

## Development of Karate Martial Arts Material Heian Nidan Kata in Junior High School through Teacher Book Media and Android Applications



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**ABSTRACT:** This research aims to: 1) produce products in the form of books and android applications that contain the development of karate martial arts material heian nidan kata for junior high school level students. 2) As well as proving the feasibility of book products and android applications containing the development of karate martial arts material kata heian nidan in use as a learning medium. And 3) to prove the effectiveness of book products and android applications produced as the development of karate martial arts material heian nidan kata with the physical education learning process in junior high school. The development of karate martial arts material kata heian nidan is to describe 22 kata movements with a positional point of view which are then packaged in book media and android applications.

This research is research and development or rnd using ADDIE development through 5 stages. The research stages include 1) The first stage of analysis, analysis is carried out on data from pre-research, namely distributing questionnaires to teachers and conducting field observations. 2) The second stage by designing or designing concepts and content to be presented in the product, 3) Development of product design realization activities that have previously been made. 4) Implementation of the application of the product obtaining feedback on the product developed through the validation process of material experts and media experts and 5) the last stage is evaluation by distributing the product to teachers in order to get feedback on the use of the product, so that revisions can be made with the results of the evaluation or the previous unmet needs of the development product. The research subjects in this study were physical education teachers. Research and product dissemination were conducted online through google form. Data were obtained through observation, documentation, questionnaires and interviews. Analysis of the data that has been obtained using quantitative descriptive techniques and qualitative data from the Likert scale conversion results.

The results of the research are the development of karate martial arts material heian nidan kata in the form of book products and android applications. Book products in the form of modules or teacher handbooks and android-based karate applications that can be accessed by teachers and students. The assessment of the material expert on the development of the material carried out and the product is 89% reaching the very feasible category. Media experts on the feasibility of material development reached 80% with a very feasible category. Teacher handbook products and android-based karate applications are categorized as effective products because they are easy to understand, clear, interesting and easy to access with a percentage of effectiveness of 74% which is a product worth using with improvements according to suggestions. The development of heian nidan karate martial arts material in junior high school through book media and android applications is feasible to use in the learning process.

**KEYWORDS:** material development, Heian nidan, book media, android application

### INTRODUCTION

Education is a window to the world, a bridge to life, as well as a way to remove the shackles that allow an individual to improve their quality. Education is an effort to educate the nation's life as stated in the Law of the Republic of Indonesia No. 20 of 2003. The national education system guarantees equal educational opportunities for all Indonesian people. In addition to educating, education also has another goal, namely to increase creativity through school learning which is a forum for formal education distribution.

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The national education system in Indonesia is regulated in curriculum regulations, in the primary and secondary education curriculum must contain physical education (Law No. 20 Year 2003 article 1 paragraph 37). The curriculum is one of the factors supporting the success of education (Winarno, 2012). The curriculum is considered the heart of education. The curriculum is all the potential activities and experiences (content/materials) that have been scientifically organized, whether they occur in the classroom, on school grounds or outside the school under the responsibility of the school to achieve educational goals (Arifin, 2013).

Physical education is a subject that has been regulated in the curriculum, physical education or PE has a strategic position that aims to develop cognitive, affective and psychomotor aspects. Sports activities in PE learning have been regulated in the 2013 curriculum. Rosdiani (2012) states that physical education must include goals in the psychomotor domain, cognitive domain and no less important in the effective domain.

PE movement activities consist of several sports and health materials delivered from elementary to high school. In martial arts physical movement activities, there are two branches of martial arts sports, pencak silat originating from Indonesia and karate outside Indonesia, precisely the country of Japan. These martial arts activities are usually taught at the junior high school and high school levels with basic material, such as stance, punches, parries, kicks and combination movements or series of movements. Martial arts sports can also be trained to improve skills and talents through extracurricular activities provided by schools.

Kolykhalova et al., (2015) "Karate includes a predetermined sequence of movements that can be performed with different qualities, for example, by players at different skill levels (very unskilled)." Kata is a sequence of basic movements that are combined into a single unit that has an order, purpose and goal and has a name from the collection of movements. Karate can be delivered to intermediate level students because they are considered to be able to understand the intent and purpose of being taught martial arts. The delivery of karate material can usually be through printed media such as books and visuals through learning videos that can be accessed via YouTube.

Suherman Ayi (2014) says there are several aspects of teaching planning, teaching implementation and assessment of learning outcomes, one of which is learning media. The selection and use of learning media is intended to help smooth the implementation of sports practice learning. The utilization of learning media in schools is a necessity to help smooth physical education learning. Karate learning text media such as books are not like other PE materials that are summarized in student worksheets or package books, so teachers must look for material to be delivered to students through several sources such as google, youtube and others. Learners can also do the same thing, namely accessing and finding out sources for learning.

Visual media in the form of videos can also be accessed easily through applications on smartphones but this visual media also has its own weaknesses. Sharon et al (2012) visual media have limitations such as being two-dimensional and only displaying one view of an object or scene, requiring hardware such as digital projectors and from an economic point of view it requires a large expenditure, with cheaper prices sometimes not having the ability to meet instructional needs.

The selection of learning media in the 21st century must follow the development of science and technology, namely by building modern learning for students to act as communicators and deliver messages so that learning can run in two directions. The development of ICT-based Physical Education Sports and Health learning media in Junior High Schools has very good results, the research data reflects that the utilization of ICT plays an important role in improving the quality of learning (I Ketut and I Nyoman, 2018).

Teachers as educators need sources as media for learning in accordance with the curriculum and syllabus. Teachers in the 4.0 era or the era of the industrial revolution, their role is irreplaceable by technology, the role of teachers is irreplaceable because it plays an important role in shaping the character of students through ethics education, tolerance and good values, but teachers need to upgrade their teaching methods to make it more fun and interesting. Teachers are expected to improve their competence, one of which is in mastering technology as a learning medium. This is very necessary in the 4.0 era to support learning activities that are interesting effective and efficient.

Teachers also need visual media suitable for the 21st century learning environment in order to engage students in two-way learning. Learning through books and applications media facilitates the interaction process between teachers and students. In the learning process in the 21st century, teachers will be more creative in delivering PE material through applications so as to attract students' interest. Aisyah and Ari (2021) the development of learning media for karate game variations packaged in articulate storyline is stated to have accuracy, attractiveness, suitability, convenience, clarity and effectiveness for use.

The scope of physical education, sports and health in junior high schools according to the regulation of the Minister of National Education of the Republic of Indonesia No. 23, 23-24, concerning graduate competency standards for junior high schools grades

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VII-IX includes (1) Sports and games, (2) Gymnastic activities, (3) Water activities, (4) Fitness activities, (5) Outdoor education, (6) Healthy living culture.

In the Physical Education, Sports and Health subjects taught at the junior high school level include martial arts. Movements that include punches, parries, kicks and stances both in a stationary position / in place as well as moving. These movements will then be delivered by the teacher through book media and android applications to achieve interactive learning. This research will develop karate learning media in accordance with the 2013 curriculum through book media and smartphone applications. Smartphones have become a daily necessity for almost all circles, both adults and students, the ease and convenience obtained in using technology in a concise, easily accessible grip and reaching parts of the world in a grip makes this smart phone also one of the media in lesson development and material development.

Material development as a benefit in terms of learning education makes students or learners more enthusiastic and helps more in the process of transferring knowledge. The application of technology is becoming very familiar in every lesson at school, including physical education, sports and health. The application of technology in physical education learning helps students remember and overcome deficiencies in books. Yuri and Recxy (2018) applied android-based web3D technology as a medium for learning basic martial arts movements. Web3D is an interactive content concept in three-dimensional form that allows internet browsers to create 3D scenes, after being tested on 30 respondents 85% of users agreed on the ease of using 3D martial arts learning media.

Phenomena like this are the background for researchers to conduct development research with the title "Development of Karate Martial Arts Material Kata Heian Nidan at Junior High School Through Media Teacher Books and Android Applications", with the hope that the contribution of teacher books and android applications containing pieces of karate martial arts movement series kata nidan can help develop a creative, effective and enjoyable learning system so that karate martial arts can be interested, liked and known by students, parents and the wider community.

### **METHODS**

This type of research is research and development (R&D). The development model used in this research is the ADDIE development research model, which includes 5 stages including: analysis, design, development, implementation, and evaluations (Sugiyono, 2020). The techniques used to collect data in this study are observation, interview, and questionnaire. Observations were made to collect initial data to obtain the initial product design to be made. Then interviews were conducted with physical education teachers on the products developed and questionnaires were used to find out the opinions of the research subjects on the products or media made. The instrument used consists of an assessment questionnaire for experts (material and media), as well as a questionnaire for use. Data analysis in this study uses quantitative descriptive techniques that describe book media and learning media applications.

### **RESULTS**

#### **1. Initial Product Description**

Before determining the product to be made, the researcher selects the material to be developed and presented in the book and application products. The selection of this material must be in accordance with the latest curriculum, namely the independent curriculum, needs analysis conducted in pre-research, product concepts and materials needed for materials in products in the form of books and applications.

Through the stages of the design, production and material development process, the initial product of the learning module for developing heian nidan kata material was produced. The following is the appearance of the initial product on the learning module for developing kata 1 material before going through the validation process of material experts, media experts and teachers.

#### **2. Final Product Review**

In the early stages of developing karate kata heian nidan material with book media and android applications, researchers made observations and analyzed the actual phenomena that occurred in the learning process, material delivery and available media. This observation and analysis was carried out directly to junior high school PE teachers in several schools and regions.

After obtaining enough pre-research preliminary data, continued with the design and production of how the development of karate kata heian nidan material can be used as a teacher's handbook to be delivered in the learning process and media such as books and android applications were chosen to be a distributor of material development. The development process goes through research and development procedures.

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Through various planning, production and evaluation, then material development products with book media and android applications using software such as Microsoft Word, Corel Draw X4, Adobe Photoshop. After the product is produced in the first stage, it needs to be evaluated by experts through validation. This validation stage is carried out by material experts and media experts, while the research stage of product trials and usage tests is carried out on junior high school PE teachers as potential users of karate material development products kata heian nidan with book media and android applications.

The first stage validation process of material experts and media experts produces data that can be used to revise the initial product. After the initial product is revised, validation is again carried out to material experts and media experts. From media experts, data, suggestions and input are obtained to improve the quality of material development products in the form of book media and android applications. The first validation process is carried out by material experts because the core of the product is the development of karate kata heian nidan material which must be in accordance with the learning process in junior high schools.

The validation stage by material experts and media experts has been completed, the product will continue the product trial stage on users, namely 10 junior high school physical education teachers. The data obtained from the product trial is used as the basis for revising the final product. The quality of product assessment is categorized into not feasible, feasible with revision and feasible without revision. The statement can be proven through the results of the analysis of data from material experts, media experts and users.

There are several things that users think the product has advantages. Among them is the display of images as examples of movement in the product is very clear and detailed so that it is easy to do and imitate. In addition, the product is also easy to learn because there is a development of karate kata heian nidan material per series of movements presented in book products. In addition to book products, there are android applications that are easily accessible, free and safe to download on the play store. This product can allow students to carry out learning activities anywhere, anytime, independently, can use books or applications and is very easy to obtain for use.

For teachers, android application-based products help the learning process to be more varied, students are not bored and contain practice questions whose answer keys can be sent directly to the PE teacher's email so that the product can help whether used with or without face-to-face.

In addition to the advantages exposed above, according to researchers, this product certainly has several weaknesses, including the material presented is quite limited, so you have to upgrade again for the next level. With these shortcomings and weaknesses, the attention and efforts of researchers as material developers in book media and subsequent android applications are carried out better.

### **3. Trial Data**

#### **a. Material Expert Validation Data**

The material expert who became a validator in this study was Prof. Dr. Sugeng Purwanto, M.Pd. he is a lecturer at the Faculty of Sport and Health Sciences UNY who teaches courses in martial arts learning, adaptive PE, inclusion and the basics of PE. Researchers chose him as a material expert because of his competence in his field, namely martial arts and in accordance with the big theme of the research being conducted.

Data collection was obtained by providing the initial product of the module or material development teacher's handbook along with an evaluation sheet in the form of a questionnaire. Researchers and material experts discussed the product that became the final result, some of the things discussed such as an overview of the product cover, an explanation of the development of kata material considering the many schools of karate with their respective characteristics in Indonesia. The suitability of material development with the curriculum and learning level in the Indonesian education system, as well as improvements that researchers must fulfill.

#### **b. Media Expert Validation Data**

The media expert who became a validator in this study was Dr. Ermawan Susanto, M.Pd. he is a lecturer at the Faculty of Sport and Health Sciences UNY who teaches courses in Educational Creativity and Innovation as well as Learning Media in the Postgraduate PE program and Physical Education Character Value Study in the Doctoral program. The reason researchers chose him as a media expert for developing material with teacher handbook media and android-based applications is his competence and experience in the field of learning media.

Data from media experts is obtained with the same stages as material experts, namely researchers attach a teacher's handbook media containing karate material development along with a questionnaire containing display aspects. The questionnaire was given at the same time as submitting the initial product of the learning module being developed.

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### **DISCUSSION**

The product of the research on the development of karate kata heian nidan material for the junior high school level in the form of a material book containing material and a series of movements displayed movements so that it will be easy to learn and convey. The second product is a learning application with an android operating system that can be accessed offline and is free of charge. This product has gone through several systematic stages of ADDIE to become a final product that is ready to use.

The research process begins with observations by researchers of field phenomena and researchers' personal experiences of the lack of teaching material sources and a pandemic that requires the development of more innovative learning media to motivate students. The product of this research is expected to create quality learning that allows students to be actively involved. This is supported in a study of physical education learning in elementary schools in Japan, with the availability of media will make it easier for teachers to carry out learning strategies, the use of appropriate media and learning strategies in physical education will improve student performance (Kaji and Ono, 2021).

Supporting the observations made by the researcher, the researcher then distributed an initial questionnaire to 10 junior high school physical education teachers who would later act as research subjects. This questionnaire was distributed via google form and contained teacher data and knowledge of martial arts physical activities including martial arts which have been included in the curriculum in the flow of learning objectives. Data obtained from distributing questionnaires to teachers is categorized by researchers in a needs analysis which shows that teachers need new media and learning resources to explain karate material.

Based on the data and needs analysis, researchers continued into the product design stage and determined what kind of material development would be displayed in the media. All things considered, researchers chose book media and applications because books and applications will complement the process and strategy of learning physical education.

Researchers chose karate kata heian nidan material because of several things, namely, there is a positive relationship between practicing karate and the five motor skills of students, this was conveyed by Ada and Lily (2017) in a study that showed karate training contributed to improving motor skills among karate beginners in school learning. Learning PE on karate kata heian nidan material with new, interesting and fun media can build student motivation and make it easier for students to introduce basic karate techniques.

Researchers designed book media with guidance from the physical education module, syllabus and curriculum as well as karate material books. The process of preparing the book starts from selecting material, field observations to collect data as material, designing the appearance of the book and compiling components in the android application. The preparation of media by researchers is expected to be well received by teachers and students. Other existing media products developed by Ayu, et al (2022) support researchers to produce products related to karate material. In the development of media, a product is produced in the form of a CD video tutorial of basic pencak silat technique training media that has been used and practiced in direct learning in the field for students.

Book and application products have been completed in the first stage then researchers continue in the validation stage on the material expert first to identify the truth of the material contained in the product. At the material validation stage through 2 stages with the results in the form of data from the material expert evaluation sheet, corrections and input from the material expert then become provisions for researchers to improve the product. The next stage of the researcher goes through the media expert validation stage, the product that has passed the material expert stage is then reviewed by the media expert.

Media experts play a role in validating several things including the appearance of the media, the attractiveness of the media, the suitability of the media for other learning components and the grammar that researchers use in the product. The data from the discussion between researchers and media experts are recorded in the evaluation width and become the basis for improving the product. Based on the data that researchers collect from the results of the evaluation sheets of material experts and media experts, the development of material and book products and android is included in the feasible category with revisions and can be continued at the next stage.

The evaluation stage of the research involved physical education teachers at the junior high school level as research subjects. Entering the 4.0 era certainly requires continuous learning innovation and development, with concrete evidence such as a lot of learning done online, materials are more easily accessed using technology on smart phones. This also encourages teachers to be even more innovative, the distribution of products developed from researchers is carried out online through google form media for evaluation sheets with Likert scale ratings as a determinant of the level of media feasibility, then distributing products through private message conversation media or WhatsApp.

Other martial arts book media products that are ready for practical use in the field such as pencak silat guidebooks with illustrations are also examples of martial arts media development carried out with the intention of achieving learning objectives.

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Pencak silat basic motion guidebook products through illustrated book media involve visual communication design which makes this guidebook in its implementation very suitable for children because it is in a period of growth and development, (Junfekar et al, 2020).

Collecting data on the results of the assessment of the research subjects then guides the researcher as a book compiler to improve the product so that it can be used optimally. The results of the assessment of the research subjects include several aspects including product attractiveness, ease of use of product suitability products, grammar in the product as well as criticism and suggestions from research subjects on media products and applications containing the development of karate material for heian nidan kata.

After passing the evaluation stage from the subject of product research to the final stage, namely implementation, where the product is ready to be used in the field and is considered suitable for use in learning physical education martial arts movement activities karate kata heian nidan.

### CONCLUSIONS

The development of martial arts material on book media and android applications as media that can be used in learning karate martial arts physical education in junior high schools begins with an analysis process, namely conducting pre-research to junior high school physical education teachers who have previously been determined by researchers as research subjects. Analysis is also carried out on internet sources, books and applications. Getting initial data from the analysis to continue to design the material and media to be used, with all the considerations that exist, the word heian nidan was chosen in the teacher's book media and android-based applications.

Next is the realization of the designed product as well as determining the instrument to measure the performance of the media. After the product is finished, the product enters the validation process from material experts, media experts and users, namely junior high school PE teachers. The validation process from material experts and media experts goes through two stages with the aim of maximizing the quality of the product. From the product implementation stage, data or assessments from experts and users are obtained, the data is a reference for evaluation with the ultimate goal of evaluation, namely measuring the achievement of development goals.

Conclusion The assessment of the material expert on the development of the material carried out and the product is 89% reaching the very feasible category. Media experts on the feasibility of material development reached 80% with a very feasible category. Teacher handbook products and android-based karate applications are categorized as effective products because they are easy to understand, clear, interesting and easy to access with a percentage of effectiveness of 74% which is a product worth using with improvements according to suggestions. The development of karate heian nidan martial arts material in junior high school through book media and android applications is feasible to use in the learning process.

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