

## Development of an Android-Based Rhythmicgym Application to Improve Rhythmic Gymnastics Skills of Junior High School Students in Yogyakarta



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### ABSTRACT:

**Aim** of this research aim to develop an Android-based *Rhythmicgym application* to improve the rhythmic gymnastics skills of Yogyakarta City Middle School students.

**Method** of this research use development (R&D). This research procedure adapts the ADDIE development model ( *analysis, design, development, implementation, evaluation*). The research subjects were divided into three groups, namely: (1) three expert lecturers (2) small-scale tests were tested on 36 students and one Physical Education teacher, (3) large-scale tests were tested on 72 students and one Education teacher Physical. Data collection instruments used questionnaires and observation rubrics. The data analysis technique in the validation test uses Aiken V analysis, the feasibility test questionnaire is analyzed using a *Likert scale*

**Results** The results of the material and media instrument validation tests obtained an average Aiken V value of 0.883 and 0.937 respectively with a very high validity category . The results of the instrument reliability test for material and media instruments respectively with *Cronbach's Alpha values* of 0.761 and 0.652 mean that the instrument is declared reliable. The results of small-scale trials on 36 students and one Physical Education teacher showed a percentage of 78% in the appropriate category. The results of a large-scale trial that was tested on 72 students and one Physical Education Teacher showed a percentage of 81% with a very feasible category.

**Conclusion** Based on the research results, it can be concluded that the Android-based *RhythmicGym application* is declared *valid, reliable, feasible, practical and effective* for improving the rhythmic gymnastics skills of Yogyakarta City Middle School students.

**KEYWORDS:** Application RhythmicGym , Skills , Rhythmic Gymnastics

### I. INTRODUCTION

Sports and health physical education is a learning process that provides positive effects such as being skilled in carrying out basic movements in sports, besides being able to provide improvement and development in terms of affective, cognitive and social relations (Fardhany, 2016 ; Setyawan & Dimiyati, 2015). 21st century skills crystallize in four basic skills, namely 4C skills, namely *Creative , Collaborative , Communicative , and Critical Thinking* (critical thinking) (Anggraeni et al, 2023). These four skills provide a strong foundation for the ability to adapt, innovate and solve problems in the era of the fourth generation industrial revolution. One thing that can be a means of connecting in processing 4C skills is learning media. In line with Tafonao (2018, p. 103) learning media is a tool in the teaching and learning process to stimulate the thoughts, feelings, attention and abilities or skills of learners so that they can encourage the learning process. Six categories the basis of media is text , audio, visual, video, engineering (manipulative) ( objects ), and people ( Suryadi , 2020 ,; Daulay & Priono , 2020) .

Physical education sports and health at the level School Intermediate First (SMP) refers to Implementation Independent Learning Curriculum , in frame enhancement fitness physical Skills movement and health participant educate (Kemendikbudristek, 2022) . Elements of movement skills and sub-elements of movement skills in rhythmic activities and elements of movement knowledge in rhythmic movement in phase D. Teachers can develop a flow of learning objectives, learning stages according to the needs and conditions of the school and teachers can adjust the gradation of specific movement skills for class VII, namely movement skills. specifically, class VIII is specific movement variation skills and class IX is specific movement variation and combination skills (Physical & Health, nd). In Phase D, the gradation of movement skills in the movement skill elements of class

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VIII students is variations in specific movement sequences in rhythmic movement activities, namely practicing the results of analysis of variations in movement sequences in rhythmic movement activities. Then, in the Movement Knowledge Element, class VIII students are identifying facts, concepts and procedures for movement skills in rhythmic activities. Specific movements in rhythmic movement activities are specific movements of arm swings and specific movements of foot steps. So in class VIII students will learn the skills of varying arm swings and rhythmic foot steps.

The presence of rhythmic movement activities in the sports and health physical education curriculum is considered by some teachers as burdensome material, this causes PJOK teachers to rarely provide rhythmic exercise material. This is confirmed by research by Kartiningtyas, et al (2018) which states that there are 30.4% who have taught rhythmic gymnastics to their students and 69.6% who have not taught rhythmic gymnastics to their students. This is based on not having supporting learning media, as well as teachers who do not master rhythmic movement material, especially teachers who do not like teaching rhythmic movement (Abdullah & Lubis, 2020 ; Amri- Dardari et al , 2022)

Students as objects in learning rhythmic movement activity material find it difficult to understand rhythmic movement activity material. In line with Azprizal's (2022) literature which states that most students are less enthusiastic and choose game sports rather than learning rhythmic gymnastics, this is shown when given the choice of sports and health physical education subject matter for the following week, the majority prefer game sports material. than rhythmic gymnastics. This is of course a challenge for a teacher to increase students' interest in following rhythmic gymnastics material. The right learning media will really help students' learning processes and outcomes (Muhammad Rusli & Dadang Hermawan, 2017). In line with Basri (2018) stated that the assistance of audio-visual media in learning rhythmic gymnastics has an effect on student learning outcomes. The average score in the pre-cycle was 67.2 (not completed), this was still below the KKM (75), in the first cycle the students' average score increased to 72.25 (not completed), but still below the KKM, and in implementation In cycle II, the average student score has reached 77.77 (completed), which means they have reached the KKM score (75). It can be concluded that the use of learning media makes students motivated and happy (Artanty et al, 2023).

Development research on rhythmic gymnastics/basic rhythmic gymnastics based on Android applications has been carried out by Nuritasari (2022). This research produces products in the form of videos and applications that explain the process for learning exercises to develop a model of the basic elements of rhythmic gymnastics based on an Android application. The resulting product has specifications in the form of pictures, videos and procedures for how to perform the basic elements of rhythmic gymnastics, jumps, turns and balance in accordance with FIG rules. simply. However, this research is still limited in its use only to athletes, and when carrying out the research process, athletes do not immediately master the basic element movements given so it requires time and guidance from the coach for athletes to be able to carry out the movements well and correctly. Therefore, this development research will be adapted to the characteristics and learning outcomes of junior high school students in the form of the Android-based *RhythmicGym application* to improve the rhythmic gymnastics skills of junior high school students. This application will be equipped with history, rhythmic gymnastics material and videos of various types of basic footstep movements and basic arm swing movements in the form of videos, and a competency test in the form of a game making variations of rhythmic gymnastics movements.

## II. METHOD

This research is study development (R&D). In research developed products is Android-based rhythmic gymnastics application to improve the rhythmic gymnastics skills of Yogyakarta City Middle School students . Procedure study adapting the ADDIE development model , namely a development model consisting of of five stages which include analysis , design , development , implementation and evaluation . The research subjects were divided into three groups, namely: (1) three expert lecturers (2) small-scale tests were tested on 36 students and one Physical Education teacher, (3) large-scale tests were tested on 72 students and one Education teacher Physical. Data collection instruments used questionnaires and observation rubrics. The data analysis technique in the validation test uses Aiken V analysis, the feasibility test questionnaire is analyzed using a *Likert scale* .

## III. RESULTS AND DISCUSSION

Development carried out in study This is application *Rhythmicgym* Android based for increase rhythmic gymnastics skills participant Yogyakarta city junior high school student . Expert validation is carried out to determine the suitability of the instrument to guide application development. Researchers asked for expert assistance to assess the initial product development draft, several experts were involved including media experts and material experts. The validation results analyzed using Aiken V analysis are described in the following table:

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Table 1. Results of Aiken V Media Expert Analysis

No	Statement	$\Sigma S$	V	Category
<b>Appearance</b>				
1	The appearance design (attractiveness, format, color combination, menu appearance) is appropriate	10	0.833333	Tall
2	The type and size of the letters are appropriate and attractive to users	12	1	Very high
3	The combination of colors and button sizes in the application is appropriate and harmonious	11	0.916667	Very high
4	The layout composition (title, text, images, navigation) is appropriate	10	0.833333	Very high
5	Illustrations, drawings and photos with the concept of the application are appropriate	12	1	Very high
<b>Audio</b>				
6	The audio used in the application varies	12	1	Very high
7	The audio in the video sounds clear	12	1	Very high
8	Backsound or supporting music in accordance with gymnastics rhythm participant junior high school student	12	1	Very high
<b>Grammar</b>				
9	The delivery style in the application is easy to understand	11	0.916667	Very high
10	The language used is appropriate to the context known to students	12	1	Very high
11	The language used does not contain the use of words or phrases that could give rise to multiple interpretations	11	0.916667	Very high
12	Correct use of punctuation	12	1	Very high
13	Language used in accordance with PUEBI (General Guide to Indonesian Spelling )	12	1	Very high
<b>Programming</b>				
14	Installing the application to the smartphone is easy	10	0.833333	Very high
15	The application size is not too heavy	9	0.75	Tall
16	The application does not take a long time to load	10	0.833333	Very high
<b>Use</b>				
17	Applications on media are in accordance with the goals to be achieved	12	1	Very high
18	The images displayed on the media make it easier for users	12	1	Very high
19	The videos displayed in the application make it easier for users to understand the material	12	1	Very high
20	The application can be used practically	11	0.916667	Very high
<b>Average</b>		<b>11</b>	<b>0.9375</b>	<b>Very high</b>

The Aiken V value is obtained from the sum of the scores from each validator for each item and then calculated using the Aiken V formula. Of the 20 validated items, the category range is in the high to very high category. If conclusions are drawn by averaging the 20 items assessed, the Aiken V value reaches 0.9375, which is included in the very high category. This can be interpreted as meaning that the media instrument is considered valid to be used.

Table 2. Results of Aiken V Material Expert Analysis

No	Statement	$\Sigma S$	V	Category
<b>Suitability of Content/Material</b>				
1	Suitability of material to research objectives	12	1	Very high
2	The material used is integrated with the Independent Middle School Curriculum	11	0.916667	Very high
3	The material covers important aspects of basic rhythmic gymnastics movements	12	1	Very high

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4	The material covers the basic concepts of rhythmic arm swing exercises	12	1	Very high
5	The material covers the basic concepts of rhythmic footstep gymnastics	12	1	Very high
6	The basic movement material for arm swing rhythmic gymnastics is presented in a variety of ways	10	0.833333	Very high
7	Basic movement material for rhythmic gymnastics. The footsteps presented are varied	11	0.916667	Very high
8	The material presented is characteristic of middle school children	10	0.833333	Very high
9	The material is presented from easy to difficult	9	0.75	Tall
<b>Construction</b>				
10	The material discussed is deep enough so that users can understand the material presented	9	0.75	Tall
11	The material presented encourages curiosity	10	0.833333	Very high
12	The characteristics of the material are in accordance with the form of application media being developed	12	1	Very high
13	The material prepared includes a variety of topics and sub-topics in the basic movements of rhythmic gymnastics	11	0.916667	Very high
14	The material presented is in accordance with learning needs	11	0.916667	Very high
<b>Language in Teaching Materials</b>				
15	The systematic presentation of material on application media is effective and comprehensive	12	1	Very high
16	The material presented does not contain the use of words or phrases that could give rise to multiple interpretations	10	0.833333	Very high
17	The use of words is appropriate to the level of understanding of junior high school students	9	0.75	Tall
18	Ease of understanding the words in the material	9	0.75	Tall
19	The language used describes a situation or context that is known to students	10	0.833333	Very high
20	Language used in accordance with PUEBI (General Guide to Indonesian Spelling )	10	0.833333	Very high
<b>Average</b>		<b>10</b>	<b>0.833333</b>	<b>Very high</b>

Based on the table of Aiken V analysis results for material instruments, the Aiken V value is obtained for each item. Of the 20 validated items, the category range is in the high to very high category. If conclusions are drawn by averaging the 20 items assessed, the Aiken V value is 0.83333, which is included in the very high category. This can be interpreted as meaning that the material instrument is considered valid to be used.

**Table 3 . Reliability of *RhythmicGym* Application Media Instruments**

Cronbach's Alpha	N of Items
,652	20

**Table 4. Reliability of Material Instruments**

Cronbach's Alpha	N of Items
,761	20

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Based on the results of the reliability test, it was found that the Cronbach's Alpha values for media instruments and material instruments were respectively 0.652, 0.761. According to Ghazali (2018), Cronbach's Alpha value is acceptable if the value is greater than 0.6. Because the Cronbach's Alpha value in this study for both instruments is more than 0.6, it can be concluded that the material instruments and media instruments are reliable to be used.

### Development Trials Application Android Based *RhythmicGym*

No	Statement	Percentage	Category
1	The appearance design (attractiveness, format, color combination, menu appearance) is appropriate	74%	Worthy
2	The type and size of the letters are appropriate and attractive to users	77%	Worthy
3	The combination of colors and button sizes in the application is appropriate and harmonious	76%	Worthy
4	The layout composition (title, text, images, navigation) is appropriate	76%	Worthy
5	Illustrations, drawings and photos with the concept of the application are appropriate	83%	Very Worth It
6	The audio used in the application varies	77%	Very Worth It
7	The audio in the video sounds clear	84%	Very Worth It
8	Backsound or supporting music in accordance with gymnastics rhythm participant junior high school student	81%	Very Worth It
9	The delivery style in the application is easy to understand	79%	Very Worth It
10	The language used is appropriate to the context known to students	83%	Very Worth It
11	The language used does not contain the use of words or phrases that could give rise to multiple interpretations	81%	Very Worth It
12	Correct use of punctuation	80%	Very Worth It
13	The language used is in accordance with PUEBI (General Guide to Indonesian Spelling)	83%	Very Worth It
14	Installing the application to the smartphone is easy	59%	Decent Enough
15	The application size is not too heavy	70%	Worthy
16	The application does not take a long time to load	68%	Worthy
17	Applications on media are in accordance with the goals to be achieved	79%	Very Worth It
18	The images displayed on the media make it easier for users	81%	Very Worth It
19	The videos displayed in the application make it easier for users to understand the material	82%	Very Worth It
20	The application can be used easily	76%	Worthy
<b>Average</b>		78%	Worthy

The results of the assessments by 36 students and 1 Physical Education teacher on the items assessed were added up, the percentage of achievement calculated, and converted to determine the category. Based on the table of small-scale trial results for the development of the *RhythmicGym application* above, the 20 items assessed for their feasibility were in the feasible to very feasible category. If you look for the average for the 20 items assessed, the product is considered suitable for use with a percentage of 78%.

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Table 6. Results of Large-Scale Trials for Android-Based *RhythmicGym Application Development*

No	Statement	Percentage	Category
1	The appearance design (attractiveness, format, color combination, menu appearance) is appropriate	81%	Very Worth It
2	The type and size of the letters are appropriate and attractive to users	81%	Very Worth It
3	The combination of colors and button sizes in the application is appropriate and harmonious	82%	Very Worth It
4	The layout composition (title, text, images, navigation) is appropriate	81%	Very Worth It
5	Illustrations, drawings and photos with the concept of the application are appropriate	83%	Very Worth It
6	The audio used in the application varies	83%	Very Worth It
7	The audio in the video sounds clear	86%	Very Worth It
8	Backsound or supporting music in accordance with gymnastics rhythm participant junior high school student	84%	Very Worth It
9	The delivery style in the application is easy to understand	84%	Very Worth It
10	The language used is appropriate to the context known to students	83%	Very Worth It
11	The language used does not contain the use of words or phrases that could give rise to multiple interpretations	82%	Very Worth It
12	Correct use of punctuation	82%	Very Worth It
13	The language used is in accordance with PUEBI (General Guide to Indonesian Spelling)	83%	Very Worth It
14	Installing the application to the smartphone is easy	69%	Worthy
15	The application size is not too heavy	76%	Worthy
16	The application does not take a long time to load	74%	Worthy
17	Applications on media are in accordance with the goals to be achieved	84%	Very Worth It
18	The images displayed on the media make it easier for users	84%	Very Worth It
19	The videos displayed in the application make it easier for users to understand the material	84%	Very Worth It
20	The application can be used easily	82%	Very Worth It
<b>Average</b>		81%	Very Worth It

Based on test results scale The magnitude presented in the table above is known as the average for the 20 items assessed eligibility by 72 participants students and 1 PJOK teacher included in very worthy category with percentage 81%. These results have increased from the results of previous trials on a smaller scale, where there was an increase of 4%. This increase shows a good thing that there are improvements that support product quality so that it can be used on a wider scale.

#### IV. CONCLUSION

This research produces a product in the form of an Android application called *RhythmicGym* which aims to improve the rhythmic gymnastics skills of foot steps and arm swings of junior high school students, especially class VIII. This application was developed by taking into account several developments in terms of objectives, samples, methods, procedures and types of activities. This application can be installed and operated on an Android smartphone, equipped with history features, rhythmic gymnastics material, videos of basic foot steps and basic arm swing movements, as well as a competency test in the form of a game making variations of rhythmic gymnastics movements. Thus, the *RhythmicGym application* was developed into a feasible, practical and effective tool in improving rhythmic gymnastics skills for junior high school students in Yogyakarta City.

Based on material and media instrument validation tests, the average Aiken V scores were respectively 0.883 and 0.937 with very high validity categories. Meanwhile, the instrument reliability values for material and media instruments were respectively

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with Cronbach's Alpha values of 0.761 and 0.652. It can be concluded that the instrument prepared is valid and reliable enough to be used. The results of small-scale trials on 36 students and 1 Physical Education Teacher show that the development carried out is suitable for use with a percentage achievement of 78% in the feasible category. Meanwhile, in a large-scale trial which was tested on 72 students and 1 Physical Education Teacher, the percentage was 81% in the very feasible category. The percentage increase of 4% from the previous test shows an improvement in the quality of the media being developed so that the Android-based *RhythmicGym application* is considered very suitable for use in improving the rhythmic gymnastics skills of Yogyakarta City Middle School students.

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