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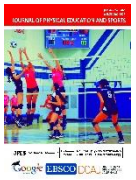

Information Technology-Based Assessment Development Model for Rhythmic Gymnastics Referees in Semarang City

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Abstract

This study aims to produce information technology-based products that can be used as a rhythmic *gymnastics* referee in processing the score of information technology-based rhythmic gymnastics matches in the city of Semarang. This research is research and development. The subject of this research is the rhythmic *gymnastics* referee in the city of Semarang. Data collection is done by interview survey techniques, documentation studies, and observations. The data obtained were analyzed using qualitative methods. This research produces a product in the form of a rhythmic gymnastics competition assessment application, which is a website with the address www.rhythmicgymnasticswimilia.com which can be accessed by rhythmic gymnastics referees using a smartphone or laptop. A validity test conducted by experts produces a value of 95%. This value shows that the information technology-based rhythmic gymnastics assessment model is in the very good category. So it can be concluded that the rhythmic gymnastics assessment model based on information technology can be applied in the evaluation of rhythmic gymnastics competitions.

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INTRODUCTION

Gymnastics is a productive physical activity to optimize children's growth and development. Gymnastics movements are very suitable to fill the physical education program. Its movements stimulate the development of physical fitness components such as strength and muscular endurance from all parts of the body. Besides that, gymnastics also has the potential to develop fundamental movement skills, as an essential foundation for mastering the technical capabilities of a sport (Agus Mahendra, 2003).

Rhythmic gymnastics is a special gymnastics for female athletes that combines aspects of flexibility, strength, speed, accuracy, and beauty that are displayed either freehand (without tools) or by using tools (ropes, hoops, balls, mace, and ribbons) accompanied by music (Soenyoto, 2014).

Based on observations in the field that the supporting equipment for the match is inadequate, therefore to support, and launch during the competition, it is necessary to develop tools that can help the referee during the tournament. Adequate supporting equipment affects the quality of the athlete's performance evaluation when competing (Biasworo, 2009).

This research aims to produce information technology-based products that can be used as a referee's aids in entering, processing score, and delivering score results in rhythmic gymnastics matches quickly, effectively, and efficiently, especially for referees in the city of Semarang. Rhythmic gymnastics assessment is entirely subjective. Then the gymnastics evaluation must be based on clear rules (Mao Hashimoto, Noriyuki Kida, Teruo Nomura, 2017).

The research to be conducted is expected to accelerate the distribution of scores from each referee to the referee coordinator. Moreover, facilitate the application of calculation formulas in rhythmic gymnastics referees in processing scores. Internet-based assessments can reduce operational costs and save time when entering judges' scores when competing (J.A. Benfield and William J. Szlemko, 2006).

Currently, the most commonly found score processing equipment is computers. The score of each referee is distributed to the referee coordinator and then processed using a computer. The referee coordinator enters gymnastics participant scores into the computer one at a time, so it is quite time consuming to produce the final score (Abdul Kadir, 2006).

The formula used is based on the rule that to determine the gymnast's final score, the lowest, and the highest score of several referees is crossed out. Then the mean score is averaged, if there is more than one average score, so the final gymnast score is obtained. Researchers feel the need for innovation in the rhythmic gymnastics assessment process, given the increasingly advanced technological developments. The high science and technology in the field of sports, increasingly improve the quality of games (Dyah Ayuningtyas, 2018).

Therefore, based on the above background, it is necessary to research the development model of information technology-based assessment for rhythmic gymnastics referees in the city of Semarang. Researchers will develop an evaluation of rhythmic gymnastics referees that initially use computers, and they are developed using internet-based technology. The internet is a global computer network connection that connects all computers in the world, even though different machines and operating systems (Melwin, 2005).

METHODS

This research is research and development. Sugiyono (2010) research and development is a research method used to produce specific products, and test the effectiveness of these products. Also, Nana Syaodih Sukmadinata (2008) research and development is a process or steps to develop a new product or improve existing products. The outcome of this research is the information technology-based assessment in rhythmic gymnastics.

Researchers conducted observations and discussions with direct referees about the

grading system in rhythmic gymnastics. One of the problems found by researchers in a field study conducted at PERSANI Semarang is a manual assessment that is circulated through referees' assistants. This is influenced by how the use in the field is still conventional, and minimal renewal in implementation. Thus, resulting in swelling of funds that must be spent by the committee for additional costs of resources needed at the referee's table.

The research subject was the target product users, namely rhythmic gymnastics referees in the city of Semarang. Small-scale trials will be tested on rhythmic gymnastics referees in Wimilia athlete assessments consisting of 15 athletes, and large-scale trials will be tested on rhythmic gymnastics referees during rhythmic gymnastics matches.

Multimedia-based assessment that has been produced, then evaluated. The form of product evaluation is validation. Validation is the stage to determine the feasibility of the product that has been prepared. Expert validation is done by submitting the initial product to the experts to get validation. As for experts who will validate multimedia-based assessments, namely experts in the field of media, which include gymnastics experts, experts in the field of material on assessment, and experts in the field of practitioners including referees and trainers. The results of the assessment and input from experts will be the basis for revising the initial product. After being validated by experts, assessment and multimedia-based can already be used to try out multimedia-based assessments for rhythmic gymnastics.

RESULTS AND DISCUSSION

This development research produced a product in the form of an application based on information technology rhythmic gymnastics competition. The application is in the form of a website with the website address www.rhythmicgymnasticswimilia.com which can be accessed by rhythmic gymnastics referees and can be used in every match.

The appearance of the product has been revised by adding a logo and changing the layout of the menu. The initial display image of the product can be seen in Figure 1.

Figure 1. Display the Initial Product Menu

The rhythmic gymnastics competition assessment application has been equipped with a manual to facilitate the referee in operating it. The cover image of the manual book can be seen in Figure 2.

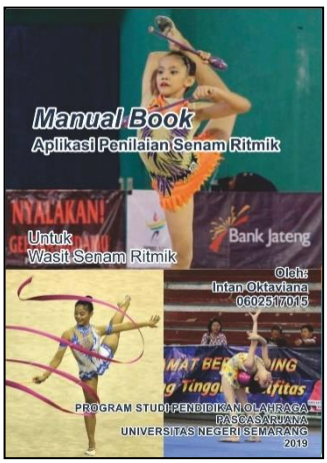

Figure 2. Cover of a Manual Book

Field trials or large-scale trials of the products developed were carried out by five rhythmic gymnastics referees on nine gymnasts. The trial was carried out at the gymnastics gymnastics club Wimilia in Semarang City. The

results of the assessment conducted by five referees using the rhythmic gymnastics assessment application can be seen in Figure 3.

The results of the assessment are the same as the assessments carried out manually using the Microsoft Excel program on the computer. There is a difference in the process of filling in the assessment data. Filling in the score data on the application is done online by each referee while filling data on the computer manually by the referee coordinator. The formula for calculating the final grade in the application is the same as for the assessment formula done manually. The total score given by referees D and E is calculated using the following formula:

$$Final\ score = \left\{\left(\frac{D_1 + D_2}{2}\right) + \left(\frac{D_3 + D_4}{2}\right)\right\} + \left\{10 - \left(\frac{E_1 + E_2}{2}\right) + \left(\frac{E_3 + E_4}{2}\right)\right\} - CJ$$

$$Final\ score = (D_I + D_{II}) + \left(10 - (E_I + E_{II})\right) - CJ$$

$$Final\ score = D + E - CJ$$

Rekap Nilai

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NO	NAMA	DAERAH	D1	D2	D I	D3	D4	D II	D	E1	E2	Rata-rata	E3	E4	Rata-rata	E	CJ	NILAI AKHIR
1	Stephanie Ann Lada	Wimilia	1,50	1,23	1,37	0,40		0,40	1,77	3,20		3,20	3,80		3,80	3,00		4,77
2	Naura Zalfa H	Wimilia	2,10	2,00	2,05	0,60		0,60	2,65	3,20		3,20	3,30		3,30	3,50		6,15
3	Keylla Fadhila	Wimilia	1,50	1,49	1,50	0,80		0,80	2,30	3,00		3,00	2,40		2,40	4,60		6,90
4	Chintya Khairunnisa S	Wimilia	1,40	0,87	1,14	0,60		0,60	1,74	3,50		3,50	5,00		5,00	1,50		3,24
5	Imelda Safitri	wimilia	1,10	0,82	0,96	0,40		0,40	1,36	3,40		3,40	3,90		3,90	2,70		4,06
6	Celine Angelina	Wimilia	0,60	0,74	0,67	0,20		0,20	0,87	3,80		3,80	2,90		2,90	3,30		4,17
7	Farizah Prameytha H	Wimilia	0,30	0,83	0,57	0,20		0,20	0,77	3,80		3,80	3,20		3,20	3,00		3,77
8	Giri Sadesi Cahayani	Wimilia	0,20	0,63	0,42	0,20		0,20	0,62	4,00		4,00	4,30		4,30	1,70		2,32
9	Queenina Permata Gunawan	Wimilia	0,60	0,76	0,68	0,20		0,20	0,88	4,10		4,10	4,50		4,50	1,40		2,28

Figure 3. Recapitulation of Rhythmic Gymnastics Evaluation by Five Referees

The validity of the research data collected is tested to obtain genuinely objective data. Then the validity and reliability of the data obtained through testing activities are classified into qualitative data. Qualitative data in the form of critiques of suggestions presented by competent experts in the field of rhythmic gymnastics and technology, both material experts and media experts. From the results of testing the validity, the value obtained is 95%. This value shows that the information technology-based rhythmic gymnastics assessment model falls into the very good category so that it can be applied in the evaluation of rhythmic gymnastics competitions. After testing is complete, the product of this research is ready to be used by rhythmic gymnastics referees to assist in the assessment process.

CONCLUSION

Rhythmic gymnastics assessment by rhythmic gymnastics referees in the city of Semarang was developed using information technology. The research product in the form of a rhythmic gymnastics assessment application can be accessed by the referee using a smartphone.

The developed product has been tested for validity, validity, and reliability with the results of the validation testing 95. This score is included in the excellent category so that the application can be used in the rhythmic gymnastics assessment process carried out by rhythmic gymnastics referees. The product developed is very useful in helping referees to enter, distribute, and display the rhythmic gymnastics score.

IMPLICATIONS

Not yet available, an export feature from the appraisal recapitulation file into a file with Excel type. So for changing the score data must be connected to the internet because all score data is on the server. The export feature that is supported is to produce a PDF file.

The product cannot be used offline, so it requires an internet connection to operate it. The referee can not do gymnastics assessments if suddenly the internet connection is lost when opening the form to fill in the score or when accessing send a score.

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