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Development of Langka Sports Game Application to Increase Physical Activity

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Abstract

Physical activity is something that cannot be separated by human life, especially in the scope of education. Sports become a necessity, in this sport get benefits including to improve, both physical health, mental health (Fauzan, 2021:154) (Fauzan A, 2021: 154) Currently, humans are spoiled by the existence of technology that is increasingly rapid, the existence of technology that is increasingly developing and sophisticated provides facilities that are easily enjoyed by humans. In study aims to develop an application product that can be used to increase physical activity for students. Referring to the development of Borg and Gall, namely research and development research using learning experts and application media experts, learning experts gave an assessment of 93% and learning media experts gave a score of 100% with very good meaning, worth using. This small group trial used 32 respondents and used 16 questions with 79% results, with a good category, worth using, an increase in pulse rate of 22%. The large group trial used three schools with 87% results, an increase in pulse rate of 24%, the conclusion is that the product can increase physical activity. This developed product will be able to be used easily to assist classroom learning in junior high school.

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INTRODUCTION

Physical activity is something that cannot be separated by human life, especially in the scope of education. In physical education taught at school, it is inseparable from pedagogy, this provides benefits to minimize the harm caused by negative experiences, in physical education, especially for students(Aartun, 2022:1) besides that the presence of physical education provides a positive relationship between regular participation in physical education classes and meeting physical activity guidelines among children and adolescents around the world (Uddin, 2020:8). Physical education provides students to encourage physical fitness and provides space and time for participants to move properly and correctly to encourage students to do it effectively (Garciá-Hermoso et al., 2021:2) (Garcia Hermoso, 2020: 2)

The explanation was conveyed by Yusuf (2023:247) explaining that sports are a form of physical activity carried out to encourage fostering and and develop physical, spiritual and social. Physical activity is one of the keys to success in education, this is because with a better degree of fitness of students, students can carry out their daily activities properly.

The same thing is also stated by Rohmah (2021:511) the degree of physical fitness is something that can be said to be important for everyone to have, everyone who has a good degree of fitness will be able to have good health as well, a student is expected to have a good degree of fitness, by having good physical fitness students can carry out learning activities well. Physical fitness is the condition of the body to carry out its daily activities without disturbing bilogical, physical and mental health (Estivaleti,2023:2). Physical activity activities carried out comprehensively with good plans and programs can increase students' physical activity (Setiawan, 2024:156). Physical well-being allows children to be physically active and active children experience normal blood pressure, cholesterol and bone density, emotional and cognitive development, self-esteem, and social interaction skills compared to less active children (Tonge, 2016). Physical Education in schools is an important environment to improve health through participation in physical activity among children and adolescents (Garciá, 2021).

In a study by (Child,2019:1) Child (2019:1) found that more than 80% of school adolescents globally do not complete at least one hour of physical activity per day. By not fulfilling physical activity for learners, it becomes a future threat to the health of these learners. The level of physical activity performed by each person will affect their life and health. The high association of overweight and low levels of physical activity among children has a serious impact on health and early mortality in the future (Muthuri, 2016:14). Research conducted Tremblay, (2014:116) explains that overall the physical activity carried out by many adolescents in this country is quite low, obtained by adolescents from 39 countries in the world, only 15% of adolescents are found to do 60 minutes of physical activity every day. Preteens aged 6-12 years spend 209 minutes per day or 64% of their school time on sedentary activities, while only spending 16 minutes per day 5% on physical activity (de Greeff ,2018:2).

Along with the passage of time, a person's ability to do sports or physical activity is a highlight that needs to be considered. As time goes by, technological developments are increasingly advanced and more sophisticated, there are many innovations and updates regarding tools or technology that have been created. At this time humans are spoiled by the existence of technology that is so rapid, with the presence of technology that is increasingly developing and sophisticated providing a facility that is easily enjoyed by every human being. Activities that originally required a lot of energy and now with the existence of technology can now and easily be avoided (Vasha, 2021:18).

This is due to the pampering of a person to stay silent by focusing on playing smartphones in his daily life. The awareness to do sports is decreasing, with the tendency of students to be more addicted to playing smartphones or online games making students less interested in doing physical activity (Nur, 2022:391).

From the results of interviews conducted with the interviewees explained as follows. An interview conducted with Mr. Mulyo Hartono, S.Pd who is a physical education teacher at Junior Hight School 1 Rembang and also the physical education teacher group leader explained that the physical activity activities carried out by students at school were less attractive, there were many students who when learning physical education preferred to be silent even though the material presented was very interesting. Furthermore, interviews conducted with the basketball extracurricular coach at Junior Hight School 2 Rembang, namely brother Achmad Rizal Lutfhi, said that there are many students who often do not go to physical activity activities in the afternoon at school or extracurricular activities, instead preferring to play online games at home.

The phenomenon that occurs in children today is the diminishing of play activities that involve children's physical activity (Suhartini, 2022). At the end of the preface written about specific issues will be examined at a particular place or context. His wish to the issue based on examination over previous research results that had already been reviewed also in the introduction. It can also come from the real problems that are found. The bottom line, pointed out that the research/study of ter-call important done. If the case is examined carefully/nature comes from field research, the mukakan problem at the venue, corroborated with data and information from observation or early research. It also pointed out the urgency of peneli-tian is done, including theoretical and practical contributions.

Furthermore, an interview conducted by Rokayah, S.Psi, a counseling guidance teacher, stated that she found many students often playing smartphones with the aim of playing online games. Globally, 80% of adolescents are inactive, and many adolescents engage in 2 or more hours of smartphone screen time each day. In this case, the latest global evidence on adolescent physical activity needs to be increased(van Sluijs et al., 2021:429), there needs to be an effort to optimize technology in positive activities.

This study aims to develop a rare sports product that is used to increase students' physical activity. the formulation of the problem in this study is to find out how the development of a rare sports application in increasing students' physical activity. As well as knowing the extent of the effectiveness of the rare sports application to increase the physical activity of students by using the pulse. The application developed is different from other applications, the application has the uniqueness of presenting games in smartphones that are practiced in real life, bringing up a competitive spirit, can be used in the world of education.

METHODS

In the research to be carried out, this research develops a game application that is able to increase physical activity and improve the physical fitness of students. (Cahyo, 2015:73) n his research explains that development research using the theory put forward by Borg and Gall there are several procedures that can be used in developing a product, using research and development development using ten stages in the development research procedure.

In this research conducted using questionnaire instruments that have been made and have been tested for validity and reliability. The instrument that has been tested uses 32 respondents using 16 question items. In this study, the research objects were divided into three groups, namely application media expert validators, competent physical education expert validators in their fields and students. The role of expert validators will assess the products developed, as well as comment and provide input on the products developed. This research also produces two types of data, namely quantitative data, namely by calculating values and qualitative data in the form of comments and input from validators. In collecting data using purposive sampling, namely taking data with the same characteristics and levels or levels. In the research that will be carried out, there is a need for data analysis stages. In this study, quantitative data were analyzed using descriptive quantitative and using a T test using the SPSS application and qualitative data were analyzed using descriptive qualitative. Here are the steps in product development **Figure 1.**

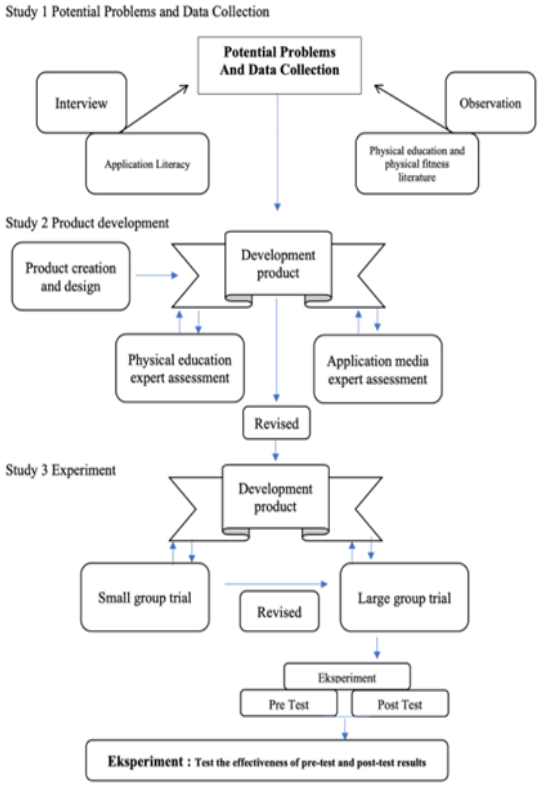

Figure 1. Stages of the product development proces.

RESULTS AND DISCUSSION

The results of the development are as follows. The results of developing an application

called LANGKA SPORT this application uses an application that can be used on an android-based smart phone, this application has the aim of competing towards the finish. To run the character begins by throwing the dice first, and continues with the character's journey on each plot and at each stop of the character there is a challenge that must be completed, if you successfully complete the challenge the player can continue by clicking the success button and if you cannot complete the challenge the player presses the failure button and gets a penalty of two plots backwards. Below is a view of the developed application. The form of material presented is a movement movement to increase physical activity, especially to increase the degree of physical fitness. The elements of physical fitness are strength, explosive power, endurance, balance.

The form of material presented is a movement movement to increase physical activity, especially to increase the degree of physical fitness. The elements of physical fitness are strength, explosive power, endurance, balance.The form of movement in the element of strength is divided into several movement materials. For the element of strength includes the strength of the arm muscles using the psuh up movement, the strength of the abdominal muscles using the sit up movement, the strength of the back muscles using back up. Not only that for the element of explosive power using squat power jump movements. For the element of cardiovascular endurance using Squat thrust and jumping jack, hight knee and mountain climber movements, for muscle endurance using plank movements for the balance element using airplane attitude movements. In its implementation, the movements carried out race the number of repetitions and the amount of time in each movement. to facilitate the use of time this application has been designed using a timer that is accompanied by a button to run the time.

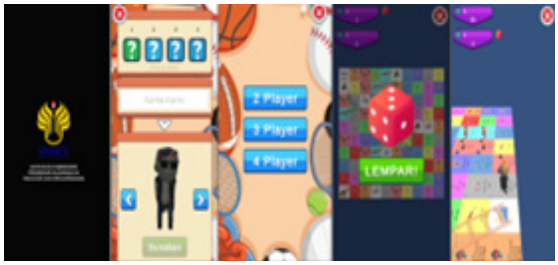

Figure 2. Display of the developed application

The results of the assessment of physical education experts in learning are as follows **Table 1. Table 2. Table 3. Table 4. Table 5. Table 6. Table 7. Table 8. Table 9. Table 10.**

Table 1. Assessment from physical education experts

Indicator	Max Score	Score
Affective Aspects	25	20
Kognitife Aspects	25	25
Motoric Aspects	30	29
Total	80	74
Percentage		93%

From the results **Table 1** listed above with a maximum score of 80 and using three aspects, the total calculation result is 74 with a percentage of 93%.

Table 2. Assessment by application experts

Indicator	Max Score	Score
Physical Aspects	35	35
Usage aspect	15	15
Music,language aspects	20	20
Total	70	70
Percentage		93%

From the results **Table 2** listed above with a maximum score of 70 and using three aspects, the total calculation result is 70 with a percentage of 100%. In the research conducted, to get a good and feasible product, it is necessary to test a small group before being tested on a large group, the results of the small group trial.

Table 3. Small group trial

Indicator	N	Max Score	Score
Physical Aspects	32	640	515
Usage Aspects	32	640	508
Material aspects	32	800	621
Music,language aspects	32	480	385
Total		2560	2029
Percentage			79%

From the results **Table 3** listed above with the overall maximum score of 2560 and using the total of the four aspects, the calculation results with a total of 2029, getting a percentage of 79%.

Table 4. Small group trial pulse

Indicator	N	Pulse
Overall pulse rate before	32	3056
Overall pulse rate after	32	3730
Difference		674
Percentage		22%

Small group trials there was a change in pulse rate increase of 674, showing a percentage of 22%.

Table 5. Large group trial 1

Indicator	N	Max Score	Score
Physical Aspects	32	640	571
Usage Aspects	32	640	573
Material aspects	32	800	730
Music,language aspects	32	480	429
Total		2560	2303
Percentage			79%

From the results **Table 5** listed above with the overall maximum score of 2303 and using the total of the four aspects, the calculation results with a total of 2560, getting a percentage of 90%.

Table 6. Large group trial 1 pulse

Indicator	N	Pulse
Overall pulse rate before	32	2748
Overall pulse rate after	32	3375
Difference		627
Percentage		23%

The pulse rate in the large group trial as a whole amounted to 2748 and after doing the overall pulse rate changed to 3375 with a change in overall improvement of 627, showing a percentage of 23%.

Table 7. Large group trial 2

Indicator	N	Max Score	Score
Physical Aspects	34	680	555
Usage Aspects	34	680	582
Material aspects	34	850	732
Music,language aspects	34	510	416
Total		2720	2288
Percentage			84%

From the results **Table 7** listed above with the overall maximum score of 2288 and using the total of the four aspects, the calculation results with a total of 2720, getting a percentage of 84%.

Table 8. Large group trial 2 pulse

Indicator	N	Pulse
Overall pulse rate before	34	3171
Overall pulse rate after	34	3937
Difference		766
Percentage		24%

The pulse rate of the second large group trial as a whole amounted to 3171 and after doing the overall pulse rate changed to 3937 with a change in overall improvement of 766, showing a percentage of 24%.

Table 9. Large group trial 3

Indicator	N	Max Score	Score
Physical Aspects	32	640	539
Usage Aspects	32	640	556
Material aspects	32	800	721
Music,language aspects	32	480	406
Total		2560	2222
Percentage			87%

From the results **Table 9** listed above with the overall maximum score of 2222 and using the total of the four aspects, the calculation results with a total of 2560, getting a percentage of 87%.

Table 10. Large group trial 3 pulse

Indicator	N	Pulse
Overall pulse rate before	34	2786
Overall pulse rate after	34	3494
Difference		708
Percentage		25%

The results **Table 10** of the third large group trial pulse rate as a whole amounted to 3786 and after doing the overall pulse rate changed to 3494 with a change in overall improvement of 708, showing a percentage of 25%.

From the explanation that has been described above, we can peel more deeply that this developed product is a product that is used to increase physical activity in students, which in this development uses learning experts and application media experts in this case learning experts provide an assessment of 93% and the assessment given by learning media experts is 100%, meaning that seeing from what has been conveyed above the validator or expert who assesses the development of this application shows that this application is classified as very good and suitable for use.

Not only that, after conducting validation by validators who have competence in their fields, it is continued with small-scale trials or small group trials where in this small group trial using 32 respondents and in this small group trial using four aspects, namely physical aspects, aspects of use, aspects of material and aspects of language and music using 16 question items showed in the small group test showed results with a value of

79%, by getting this value it is classified as good and feasible to use, and showed an increase in pulse rate of 22%. To follow up on the small group trial, it was continued with a large group trial using three schools which was 87% and an increase in pulse rate of 24%.

The use of technology in learning can improve student abilities. cognitive, affective, and psychomotor abilities. Media and technology in learning can support learning that can communicate learning content effectively in achieving the desired goals (Taufik, 2025:425). The use of technology in sports education, such as applications, can be a fun way to involve students in the learning process while increasing their interest in sports (Hartati, 2024:111). Hidayat, (2024:78) The utilization of software in information technology has now experienced rapid progress. The advancement of information technology can be utilized for various purposes, one of which is to support sports activities. The use of software is part of the use of technology that can be used as monitoring or coaching for the delivery of material in sports performances or in other fields (Saputro, 2023).

Gamification is an approach used to deliver material by means of games to design effective learning for all participating students(Fernandez-Ri, 2020). By integrating with learning methods, this media can improve critical thinking(Dasilva, 2019).

Research conducted (Schoeppe, 2016:23) describes the use of apps to improve physical activity, and effective behavior in children and adults. The evidence base is large for the use of apps to increase physical activity in adults. Overall, 19 of the 27 studies conducted reported significant improvements in behavior and health related physical activity outcomes. The use of virtual technology designed for physical education has good applicability and effect (Ding, 2020:96065) The use of multimedia has a role worth considering in relation to improving health and education (Ridwan M, 2024). This study reported significant results from this study suggesting that apps can be an effective tool to improve physical activity behavior for health. In the use of applications installed on smart phones, compared to other delivery such as the use of applications has a higher value compared to the use of websites, counseling (Schoeppe, 2016:23). The same thing was conveyed by Pradal-Cano (2020:1) taking 191 articles. After the titles and abstracts were reviewed, the study reported that the application was effective in increasing physical activity and healthy habits to maintain health and fitness. Smartphones have developed rapidly and offer a range of services that are optimal for the field of physical activity and sports education. The aim of this study was to analyze the use of smartphones by 40 Spanish adolescents and assess the level of satisfaction with the applications in physical education subjects in high school. The students confirmed that they were motivated to learn by using Smart phones to improve their knowledge and that the use of applications is an innovative and effective way. With all that, smart phones can be an educational tool that arouses the interest of adolescents and teachers (Vega-Ramírez ,2020:1).

CONCLUSION

From the explanation that has been described above, we can conclude that the research carried out is a research RnD product developed is a product that is used to increase physical activity in students, which in this development uses learning experts and application media experts, besides that it was also tested in the same small and large groups showing that the application developed has a very good category that is suitable for use to increase physical activity in students.

This developed product will later be able to be used easily to help learning in classes in junior high schools. With the presence of this application can provide a new nuance in physical education learning can also be conveyed in the form of games using applications with smartphones.

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