

Development of Android-Based Let's-Teach Learning Media in Physical Education Learning Curriculum 13

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Abstract

The development of science and technology has a significant impact on human lifestyles, which must likewise evolve. This study aims to: (1) analyze the development of Android-based Let's-Teach learning media on smartphones for PE (Physical Education) learning documents for grade XI; (2) analyze the effectiveness of applications for developing Android-based learning media and teacher administration in PE learning for grade XI; and (3) analyze the level of feasibility of using Android-based learning media for PE learning materials for grade XI. This research used development research. Potential and problems, data collection, product design, design validation, usage test, product revision, trial run, design revision, product revision, and mass production are the 10 phases of the used development approach. Data collection used product validation questionnaires, respondent questionnaires and documentation. This study's data analysis method included descriptive percentages. The result of this study was an Android-based PE learning resource for high school Grade XI. Small-scale testing of the PE learning media application for high school Grade XI yielded a score of 91 percent, which is regarded as very good. The results of the large-scale trial of the high school PE learning media application were 94 percent very good, indicating that this application could be mass-produced and utilized by teachers for high school PE learning media. It was determined that a product in the form of an Android-based PE learning media could be mass-produced and used to support the education of high school PE teachers.

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INTRODUCTION

The progress of an increasingly modern era demands that life is increasingly developing in all respects, including in the aspect of education (Pranowo, Rufli, & Hakim, 2021). The National Education System Law No. 20 of 2003 gives an understanding of all processes that are conducted with full awareness and meticulous planning in order to carry out teaching and learning activities effectively. The usage of learning media is essential in the teaching and learning process for activating the role of students and enhancing all areas of learning activity (Ardiansyah E, Pratama, H.G, Sulendro, 2020).

The development of science and technology has a significant impact on human lifestyles, which must also evolve to follow these developments, as a result, critical, systematic, logical, creative, and innovative thinking, as well as the willingness to collaborate effectively, are required to respond to this trend (Sujarwo, Suharjana, Rachman, & Ardhya, 2021). In the field of education, media-based learning technologies must be developed. Media is an educational resource generated with digital applications or in physical form to improve student engagement with learning (Kuswanto, 2019).

Streamlining communication between teachers and students, learning media is a useful tool in the teaching and learning process (Parahita, 2021). The term media is derived from the Latin word "medius", which meaning middle, intermediary, or introduction. Media is a tool used in educational activities to deliver information (Zulbadri, Syahril, & Lapisa, 2021). A appropriate instrument is required for the correct information to be transmitted.

Smartphones are a form of current technological development that are not only used for making phone calls and sending text messages, but have also been created as computers (Ashari, Lestari, & Hidayah, 2017). Android is currently the most popular

and widely developed operating system since its use is relatively open, allowing for a great deal of freedom in terms of application development (Akbar & Yunarti, 2020). E-marketer, a digital marketing research firm, has ranked Indonesia in the top four smartphone-using nations in 2018 due to the country's population of over 100 million smartphone users. According to ministry data, there are twenty-four mobile and tablet component companies in Indonesia. industry. Android and IOS operating systems are currently the most widely used by the public based on their respective needs, with Android operating system mobile phones accounting for 80 percent of sales according to Statiska (Nugroho, Florentinusa, & Lestari, 2020).

Along with the progression of time, mobile phones are now filled with social media, games, and learning media applications in addition to telephone and Messaging communication (Mulyana, Gumilar, & Soraya, 2022). Observations made at SMA N 1 Bergas indicate that the most teachers and students only use their mobile phones for calling, SMS (Short Message Service), playing music/videos, accessing social media (Facebook, Instagram, WhatsApp), and playing games.

According to Law No. 20 of 2003 concerning the National Education System, the 2013 Curriculum is a well-regulated plan covering materials, content, and objectives to be used as a guide for educators to achieve educational process goals. In accordance with article 11 of the National Sports System Law (SKN) No. 3 of 2005 pertaining to sports education, physical education and sports are conducted as part of a regular and ongoing educational process to acquire knowledge, personality, skills, health, and physical fitness.

The time allocation for PE subjects is three 45-minute sections. The PE lesson is divided into 2 x 45 minutes of practice on the field and 1 x 45 minutes of classroom-based PE teaching. Therefore, it differs from the curriculum that preceded it, which was solely

practical, in that the cognitive aspect has now been incorporated into the formation of PE knowledge. The 2013 curriculum not only emphasizes academic excellence, but also prioritizes character education and maximizes student potential. The design of learning by teachers must be mature in order to produce effective learning and increase student motivation to follow the learning process.

Based on observations and preliminary research with 10 high school PE teachers in Semarang Regency in interviews conducted on October 21, 2019, the following data were found, namely the first from Suwarno, S.Pd, M.Or rank / group Supervisor of Kindergarten 1 / IV b he is the supervisor of the PE subject at SMA N 1 Pabelan, he often gets into trouble during practice when he brings textbooks, the attendance list sometimes forgets to fill out the list of grades which becomes untidy. The second is the results of interviews from Drs. Nur Tamzis has the rank of Tk 1 / III stylist and is the supervisor of the PE subject at SMA N 1 Ambarawa. The problem is that the teacher's handbook for him is damaged due to being carried here and there during practice in the field as well as during class material and hassles when recapitulating the final grades of students.

According to the previous findings, there is a lack of variety in the development of Android-based learning media. Then, the motivation of researchers to develop android-based learning media and teacher administration emerged. In carrying out the learning process, it must be packaged as effectively as possible, one of which is Android-based learning media; based on initial observations in several Semarang Regency Senior High Schools, nearly 90 percent of the school's teachers already use smartphones daily, although they have also used smartphones in the past. Numerous learning tools have been created, but many of them are impractical and difficult to use, causing teachers to become lazier about employing them. The Development of

Physical Education Applications on Android-Based Smartphones as Physical Education Learning Media for Grade VII at SMPN 1 Bangkalan is one example of the development of existing PE learning media.

This development research is expected to produce an Android-based learning media that can develop all aspects of learning (cognitive, affective, and psychomotor), assess knowledge and skills in each PE material effectively and efficiently, and make it easier for PE teachers to bring teaching and learning materials to PE assessments.

METHODS

This study used development research method, often known as Research and Development (R&D). Development research method (R&D) is a research method used to produce or develop a product to determine whether it is feasible for use (Swandana, Sugiharto, & Wahyu, 2021). The development procedure basically comprised two main objectives, namely: (1) developing the product, and (2) testing the effectiveness of the product in achieving the goal (Siregar, Soegiyanto, & Rustiadi, 2021).

This media is an android application that can be downloaded from the playstore and installed on an android smartphone. This learning media for teachers contains several features that can be accessed, including the first part of the student attendance list that must be filled out by the teacher each time learning begins and a menu of learning materials for grade XI PE, including big ball games, small ball games, athletics, martial sports, physical fitness, floor exercise, rhythmic motion, swimming, the benefits of physical activity, and HIV/AIDS.

Each learning material includes a list of knowledge values and practical values that can be completed by the teacher while conducting an assessment. The last menu contains a summary of student scores that may be downloaded during grade XI



Figure 4. Material Menu & Final Score Recap

Several experts or experts were presented in this study in order to validate the design for products that have been designed and consist of:

Material Expert : Dr. Agus Raharjo, S.Pd., M.Pd Solidin, S.Pd

IT Expert : Dr. Ir. I Made Sudana, M.Pd, IPM Agung Susanto, S.Kom

The product is assessed and evaluated by experts, specialists, and PE teachers to determine if it is suitable for usage and mass distribution. Alternatively, it produces better results as compared to other products. Using experimental techniques, the effectiveness of the product is determined.

If the product's findings are still insufficient, it is possible to revise it, but it must then be retested to see whether or not there has been any improvement. Revisions of a product are prompted by the reviews and analyses of a number of experts or specialists. So that product II in the form of learning and administrative media applications for PE teachers can be produced and field-tested in accordance with the results of the revision by the experts.

This research is based on interviews with ten teachers from various high schools in the Semarang Regency. Teachers believe that the lack of learning media and teacher administration to date justifies the development of this application, which can assist teachers in delivering PE learning materials to students and completing teacher administration. This application must have a level of security and validity that can only be accounted for.

The research subjects were divided into 2 groups. One group in the first stage of the trial and the second group in the second stage of the trial. The subjects of the needs analysis were 20 high school PE teachers. The first stage of the coha test, the test subjects at this stage were 10 high school PE teachers. And the 2nd stage of the trial, the test subjects at this stage were 20 high school PE teachers.

Questionnaires was instruments used in product development to obtain information. Utilizing questionnaires to assess the quality of products produced. In this study on the quality of the produced products, questionnaires are utilized to obtain data from PE experts and teachers regarding critiques, suggestions, and effective solutions.

Table 1. Criteria for the Range of Values used

Assessment scale	4	3	2	1
Interpretation 1	Very good	Good	Deficient	Poor
Interpretation 2	Strongly Agree	Agree	Disagree	Don't Agree

The formula for processing percentage data is as follows :

$$P = \frac{\sum X_i}{\sum X_j} \times 100\%$$

Description :
 P = Percentage
 $\sum Xi$ = Total Score Assessment by
 Coach and Athlete
 $\sum Xi$ = Maximum Score

100% = Constant

The percentage obtained is then classified to obtain data conclusions.

Table 2. Percentage Classification

Percentage	Classification	Mean
75 – 100	Very good	Very decent using
50 – 75	Good	Proper to use
25 – 50	Deficient	Fixed
0 – 25	Poor	Not decent using

RESULT AND DISCUSSION

This research led to the development of android-based "let's - teach" learning media for class XI grade XI class k-13 learning. This application must be installed on an Android smartphone prior to use. This features includes a menu of PE learning resources for class XI, as well as class management, i.e. the ability to enter a list of courses to be taught. The class management feature allows you to enter the lesson schedule, including the date, month, and year, as well as a score list containing each material.

The materials in the application creation process are as follows: 1) JDK (Java Development Kid) which is software to compile java code created by developers, 2) JRE (Java Runtime Environment) which is software to run Java-based programs or applications, 3) IDE (Integrated Development Environment), 4) Android Studio, which is the official Integrated Development Environment for android application developers, 5) New Navigation Editor, which is to change and improve the appearance of the software, application layout, and application design, 6) Layout Feature, which is for review applications and can be analyzed and repaired if there are improvements, 7) Jetpack, which is to streamline application creation schemes and display high quality, 8) Process Memory (RSS) which is to determine the amount of memory used by applications

when installed on Android smartphones, 9) Buffer Queue, which is to see the number of buffers in the application platform in the form of: – a certain form of code when switching from one graphics component to another. Let's Teach is an android-based smartphone application to be used as a teaching aid by teachers and can be installed on their respective smartphones. The application of this learning media is an idea from the researcher himself and a modification from the author.

Table 3. Application Features Used For Research



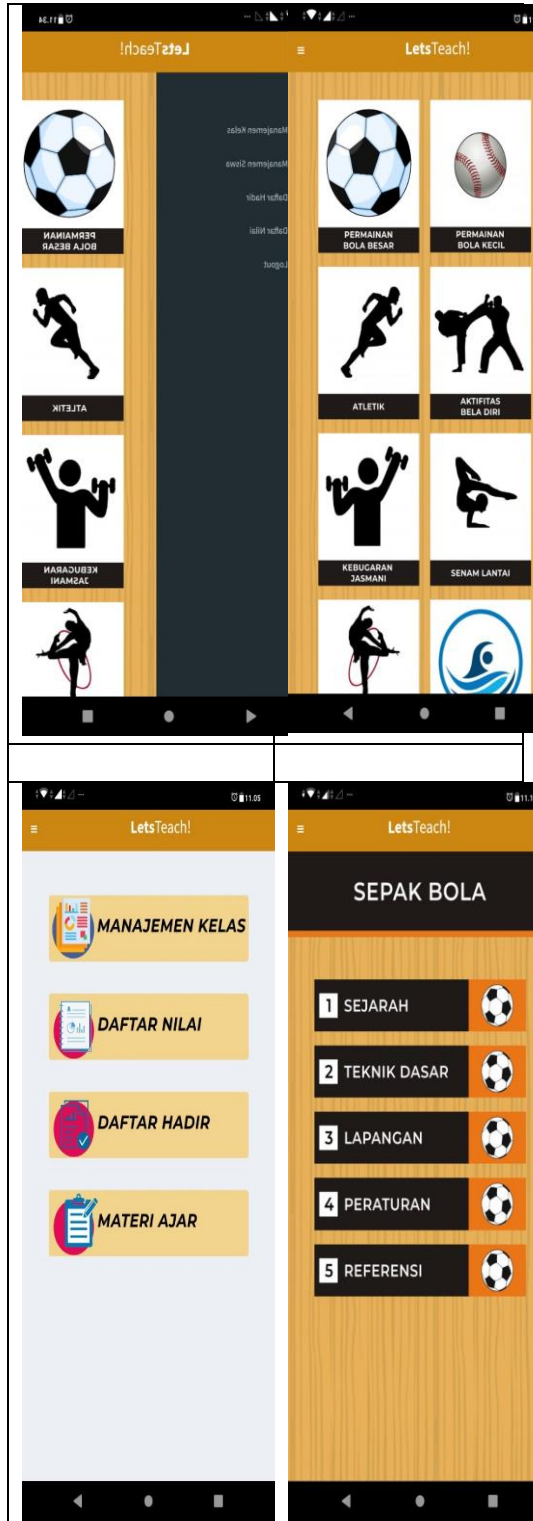


Figure 5. Let's Teach Products before Expert Validation

The initial specifications for the Let's Teach android-based application product are as follows:

The Let's Teach learning media application is for teaching aids.

The Let's Teach learning media application is a tool for teachers to complete learning administration.

The application contains learning materials for high school Grade XI PE which can be installed on an android smartphone.

The application contains an attendance list and a list of grades for students to help teachers complete their administration at the end of the semester.

Applications can be downloaded via Google Playstore on Android smartphones.

The findings of the validator's application validation for improvement or change before to small-scale testing. The percentage clarification table below was used to determine the following product quality evaluation results:

Table 4. Presentation Classification

Percentage	Classification	Mean
75 - 100	Very good	Very decent using
50 - 75	Good	Proper to use
25 - 50	Deficient	Fixed
0 - 25	Poor	Not decent using

PE Learning Media Design Based on Android Expert Validation

The assessment sheet's results presented as a questionnaire or questionnaire. In March 2022, media experts and material experts produced a report stating that its implementation was in accordance with what had become the main goal, but there were still some deficiencies in the application, namely the initial display arrangement in the application, the absence of a save as feature for the final value result, and the absence of a list of references for each material.

The results of the feasibility assessment from stage I media experts are as follows:

Table 5. Early Stage Media Expert Validation Results

No	Expert Validator	Total Score	Percentage	Criteria
1	A1	93	93	Very good and decent using
2	A2	78	78	Very good and decent using

The first stage of validation is carried out to Material experts.

Table 6. The results of the Validation of the Material Expert for the first stage

No	Expert Validator i	Total Score	Percentage	Criteria
1	AM1	56	93	Very good and decent using
2	Khoirudin Fathoni, S.T., M. T.	54	90	Very good and decent using

The Android-based PE learning media application for high school grade XI gets a percentage of each from validator I getting 93% and validator II getting 90%. So the assessment of each material expert can be said to be "very good".

Second Stage Validation

If it has been examined by experts, including media experts and material experts, the second stage of validation can be carried out. Revisions, suggestions, and expert advice will yield products that are ready for validation in the second stage if the application is enhanced.

Table 7. Phase II Product Validation Results By Media Experts

No	Expert Validator	Total Score	Percentage	Criteria
1	A1	94	94	Very good and decent using
2	A2	97	97	Very good and decent using

Table 8. Phase II Product Validation Results by Material Experts

No	Expert Validator	Total Score	Percentage	Criteria
1	AM1	56	93	Very good and decent using
2	AM2	57	95	Very good and decent using

The expert validator I score for the Android-based PE learning media application for high school was 93 percent, and the expert validator II score was 95 percent. Therefore, the material expert's evaluation was "very good" and has increased from the previous percentage. Android-based learning media applications have been deemed adequate, and no further improvements were anticipated.

Effectiveness of Using Android-Based Learning Media

Small Scale Trial

A small-scale trial of the Android-based PE high school learning media application for class XI was carried out in February 2022 to 10 high school PJOK teachers presented in the following table:

Table 9. Small Scale Trial

Subject	Obtained Score	Max Score	%	Category
Teacher (10)	695	760	91	Very good

The total percentage acquired in a small-scale trial of the PE learning media application for high school grade XI was

91%, which is categorized as very good; consequently, it can be continued to the next stage.

Large Scale Trial

Small-scale trial have been completed and the Android-based grade XI learning media application has received some input, revisions, and improvements. Large-scale

trials with 20 high school PE teachers can be undertaken in March 2022.

The results in large-scale trial research are as follows:

Table 10. Large Scale Trial

Subject	Obtained Score	Max Score	%	Category
Teacher (20)	1431	1520	94	Very decent

The total percentage obtained in a large-scale trial of the high school PE learning media application was 94%, which is rated as very good, indicating that this application product may be mass-produced and used by teachers to administer high school PE learning media.

support high school PJOK teachers in teaching activities and in completing the administration in a more efficient manner.

After undergoing both small-scale and large-scale testing, the Android-based learning media application for high school Physical Education 11th grade reveals the following advantages and disadvantages:

DISCUSSION

Advantages

This product was developed in collaboration with IT experts. The application may be quickly accessible and obtained using an Android smartphone and downloaded from the Google Play store, which can also make it simpler for teachers to utilize it in teaching activities and complete administration (Prawiro, 2021). This research certainly goes through several stages, namely from observing potential and problems, collecting data, designing products, product validation, product revisions, small-scale trials, product revisions after small-scale trials, large-scale trials, mass production.

This learning media application is easily accessible and may be downloaded from the Google Play Store on an Android-based smartphone. It is particularly useful for teachers' teaching activities and administrative tasks. This learning media application is incredibly engaging to use due to its design and functionality.

Disadvantages

There are disadvantages to using this application; if the signal is weak, it is not optimal to use the application.

The use of the Internet and multimedia technology can modify the delivery of knowledge and serve as an alternative to classroom learning. Implementing online education necessitates the use of mobile devices, such as smartphones, laptops, and tablets, that may be used to access information from anywhere and at any time (Handarini & Wulandari, 2020). The application can be utilized by high school PE teachers, and teachers who support high school PE courses often respond positively to it. With the results of the aforementioned data and the increase, the application can

CONCLUSION

Based on the results of research and discussion about the development of android-based "let's - teach" learning media in learning at the k-13 high school. This research resulted in the development of android-based "let's - teach" learning media products in pjok k-13 high school learning that had been validated by media experts and material experts. The Let's Teach application product in the small-scale trial stage shows a percentage of 91% which can be categorized as very good. The next Let's Teach application product in large-

scale trials showed a percentage increase of 94% which can be categorized as very good, meaning that it can be used and mass-produced.

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