Software Development Tools with Android Base for Skills Data Collection in Physical Education

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Abstract

The development of information technology in the digital era on digital development 4.0 is based on the increasing knowledge and influence for the world of physical education. The demands, especially on physical education teachers, must be more creative in selecting appropriate, effective, and efficient technology developments. This has led to the development of android-based tools as an alternative for teachers to help carry out their duties, especially in collecting data on physical education skills.

This development research was conducted for senior high schools in the city of Semarang. The technique used to be used as a sample in the development research conducted was purposive sampling, which consisted of five schools.

The result of this development is a description of the process of developing an android-based tool which includes product analysis, expert validation, product trials, field trials, and product revisions.

In the development research that was carried out, there were various conclusions, including that android-based tools could be one of the teacher's solutions in helping to collect student skills related to physical fitness, with android the teacher's tasks can be carried out quickly, effectively, and efficiently.

Keywords: Educational Skills, Learning Model, Student Database, Physical Education, Smart Learning.

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1 Introduction

According to Rosdiani (2013) physical education Health and recreation is an educational process that takes the benefits of physical activity that is planned systematically with the aim of developing and improving individuals in organs in the body, neuromuscular, perceptual, cognitive, and emotional, within the framework of a systems mind. National Education. The development of information technology in the digital era 4.0 and android-based communication which is very significant in following the development of science can be used by teachers to support the learning process carried out by educational units. This is supported by the opinion of Chuang (2014) which states that the use of technology is beneficial in the learning process which has the effect of increasing student motivation and student learning outcomes. Thus, the learning process can be carried out interactively, inspiring, fun, and motivating teachers and students with the benefits of existing technological developments.

The definition of educational technology from AECT in 2008 according to Januszewski & Molenda in Zainal Abidin Arief (2015) educational technology is the study and practice of ethics in the context of facilitated learning with the aim of improving the quality of performance through the creation, use, and management of processes and arrangement of resources. sufficient power. Learning with the help of smartphones has the potential to help students increase learning motivation (Hess, 2014). If these opportunities can be used appropriately, then learning will be more flexible, inspiring, fun, and motivating for teachers and students.

Until the current digital era, public interest in Android is very high and is the main choice because it is very easy to operate. The development of Android with an increasingly complex graph of improvements indicates the attractiveness of features and ease of use. The number of android users in Indonesia in the period of July 2017 reached 84.09% which experienced a significant increase when compared to android users in 2016 of 73.80% (Stat Counter, 2017). Android is the most popular software operating system on mobile phones used by the wider community, especially among teachers. However, in reality, the use of smartphones has not been maximized to support learning (Woodcock, Middleton, & Nortcliffe, 2012). This condition can be seen from its use for entertainment and social media. The results of research conducted by Parise & Crosina (2012) and Boyinbode & Fasunon (2015) show that technology media is a supplement in learning that has a significant influence on improving the learning process.

The rapid development of information technology will bring mobile learning to be an alternative learning in the future that continues to grow (Irwanto, 2016). Physical education learning that takes place more in the field than in the classroom requires a teacher to be more creative in choosing appropriate, effective, and efficient technological developments in carrying out their duties.

According to Rayandra Asyhar (2011) learning media that have been prepared and already exist are a means in the learning process with the aim of conveying or distributing messages from a source in a planned manner, so that the learning environment becomes more conducive for teachers and students to carry out the learning process, the learning process learning can be done efficiently and effectively. So that learning materials are accepted by students more quickly as a whole and increase the interest of students to learn further (Musfiqon, 2011). Then Ali Mudlofir and Evi Fatimatur Rusydiyah (2016) said that learning media as a tool to convey or deliver messages from sender to recipient so that recipients have motivation to learn so that learning outcomes are expected to be obtained with more satisfactory criteria, while the form can be in printed form. or non-print.

Making code (language) program is handling (input operation), (arithmetic processing), (output operation), and some standard functions. More specifically, this stage is the stage of designing and creating applications using Java. The translation of the program into machine language that is ready to be done by the machine is the coding stage (implementation of the algorithm into the programming language). Program testing is the stage of testing the program so that it can be used according to user needs. And next is the production of ready-to-use programs (Harwikarya, 2014). A programmer writes the source code of a program, and operates a special program, called a compiler, so that the code is converted from source into output that computer software can understand or translate. (Frank, 2016).

According to Pressman & Bruce (2014) mobile apps or mobile applications are computer programs that are specifically made to run on mobile phone or tablet handheld devices. Problem solving that is used is one of the application data processing techniques which usually races on a computing or data processing which is expected to be the ability of an application that is built (Juansyah, 2015). There are many types of applications on smartphones that function to serve activity needs, including communication between humans, seeking information or knowledge, for shopping, playing music or videos, conducting business activities and managing finances, utilities and productivity, reading news, the latest updates about sports, playing games. Games and many more various types of applications that are being developed to meet human needs (Spath, 2018).

According to Frazy (2018), android studio is a developer software used to create an android application. Before the existence of Android Studio, Android applications were usually developed using Eclipse, which is an application development tool that is classified as an IDE (integrated development environment), because it provides various facilities for making applications. (Kadir, 2013). This application has tools based on drag and drop and visual blocks programming. Drag and drop is a term used for coding which is done by dragging and dropping program code into the block's editor. While visual blocks programming is a feature that can transform text-based programming language coding into visual language in the form of program codes (Wicaksono, R,S., 2017).

2 Development Research Method

According to Sugiyono (2017) the meaning of the research method carried out in development research is a scientific way to obtain data with certain goals and uses. In the field of education, methods are used to develop and revise books, guide modules, learning media or tools, evaluation instruments, curriculum models, and others (Hamdi, 2014). Methods This research uses research and development methods, which are carried out in senior high schools in the city of Semarang. The sampling technique in this research is purposive sampling.

This development research uses a development procedure model, because this research model is descriptive, which is a procedure that describes the steps in developing applications that must be followed in producing products (Puslijatnov Team, 2008). According to Wasis D. Dwiyogo (2004) in every research and development one must choose and find the most appropriate stages of development and process for the research based on the conditions of the problems and obstacles encountered in the field. Research and development seek to provide a component in the physical education system, health and recreation for data collection of physical skills through the steps of research development procedures and validation processes. Furthermore, it is stated that the research and development concept framework procedure basically have two main objectives, namely: 1) Developing the product to perfection, and 2) Testing the effectiveness of the product in achieving the target goal.

3 Results and Discussion

The results of the developed software are tools for data collection of physical education skills based on Android in the form of 2 things, namely descriptions of development and application products. This development model is carried out in five stages. The following will describe the development process as well as product development.

1) Conduct Product Analysis to be Developed

a. Survey on learning physical education by conducting preliminary research and collecting information in the form of data collection on skills in physical education.

b. Assessment of the problems faced.

c. Develop an initial product in the form of an application for skills data collection tools in Android-based physical education.

d. Product purpose and character analysis.

e. Looking for sources of content from the characteristics of the product to be made.

f. Arranging the stages of product manufacture.

2) Expert Validation

Validity is enforced by determining the assessment tool for the concept being assessed so that the assessment is carried out according to what criteria should be assessed (Nana Sudjana, 2011). In line with this opinion, Nurhasan (2008) explains that an assessment using a valid (valid) measuring instrument/test will obtain representative data and provide the correct interpretation of the conclusion.

3) Product Trial

The trial is intended to obtain instruments that meet the criteria of reliability (reliability) and to obtain feedback on the implementation of the form of the product to be made. The trials were carried out through group trials with small and controlled samples and group trials with large samples or product marketing trials.

4) Field Trial

Field trials were carried out on the community to get responses in the form of product revisions if there were technical problems in the application, so that the final product would be in the form of a physical education data collection system application, especially android-based practice. The trials were carried out in small-scale trials and large-scale trials or field trials.

5) Product Revision

After getting input from experts and physical education teachers who have revised the product, to improve the product before the final product is used by teachers in general or can be implemented.

The following shows the results of application development:

Figure 1: Display Class Listened Add New Class Feature

Figure 2: Display Add New Class Feature

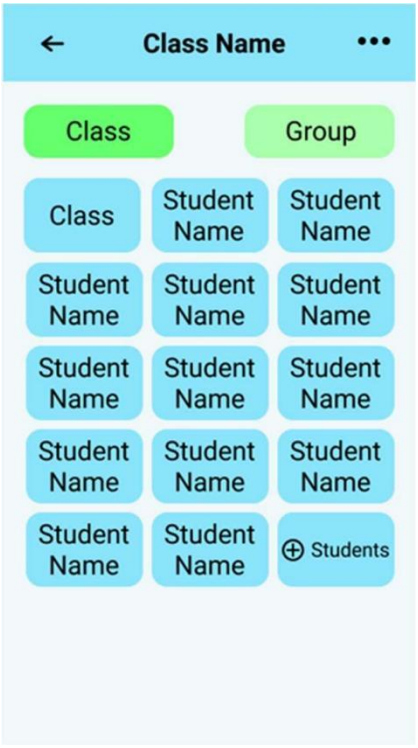

Figure 3: Displaying Student Names in One

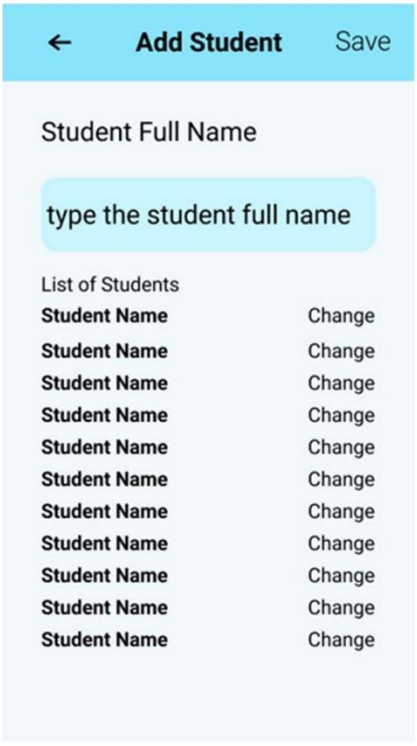

Figure 4: Displaying Student Name Features

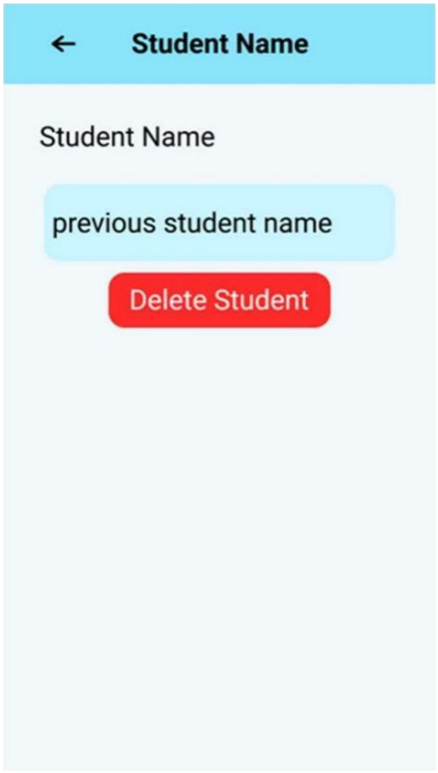

Figure 5: Displaying the Change and Delete Student Features

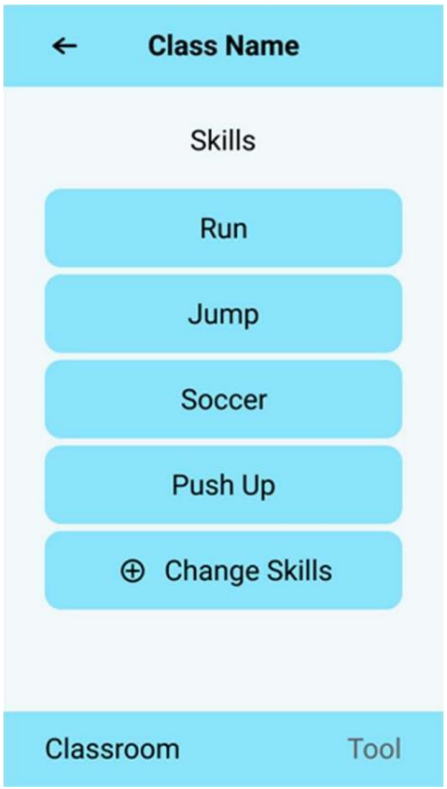

Figure 6: Displaying the Change and Add Skills Features

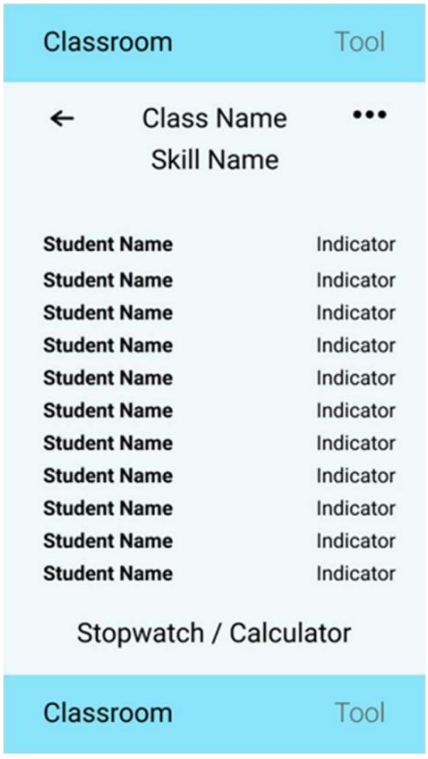

Figure 7: Display Student's Name in One

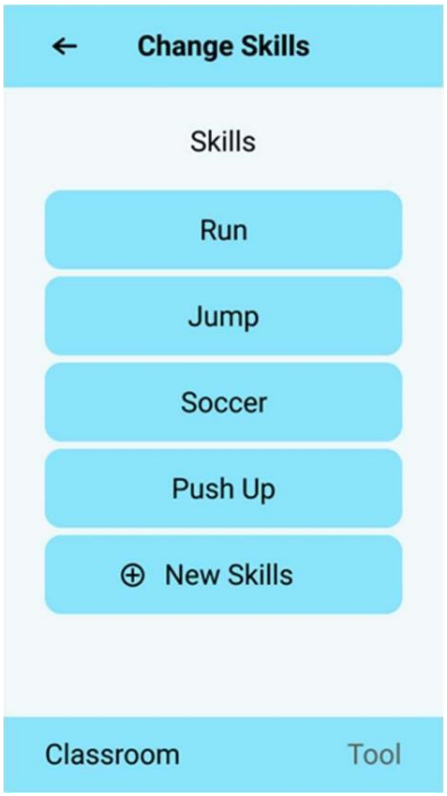

Figure 8: Display Student's Change Skills

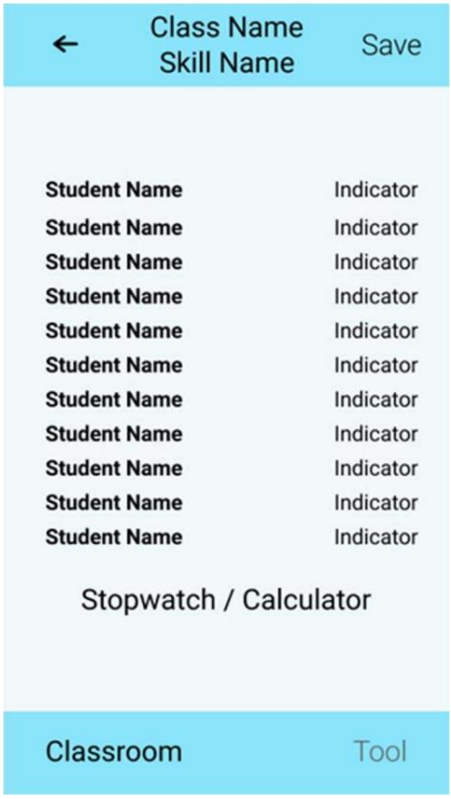

Figure 9: Displays the Skill Save

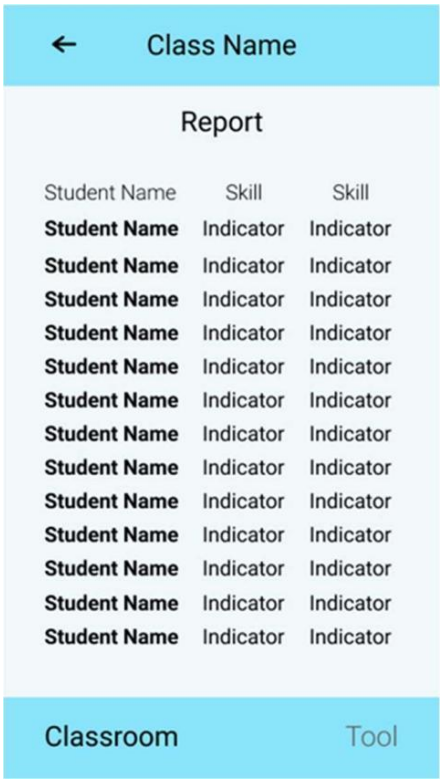

Figure 10: Displays the Report for Each Class

Figure 11: Showing Each Student's Report

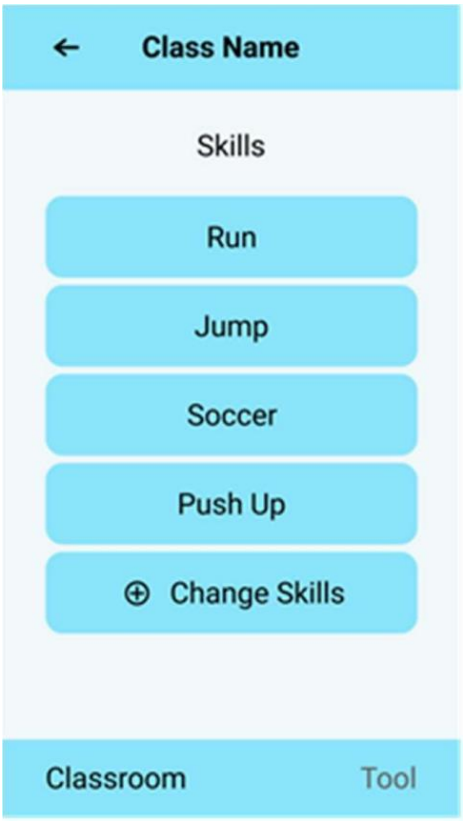

Figure 12: Showing Skills Features That Can Be Changed Also

Based on the main problems studied and developed by the results of development and research can be discussed, it is concluded that the stages of the procedure model used are five stages, namely the first stage of analyzing the product to be developed. At this stage, researchers conduct surveys, analyzes, and collect relevant data and sources as a reference for making products. The second stage is expert validation, which is determining the determination of the assessment to be appropriate. The third stage of product testing is to obtain an instrument that meets the criteria of reliability and to get a response to the implementation of the form of the product to be made. The trials were conducted through small group trials and large group trials. The fourth stage of field trials. This trial was carried out to obtain feedback and product revisions, so that the final product would be in the form of a physical education data collection system application, especially android-based practice. The last stage of product revision, namely after getting input from experts and physical education teachers who have revised the product, to improve the product before the final product is used.

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