

Development of an Android-based Floor Gymnastic Application as an Alternative Teaching Material for PJOK Mix Learning at SD Negeri 113 Kota Jambi

Fitri Khairunnisa¹, Liza Septa Wilyanti¹, Eko Kuntarto¹, Sofyan¹

¹Universitas Jambi, Jambi, Indonesia

Corresponding author e-mail: fitrihairunnisa4299@gmail.com

Abstract: This study aims to produce a product in the form of an android-based floor exercise application learning at SD Negeri 113 Jambi City. The background of the problem in this study is that some students at school are still not able to do good and correct basic gymnastic movements because some students still do not understand the correct steps of movement so that they experience obstacles in learning. This floor exercise application has been developed accurately, incorporating the latest movements, techniques, and practical, easy-to-use rules in learning. This research was conducted at Public Elementary School 113 with research subjects namely students of SD N 113 Jambi City. The research method used is the ADDIE model development research. The steps of this research start from analysis, design, development, implementation to evaluation. The results of the analysis of the research data show that the percentage score of the product trials carried out is 80% to 90% in the good category so that it can be concluded that this android-based floor gymnastics application product is suitable for use by students and teachers, especially sports.

Keywords: Android, Application, Floor Gymnastic, Mix Learning

A. Introduction

Currently, the parent organization for world-class gymnastics, namely FIG (Federation Internationale de Gymnastique), oversees six numbers of gymnastic disciplines (Sukendro & Lestari, 2023). Among them are Artistic Gymnastics, Rhythmic Gymnastics, Aerobic Gymnastics, Acrobat Gymnastics, Trampoline Gymnastics, and General Gymnastics. In Indonesia, PERSANI (Indonesian Gymnastics Association) has begun to oversee five of the six gymnastics disciplines, especially Aerobic Gymnastics.

Aerobic Gymnastics is the most complex gymnastic discipline, including music, choreography, acrobatics/artistic, and difficulty elements. In a series of choreography there are several difficulty elements and acrobatics, so athletes must know how to set strategies for physical and cardiac endurance in carrying out a

series of choreography. Aerobic gymnastic itself has competition rules that must be obeyed and carried out within the aerobic gymnastic code of points (Kilijanek & Sanchez, 2020).

In Jambi Province, gymnastics is managed by PERSANI (Indonesian Gymnastics Association) in which there are 4 disciplines, including Men's Artistic Gymnastics, Women's Artistic Gymnastics, Rhythmic Gymnastics, and Aerobic Gymnastics. Athletes within the scope of PERSANI Jambi have contributed in the form of achievements to Jambi Province, both at the regional, national and international levels, including winning a bronze medal in the Trio category at the ANAC (Association National Aerobic Championship) event, Phoenix, Arizona US July 2019, medals silver at the 2019 Philipin 2019 Sea Games in the Trio category, PON XX Papua 2021 which awarded silver and bronze medals in the individual men and mixed pair categories. This will be a benchmark for Indonesia in the Aerobic Gymnastics branch to the international arena.

To achieve this achievement there is a match that has a reference in evaluating a performance. The reference is contained in the aerobic gymnastic code of points which consists of rules and assessments (Alves et al., 2015). The Code of Point (COP) is a competition regulation related to aerobic gymnastics (Chayun et al., 2020). In it there are technical matches and rules that must be carried out. The code of point changes every 5 years. These changes were made in order to improve the quality, difficulty and standard of the aerobic gymnastic itself.

In school learning, gymnastic is included in the curriculum with floor gymnastics material (Kurniawan & Tangkudung, 2017). This floor exercise itself can later be learned and trained up to an inter-school competition called O2SN. For elementary school students and students, the O2SN event is a place for them to show their learning and training results at school with their sports teacher. The results of the preliminary observations that the researchers made found that there were students at school who still did not know the whole which caused many mistakes in movements in the learning and training process. This also had an impact on the O2SN competition earlier.

Rapid technological advances are expected to increase the ease of obtaining the expected information. In this study, the authors wanted to modify the floor gymnastic mix learning into an application that can make it easier for users to learn. Writing e-modules in the application is adjusted to good and correct movements in accordance with the rules of national gymnastics. The points contained in the application are several basic floor gymnastic movements such as front roll, back roll, cartwheel, handspring, walk over, back over, and others (Mitchell et al., 2002).

Developmental research is a research method used by researchers in this study. Research and development is a process or steps to develop a new product or perfect an existing product, which can be scientifically justified because the product has been properly tested. Winarno (2011) states that development research is research in the form of developing certain products according to the current needs of society. As for Sugiyono (2010) argues that research and development methods are research methods used to produce certain products, and test the level of effectiveness of these products. Through this research, researchers want to develop products as solutions to problems encountered so that it is hoped that the results of this development research can be useful, feasible to use and can make it easier for school students, especially Jambi Province, to learn and train regarding good and correct floor gymnastic movements.

B. Methods

This study aims to produce a product in the form of a floor exercise application that can be used by elementary school students. This research was conducted in Jambi province with research subjects namely elementary school students from SD Negeri 113 Jambi City. The research method used is the ADDIE model. According to Shelton et al. (2011) the ADDIE model is a generic learning design model that provides an organized process in the development of learning materials that can be used for both traditional learning (face to face in class) and online learning.

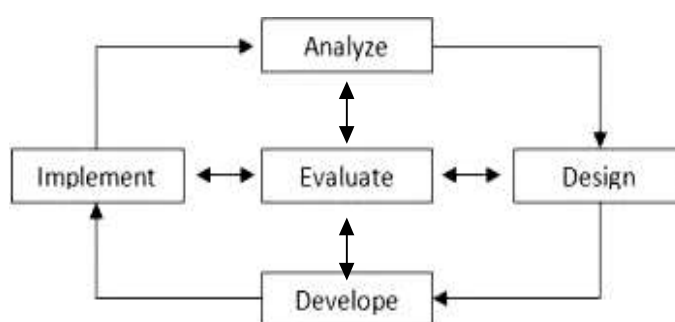


Figure 1. ADDIE Model Research Stages

Peterson (2003) concludes that the ADDIE model is a simple framework that is useful for designing learning where the process can be applied in a variety of settings because of its common structure. The ADDIE development model consists of 5 stages, namely: (1) Needs analysis; (2) Design; (3) Development; (4) Implementation; (5) Evaluation. The data collection instrument for this research was in the form of a questionnaire, namely several questions used to obtain information from respondents for product results. The data analysis technique used in this research is descriptive analysis technique. Descriptive analysis technique is done

with descriptive statistics. The results of the data analysis obtained are then used to revise product development, review products, and provide suggestions for utilization, as well as further product development. The data obtained is described by the percentage formula as follows:

$$\text{Validity Value} = \frac{\text{Score Obtained} \times 100 \%}{\text{Highest Total Score}}$$

C. Results and Discussion

This research aims to produce a product in the form of a floor exercise application. After making the application, the product is ready to be previewed. Preview aims to see whether the product made is as planned. The people involved in this preview are the developers, production team, content experts and media experts. Each of them carried out an assessment and revised the parts where there were deficiencies. The application program that has been produced and previewed is then tested on students at SDN 113 Jambi City. It aims to see the use of products in the learning process. After observing the athlete's questionnaire and input from material and media experts, revisions or improvements were made to the section which have been judged by material and media experts to be unfavorable. However, repairs were only made in a few parts.

The product of this application is in the form of floor gymnastic movements which contain instructions on how to do the right movements. Material expert validation was carried out by a Lecturer in the Department of Sports Education, FKIP, University of Jambi. Material experts provide an assessment of the suitability of the material, the accuracy of the material, the presentation and design of the product. This type of data collection uses a questionnaire containing 10 (ten) questions. The results of the validation by material experts obtained 92% results with very good criteria and the results of validation by media experts obtained 80% results with good criteria. This shows that the product is feasible to proceed to the trial stage.

After the product has been validated by material experts and media experts and has been revised, this application product is tested on students at SDN 113 Jambi City. This trial aims to be able to find out and identify the advantages and disadvantages of the product when used. This trial was carried out by involving fifth grade elementary school students and sports teachers at SDN 113 Jambi City. The results of the application product trials carried out include: This application is considered to have provided information that is easy to understand (88%), The menu on the application is easy to use (92%) Easy application operation (88%), The material content in the application is in accordance with the code of point aerobic gymnastic (92%), Attractive application design (92%), Menu button response speed in the

application (88%), Application convenience (94%), The overall score results obtained as a whole percentage show 91.2% so that it can be concluded that the results have very good criteria.

Based on the results of the development research produced, several advantages were also found from the results of this development research, namely (1) Products in the form of this application make it easier for students and female students to learn the correct floor exercise movements, (2) Facilitate access to find this floor exercise application by download via the Google Play Store, (3) The material in this application is designed and adapted to the rules of national gymnastics. Floor gymnastic movements in the form of a mobile application will make it easier for students to learn the movements, techniques, and rules that have been published for the continuation of learning and practice up to the competition. In addition, it can also be used anytime and anywhere.

D. Conclusion

Based on the results of the study, the researcher concludes that the floor exercise application product which contains good and correct floor exercise movements that have gone through the research and development stages is feasible for use with the advantages of the product including (1) Products in the form of this application make it easier for students to learn the correct floor gymnastic movements, (2) Facilitate access to search for this floor exercise application by downloading it via the Google Play Store, (3) The material in this application is designed and adapted to national gymnastics regulations. Even though the product has several advantages, the product being developed still has limitations, including (1) The product being developed is only intended for floor gymnastics material, (2) The product being developed is in the form of basic movements of floor gymnastics.

Researchers also found that this floor exercise application product is useful for students and sports teachers in getting information quickly with their hands. Students also get convenience in learning and practicing because the products that have been produced can be used by their sports teachers in improving the correct floor exercise technique.

References

- Alves, C. R. R., Borelli, M. T. C., Paineli, V. de S., Azevedo, R. de A., Borelli, C. C. G., Lancha Junior, A. H., Gualano, B., & Artioli, G. G. (2015). Development of a Specific Anaerobic Field Test for Aerobic Gymnastics. *PLOS ONE*, *10*(4), e0123115. <https://doi.org/10.1371/journal.pone.0123115>
- Chayun, D., Kletsov, K., & Manzheley, I. (2020). Acrobatics as a New Trend in

- Aerobic Gymnastics. *Journal of Physical Education and Sport*, 2020(02), 759–767.
- Kilijanek, K., & Sanchez, K. (2020). History and Overview of Gymnastics Disciplines. In *Gymnastics Medicine* (pp. 1–14). Springer International Publishing. https://doi.org/10.1007/978-3-030-26288-4_1
- Kurniawan, A. W., & Tangkudung, J. (2017). Development of Interactive Multimedia-based Gymnastics Floor Techniques Learning Model for Junior High School Students. *Jipes - Journal of Indonesian Physical Education and Sport*, 3(1), 100. <https://doi.org/10.21009/JIPES.031.012>
- Mitchell, D., Davis, B., & Lopez, R. (2002). *Teaching Fundamental Gymnastics Skills*. Human Kinetics.
- Peterson, C. (2003). Bringing ADDIE to Life: Instructional Design at Its Best. *Journal of Education Multimedia and Hypermedia*, 2 (3) hlm. 227-241
- Shelton, K & Saltsman (2011). *Applying the ADDIE Model to Online Instruction*. Dalam *information Resources Management Association*. Instructional Design: Concepts, Methodologies, Tools, and Applications, page 566-581. New York: IGI Global
- Sugiyono. (2010). *Quantitative Qualitative Research Methods and R&D*. Bandung: Alfabeta
- Sukendro, & Lestari, P. A. (2023). Development of Media Applications Based on Cellular Difficulty Element Mandatory Junior Aerobic Gymnastics Persani Jambi. In *Proceedings of the 3rd Progress in Social Science, Humanities and Education Research Symposium (PSSHERS 2021)* (pp. 456–461). Atlantis Press SARL. https://doi.org/10.2991/978-2-494069-33-6_50
- Winarno. (2011). *Research Methodology in Physical Education*. Malang: Media Cakrawala Utama Press