Digital Teaching Material "POJOK": One of The Technology Based Media In Physical Education Learning

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Abtract: *Technological development in the 4.0 digital industry era requires all areas of life, including physical education learning, to move forward. However, physical education learning has not used technology optimally, especially digital teaching materials, due to the limited availability of suitable digital teaching materials for junior high school. Therefore, this research aims to test the feasibility of digital teaching materials of Pojok (Pendidikan Jasmani/Physical Education). The method used is ADDIE method. The instrument used to test the feasibility of this application was a media feasibility questionnaire for the application containing indicators (1) subject matter, (2) additional information, (3) affective considerations, (4) interface, (5) navigation, (6) pedagogy, and (7) resilience. The results showed that the digital teaching materials were feasible with an feasibility level of 80%. In conclusion, the digital teaching materials can be used in junior high school especially for physical education learning specifically on the topic of large ball games.*

Keywords: *Digital Teaching Material; Physical Education; Learning Media*

I. Introduction

Technological developments have entered all aspects of life, as well as the process of physical education (PE) learning. In some developing countries, the use of technology in PE is not new (Chia, 2000). Today, technology has begun to develop in the world of education (Tou, Kee, Koh, Camiré, & Chow, 2019). The use of technology is a form of transformation in the learning process (Henderson, Selwyn, & Aston, 2017). Technology has many benefits for PE learning process if it is applied correctly because the effectiveness a technology depends on its users (Scroll & For, 2012). Moreover, the application of a technology in learning will affect the optimization of the learning process.

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When technology is applied in PE, it is inevitable that the process of learning remains on the students being involved and equipped with movements that can develop their movement skills, healthy life habits, mental strength, and social skills with the aim to foster their physical and psychological growth (Bailey et al., 2009; Solmon, n.d). PE is even capable of transforming a country into a developing country (Kilborn, Lorusso, & Francis, 2016), as PE can grow patriotism (Hermann, 1921). However, it does not rule out the possibility that when PE focuses on psychomotor, physical and psychological, and affective achievements, the role of technology in the learning process can be optimized in various ways (Lambert, 2016).

It is time for technology to be developed and applied in PE learning process, particularly in Indonesia. Thus far, the unoptimal use of technology in PE learning is due to its low availability. As a result, the learning process is not in accordance with technological development (Rithaudin, 2008).

The use of technology in the learning process has to encourage a teacher to choose a technology to facilitate the learning process (Freidhoff, 2008). Technology can transform learning from being in a classroom into learning anywhere and from using hardfile to softfile, and students can learn anywhere and anytime (Muhammad Andri Wicaksono, Sihkabuden, 2004). The benefits of applying technology in the learning process is the increase of interest (Palao, Hastie, Cruz, & Ortega, 2015), student motivation (O'Loughlin, Chróinín, & O'Grady, 2013), and decision-making abilities (Koekoek, van der Mars, van der Kamp, Walinga, & van Hilvoorde, 2018). In the process of learning, technology is able to change, support and improve the rhythm of learning in the younger generation (Julia Sargent, 2017; Sianjina, 2000). Technology eases the learning process especially to facilitate various student learning styles, arouse self-espersion and active learning, and promote a positive attitude in the use of computers. Technology can also be used as a forum to promote knowledge and skills in the process of learning motion (Casey, Goodyear, & Armour, 2017; O'Loughlin et al., 2013). Technology is a tool to increase student appreciation for the application of skills and increase the verbalization of deeper understanding (Tearle & Golder, 2008). There is a high level of enthusiasm in the use of technology (Weir & Connor, 2009). Technology can positively influence student learning. The use of digital video (Weir & Connor, 2009; Koekoek et al., 2018; Casey & Jones, 2011), web (Sciamanna, Harrold, Manocchia, Walker, & Mui, 2005), and computers (Eyre, 2007; Brothen & Wambach, 2000; Springer & Pear, 2008) are the tangible forms of technology implementation in PE learning.

So far, the use of new technology-based learning media is limited to the use of visual media in computers or laptops (Jatmika & Yogyakarta, n.d) and the students are only directed to watch learning videos using them. There have not been many learning facilities especially the use of technology in PE learning. Meanwhile, indirectly, the use of technology can be easily incorporated into the PE curriculum so that the learning process can benefit the students and teachers (Lambert, 2016). However, there has not been any learning media based on Digital Material Teaching in the form of smartphone application with PE learning content that is adapted to the learning materials stated in the basic competencies in each educational unit. The provision and use of learning media based on digital teaching materials of mobile application is not easy. It requires innovation and usage feasibility by students in the learning process. Feasibility of a learning media can be seen from the indicators of (1) subject matter, (2) auxiliary information, (3) affective considerations, (4) interface, (5) navigation, (6) pedagogy, and (7) robustness (Winarno, 2009). Therefore, the digital teaching material POJOK (*Pendidikan Jasmani*/Physical Education) is present as an innovation in technology-based learning media in the form of digital teaching material application. The building process of the application

refers to the seven indicators of feasibility of an application-based learning media. This media is expected to fulfill the needs of technology-based learning media for students in schools to learn PE.

II. Theoretical Review

Physical Education

According to Suherman (2015) and Mahendra (2017), Physical Education (PE) is a process of educating movements that is received and carried out systematically and planned by all students through play, exercises, and physical activities so that they become individuals who have good cognitive, affective and psychomotor abilities. Husdarta and Saputra (2000) stated that one of the scopes of PE is movement building which includes the desire to move, appreciate time, space, and form including feelings of rhythm, recognizing the possibility of movement of self, having confidence in motion and feelings of attitude (kinesthetic), and enriching the ability of making movements. Dacica (2015) revealed that PE is the most important element in the education process that aims to build the physical development, movement, and personality of the youth generation.

In fact, SHAPE America (2015) asserted that PE aims to develop individuals who have physical awareness with knowledge, skills, and confidence to enjoy healthy physical activity for life. Solmon (n.d) revealed that the purpose of PE learning is to enable students to adopt and maintain an active lifestyle to improve the quality of life in the long run. Balan, Marinescu, Ticala, & Shaao (2012) affirmed that involvement in motor activities in PE is one of the main factors in forming a person's personality, this is due to the integration of the way of thinking and behavior that is shown when doing motion activities.

Based on the explanations above, it can be concluded that PE is basically an educational process that emphasizes on the educational process through movement activities that will later equip the learners to have awareness of movement activities to improve the quality of a better life, in terms of physique, movement, and personality.

III. Method

To achieve the research objectives, namely to determine the feasibility of the digital teaching material POJOK (Physical Education), the ADDIE research method used but in this study only the feasibility testing stage is part of the development stage in this method. The data were collected from 40 junior high school students using a feasibility questionnaire of learning media application with 7 feasibility indicators of (1) subject matter, (2) auxiliary information, (3) affective considerations, (4) interface, (5) navigation, (6) pedagogy, and (7) robustness (Ernawati, 2017). The analytical procedures performed were Alpha Testing for reliability of data from an application expert, a multimedia expert, and a PE material expert, and then Beta Testing that was a feasibility test of the use of digital teaching material product POJOK (Pendidikan Jasmani).

IV. Result

A. "POJOK" Teaching Material Display

1. Digital Teaching Material "POJOK (Pendidikan Jasmani)"

POJOK (Pendidikan Jasmani) application was made because of the demand in the era of technology that has become a part of life, as well as in the world of education. It is hoped that POJOK (Pendidikan Jasmani) can make the PE learning process more colorful and attract students to want to learn anytime and anywhere. It is also expected that it can help students gain understanding of the concept of movement. The application can be downloaded and installed by all students, especially junior high school students from the Playstore application for free. The application has sereval features for students to use in the learning process without being detached from the role of teachers who provide input and evaluation of the learning process.

There are several figure in the POJOK (Pendidikan Jasmani) application. First, the login feature which is for users to enter the POJOK (Pendidikan Jasmani) digital learning material application and to use this application as a learning medium. In this first step, students register by entering their e-mail address and student ID number in the REGISTER column.

Figure 1. Login Display

Figure 2. Home Display

Home is the first display that appears after the user logs in to the application. In Home, there are three choices of education units, namely Elementary School, Junior High School, and Senior High School.

Figure 3. Pojok Siswa Display

To facilitate the PE learning process, this application has several features of Pojok Siswa (Student Corner). Pojok Siswa can be used by students to support their PE learning process in each education unit. The learning activities displayed in this feature are adjusted to the curriculum issued and authorized by the Ministry of Education and Culture, and it is hoped that they are all in line with the curriculum applied in Indonesia, especially for PE learning at every level of education. In addition, there is a choice of class or grade in each education unit. Learning modules appears when the user chooses the type of learning activity. The materials included are, for example, large ball games, small ball games, aquatic activities, rhythmic/gymnastic activities, martial arts, and athletic activities. However, the application is still in its first development stage, thus the contents are limited to large ball games and the learning materials are such as specific movement learning for basketball games, volleyball games, and soccer games. Moreover, the contents are only for grade VII junior high school level.

Figure 4. Learning Module Display

Each type of learning activity has several modules. For example, in large ball learning activities there are 12 learning modules starting from the basic movements of passing and dribbling in football and basketball, and the basic motions of passing and servicing in volleyball. The learning modules are packaged in two forms of material display, in written form and in videos.

Figure 5. Learning Achievement Report Display

In the application, there is a display called Laporan Siswa (Student Report) which is intended to report student learning outcomes. After the students completed the learning process, they are required to report the results of the learning process on the Student Report page. In this report, the students are also required to write down difficulties during the learning process and they can upload their own videos or photos during the learning process. The videos or photos and learning difficulties are then sent to their PE teacher and the teacher gives feedback to the students.

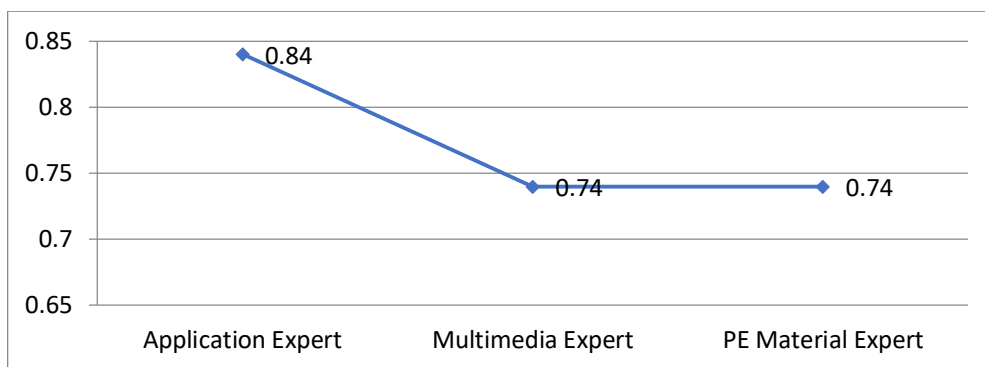**B. Feasibility Application of Digital Teaching Materials "POJOK"**

Figure 6. Results of Expert Test of Digital Teaching Material POJOK (Pendidikan Jasmani)

Figure 6 shows the reliability level of POJOK (Pendidikan Jasmani) conducted by experts of application, multimedia, and PE materials. The level of reliability obtained from the media expert was 0.84, multimedia expert was 0.74, and the PE material expert was 0.74. The scores show a fairly high reliability score, meaning that the application of digital teaching material POJOK (Pendidikan Jasmani) was properly used by students and teachers to support learning especially for large ball learning.
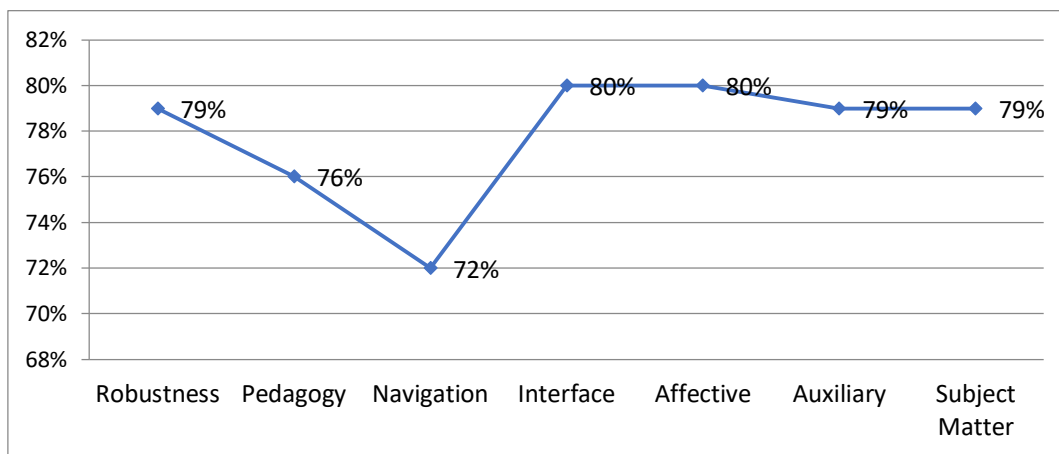
Figure 7. Results of Feasibility Test by Users of POJOK (Pendidikan Jasmani)

The figure shows that the indicators the feasibility of POJOK (Pendidikan Jasmani) has a percentage range of 70-80%. For the robustness indicator, a score of 79% was obtained, meaning that the application has a decent level of product robustness and the users did not find any error when operating the application. The pedagogy aspect gained 76%, which means it has a decent feasibility in terms of pedagogy. The navigation or operational aspects of the application shows a feasibility score of 72%, meaning that the application could be operated easily and did not confuse the students. The application interface shows a percentage 80%, which means that the display of the application has a high or decent feasibility. The affective consideration shows the level of 80% which means that the application was able to grow student motivation. The auxiliary information aspect shows a feasibility level of 79%, meaning that the application has a high feasibility as an additional content or material. As for the aspect of subject matter, it has a feasibility of 79%. This means that the application is feasible to use in terms of content and learning outcomes.

V. Discussion

Current technological developments demand many circles to think about the availability of appropriate learning facilities. A feasible learning medium can help the students to learn movement materials. The ease of the digital teaching materials encourage the learning process that is student-centered (Calderón, Meroño, & MacPhail, 2019). The ease of use of a technology-based media is basically to support PE learning, because the ease of use has an impact on the development of learning curricula (Wasif Nisar, Munir, & Shad, 2011).

This application comes as a tangible manifestation of technological developments in PE. Based on the results of the feasibility assessment, POJOK (Pendidikan Jasmani) has a decent level of feasibility in terms of Subject matter, Auxiliary information, Affective considerations, Interface, Navigation, Pedagogy, and Robustness. This means that the application, based on standardized indicators of application media feasibility, can be used by students to learn movements. This application can also be said as a form of tehnological development in PE learning.

From the aspect of subject matter, this application is focused on the suitability between the materials in the application and the initial purpose of its making, thus the application was made to suit with the level of learners who will use it. Regarding the aspect of auxiliary information, this application elaborates

additional information for students about its use and what students must do in the learning process. Concerning the affective considerations, this digital teaching material helps students explore their abilities and view learning videos. Students can also report their learning achievements and get feedbacks. Moreover, students can learn the same material anywhere and anytime. About the application interface, the applicatin's a display is tailored to the characteristics of the user. The learning videos elaborate of the stages of basic movement in each branch of sports. From the navigation aspect, the application has a simple design starting from the beginning of the entry (Login), during usage, until the process of closing the application so that the students can use it easily. Pedagogically, this application generally describes a learning model based on personalized system of instruction meaning that students are required to have independence and responsibility in the learning process because in the application students can read learning instructions, prepare equipment, and provide learning achievements independently without having to depend entirely on the teacher. For the aspect of robustness, this application is designed so that each student has their own account to maintain confidentiality of learning data and learning achievements. Additionally, the installation process of this application does not require a large internet quota due to its small size.

POJOK (Pendidikan Jasmani) is an application that is designed as simple as possible to serve all students with all their characteristics (Julia Sargent, 2017). The application is packaged so that students can arrange their learning activities from the beginning to the end and they can report their learning activities. Therefore, the packaging was indirectly able to provide intrinsic motivation to students to continue learning wherever and whenever (Scroll & For, 2012; Calderón et al., 2019). This supports the statement that the use of a technology in learning can grow intrinsic motivation starting from the learning atmosphere until the achievement of a learning outcome (Patall, Cooper, & Robinson, 2008).

Using this application, each student is able to learn and prepare for learning independently and even save learning achievement data and the teacher can save the assessment data from the learning process. This is because the application has learning videos, enrichment materials, and learning instructions. Morover, students can provide performance reports, elaborate difficulties when learning, and upload recorded videos which are sent to the teacher. Therefore, with the use of technology, students can be independent learners (Misseyanni, Lytras, Papadopoulou, & Marouli, 2018) and are expected to have responsibilities (Eyre, 2007).

The use of a technology in PE learning can provide a positive attitude and help the learning process for students who have different academic characteristics (Gibbone, Rukavina, & Silverman, 2010). There are many forms of technology that teachers can use in the PE learning process including interactive videos and digital technology (Sun, 2012). This application is equipped with an interactive learning video display in each module presentation. Learning videos can help teachers provide appropriate feedback to students regarding the improvement of their movement skills (Parsloe, 1982).

When technology-based learning is able to create interactive learning, students will quickly get feedback from teachers about the learning process and the data recording process will be easier (Silverman, 1997), teachers and students can directly store learning (Juniu, 2011), and students can have higher interest in learning in the classroom (Palao et al., 2015). In addition, the use of technology in PE learning can provide support and convenience for teachers in the teaching process. Students who experience learning process incorporated with technology show a far more effective improvement in the learning process (Chen, Zhu, Kim, Welk, & Lanningham-Foster, 2015).

VI. Conclusion and Recommendations

The conclusion of this research is that the application of digital teaching materials POJOK (Pendidikan Jasmani) has a high level of feasibility which means that the application is suitable for use by all junior high school students in supporting the learning process of Physical Education, especially in the leaning of large ball topics including football, basketball, and volleyball.

Based on the conclusion, it is recommended that the application of digital teaching materials POJOK (Pendidikan Jasmani) can be chosen as an alternative digital teaching material to support and facilitate PE learning process especially at the junior high school level. Moreover, this application can be included in the PE learning curriculum.

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