



The Assessment Instrument Development in Physical Education Learning on Rhythm Gymnastics Materials for Upper Class Elementary School Students in Covid-19 Pandemic Era

Putra Rahmat Kurniawan¹; Agus Kristiyanto²; Slamet Riyadi²

¹Magister Ilmu Keolahragaan, Universitas Sebelas Maret, Surakarta, Indonesia

²Departemen Ilmu Keolahragaan, Program Pascasarjana, Universitas Sebelas Maret Surakarta, Indonesia

E-mail penulis: putrasahmat664@gmail.com

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Abstract

Rhythmic gymnastics is one of the materials taught at the elementary school level, both lower and upper classes with more structured rhythmic activity movements. The purpose of this study is to describe: (1) the testing result of validity and reliability of the assessment instrument in physical education learning in rhythmic gymnastics material for upper-class elementary school students during the of data in this study is upper class students in SD/MI Negeri in Ngadirojo District, Wonogiri Covid-19 pandemic, (2) the results of the instrument effectiveness test assessment in physical education learning on rhythmic gymnastics material for upper-class elementary school students during the Covid-19 Pandemic. The research method used is research and development (R&D). Sources Regency. Data collection techniques using interviews, questionnaires, and documentation. The results of this study are (1) The assessment information system developed using the Rapid Application Development (RAD) method has very high validity for processing grades in elementary schools. Based on the analysis of the validity test data using Aiken's V formula, the result is Content-validity coefficient of 0.83 with very high validity criteria, (2) The effectiveness of grade processing in elementary schools increased after using an assessment information system developed with the Rapid Application Development (RAD) method. Based on the results of the data analysis, the system effectiveness test has a kappa moment of 0.96 with very effective criteria.

Keywords: *Physical Education; Rhythm Gymnastics; R&D*

Introduction

Physical education is a subject that teaches picomotor skills which is taught from elementary to secondary education. Based on Law No. 20 of 2003 concerning the national education system, Physical

Education is an educational process that is conducted consciously and systematically, through physical activities, to obtain physical growth, health, and physical fitness, skills, intelligence, and character development, as well as a harmonious personality in the context of the quality formation Indonesian people based on Pancasila. Physical education can also be interpreted as an educational process through physical activities designed to improve physical fitness, develop motor skills, knowledge and behavior of healthy and active living, sportsmanship, and emotional intelligence. (Cahyati & Suherman, 2019).

Based on the 2013 curriculum, the course of Physical Education are: big ball games, small ball games, athletics, martial arts, physical fitness, floor gymnastics, rhythmic gymnastics, water activities, and health materials. (Cahyati & Suherman, 2019). Rhythmic gymnastics is one of the materials taught at the basic education level, both for lower grades (grades 1,2,3) in the form of basic movement thematic learning, and upper classes (grades 4,5,6) with more structured rhythmic activity movements. Rhythmic gymnastics is a type of gymnastics that emphasizes rhythm in the execution of its movements (Cholik dan Lutan in Suharjana, 2010). Rhythmic gymnastics or rhythmic activities can be used as a tool to develop the orientation of body movements, so that children have elements of multilateral body abilities. The implementation of rhythmic gymnastics in physical education can be made and arranged in such a way that it is not boring (Suharjana, 2010). However, not all physical education teachers in elementary schools are able to teach rhythmic gymnastics well. This is caused by several obstacles, including limited media, the ability to master rhythmic gymnastics material, or the issue that teachers do not like to teach rhythmic gymnastics material.

Many researches on the development of assessment instruments in physical education have been conducted but with different materials and aspects. These studies include standard assessment instruments for learning PJOK class VIII in odd semesters (Aji & Winarno, 2016). In addition, Hendra Puspita's research, 2017, produced a product of physical education learning assessment instruments on baseball material for upper grade elementary school students that has been validated by experts (Puspita & Lismadiana, 2019). The survey research on the level of understanding of physical education teachers on rhythmic activity learning in elementary schools throughout the Tahunan district, Jepara regency, showed that the level of understanding of physical education teachers on rhythmic activities was in the medium category with a percentage of 64.70%, which means that physical education teachers were able to understand, apply, and implement rhythmic activity material in learning at school (Yusuf, 2016).

In March 2020, WHO (World Health Organization) officially declared covid-19 (Corona Virus Disease 2019) as a pandemic with more than 118,000 cases in 110 countries around the world. The number of COVID-19 sufferers in Indonesia continues to increase, so the government issues large-scale social restrictions, including teaching and learning activities that must be conducted online. This was strengthened by the issuance of the 4 ministerial decrees related to the implementation of online learning, especially in the red and orange zone areas, according to data from the national Covid-19 handling task force. This online learning process brings many impacts and adjustments. One of them is in terms of assessment and evaluation. This research and development research will produce a physical education assessment instrument product for standard rhythmic gymnastics which is expected to be used by all elementary school physical education teachers during the covid-19 pandemic.

Method

The research method used is research and development (R&D). Sources of data in this study are upper class students in SD/MI Negeri in Ngadirojo District, Wonogiri Regency. Data collection techniques using interviews, questionnaires, and documentation. Data collection instrument is a tool used to collect data. Because it is a tool, the instrument can be in the form of checklist sheets, interview guidelines, cameras, and others. The three data collection techniques used in this study were observation,

interviews, and documentation. Data analysis techniques are done at the time of data collection and after completion of data collection within a certain period. Activities in data analysis are descriptive tests, validity, and reliability, and effectiveness of research instruments test.

Results and Discussion

In this study, an assessment information system was developed based on Thiagarajan, Semmel and Semmel development research consisting of 4 stages, which are the definition stage, the design stage, the development stage, and the dissemination stage. The data from the research and development stages that have been conducted are as follows:

A. Description of Research Results Phase I: *Define*

In the define stage, the needs are defined in the management of the assessment and collect various information related to the information system to be developed. This is done through literature studies related to the 2013 curriculum assessment and information systems that can increase effectiveness in score processing. Then an analysis is conducted which consists of a front-end analysis, a concept analysis, and a needs analysis. The explanation of each analysis activity is as follows:

1. Front end analysis

The literature study done in the early-late analysis activities in this research and development is described as follows:

a. Assessment Information System Studies

Based on the results of observations and interviews, it was found that in the task of score processing into report cards, all teachers used applications purchased from several different owners. Each application has advantages and disadvantages. The shortcomings of each application have a significant effect on the effectiveness of teacher performance in processing score. Teachers feel less comfortable with the current application. The teacher feels that the value processing process is complicated, time-consuming, energy-consuming, and thought-provoking. Not to mention if there are other class teachers who ask for help to input grades into the application due to their lack of ability in technology skill.

b. Concept Analysis

This analysis aims to determine the specifications and all the information that needs to be displayed in the assessment information system. This step refers to the results of the preliminary-late analysis. Basically, an information system for value processing consists of 3 stages, namely: input, process, and output.

c. System Requirements Analysis

The requirements analysis was conducted referring to the results of the initial and final analysis and concept analysis. The analysis is done on the need for features in the assessment information system that can increase the effectiveness of the score processing task into report cards. Data was collected by conducting literature studies, observations, and questionnaires. The results of observations and analyzes conducted indicate that the applications used by teachers so far have not been able to increase effectiveness in processing grades into report cards.

2. Description of Research Results Phase II: *Design*

The results of the system design at this stage are as follows: based on the designed context diagram, then an assessment information system is developed based on Microsoft Excel and VBA Macro

Excel that works offline. The system was created as a value processing application for PJOK. The menu display is made for each page so that users do not need to go back and forth to the home page.

The stages of the assessment information system developed here are as follows:

a. Input

The input stage in this system consists of: login page, school and class data, principal and teacher data, KKM management, management of spiritual and social attitude values, management of the value of knowledge and skills of lesson content, and management of supporting data such as attendance, extracurricular, achievement, and student conditions. The userface display of each page of the assessment information system on the prototype I developed is as follows:

Login

In this login menu, the user only inputs the name of the teacher and the name of the school, then clicks the logo to enter the system. Before entering the next menu, you will hear the greeting "welcome to the assessment information system for elementary school" from the system. The login menu display of the developed information system is shown in Figure 1



Figure 1 Menu Login

Home

In this home menu the user can manage school data, classes, principals, and teachers. This input menu will determine the next stage, which is the process because in this menu the user should input the class and semester. When the class and semester have been determined or inputted, the system will carry out an identification process to display KI and KD information in accordance with the selected class and semester. At the top, the main menus of this information system are displayed. The goal is that the user can directly select the menu that will be done next without having to go back and forth to the initial menu (home). Display the home menu as shown in Figure 2.



Figure 2. Home

Setting

In this settings menu, the user can manage the KKM for PJOK lesson content. The inputted KKM for the content of the lesson will affect the process of determining the KKM for educational units and the range of score. At the top, the main menu is displayed and the settings menu section, which are general, KI-KD, description of KI 4, will be filled if the class and semester have been selected similar with the KI 4 description page. After that the system will carry out the process as well as other assessments. The display of one part of the settings menu of this information system is shown in Figure 3.



Figure 3 Menu Setting

Student Data

Data input can be directly in the cell or using form facilities by clicking the button. The data entered in this menu will be processed by the system to be identified and displayed on every page that requires data from this menu. The student data menu display is shown in Figure 4.



Figure 4 Menu Student Data

Ki 4

The KI 4 menu consists of several sections to input the value of knowledge and skills from the lesson content. Seen at the top of KI 4 there is a sub menu display, namely PJOK. When class and semester data has been determined and student data has been filled in, the system will automatically identify the required data and will be displayed on the page in question. The NIS column, student name, KD description and KD number will automatically be filled. On this page, the user can input the required value components per KD such as NPH (Daily Assessment Value). According to the assessment guide for elementary schools, the daily assessment of each KD can be done using various techniques. The assessment information system developed here provides flexibility for teachers to choose at least 1 of the three assessment techniques according to KD needs. Other techniques may be left blank and will not affect the final daily score for the intended KD. Figure 4.6 is an example of the display of the skill value management menu (KI 4) for lesson content. To manage the value of the lesson content, the user just selects the wanted page.

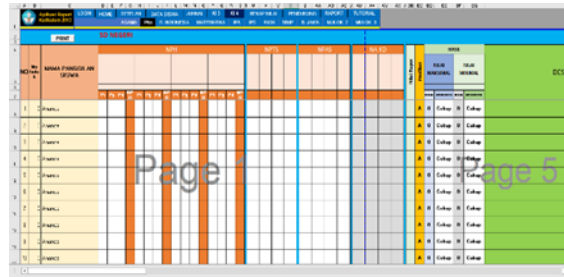
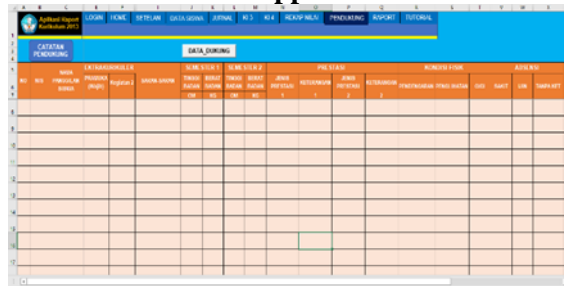


Figure 5 Assesment

Support



Support menu displays as shown in figure 6

In this menu the user can manage student attendance assessment. In addition, the user can also add health notes and advice or motivation for students.

b. Process

The assessment information system developed here has 2 stages of processing, which are data processing and value processing. Data processing occurs when the user selects a class and semester, then the system will identify and display all data related to the need for value processing in class and semester. The selected. The processes that occur on each page are interrelated.

The score processing process occurs when the data has been identified and the user enters a value on the KI 4 page, the system will process the value so that a valid final score is obtained based on the input including supporting data that will complete student assessments for 1 semester.

c. Output

The results of data processing by the system will be displayed on the page as needed, such as KI-KD, description of KI 4 according to the selected class and semester. The results of all inputs in this system will be displayed on the score summary page and report cards consisting of covers and report cards. The cover page consists of 3 parts, which are the front cover of the report card, school data, and student data. The report card page displays quantitative and descriptive score from the results of processing score input for each student.

3. Description of Research Results Phase III: Development

The assessment information system developed is based on Macro Excel through the stages of developing a 4D model and the RAD method. Application of 4D models in accordance with the research from Hasrudy Siregar (2019) who succeeded in developing an information system that facilitates the registration and monitoring of each hajj financial lending. The information system developed is based on Macro Excel (VBA), in addition to saving time and accelerating the equipment required for customer documents, the system is also very flexible and uses a small capacity. Puspita Sari & Muhartini (2017)

which proves that the use of Microsoft Excel application is very helpful in the assessment process correctly. The use of the RAD method is supported by Aswati et al. (2017) which proves that the use of the RAD model is a good alternative in system development because it requires a relatively short time. In addition, the development of information systems with a short time affects the use of economical costs. In RAD there is also user involvement in the requirements planning stage to achieve user satisfaction.

In the research process, it was obtained: 1) system validity test data, 2) the effectiveness of the assessment information system. The data were analyzed to determine whether the developed assessment information system was included in the valid, feasible, and effective criteria for use. In this discussion, it will describe and analyze the result data from the assessment of the developed assessment information system will be discussed. The discussion will focus on the validity, practicality, and effectiveness of the developed assessment information system.

1. Validity Test Results

The validity test data obtained are then analyzed using the Aiken's V formula. Calculations with the Aiken's V formula will produce the Content Validity Coefficient which is the reference for the level of content validity of the system being developed. In this study, it is known that $n = 3$ because it involves 3 raters, which is expert validator 1 is called r_1 , expert validator 2 is called r_2 , and expert practitioner is called r_3 . While $c = 5$ because there are 5 categories that the rater can choose in giving a score, namely 5 = strongly agree, 4 = agree, 3 = quite agree, 2 = disagree, and 1 = strongly disagree. As for $l_0 = 1$, because the lowest score that the rater can choose is 1. According to the validity criteria from Aiken, assessment item 1 has **very high** validity criteria because the V value is in the range of 0.81–1.00. Recapitulation of data from the calculation of the content validity coefficient from the assessment information system developed using the Aiken's V formula.

Based on the calculation results, it is known that the overall assessment information system developed has a very high validity with a final content validity coefficient of 0.87. This figure is obtained from the average content validity coefficient of the three system aspects, namely the input aspect of 0.90, the process aspect of 0.74, and the output aspect of 0.95.

The results of this study are in line with the theory presented by Aiken in Retnawati (2016), which states that the content-validity coefficient is calculated based on the results of research from a panel of n experts on an item in terms of the extent to which the item is measured. According to Guilford in Tomoliyus & Sunardianta (2020) information systems with validity above 0.8 can be said to have very high validity (very good).

2. Effectiveness of Development Result Assessment Information System

Testing the effectiveness of the assessment information system includes 3 criteria, which are the effectiveness of content, process and results. The effectiveness analysis is done by comparing the three criteria of the assessment information system developed with the existing system. Effectiveness test data were obtained from the results of trials conducted by public elementary school PJOK teachers in Selogiri District. An assessment information system is said to be effective if it can help users work more quickly, efficiently, and accurately in processing score into report cards. Analysis of the results of the assessment of the effectiveness of the developed assessment information system is calculated using the kappa moment formula. The magnitude of the kappa moment represents the level of effectiveness of the developed information system. The average calculation of each aspect is as follows:

a. Content Effectiveness

$$\text{Application development } \textit{average} = \frac{0,93+0,85+0,93}{3} = \frac{2,71}{3} = 0,90$$

b. Process Effectiveness

$$\text{Application development } \textit{average} = \frac{0,75+0,93+0,85}{3} = \frac{2,53}{3} = 0,84$$

c. Result Effectiveness

$$\text{Application development } \textit{average} = \frac{0,89+0,75+0,89}{3} = \frac{2,53}{3} = 0,84$$

Referring to the calculation of the average effectiveness of each aspect, the information system developed has an average kappa moment of 0.86. This means that the developed information system has a higher effectiveness in helping teachers process scores into valid and accurate learning outcomes or report cards.

The information system developed in this study is expected to have a higher effectiveness than existing value processing applications. In addition, the target level of effectiveness of the developed information system is expected to reach above 0.8. After calculating the results of the analysis of the results, the effectiveness of the developed information system has exceeded the effectiveness of the previous system. The magnitude of the kappa moment of the developed information system reaches 0.86. This means that the target for achieving the level of effectiveness has also exceeded the expected target.

This result is in accordance with Supardi's opinion in Jtri Legono (2017) which defines effectiveness as an effort to achieve the targets that have been set in accordance with the plan both in the use of data or physical and non-physical means to obtain maximum results both quantitatively and qualitatively. The minimum limit is categorized as effective when the results of the calculation of the minimum effectiveness are above 0.60.

The results of the final calculation of the effectiveness of content, process, and results, each of which shows a score above the set standard. This assessment information system was developed to increase effectiveness in processing scores into learning outcomes reports in the form of report cards. In the design of this assessment information system using a basic application, namely Microsoft Excel which is supported by macro-VBA or better known as macro excel VBA. With macro facilities, the information system is equipped with several automations that provide convenience to the user. This makes the information system developed to be practical, simple, and economical. The addition of the hyperlink feature on each sheet makes users comfortable because they don't have to go back and forth to the main menu to access the wanted sheet. This assessment information system is made in 1 file with a relatively small size. This helps users in score processing activities more efficiently because they only need to access 1 file.

This is in line with Anam's opinion in Yasin & Sari (2020) who stated that the VBA macro feature in Microsoft Excel was able to produce a system design application that was simple and easy to use. The simple appearance and relatively small file size make the developed information system a practical tool to use.

The analysis of all the results towards the assessment information system developed, proves that the system is very valid, very practical, and very effective to be applied in processing values into report cards. Thus, it can be concluded that the 4D model and the RAD method can be used as alternatives in research and development of assessment information systems in elementary schools.

Conclusion

Based on the description of the results and discussion of the assessment information system development that has been done. it can be concluded as follows:

1. The assessment information system developed using the Rapid Application Development (RAD) method has very high validity for processing grades in elementary schools. Based on the analysis of the validity test data using Aiken's V formula, the Content-validity coefficient is 0.83 with very high validity criteria.
2. The effectiveness of value processing in elementary schools increases after using an assessment information system developed using the Rapid Application Development (RAD) method.

Based on the results of the data analysis, the system effectiveness test has a kappa moment of 0.96 with very effective criteria.

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