are 1). What is the android-based physical fitness assessment application for students of Senior High School 1 Kudus' model? 2). How effective is the android-based physical fitness assessment application for students of Senior High School 1 Kudus?

The results of this study is an android-based application product of physical fitness test for students of Senior High School 1 Kudus which is effective and attractive to use by both physical education teachers and students. The validation result by material experts in all aspect is "Very Good" with an average score of 93.13%, the media experts' assessment to product is "Very Good" with an average score of 89.09%, the teachers' assessment to the product is "Very Good" with an average score of 85.38%, assessment by the large group students is "Very Good" with an average score of 85.11%. This study concludes that a product of android-based physical fitness assessment application has been produced and the teachers, students and parents can download it in the Play store by keyword "SIKESA". The implication of the research is that "SIKESA" can simplify the physical education learning process and become a learning resource which can be used by students to learn independently.

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INTRODUCTION

Humans as a social creature and an individual creature who will have responsibilities and obligations to maintain their own lives, people lives and their environments requires optimal physical fitness or having a good level of physical fitness, everyone is categorized in an ideal condition in his life if a person is able to balance the daily work routines with physical fitness in one good condition. (Mutohir and Maksum 2007: 51) Giri Widjojo (2005: 123) states "Physical fitness is the body's ability to adjust the functions of the organs within physiological limits to environmental conditions or physical work efficiently without excessive fatigue". Physical fitness can be obtained in various ways; one of them is doing physical activity or exercising which involves physical fitness components with regular and measured training methods.

The Indonesian Physical Fitness Test (TKJI) is a series of tests and measurements of physical conditions to measure the level of physical fitness for Indonesian children and adolescents. TKJI is divided into 4 groups of test instruments which are differentiated based on age groups, they are: 1) 6-9 years old Indonesian Physical Fitness Test, 2) 10- 12 years old Indonesian Physical Fitness Test and, 3) 13-15 years old Indonesian Physical Fitness Test, 4) 16-19 years old Indonesian Physical Fitness Test.

The development of learning media follows technological developments, the relationship between media and learning technology is very close, this is because in applying learning technology we must use media so that in the learning process teacher can be easily convey the material and the students would accept it well. Learning process will be better when it uses good learning media. Therefore, the media with the Physical Fitness Test (TKJ) implementation using an android application will greatly assist the learning process. With the existence of android, the students' fitness level and learning outcomes are found out quickly by teachers, students and

parents. It is also expected to increase students' learning motivation so that they could get optimal learning outcomes and also technology will be more advanced.

The rapid technology development in the world makes implementation of technology run unwell and even the development of prior technology have been followed by new generation technologies. New generation means new perspective, new trends that are different from before. Then, the industry has to adapt quickly along with new generation. From the historical records, technology which creates the industrial revolution has at least four phases starting in 18th century; they are the generation 1.0 due to the discovery of steam and woven machines technology that causing the industrial forms were very different from the previous century. Generation 2.0 was born as a consequence of the electricity invention for lighting and power plant.

In the 20th century, generation 3.0 was born due to the discovery of advanced electronic equipment technology and advanced Information Technology (IT). The last generation is the industrial revolution 4.0 which is a consequence of the rapid technological inventions than before. Generation 4.0 is identified by the role changes of the physical energy and human behavior in various production processes, which have been replaced by "robotic functions" controlled by the enormous capacity of the internet.

Physical education has a huge and important contribution to create human resources qualities that are competitive in facing the industrial revolution era.

We are facing the fourth industrial revolution known as the disruptive innovation era where innovation goes rapidly that help creating new markets. The innovation is also able to disrupt or may destroy the existing markets and even replace the existing technology.

Therefore, a teacher is very close to integrity and personality, moreover the industrial revolution 4.0 will get deeper into various sectors, including education. On the

other hand, the enhancement of teacher competence is an absolute thing to do, besides the continuous role to develop science to the advances dignity and not the contrary.

The changes due to technology become new challenges regarding what physical education teachers' role in the industrial revolution 4.0 era is. Based on observation to several physical education teachers in Senior High School 1 KUDUS, it is concluded that there is no technological innovation that supports learning process assessment, especially in physical fitness. The physical fitness of person can be assessed by using some instruments. They are the multistage test, 12-minute run, 2.4 KM run, Indonesian Physical Fitness Test (TKJI) and so on. In this case teachers need new innovations which make them easier to obtain physical fitness test data.

Researchers get information about an innovation developed by Muharam Syuhada in his research entitled "*Pengembangan Multimedia Tes Kebugaran Jasmani Indonesia (TKJI) Berbasis Android pada Pendidikan Jasmani Olahraga dan Kesehatan di SMA*" in 2017. In his research, an android application was got for physical fitness test but it has several weaknesses, they are the unavailability of tutorial for using the application, there are no exercises and materials for self assessment.

Based on the issues to solve the problems, the researcher decided to have a study about developing a physical fitness test by using the Android-based application SIKESA (Sistem Kebugaran Siswa) so that researchers can help the teachers in responding to industrial revolution 4.0 in obtaining best learning media and helping students and teachers in the learning process, as well as improving the previous applications quality.

METHODS

Research and development, According to Sugiyono (2013: 407), this research and development is focused on producing products that can be used as an alternatives device for teachers and also developing an effective system

to support learning assessment activities at school, especially physical education, in android-based physical fitness assessment application that can be used. The product in this study is a software application called SIKESA, which is used to record the level of student fitness in physical education subjects at school.

Procedure of the research in this study is summarized as follows: 1) Identification of the problems, 2) Data collection, 3) Product design, 4) Design validation, 5) Design revision, 6) Product testing, 7) Product revision 1, 8) Product use trial, 9) product revision 2 and, 10) mass production.

There are two types of data, quantitative is the main data obtained from the results of tests that have been observed and analyzed by several experts regarding the use of the application. Qualitative data is in the suggestions obtained to improve the application by validating it to material experts, fitness experts and media experts.

The subjects of this study are material experts, learning media experts, fitness experts and students. The data collection instrument of this study is a non-test instrument, questionnaire. The questionnaire type used is a closed-ended question using a Linkert scale measurement with four choices: (very good, good, bad, and very bad). Instruments in this research are evaluation and questionnaires form.

RESULTS AND DISCUSSION

The results and discussion of the study lead to an android-based physical fitness assessment application for Senior High School 1 Kudus students. The researcher carry out application design based on observations, interviews, and other information where there is no physical android-based fitness assessment app about Indonesian Physical Fitness Test (TKJI), they are only a book, so that this android application will show about display, content, material and learning aspects. The product of an android application which can be downloaded in the play store with keyword "SIKESA" which is developed to monitor

student fitness improvement so that teachers and students can find out the history of students' physical fitness results.

The first step is a developing idea by collecting information as a main idea to create a concept. Based on need analysis, it concludes that this developing idea create an android app product for physical fitness assessment. Next, make the initial product (draft), the product is transformed into a design book consist of physical fitness tests series completed by a display image of the application design. The initial developed product is expected to be created systematically and logically, so that it can be developed and has effectiveness for physical fitness tests and the developed product results.

In conducting a trial in a small or large scale students and asking validation by an expert for initial product, the researcher involved 2 material experts and 2 media experts. Validation is taken by providing an initial product (draft) and an evaluation sheet for material experts and media experts. The evaluation sheet is the questionnaire form containing material quality, content, displays and programming aspects.

The next step is evaluating the initial product (draft). Material experts and media experts evaluate the product to improve and accomplish the manuscript. The data obtained from filled questionnaires by validation experts is a guideline to state whether the product is appropriate to be applied or not. The initial product (draft) is perfected by the revisions made by the validation expert, and then the final product is finished and ready to test.

The following step is trial. The trial is intended to find improvements, suggestions and assessment of the product. The trial is taken in some steps, they are: 1) Determining the trial design, 2) Determining the trial subjects, 3) Developing data instruments, 4) Determining techniques of data analysis. The trial is taken in small and large scale. The small-scale trial involves 30 students (X MIPA 9, X IPS 1, and X IPS 2). The large-scale trial involves 130 students ((X MIPA 1 and 2), (XI MIPA 9 IPS 1 and 2), and (XII MIPA 9 IPS 1 and 2)). The goal

of the trial is to get improvements by identifying and perfecting the products after getting review by experts.

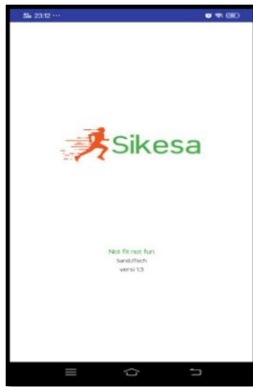
Based on data from material expert I and material expert II in validation step, the android-based physical fitness application is suitable to use in trial with the revision suggested. Based on assessment data from physical education teachers regarding the android-based application of Indonesian Physical Fitness Test (TKJI) the category is "Very Good" with a percentage of 85.38%. Based on the small group students' assessment, the category of the application is "Good" with a percentage of 73.75%. Based on the large group students' assessment, the product category is "Very Good" with a percentage of 85.11%.

Assessments of the effectiveness test above are affective, cognitive, and psychomotor aspects which state that an android-based physical fitness learning media has a "Very Good" quality with an average percentage of 79.61%. Assessment of the effectiveness test of the android-based physical fitness learning application product get excellent results so that this product is suitable to use in the learning process of physical education, sports and health.

The final product after the large scale trial revision doesn't have many changes both content and display. This is because of the observations and research results from the large-scale test revision receive a very good product rating.

The revisions by media experts, material experts, small group students and large group students bear a final product called SIKESA, an android-based physical fitness assessment application which can be downloaded easily in the play store and can be used as a learning source in school for both teachers and students.

The following is the final product display of "SIKESA" the android-based physical fitness assessment application in detail:



Loading Display



Home Display



My Health Display
(Fitness Test Calculation)



Score History Display



Class Fitness History Display



CONCLUSION

Based on the study and discussion about Android-Based Physical Fitness Assessment Application for Student of Senior High School 1 Kudus can be concluded that: 1). An android-based physical fitness learning assessment application has been produced and students can download it freely on the android play store by

keyword "SIKESA, 2). The Android-based Indonesian Physical Fitness Test (TKJI) application product is effectively used to support the learning process of Physical Education, Sport and Health (PJOK) in Senior High School 1 Kudus. The validation result by material experts is "Very Good" with an average score of 93.13%. The media expert's assessment for the product is "Very Good" with an average score of 89.09%. The teacher's assessment on the product is "Very Good" with an average score of 85.38%. In large group students' assessment is "Very Good" with an average score of 85.11%, 3).

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