Development of Media Applications Based on Cellular Difficulty Element Mandatory Junior Aerobic Gymnastics Persani Jambi

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Abstract. This study aims to complete the author's undergraduate study at the Faculty of Sports Science, Jambi University and hopes that the author's product can be accepted and used by Persani Jambi athletes. This type of research is Research and Development (R&D) research which has 11 stages until it finally becomes a final product that still requires further revision. During the writer's practice, the writer observes and collects information from what he feels and asks his junior athletes, until the writer finds problems in practicing the difficulty element technique, namely that today's junior athletes, there are still many who do not understand about difficulty elements, especially those that are mandatory. Starting from the correct move to the wrong move to the deduction of points which greatly affects their final score if later during the match. The small and large scale tests in this study were aerobic gymnastic athletes at Persani Jambi. In this study there are also 3 experts who validate and revise the product made by the author.

Keywords: Application Development · Difficulty Element · Aerobic Gymnastics

1 Introduction

Maximum achievement in sports can be done by someone by practicing and through a programmed, structured and systematic training process that is carried out repeatedly. Repetition in technical training in addition to aiming to strengthen and stabilize the technical abilities we have. In addition, sports achievements can not only be applied to the path of achievement, but can also be useful for many audiences, especially in the sport of gymnastics. Gymnastics is a sport that has many benefits for our body. Because at the time of exercise we move all our limbs. Gymnastics has now been recognized in the sports world in Indonesia such as in the PON, POPNAS, National Championships, and has also been included in major international events such as the Sea Games, Asian Games, and even the Olympics.

Currently, the parent organization of world-class gymnastics, namely FIG (Federation Internationale de Gymnastique) oversees six gymnastics discipline numbers. Among them are Artistic Gymnastic, Rhytmic Gymnastic, Aerobic Gymnastic, Acrobat

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Gymnastic, Trampoline Gymnastic, and General Gymnastic. In Indonesia, PERSANI (Indonesian Gymnastics Association) has started to oversee five of the six gymnastics disciplines, especially the Aerobic gymnastic discipline.

Aerobic gymnastics is the most complex gymnastic discipline, including music, choreography, acrobat/artistic, and difficulty elements. In a choreography series, there are several difficulty elements and acrobatic elements, so athletes must know how to manage physical and cardiac endurance strategies in doing a choreography series. Aerobic gymnastics itself has competition rules that must be obeyed and carried out in the code of point aerobic gymnastics in the form of modules. In a series of choreography performances, especially in the junior category (National development, Age Group 1 and Age Group 2), there are mandatory provisions for doing difficulty elements.

Currently, PERSANI Jambi's Aerobic Gymnastics has the most athletes, as well as PERSANI Central Java and East Java. Early training must be carried out so that the seeds of PERSANI Jambi athletes will not lose competitiveness with other provinces. The problem that often occurs is that PERSANI Jambi's junior aerobic gymnastics athletes still do not understand the techniques, especially in the mandatory difficulty elements that must be mastered, causing athletes to still not be able to perform their mandatory difficulty elements perfectly as desired by the code of point aerobic gymnastic. In this research, the researcher want to modify the mandatory aerobic gymnastic difficulty element in the junior category into a media application, in which there is information on what mandatory difficulty elements must be mastered by junior athletes, how to do it, values, and the training process. Because at this time, the use of technology is an increasingly modern advancement in Indonesia, especially in communication tools. Almost all people have an Android-based communication tool in which there are various applications. Technological capabilities will further increase the ease of obtaining information. Therefore, the researcher hope that the results of this development research can be useful, feasible to use and can make it easier for junior aerobic gymnastic athletes to learn and train related to the mandatory difficulty elements.

2 Theoretical Review

2.1 Nature of Development

According to the Law of the Republic of Indonesia Number 18 of 2002 Development is a scientific and technological activity aimed at utilizing proven scientific principles and theories to improve the functions, benefits, and applications of existing science and technology, or to produce new technology. Development generally means a pattern of growth, gradual change (evolution) and gradual change.

In essence, development is an educational effort both formal and non-formal that is carried out consciously, planned, directed, regularly and responsibly in order to introduce, grow, guide, develop a personality basis that is balanced, intact, in harmony, knowledge, skills according to talent, desires and abilities as a provision on their own initiative and literature studies to produce a particular product design, and the second activity is development, namely testing the effectiveness, validity, designs that have been made, so that they become tested products and can be utilized by the wider community.

Research and development methods have been widely used in the fields of Natural Sciences and Engineering and are the spearhead of an industry in producing new products required by the market.

2.2 The Nature of Media

According to Kustandi (2011), the media is an intermediary or messenger from the sender to the recipient of the message. More specifically, the notion of media in the teaching and learning process tends to be defined as graphic, photographic, or electronic tools for capturing, processing, and rearranging visual or verbal information. Meanwhile, according to Susilana (2007), in an effort to use the media as a tool, the media are classified according to their level from the most concrete to the most abstract.

The media is an introductory message that is used to convey learning information. Media can be in the form of people or teachers, electronic devices, print media, audio media, audiovisual media, application media, multimedia and so on. Things that must be considered in choosing learning media are: 1) accuracy with learning objectives, 2) support for lesson content, 3) ease of obtaining media, 4) teacher skills in using it, 5) availability of time to use it, and 6) in accordance with level of thinking of students.

The grouping of elements is as follows:

- Group A, Dynamic Strength, namely the movement of difficulty factors that rely on dynamic muscle strength, such as; push up family, free fall family, one leg family.
- Group B, Static Strength, namely movements that rely on muscle strength statically or at rest; like family support.
- Group C, Jump, Leap, Turn, namely the movement of jumping, twisting and opening both legs in the air.
- Group D, Flexibility, namely movements that prioritize flexibility/body flexibility.

2.3 Components of the Aerobic Gymnastic Race

Matters related to Aerobic gymnastics competitions include categories, ages, music, and fields.

2.3.1 Gymnastics Category

The numbers that are competed in Aerobic gymnastics at the World Championship are Individual Women, Individual Men, Mixed pairs, Trios, Groups, and Team Competitions. While the number of participants from each category are:

a. Individual Women, one female athlete,
b. Individual Men, one male participant,
c. Mixed Pair participants consist of one male athlete and one female athlete,
d. The trios of participants are 3 (three) people consisting of male or female or mixed athletes,
e. Groups of participants include 6 (six) people consisting of male athletes or female athletes or mixed,

f. Team Competition for this category where teams are judged based on the categories of Individual Women, Individual Men, Mixed Pairs, Trios and Groups that they participate in.

2.3.2 Age

The code of point book has provided rules regarding age categories in Aerobic gymnastics competitions, including:

a. National development (ND): Age 9 – 11 Years
b. Age Group 1, Age 12 – 14 Years
c. Age Group 2, Age 15 – 17 Years
d. Senior, Minimum age 18 years old

2.3.3 Music

The length or duration of the music is between 1 minute and 20 seconds to 1 minute and 25 seconds, the music speed is between 150-160 BPM, consisting of a combination of several types of song rhythms, recorded on cassette or other.

2.3.4 Field/Stage

The stage has a length and width of 7 × 7 m for the National development and Age Group 1 categories, 10 × 10 m for the Age Group 2 and Senior categories, with a field line width of 5 cm and an outdoor court of 2 m. The floor is made of wooden floor, which is wood that has a layer that is not too hard so it is not at great risk of bodily injury.

2.3.5 Difficulty Element Mandatory Junior

According to the code of point aerobic gymnastic from FIG (Federation Internationale de Gymnastique), there are several junior categories and difficulty elements that must be done in a choreography series including:

a. National development (ND)
   Mandatory difficulty elements: Push Up, Straddle Support, 1/1 Air turn, Vertical Split.
b. Age Group 1
   Required difficulty elements: Helicopter to Push Up, Straddle Support (max. 1/1 turn), 1/1 turn Tuck Jump, 1/1 Turn to Vertical Split.
c. Age Group 2
   Required difficulty elements: Helicopter to Split/Wenson, Straddle Support (Max. 2/1 turn), Straddle Jump, Illusion to Vertical Split/Free Illusion to Vertical Split.

3 Methodology

3.1 Research Subject

The subjects of this research are experts in the field of sports, media, judging in aerobic gymnastics and aerobic gymnastics experts themselves. In addition, the subject of this study will use several PERSANI Jambi aerobic gymnastics athletes aged 12–16 years (Age Group) as models in the android-based mandatory junior aerobic gymnastic difficulty element application video.

3.2 Data Type

This research and development research data type is qualitative and quantitative data. Qualitative data were obtained from comments and suggestions from the results of product trials of small, large groups and experts descriptively. The quantitative data obtained from the results of the questionnaire or the results of the question questionnaire in the form of numbers.

3.3 Data Collection Instruments

The instrument of data collection in this research is a questionnaire/questionnaire, namely several questions that are used to obtain information from respondents for product results. The questionnaire/questionnaire for this research instrument is attached.

3.4 Data Collection Techniques

The data obtained are data from the implementation of development research. Preliminary research data are in the form of information on the difficulty element contained in the 2016–2020 code of point aerobic gymnastics and some information related to aerobic gymnastic experts, training media and junior aerobic gymnastics athletes.

4 Conclusion

Based on the results of the study, a conclusion can be drawn, namely to produce a junior aerobic gymnastic difficulty element application product. Among them include 3 junior categories which are distinguished according to age level 1) National development aged 9–12 years, 2) Age Group 1 aged 13–15 years and, 3) Age Group 2 aged 16–17 years.

Researchers have carried out the stages of R&D research starting from problems, collecting information, product design, product validation, design improvement, product manufacturing, product testing, product revision I, product 2 trial, product revision 2 and mass products. At the end of this research stage, it can also be concluded that the aerobic gymnastic difficulty element application product has been revised by experts and has been effective as a model for development and use.

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