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Android Based Learning Media Through Developmentally Appropriate Practice (DAP) Approach to Increase Elementary School Students' Learning Motivation

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Abstract

Students' lack of understanding of the activities and movements in the invasion game material which refers to the learning objectives that are not achieved so that it has an impact on low student learning motivation. This study aims to develop an android-based learning media for elementary school students through the Developmentally Appropriate Practice (DAP) approach. This study is a type of development research (R&D) using the ADDIE development model. Data collection techniques in this study are quantitative data through material validation questionnaires, learning design validation, learning media validation, and determination of validation classification by experts based on the number of answer scores. Data are analyzed and processed descriptively into interval data using a Likert scale. The results obtained are in the form of an android-based learning media through the Developmentally Appropriate Practice (DAP) approach, which can be used as a learning media on material the invasion game of the fourth grade PJOK elementary school invasion game, the results of the feasibility assessment based on material validation with a score of 62 or 88.57%, a learning design validation score of 52 or 86.67%, and a learning media validation score of 69 or 92%. As well as the teacher's assessment as a practitioner of 91.02%. The effectiveness test results showed differences in student learning motivation before and after the implementation of the Android-based learning media through DAP. It was concluded that the android-based learning media that had been developed was declared effective for use in PJOK learning of invansion game material in Elementary Schools. The implication of this research is that the Android-based learning media through this approach can be used as learning media in PJOK learning activities.

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INTRODUCTION

The Merdeka Belajar curriculum, which is currently developing and being used by all schools in Indonesia gradually, actually provides freedom to all parties involved in learning, students are free to choose the desired subjects according to their respective talents and interests (Ramadhan et al., 2024), the learning objectives to be achieved and schools are also given the freedom to determine the contextualized operational curriculum of the education unit, so that the learning applied is in accordance with student learning needs (Aransyah et al., 2023). The concept of learning independence policy is that teachers as educators are able to create a comfortable learning atmosphere and are able to generate enthusiasm for learning so that students do not feel burdened by the material delivered by the teacher. (Yusuf & Arfiansyah, 2021) Teachers are required to be creative and innovative in designing learning. In creating independent learning for students, a teacher must be able to use his creativity in designing learning by using various existing learning methods and media (Ramadhan et al., 2024; Windayanti et al., 2023). The learning process will be interesting and fun if a teacher is able to design learning creatively and innovatively. Teachers can choose learning methods that are suitable for students and use learning media so that students will more easily understand and understand the material being taught (Zahwa & Syafi'i, 2022). By using the right learning methods and media, it will create learning that is fun and not monotonous.

In learning PJOK, motivating students to explore their potential in terms of movement is necessary. Therefore, students must be encouraged to explore their abilities continuously (Hendri, 2020; Kasriman, 2017). This motivation is very much needed by students in carrying out the physical education learning process (Islamy, 2017; Kasriman, 2017). High motivation encourages students to practice diligently and enthusiastically in doing exercises. With high motivation, students can support better learning achievements (Apriansyah et al., 2017; Rahman et al., 2017). Likewise, if students' learning motivation is low, their enthusiasm for learning will decrease, and their learning outcomes will certainly be doubtful. Teachers can do this, especially by providing psychological encouragement related to motivation (Apriansyah et al., 2017; Rahman et al., 2017; Rismiandy et al., 2023).

However, the current problem is that in physical education, sports and health learning activities in elementary schools, teachers often experience obstacles during learning related to physical fitness activities in accordance with learning tools. Previous findings reveal that students' lack of understanding of activities and movements in learning activities has an impact on not achieving learning objectives and low student learning motivation (Arifin, 2023). This is certainly a challenge for teachers in creating effective learning so that learning objectives can be achieved. In carrying out a learning activity, teachers

are also hampered by the equipment available at school, resulting in children only being able to do ordinary game activities with motion activities that are less understood by students, thus causing boredom in children (Ardi & Purwanto, 2021). This boredom results in a lack of motivation and seriousness of children in participating in PJOK learning. The lack of motivation and seriousness of children in participating in learning also has an impact on the PJOK learning process which is less effective and efficient and is not in accordance with the objectives of sports education (sudarsinah, 2021).

Based on these problems, the solution is to use android-based game learning media through a developmentally appropriate practice (DAP) approach to increase learning motivation. The use of learning media in the educational process has become clear evidence of the application of the use of technology that develops from conventional patterns to digitization-based learning patterns (Yang et al., 2020). Learning media is a tool or intermediary used in the process of facilitating teaching and learning activities, with the aim of streamlining communication between teachers and students (Arsyad, 2014). Interesting learning media can increase students' attention and motivation to learn, so that the material presented is easier to understand and remember. In addition, the use of varied media, such as interactive videos, simulations, animations, and technology-based applications, can help students understand abstract concepts more concretely (Mayer, 2014). Effective interaction between teachers, students, and learning media can also create a more dynamic learning atmosphere. Teachers can utilize technology to conduct real-time evaluation, provide quick feedback, and adjust learning strategies according to students' needs (Anderson, 2008). Thus, learning media not only functions as a tool, but also as an important component that can improve the quality of the learning process.

Based on these problems, the solution is to apply a game learning model through a developmentally appropriate practice (DAP) approach to increase learning motivation. Based on the DAP concept, teachers must understand that every child is unique and has different talents, interests, strengths, weaknesses, and experiences (Nurlia et al., 2017; Sihotang, 2022). One of the key components of DAP is the importance of early childhood learning through a child-centered and play-based approach (Bredekamp, 2017; N. C. Dewi, 2019). In addition, playing is a very important activity in developing physical abilities and has value in the game (N. K. Dewi et al., 2018; Noviampura & Watini, 2022). Students need sufficient physical activity to stimulate their growth and development (Anggita et al., 2020; Rocmah & Rezania, 2017). Playing should be done with pleasure so that all fun activities will result in a good learning process for children (Agustini et al., 2016; Yuniati & Rohmadheny, 2020).

Therefore, educators must be able to adapt to this uniqueness. The DAP concept or approach has become a reference in early childhood education programs, and in subsequent developments has been adapted to basic education programs. However, there is no

game learning media through the developmentally appropriate practice (DAP) approach that can explain in detail the characteristics of games that are in accordance with the DAP concept to increase learning motivation. So that game learning media is needed and arranged based on the concept of Developmentally Appropriate Practice (DAP) developed through Android as a learning media for game material in physical education and health subjects. This study aims to develop android-based learning media with a Developmentally Appropriate Practice (DAP) approach to increase the learning motivation of elementary school students.

METHODS

This type of research is development research (Research and Development) the resulting product is android-based PJOK learning media through the DAP approach. The development of this game learning media uses the ADDIE development model (2009). The ADDIE development model consists of 5 development stages, namely (1) Analysis, (2) Design, (3) Development, (4) Implementation, and (5) Evaluation. In the study, two trials were conducted, namely small group trials and effectiveness tests of andoid-based learning media through the DAP approach. The Effectiveness Test in this study used Pre-Experimental Design with One-Group Pretest-Posttest Design and was tested on small-scale and large-scale students.

Participants

The subjects of this study were material experts, learning design experts and media experts, PJOK teachers, and students. In the small group trial using 20-30 students and one PJOK teacher conducted in 7 elementary schools in janapria, Lombok Tengah, NTB. While the effectiveness test involved 1 class of students consisting of 28 students, wich 13 male students and 15 female students and 1 PJOK teacher at one of the different elementary schools, SD Negeri Bile Penanggak, Lombok Tengah.

Sampling Procedures

The selection of schools that became the research site used purposive sampling technique, which is a sample taken intentionally with certain criteria. The selection of trial subjects was based on the criteria of 3 aspects of DAP, which are 1) adjusting to the age of the learners 2) Adjusting the uniqueness of students to the environment and 3) adjusting to the socio-culture of students. In addition, the samples taken were also selected based on the availability of school facilities and infrastructure as well as the availability of adequate educational technology at the school.

Materials and Apparatus

The research instruments in this study include a needs analysis questionnaire, material validation questionnaire, learning media validation questionnaire, teacher assessment questionnaire, and student learning motivation questionnaire.

Procedures

The ADDIE development model consists of 5 development stages, namely (1) Analysis, (2) Design, (3) Development, (4) Implementation, and (5) Evaluation. In this development model, five analyses are carried out, namely needs analysis, student character analysis, goal analysis, material analysis, and educational technology analysis. At the analysis stage, data collection is carried out on problems that occur in the field. At the design stage, the game learning media is designed with Developmentally Appropriate Practice (DAP) and based on the required android specifications. At the development stage, the game learning media is developed with Developmentally Appropriate Practice (DAP) based on the previously developed design and product validity testing by material experts and learning media experts. At the implementation stage, the game learning model is implemented with Developmentally Appropriate Practice (DAP) and practicality testing through teacher assessment questionnaires. The evaluation stage is carried out at each stage to improve the product and at this stage the model effectiveness test is carried out.

In the implementation of the effectiveness test, activities were carried out including 1) pretest to determine learning motivation, 2) implementation of the game learning model and 3) posttest to measure student learning motivation. Observation, interview, and questionnaire techniques were used for data collection. Observations were made by observing the PJOK learning process in class IV, interviews and questionnaires were conducted with PJOK teachers and students concerned to obtain the information needed in the study.

Design or Data Analysis

The technique used to analyze data is descriptive qualitative and quantitative analysis and statistics. Validation data analysis is carried out based on the results of the validation of material experts and media experts. Analysis of teacher assessment data is carried out based on the results of teacher assessment as a practitioner of the learning model. Validation instruments for material experts, learning design experts, learning media experts and teacher assessments use a Likert scale with 5 levels (Widoyoko, 2012).

The pretest and posttest learning motivation questionnaire scores were analyzed based on the pretest (before treatment) and posttest (after treatment) results. The test instrument was tested using the normality test. The normality test in this study uses the Shapiro-Wilk test and can be said to be normal if the significance results are equal to or more than 0.05. Furthermore, to find out whether there is a difference in learning motivation between before treatment and after treatment, calculations are carried out using the Paired Sample T-test. If there is an increasing influence, then t count> t table means the significance result is also> 0.05.

RESULT

The resulting product is in the form of android-based learning media through the DAP approach which is arranged in the form of an android

application, then the application is named *G-Move Aps*. The learning media that has been developed contains the stages of learning as a whole, starting from the planning stage such as learning devices and learning modules, the implementation of learning, field design and learning videos in a clear and detailed manner to evaluation and enrichment. First is the analysis stage. The results of the analysis are (1) Learning that is not in accordance with DAP theory, (2) Students do not understand the activities and movements carried out in learning (3) a monotonous learning process, (4) teacher knowledge about a form of physical fitness activity that refers to a goal in doing an activity is less varied so that it has an impact on monotonous activities, (5) lack of motivation and seriousness of children in participating in PJOK learning (6) monotonous learning media in the form of pictures does not help students in understanding the learning activities to be carried out. In learning based on the concept of DAP, good learning must be adapted to the characteristics of students, the curriculum that is DAP to students must be appropriate or appropriate to the age range of children in their group and pay attention to differences in children's needs, interests, and development levels.

The second is the design stage. The planning or design stage is the most important part of multimedia development because failing to plan means planning to fail (Akbar, at all. 2023). The output or result of this design stage is an android-based game learning media storyboard. Third, development. The development stage is the stage of realizing the storyboard into the form of an android application based on the theory and material that has been designed. In addition, at this stage all learning tools are also developed, including modules and learning images and videos that can be accessed via Android with a minimum version of Android 4.0. The game learning media developed includes several displays: (1) introduction, (2) class selection, (3) semester selection, (4) material selection, (5) game selection, and (6) developer profile display. The display of this game learning media can be seen in Figures 1 to 6.

Fig 1. Introduction

Fig 2. Class Selection

Fig 3. semester selection

Fig 4. material selection

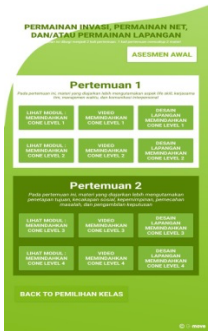

Fig 5. Game selection

Fig 6. developer profile display

The feasibility of Android-based learning media with the DAP approach is obtained through validation by material experts, and learning media experts. Each assessment was carried out twice this is because at the time of the first validation there were still several things in the product that had to be revised. Based on the data analysis of the material validation questionnaire, the material validation results are shown in Table 1.

Table 1. Material Validation Result

Validation	Score	Percentage	Criteria
1	53	75,71%	Good
2	62	88,57%	Verry Good

Based on the data analysis of the media validation questionnaire, the results of the learning design validation are as shown in Table 2.

Table 2. Media Validation Result

Validation	Score	Percentage	Criteria
1	54	72%	Good
2	69	92%	Verry Good

The results of the teacher's assessment based on the practicality test through the teacher's assessment questionnaire, namely getting a score of 91.02% including in the 81%-100% interval with the criteria “very good”. The chart of teacher assessment can be seen in Figure 7.

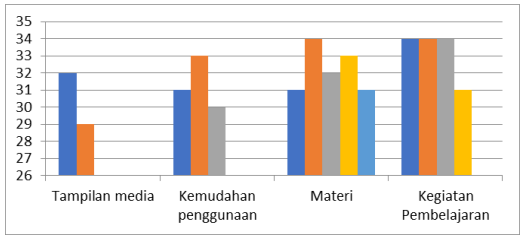

Fig 7. Chart of teacher assessment

In the effectiveness test, the learning motivation questionnaire consisted of 15 statements, 3 of which were negative statements. The questionnaire was distributed before starting learning (pretest) and after learning (posttest). The results of the normality test of the student learning motivation questionnaire can be seen in Table 3.

Table 3. Normality test (Shapiro Wilk)

Test	Sig.	Result
Skor pretest	0.189	Normal
Skor Posttest	0.708	Normal

The normality test results show that the data is normally distributed where the significant value of each data > 0.05. This indicates that the data obtained can be continued to conduct the t-paired test. The results of the t-paired test are shown in Table 4.

Table 4. T-Paired Test Result

Motivation test	t	Sig. (2-tailed)	Result
Skor pretest-skor Posttets	-2.239	0.034	Normal

Based on table 4, it is known that the sig value. (2-tailed) of 0.034. Where the value of 0.034 <0.05, then H_0 is rejected and Ha is accepted. So it can be concluded that there is an average difference between the score of student learning motivation before participating in learning by using game learning media and the score of student learning

motivation after participating in learning by using game learning media, which means that game learning media has an effect in increasing student learning motivation.

DISCUSSION

This study aims to produce android-based PJOK learning media through DAP on valid invasion game material, using ADDIE development. Based on the discussion above, game learning media is theoretically and practically feasible to use in learning physical education, sports and health, and sports and health. This is due to several factors as follows. First, android-based learning media with a Developmentally Appropriate Practice (DAP) approach is suitable for use in learning because it can increase student understanding. The appearance and ease of use of learning media can help in increasing students' understanding of activities and activities carried out in learning (Pranata et al., 2021), the use of android in learning makes it easier for teachers and students to understand learning (Fernando, 2022). The suitability of the DAP approach with game learning steps is very important. The adjustment of the material provided by the teacher must be in accordance with the characteristics of students both in terms of student age, student uniqueness (motor development), and social aspects because these adjustments will have an impact on the learning process followed by students (Aldiansyah, 2020; Gholy et al., 2021). This allows students to be able to participate in learning voluntarily and without coercion so that it becomes an effective, efficient, enjoyable learning activity, and learning objectives can be achieved (Widiastita & Anhusadar, 2020; Wina Dwi Puspitasari, 2018).

Second, android-based learning media with the DAP approach is feasible to use because it can increase student learning motivation. Based on statistical analysis, the game learning model through the DAP approach effectively increases student learning motivation. The game learning model focuses on understanding and fulfilling students' developmental needs (Fithri & Setiawan, 2017; Noviampura & Watini, 2022). the development of game-based learning applications has succeeded in increasing student learning motivation as well as student participation and involvement in the learning process (Setiawati et al., 2024), besides that the application of the game will significantly impact the level of physical fitness of students (Aldiansyah, 2020; Gholy et al., 2021).

Third, android-based learning media through the DAP approach is suitable for use because it can enhance a pleasant learning atmosphere. As one of the main elements, games present a fun and interactive atmosphere, so students can learn while playing (Aldiansyah, 2020; Gholy et al., 2021). The attractive appearance of learning media provides a different learning experience for students (Fadhli, 2016) so that learning using andoid-based learning media can overcome boredom and monotonous learning in a PJOK learning process (Devega & Kom, 2022).

Previous findings show that android-based learning media is an effective learning media in increasing students' learning motivation and learning

outcomes (A. Sari et al., 2023). Android-based learning media creates an interesting learning atmosphere that increases student understanding (P. Sari et al., 2023). This is what creates a more pleasant and less boring learning atmosphere.

The limitation of this study is that this study only tested android-based learning media with the DAP approach to student learning motivation. It is recommended that other studies examine other variables, such as student learning outcomes. This research implies that the learning media for android-based games with the DAP approach developed can be used as a learning media on the material of grade IV elementary school invasion games.

CONCLUSION

Android-based learning media through the Developmentally Appropriate Practice (DAP) approach has been declared theoretically feasible based on the results of material validation and learning media validation. In addition, this model is also practically feasible based on teacher assessment through small group trials in several elementary schools, based on the results of theoretical and practical feasibility of android-based learning media with a Developmentally Appropriate Practice (DAP) approach can be used in learning PJOK in elementary schools. Based on statistical analysis, android-based learning media through the DAP approach effectively increases student learning motivation. It is concluded that android-based learning media through the DAP approach can be used to increase the learning motivation of elementary school students.

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