

Android Application Schema Model Development in PJOK Curriculum 2013 for Class XI Students in SMA/SMK/MA

Alfian Priyatama^{1✉}, Setya Rahayu² & Tommy Soenyoto³

¹ STKIP Dharma Wacana Metro, Lampung, Indonesia

² Sports Science, Universitas Negeri Semarang, Indonesia

³ Physical Education, Health and Recreation, Universitas Negeri Semarang, Indonesia

Article Info

History Articles

Received:
July 2019
Accepted:
August 2019
Published:
August 2020

Keywords:

*android,
class xi,
curriculum 2013,
physical sports, and health
education*

DOI

<https://doi.org/10.15294/jpes.v9i2.33984>

Abstract

Technological advances greatly support teaching and learning activities for teachers and students in schools. Android applications on smartphones make it easy to communicate to get access to various information. The purpose of this study is to develop an Android-based application that contains a PJOK scheme in class XI SMA/SMK/MA which includes Core Competency (KI), Basic Competency (KD) and content. This research is a Research and Development study. The research instrument used a questionnaire with research subjects, namely curriculum experts, multimedia/information technology experts, and class XI students SMA/SMK/MA. The results of the validation by curriculum experts in stage 1 with a score of 3.3 or 66% included category "good" and stage 2 with a score of 4.2 or 84% included category "very good." Validation by multimedia experts in stage 1 with a score of 3.6 or 71% included category of "good" and stage 2 with a score of 4.5 or 90% included category "very good." The results of the small-scale effectiveness test with a rating score of 3.2 or 63% are included category "good." The results of a large-scale effectiveness test with a rating score of 4.2 or 83% are category "very good." The conclusion that the android application product physical, sports and health education subjects in Curriculum 2013 for class XI SMA/SMK/MA is effectively used as a learning resource for students.

© 2020 Universitas Negeri Semarang

✉ Correspondence address:

Soekarno Hatta, Mulyojati, Metro Barat, Metro, Lampung, 34121
E-mail: alfianpriyatama73@gmail.com

[p-ISSN 2252-648X](#)

[e-ISSN 2502-4477](#)

INTRODUCTION

Humans move and exercise for life because motion is virtually a necessity of life (Riyoko, Soegiyanto, and Sulaiman, 2014). Sport is a physical activity that is a necessity of every human being. The current development of sports does not look at age, gender, ethnicity, race, and religion (Santosa, and Soegiyanto, 2016).

Schools as a place of learning are used by teachers to develop three domains in education, namely cognitive, affective, and psychomotor (Nur, Sulaiman, and Rustiana, 2018). Physical, Sports, and Health Education (PJOK) developed the three domains mentioned above. Education has pedagogical objectives. Therefore knowledge is incomplete without physical education, sports, and health because motion as physical activity is the basis for humans to know the world and itself which naturally develops in the direction of the times (Octaviansyah, Rahayu, and Handayani, 2015).

Physical, Sports, and Health Education (PJOK) are compulsory subjects that are listed in the National Education Curriculum in Indonesia, at all levels, and types of education. The curriculum is a set of plans and arrangements regarding the objectives, content, and teaching content, and methods used to guide learning organizations to achieve specific educational goals (Rudy, 2015).

PJOK is a broad field of study, which is very interesting with an emphasis on increasing human movement (Tangkua, Rahayu, and Soegiyanto, 2015). Besides that, the main objective of learning Physical, Sports, and Health Education (PJOK) in schools is to help students improve their movement skills. The other main goal is also to make them feel happy and encouraged to participate in various forms of activity (Kusmiyati, Soegiyanto, and Rahayu, 2014).

Physical, Sport and Health Education become a media to encourage physical growth, psychological development, motor skills, knowledge, punishment, appreciation of generation values, and the habit of healthy lifestyles that lead to seeking growth, and the

development of balanced physical and psychological qualities.

The learning process involves interaction between students and teacher, such communication is only possible through the media. The core of learning activities in schools is on the content of the lesson, without the content and object of the teaching and learning process will not be able to run, because there is no study learned. Media in the teaching and learning process used as a means to facilitate the delivery of information and content the interaction of students and teachers.

The term media refers to anything that carries information between the source and recipient. Media can be in the form of tools or objects that are helpful to facilitate understanding of the content of the lesson. Knowledge and application of instructional media are an essential part of every teaching, provision, and use of instructional media, and technology that effectively distinguishes excellent schools from inferior ones (Vázquez-Cano, 2014).

Educational media and multimedia technology are channels for transmitting information to students, as well as gadgets, and machines needed to send information to students. There are various types of educational media, and multimedia technology currently used in teaching and learning processes, namely: computer systems, microphones, mobile devices, interactive whiteboards, digital-video-on demand, online media streams, digital games, podcasts, and so on (Omodara, and Adu, 2014). Media is a means to convey messages and learning perspectives that deliver content to students, to achieve effective and efficient learning.

Information technology has a role in facilitating the delivery of different content and knowledge. But in education, the transfer of knowledge is not the final destination because school is also responsible for forming personal or character (Subarjo, 2015). The role of educational technology in teaching is very important because of the use of information and communication technology. Educational technology is a systematic and organized process of applying

modern technology to improve the quality of education.

Educational technology has three domains of use (1) technology as a tutor (computers give instructions and guide users), (2) technology as a teaching tool, and (3) technology as a learning tool. The application of educational technology improves skills, and cognitive characteristics, with the help of this new technology an explosion of learning emerges, and acceptance of further information especially on mobile devices (Stošić, 2015).

Changes in the use of information technology and communication that are mobile and wireless in learning develop very broadly and quickly in various aspects (Sulisworo, 2014). The potential of smartphones in education is built on the experience described in the extensive literature on mobile learning from the previous decade which shows that ubiquitous, multi-functional and mobile device connectivity offers a new and potentially networked learning environment (Woodcock, Middleton, and Nortcliffe, 2012). Nowadays, smartphones and internet connections are essential. These two factors open the door to improving the quality, and the quantity of information available to users depends on their location, and can also be shared, directly with others (Neri, Lopez, Barón, and Crespo, 2013).

Students are individual beings who have personalities with distinctive features that are following their growth and development. In the development of these students, they essentially have needs that must be met. Fulfillment of the needs of students to grow and develop to reach physical and psychological maturity (Ramli, 2015).

Teachers and students today are familiar with smartphones. The sophistication of a smartphone is very interesting with specifications other than as a communication tool for calling and sending messages, and also equipped with a camera, internet, music, games, as well as other applications such as photo editors, video editors, etc. The positive aspect of smartphones for teachers, and students is that they can use as a medium in learning activities..

The results of preliminary observations made at Vocational School Widya Praja, Ungaran about the use of smartphones among class XI students in schools with 128 respondents stated that 96.88% or 128 students owned and used smartphones at school. It is very supportive in the dissemination of the use of PJOK learning applications that are designed and will be developed by researchers. More than 70% of students install apps for learning. Students will be familiar and have no difficulty downloading and using learning applications because to operate a smartphone and students are familiar with the variety of advanced features, and practical and useful specifications.

Products of learning applications that can use online (connected to the internet network) or offline (not connected to the internet network) are made for convenience and practicality delivering content from teachers to students. In reality, students still use manual books, namely Student Books published by the Ministry of Education, while the number of books does not meet the number of all students, so some students do not get PJOK book loan. On the other hand, students do not like to bring thick PJOK textbooks, every time PJOK lesson schedule. This can be addressed by utilizing technological advancements to simplify and accelerate access to information.

Researchers designed a model of application development for PJOK subject scheme in Curriculum 2013 for class XI students of SMA/SMK/MA. Applications are made in the form of schemes for students to use as a learning tool. The application contains lesson content schemes PJOK class XI for semesters 1 and 2.

PJOK subject scheme is essential for students because it can be studied independently without reducing the essence of the lesson content itself. The researcher intends to design an Android application development model for PJOK subjects in the form of an application designed which is a scheme that contains the core content of each competency that is learned at the level of class XI SMA/SMK/MA.

METHODS

This research is a Research & Development (R&D) research. Research and Development is a research method used to produce specific products and test the effectiveness of these products (Sugiyono, 2013). Making a product in research development is based on a needs analysis. Analysis of needs in this study was carried out by field observations and filling out questionnaires.

The research procedure in this study was divided into two stages, namely the preliminary study stage and the development stage. Preliminary studies are carried out based on direct observations in the field. After finding a problem, a literature study regarding related research has been carried out by previous researchers. It is followed by information gathering, interviews to identify problems in the field. At the development stage, the researcher makes a product design in the form of product description and specifications. This product design was created by an application program designer, a prototype application product.

Sources of data in this study are PJOK teachers who teach in vocational schools, curriculum experts, and multimedia/IT experts. PJOK teacher assesses the application product. Curriculum experts provide information about the legal basis, structure, and implementation of Curriculum 2013. Multimedia/IT experts give an overview of how to visualize an android product with the latest model. Besides curriculum experts and multimedia/IT experts also provide assessments, criticisms, and suggestions about the application product results.

The analysis used to test the feasibility of the product is a questionnaire that uses choices with a Likert scale of 1-5, with the answer categories namely very less (SK), less (K), sufficient (C), good (B) and very good (SB). The formula states the final results of the analysis of the questionnaire test:

$$P(\%) = \frac{f}{N} \times 100\%$$

P = results to be searched for as a percentage

f = the number of scores the percentage will be searched

N = score criteria obtained the maximum score from the questionnaire results

Questionnaire eligibility criteria can be seen in table 1.

Table 1. Interpretation of Scores

Percentage (%)	Category
0 - 20	Very less
21 - 40	less
41 - 60	sufficient
61 - 80	good
81 - 100	very good

Source: Marhadini, Akhlis, and Sumpono, 2017

RESULTS AND DISCUSSION

The resulting android application product is called PJOK scheme for class XI SMA/SMK/MA. Product specifications designed by researchers at the beginning of the study contained several menus that had changed to be removed or added based on criticism, and suggestions from curriculum expert validators, multimedia/IT expert validators.

PJOK scheme products for class XI SMA/MK/MA can be operated directly, after being downloaded without having to update on all types of smartphones. Besides being downloaded on Playstore, applications can be transferred via offline transfer media such as Share-it and Bluetooth.

Display of PJOK scheme icon for class XI SMA/SMK/MA on the smartphone menu screen (Figure 1).

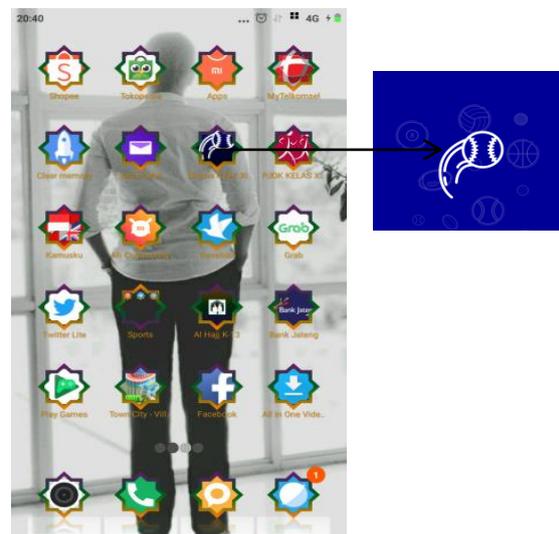


Figure 1. PJOK for Class XI Schema Icon

Main menu display of PJOK scheme for class XI SMA/SMK/MA on the smartphone menu screen (Figure 2).

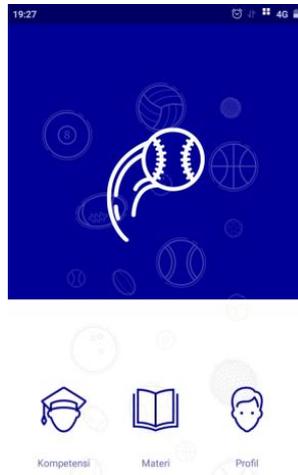


Figure 2. Main Menu of PJOK Scheme for Class XI

Display of the Core Competency (KI) and Basic Competency (KD) icon in the PJOK scheme for class XI SMA/SMK/MA on the smartphone menu screen (Figure 3).



Figure 3. Menu of Core Competency (KI) and Basic Competency (KD)

Display the menu content icon in the PJOK scheme for class XI SMA/SMK/MA on the smartphone menu screen (Figure 4).



Figure 4. PJOK Schema Content Menu for Class XI

Display sub-content in the PJOK scheme for class XI SMA/SMK/MA on the smartphone menu screen (Figure 5).



Figure 5. Sub-content menu

The curriculum expert who became the validator in this study was Dr. Sulaiman, M.Pd., and Drs. Hermawan Pamot Raharjo, M.Pd. The validation of curriculum experts in this study was carried out in two stages. The following is table 2 curriculum expert validation results in stage 1.

The results of validation by two curriculum experts in stage 1 with a mean = 3.3 or 66% included category "good" and the following is a table 3 results of validation of curriculum experts in stage 2.

The results of the validation by two curriculum experts in stage 2 with a mean = 4.2 or 84% are included category "very good."

Multimedia experts test the feasibility of the product in terms of product appearance and product specifications. The multimedia expert in this research is Pratama Bayu Widagdo, S.Sn., M.Ds. The following is a table 4 results of multimedia expert validation in stages 1 and 2.

Table 2. Curriculum Expert Validation Results in Stage 1

Expert	Score	Percentage (%)	Category
Curriculum expert 1 (Drs. Hermawan Pamot Raharjo, M.Pd.)	2.8	55	Sufficient
Curriculum expert 2 (Dr. Sulaiman, M.Pd.)	3.9	78	Good
Average	3.3	66	Good

Table 3. Curriculum Expert Validation Results in Stage 2

Expert	Score	Percentage (%)	Category
Curriculum expert 1 (Drs. Hermawan Pamot Raharjo, M.Pd.)	3.8	75	Good
Curriculum expert 2 (Dr. Sulaiman, M.Pd.)	4.6	93	Very good
Average	4.2	84	Very good

Table 4. Multimedia Expert Validation Results in Stage 1 and 2

Stage	Score	Percentage (%)	Category
Stage 1	3.6	71	Good
Stage 2	4.5	90	Very good
Average	4.0	81	Very good

The results of validation by multimedia experts in stage 1 with a score = 3.6 or 71% are included category "good." Whereas in stage 2 with a score = 4.5 or 90% included category "very good."

There is an increase in the assessment by curriculum experts and multimedia/IT experts in the validation test of the initial and final stages. Researchers have made several improvements to the product contents following the advice of curriculum experts and multimedia/IT experts.

The results of small-scale product trials conducted at Vocational High School Widya Praja Ungaran are as follows:

Table 5. Small Scale Test Results

Class	Score	Percentage (%)	Category
A1 class XI Teknik Sepeda Motor (TSM)	3.2	63	Good
A2 class XI Tata Busana A	3.2	63	Good
Average	3.2	63	Good

The effectiveness of small-scale product test results with an average rating score is 3.2, or if converted as a percentage is 63% included category "good."

The overall score given by students on a small scale states that the application of the PJOK Scheme application for Class XI is effectively used as a source of student learning in PJOK subjects for Class XI SMA/SMK/MA.

The graph of the small scale test results is as follows:

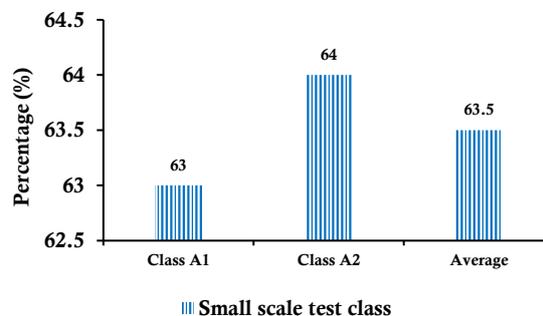


Figure 6. Small Scale Test Chart

Scores of the results of large-scale product trials conducted at SMK Bina Nusantara and SMK NU Ungaran are as follows:

Table 6. Large Scale Test Results

Class XI	Score
Teknik Sepeda Motor	4.2
Tata Busana A	4.3
Tata Busana B	4.2
Teknik Komputer Jaringan (TKJ) A	4.0
Teknik Komputer Jaringan (TKJ) B	4.1
Multimedia A	4.1
Total	25
Average	4.2
Percentage (%)	83

The effectiveness of large-scale product test results in all classes with an average rating score of 4.2 or if converted as a percentage is 83% included category "very good."

The overall score given by students on a large scale states that the application of the PJOK scheme for Class XI is effective to be used as a source of student learning for PJOK subjects for Class XI SMA/SMK/MA.

The large scale test results above are as follows:

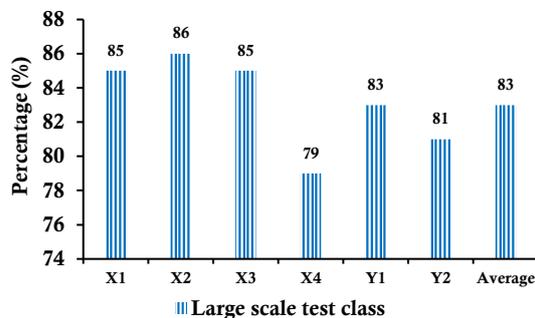


Figure 7. Large Scale Test Chart

PJOK scheme application product for Class XI is a content scheme for PJOK subjects with spectrum Curriculum 2013. When the curriculum changes in the future, the application of the PJOK scheme for Class XI with the contents of Curriculum 2013 does not match the contents of the new curriculum according to the standards curriculum content, this becomes a weakness of the application of the PJOK scheme application for class XI SMA/SMK/MA.

Researchers agree with Widiyono (2015) stated about curriculum revisions made to realize

curriculum following the demands, and needs of the community, to anticipate the times and provide a reference for the implementation of learning in education units. Alaswati, Rahayu, and Rustiana (2016) also found that the curriculum changes were carried out by the government based on the study that development and the increasing demands of the times demanded change.

The advantages of PJOK scheme application products for class XI SMA/SMK/MA in terms of practicality, convenience, and current. Practicality is an application that can be downloaded and transferred easily anywhere, using a smartphone. Applications can be directly installed and operated without always having to update regularly. Also, when compared print media such as books and modules, it is clear that the application of PJOK scheme for class XI SMA/SMK/MA is more practical when compared to other digital media namely e-books, is more concise, and easy to learn because the content is more concise on the main points of the target subject content according to the latest curriculum, while the e-book is only a transformation of printed books into digital books.

PJOK scheme application product for Class XI SMA/SMK/MA is different from some similar application products that have been developed by previous researchers. The application of PJOK scheme for class XI covers the overall content in one broad but not specific level, whereas similar application products that have been developed by previous researchers only one or two main content that is specifically discussed.

CONCLUSION

This research resulted in an Android application product for PJOK subject schemes in Curriculum 2013 for class XI SMA/SMK/MA students which contained the main menu of KI and KD, the content menu, and the profile menu with several sub-menu on each main menu.

The product in the form of android application for PJOK subject scheme in Curriculum 2013 for class XI SMA/SMK/MA students is effectively used as a learning resource for class XI students SMA/SMK/MA.

REFERENCES

- Alaswati, S., Rahayu, S., & Rustiana, E. R. (2017). Evaluasi pelaksanaan pembelajaran kurikulum 2013 pjok. *Journal of Physical Education and Sports*, 5(2), 111-119. Retrieved from <https://journal.unnes.ac.id/sju/index.php/jpes/article/view/13447>
- Kusmiyati, Soegiyanto, & Rahayu, S. (2014). Pengembangan model modifikasi permainan bolavoli mini “serpassing” pembelajaran penjasorkes sd kelas v. *Journal of Physical Education and Sports*, 3(2), 73-77. Retrieved from <https://journal.unnes.ac.id/sju/index.php/jpes/article/view/4809>
- Marhadini, S. A. K., Akhlis, I., & Sumpono, I. (2017). Pengembangan media pembelajaran berbasis android pada materi gerak parabola untuk siswa sma. *Unnes Physics Education Journal*, 6(3), 38-43. Retrieved from <https://journal.unnes.ac.id/sju/index.php/upej/article/view/19315>
- Neri, R. B., Lopez, G. M., Barón, H. B., & Crespo, R. G. (2013). Annotation and visualization in android: an application for education and real time information. *International Journal of Interactive Multimedia and Artificial Intelligence*, 2(2), 7-12. Retrieved from <https://www.ijimai.org/journal/node/460>
- Nur, I. N., Sulaiman, & Rustiana, E. (2018). Implementation of learning physical education sport and health at nature elementary school ungaran. *Journal of Physical Education and Sports*, 7(2), 124-128. Retrieved from <https://journal.unnes.ac.id/sju/index.php/jpes/article/view/25118>
- Octaviansyah, Rahayu, T., & Handayani, O. W. K. (2015). Evaluasi implementasi kurikulum 2013 pada pembelajaran penjasorkes di sekolah menengah pertama negeri kota palembang. *Journal of Physical Education and Sports*, 4(2), 179-185. Retrieved from <https://journal.unnes.ac.id/sju/index.php/jpes/article/view/9893>
- Omodara, O.D., & Adu, E. I. (2014). Relevance of educational media and multimedia technology foreffective service delivery in teaching and learning processes. *IOSR Journal of Research & Method in Education*, 4(2-1), 48-51. Retrieved from <http://www.iosrjournals.org/iosr-jrme/papers/Vol-4%20Issue-2/Version-1/H04214851.pdf>
- Ramli, M. (2015). Hakikat pendidik dan peserta didik. *Tarbiyah Islamiyah*, 5(1), 61-85. Retrieved from <https://idr.uin-antasari.ac.id/4626>
- Riyoko, E., Soegiyanto, & Sulaiman. (2014). Kebijakan pemerintah kabupaten musi banyuasin dalam mengembangkan minat masyarakat untuk berolahraga. *Journal of Physical Education and Sports*, 3(2), 90-95. Retrieved from <https://journal.unnes.ac.id/sju/index.php/jpes/article/view/4813>
- Rudy, P. C. (2015). The perspective of curriculum in Indonesia on environmental education. *International Journal of Research Studies in Education*, 4(1), 77-83. Retrieved from <http://consortiacademia.org/10-5861ijrse-2014-915>
- Santosa, T., & Soegiyanto. (2016). Pengembangan alat bantu return board untuk forehand topspin tenis meja. *Jurnal Pedagogik Olahraga*, 2(2), 30-48. Retrieved from <https://jurnal.unimed.ac.id/2012/index.php/jpor/article/view/4513>
- Stošić, L. (2015). The importance of educational technology in teaching. *International Journal of Cognitive Research in Science, Engineering and Education*, 3(1). Retrieved from <http://www.ijcrsee.com/index.php/ijcrsee/article/view/122>
- Subarjo, A. H. (2015). Pemanfaatan teknologi informasi untuk pendidikan (kajian pada mata kuliah kewarganegaraan). *Jurnal Angkasa*, 7(1), 45-56. Retrieved from http://stta.ac.id/data_lp3m/04.Mei2015_AbdulHaris.pdf
- Sugiyono. (2013). *Metode penelitian kuantitatif, kualitatif, dan r&d*. Bandung: Alfabeta.
- Sulisworo, D. (2014). Pengembangan sistem manajemen pembelajaran kooperatif secara mobile berbasis sistem operasi android. *Indonesian Journal of Curriculum and Educational Technology Studies UNNES*, 2(2). Retrieved from <https://journal.unnes.ac.id/sju/index.php/jktp/article/view/3804>
- Tangkua, M. A., Rahayu, T., & Soegiyanto. (2015). Peran dan kedudukan peserta didik dalam penyelenggaraan mata pelajaran pendidikan jasmani olahraga dan kesehatan (pjok) di sma

- (studi eksploratif mengenai eksistensi pjok dari perspektif peserta didik). *Journal of Physical Education and Sports*, 4(2), 113-121. Retrieved from <https://journal.unnes.ac.id/sju/index.php/jpes/article/view/9879>
- Vázquez-Cano, E. (2014). Mobile distance learning with smartphones and apps in higher education. *Educational Sciences: Theory and Practice*, 14(4), 1505-1520. Retrieved from <https://eric.ed.gov/?id=EJ1045122>
- Woodcock, B., Middleton, A., & Nortcliffe, A. (2012). Considering the smartphone learner: developing innovation to investigate the opportunities for students and their interest. *Student Engagement and Experience Journal*, 1(1), 1-15. <http://shura.shu.ac.uk/5256>