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E-Module Development: Frog Jumping Game for Mentawai Inland Tribe Children Based on Local Wisdom

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ABSTRAK

Perkembangan motorik sangat penting dalam tahapan perkembangan anak. Perkembangan motorik anak sesuai dengan karakteristik anak yaitu bermain sehingga diperlukan keterampilan motorik yang baik untuk dapat menunjang aktivitas anak sehari-hari. Penelitian ini bertujuan untuk menganalisis hasil pengembangan e-modul dan kemampuan motorik kasar siswa di Kabupaten Mentawai. Penelitian ini merupakan jenis penelitian pengembangan (R&D). Penelitian ini dikembangkan dengan menggunakan model pengembangan ADDIE. Instrumen yang digunakan adalah angket validasi ahli media, angket validasi ahli materi, angket respon, dan lembar observasi keterampilan motorik siswa. Populasi penelitian ini adalah pelajar di Kabupaten Mentawai yang dipilih dengan teknik purposive sampling. Dalam penelitian ini data dianalisis dengan menggunakan statistik deskriptif (mean, frekuensi, persentase, modus median) dan statistik inferensial (uji asumsi dan uji hipotesis berupa uji dan uji korelasi). Hasil penelitian menunjukkan bahwa modul elektronik yang dihasilkan dikategorikan baik dan terdapat perbedaan hasil motorik kasar siswa di Kabupaten Mentawai sebelum dan sesudah penggunaan e-modul. Hal ini terlihat dari nilai signifikansi yang diperoleh yaitu 0,000 dan 0,030. Kesimpulan yang dapat ditarik adalah pembuatan modul elektronik permainan lompat katak dengan kategori baik berdasarkan hasil validasi ahli media dan validasi ahli materi yang dapat diakses melalui smartphone atau laptop.

ABSTRACT

Motor development is very important in the stages of child development. Children's motor development is in accordance with the characteristics of children, namely playing so that good motor skills are needed to be able to support children's daily activities. This study aims to analyze the results of e-module development and gross motor skills of students in Mentawai district. This research is a type of development research (R&D). This research was developed using the ADDIE development model. The instruments used were media expert validation questionnaires, material expert validation questionnaires, response questionnaires, and student motor skills observation sheets. The population of this study were students at Mentawai district, selected by purposive sampling technique. In this study, the data analyzed by using descriptive statistics (mean, frequency, percentage, median mode) and inferential statistics (assumption tests and hypothesis testing in the form of tests and correlation tests). The results showed that the electronic modules produced were categorized as good and there were differences in the results of the gross motor skills of the students in Mentawai district before and after the use of e-modules. This can be seen from the significance values obtained, namely 0.000 and 0.030. The conclusion that can be drawn is the creation of an electronic module for the frog jump game with a good category based on the results of media expert validation and material expert validation that can be accessed via a smartphone or laptop.

1. INTRODUCTION

Motoric is a translation of the word "motor" which is a biological or mechanical basis that causes a motion to occur, where motion is a reflection of an action based on a motor process (Nofianti, 2020; Primayana, 2020). Motor development is very important in the stages of child development. Children's motor development is in accordance with the characteristics of children, namely playing so that good motor skills are needed to be able to support children's daily activities (Esmaeelzadehazad et al., 2021; Fitria & Rohita, 2019). Motor skills can make a child's body healthier so it is very important to be taught, especially to elementary school students. Through motor skills, children's body development will run well because children are always moving cheerfully and actively (Mahfud & Fahrizqi, 2020; Mahfud & Yuliandra, 2020; Mahmud, 2019). Active children are not only useful for health and ideal body development, they can also teach children to socialize and interact with the environment which is useful for shaping children's character (Mahfud & Yuliandra, 2020; Mahmud, 2019). Children's motor skills can

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be trained throughplay activities. Playing activities or games are a need that is very closely related to children, consciously or unconsciously children will learn many things and in the end what they have done can be achieved. Playing is a natural process that will be carried out by children through their imagination so that children's creativity will be formed (Hardiyanti, 2020; Richard et al., 2020). Children do not need to be told or forbidden to play, but instinctively children will do play activities. Play will grow children to explore, train physical growth and imagination, and provide extensive opportunities to interact with adults and other friends, develop language skills and add words, and make learning very enjoyable (Setiyowati, 2015; Yeni, 2019). Through playing, children can learn real things so that their creativity, imagination, creativity and physical motor skills can develop (McMurray, 2018; Wahyuni & Erdiyanti, 2020). One of the sports games that can be done to improve children's motor skills is the frog jumping movement.

Frog jumping is a jumping motion with two legs forward (Mudian, 2018; Wahyudin, 2018). Frog jumping is also defined as a form of exercise that uses both legs to jump like a frog. The sequence in carrying out the frog jump movement, namely standing relaxed, hands behind the body when making a jump, then squatting with both feet, knees bent and hands in front of knees for balance when jumping (Ichwal et al., 2020; Ikramansyah & Shandi, 2019). Frog jump training if it continues to be given a gradual increase in weight every day or week will have a positive influence on a positive increase in increasing leg muscle explosive power. Jumping frogs can train leg muscle strength which is one of the important elements in achieving maximum jumps, so it needs to be trained regularly and regularly (Ichwal et al., 2020; Sitepu, 2019; Wahyudin, 2018). Therefore, through development and coaching, the game of jumping frogs in sports learning must be taught in schools from the elementary school level as an effort to preserve local wisdom.

Etymologically, local wisdom consists of two words, namely wisdom (wisdom) and local (local). Local wisdom is often known as local knowledge, local wisdom, and local genius (Njatrijani, 2018; Sudarmiani, 2013). Local wisdom is a form of heritage of local customs and culture that has been passed down from generation to generation. Local wisdom is also defined as something that is inherent in certain regional communities which later becomes a hereditary characteristic and has been recognized by the wider community (Amini & Rahman, 2019; Hidayati et al., 2020). One form of local wisdom that needs to be preserved is the local wisdom of rural communities in the Mentawai islands, namely the frog jump game. So this game is very important to be preserved even though it has undergone modernization which can be poured in the form of an electronic module.

Electronic modules (E-Modules) are media in electronic format to present various forms of local wisdom such as games so that they are not lost due to modernization. Electronic modules are designed systematically with a display that is designed to be attractive to readers/users (Hadianto & Festiyed, 2020; Imansari & Sunaryantiningsih, 2017). So that this electronic module is the right solution to preserve the local cultural wisdom of the Inland community in the Mentawai Islands so that it does not disappear. Thus this electronic module can be used in learning such as physical learning. Previous research that is relevant to this research has been carried out by in a village in the interior of the Mentawai Islands, this study concluded that the basic movement skills of the children in the remote village were very good (Hermanto & Komaini, 2019). The results of the children's excellent motor skills were obtained because of high movement activities, such as raising livestock, gathering, hunting, making poison and catching fish. This activity has become part of the daily life of the Mentawai tribal children. The problem is that the Mentawai community will be prepared to become a modern society, this is emphasized by the construction of a lot of housing and roads as access for the community, of course in general this is a good thing for the Mentawai people, but if you look more carefully it is always there are consequences of the modernization carried out.

Therefore this research is important to do to anticipate the movement skills of Mentawai inland children who are already good in order to survive despite modernization. This frog jumping game is one of the games based on local wisdom for children in the Mentawai hinterland that researchers will translate into an electronic module. In electronic module products, the game will be displayed in the form of pictures and an explanation of the game steps being carried out. With this module, it is hoped that local wisdom in the form of frog jumping games can remain sustainable and not eroded by the times. The novelty of this research is more directed at the local wisdom of the frog jump game which is outlined in the form of an electronic module so that it can be easier to use in a modern way. Based on the explanation given above, the researchers conducted this study with the aim to analyze results of the development of the frog jumping game e-module for children in the interior of Mentawai. Then to find out the gross motor skills of students at SDN 2 Matotonan and SDN 10 Mara, Mentawai District. And finally, this study aims to analyze the relationship between response and gross motor skills of students at SDN 2 Matotonan and SDN 10 Mara, Mentawai District.

2. METHODS

This research is a research development (R&D) of traditional game e-module jumping frog. In this development research, the development model used is the ADDIE model. The ADDIE model is a development model that is suitable for product development in education (W. D. Putri & Rukun, 2019; Wibawa, 2017). The instruments used in this study were media expert validation questionnaires, material expert validation questionnaires, response questionnaires, and student motor skills observation sheets. The media expert validation questionnaire using statement of 15 items using a Likert scale with 4 scales, while the material expert validation with 18 statements. The grid from the media expert validation questionnaire for the developed e-module can be seen in Table 1.

Table 1. Grid of Media Expert Validation Questionnaires

Aspect	Question Number
Contents of e-module and language	1,2,3,4,5,6,7
e-module design	8,9,10,11,12
Purpose of making e-module	13,14,15

After the validation of the media expert, then the validation of the material expert was carried out with the grid which can be seen in Table 2.

Table 2. Material Expert Validation Questionnaire

Aspect	Question Number
Theory	1,2,3,4,5,6
Learning	7,8,9,10,11,12,13,14,15
language	16,17,18

After that, data was collected through student responses to the developed e-module. The student response questionnaire to the e-module using a Likert scale. The grid of student response questionnaires can be seen in Table 3.

Table 3. Grid of Student Response Questionnaires

Aspect	Question Number
Fill in the e-module and discuss	1,2,3,4,5,6,7,8,9
e-module design	10,11
Purpose of making e-module	12

Then the students' gross motor skills were observed with a total of 10 statements which can be seen in Table 4.

Table 4. Grid of Students' Gross Motor Skills Observation Sheets

Indicator	Question Number
Prefix	1,2,3,4
Reject	5,6,7,8
While Floating in the Air	9,10,11,12
Land	13,14,15,16

The categorization of the Likert scale to see the categories of expert validation, student responses, and student gross motoric ability observation sheets can be seen in Table 5.

Table 5. Categories of Expert Validation, Student Responses, and Student Motor Skills

Range	Category
1.00-1.75	Very invalid/very bad
1.76-2.50	Invalid/not good
2.51-3.25	Valid/good
3.26-4.00	Very valid/very good

The population of this study were students at SDN 2 Matotonan and SDN 10 Mara, Mentawai district. The sampling technique was using purposive sampling technique. Purposive sampling technique is a sampling technique by determining the criteria of the sample (Fitriani et al., 2020; Tanti et al., 2022). From the purposive sampling technique, the criteria for the sample are that students have studied the material on leg muscle strength. From the predetermined criteria, a sample of 50 students was obtained. In this study the data will be analyzed quantitatively. Quantitative data were obtained through media expert validation, material expert validation, student responses, and student gross motor skills observation sheets using descriptive statistics and inferential statistics. Descriptive statistics are statistics that will explain data in the form of mean, median, mode, and percentage (Fitriani et al., 2021). After performing the descriptive statistical test, the mean results will be matched into the category table according to Table 5. Then, before the inferential test is carried out, normality, homogeneity, and linearity tests are needed to meet the prerequisite tests. After the data is said to be normal, homogeneous and linear, an inferential test can be carried out where in this study the t test and correlation test were carried out. The stages in this research can be seen in Figure 1.

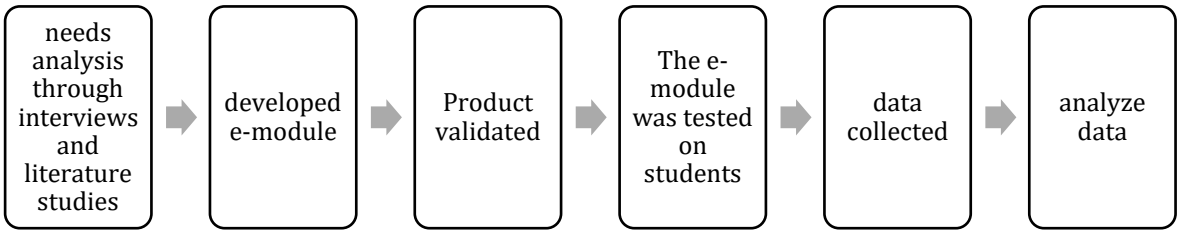

Figure 1. Stages of Research on the Development of the Jumping Frog E-Module

3. RESULT AND DISCUSSION

Results

Based on the results of the initial analysis, it is known that it is necessary to develop an e-module for the frog jumping game to preserve the local wisdom of rural communities in the Mentawai village. At the time of observing the gross motor skills of students, it was known that students' gross motor skills were in the bad category with the results which can be seen in Table 6.

Table 6. Descriptive Results of Students' Gross Motor Skills Before Using E-Modules

Variable	Range	F	%	Category	mean	median	Mode
Gross motor skills	1.00-1.75	-	-	Not very good	2.42	2.50	2.38
	1.76-2.50	31	62.0	Not good			
	2.51-3.25	19	38.0	Good			
	3.26-4.00	-	-	Very good			

Based on Table 6, it is known that the gross motor skills of students are in the bad category with a percentage of 62.0%. In addition, the mean value is 2.42, the median is 2.50 and the mode is 2.38. After the e-module product is designed, it is validated by a media expert the results is show in Table 7.

Table 7. Media Expert Validation Results

Aspect	Average
Contents of e-module and language	3.20
e-module design	3.13
Purpose of making e-module	3.27
Overall average	**3.20 (valid)**

Based on Table 7, it is known that the average validation result of media experts is 3.20 with a valid category. The results of material expert validation are presented in Table 8.

Table 8. Material Expert Validation Results

Aspect	Average
Theory	3.17
Learning	3.11
language	3.22
Overall average	**3.17(valid)**

Based on Table 8, it is known that the average result of material expert validation is 3.17 with a valid category. Because the results of the developed e-module have been categorized as good based on the results of the validation of media experts and the results of the validation of material experts, then the implementation stage can then be carried out by looking at student responses to the developed e-module with the results presented in Table 9.

Table 9. The Results of the Descriptive Test of Student Responses

Variable	Range	F	%	Category	mean	median	Mode
Response	1.00-1.75	-	-	Not very good	3.11	3.12	3.33
	1.76-2.50	1	2.0	Not good			
	2.51-3.25	18	36.0	Good			
	3.26-4.00	31	62.0	Very good			

Based on Table 9, it is known that students have a very good response to the use of e-modules with a percentage of 62%. In addition, the average response value is 3.11, the median is 3.12 and the mode is 3.33. After it was found that the students gave a very good response, then an observation was made on the motor skills of the students after the e-module of the frog jumping game and seen whether there was an increase from the previous one or not. The results of students' motor skills after the e-module can be seen in Table 10.

Table 10. Descriptive Test Results of Gross Motor Skills After Using E-Modules

Variable	Range	F	%	Category	mean	median	Mode
Gross motor skills	1.00-1.75	-	-	Not very good	2.80	3.00	3.43
	1.76-2.50	-	-	Not good			
	2.51-3.25	10	20.0	Good			
	3.26-4.00	40	80.0	Very good			

The results from Table 10 show that the students' gross motor skills after using the e-module are in the very good category, believe it with a percentage of 80%. The average value is 2.80, the median is 3.00 and the mode is 3.43. After a descriptive statistical analysis has been carried out, then an inferential statistical analysis is carried out by first conducting a prerequisite test with the results show in Table 11.

Table 11. Normality Test Results

	Kolmogoriv-Smirniv		
	Statistics	**df**	**Sig.**
Response	0.105	50	0.200
Motor skills before the use of e-modules	0.965	50	0.150
Motor skills after using the e-module	0.113	50	0.139

The normality test is a test used to see whether the distribution of the data used has been normally distributed or not. The requirement of the normality test is that the significance value must be greater than 0.05. The normality test carried out by the researcher was the normality test of student response data and motor skills sheet data before and after the use of e-modules. Base on Table 11, the results of the normality test on the response data were 0.200, the motor ability sheet before using the e-module was 0.150, and the motor ability data sheet after using the e-module was 1.39. So based on the results that have been obtained, it can be said that the data has been normally distributed because it is in accordance with the test requirements.

After conducting the normality test, the researcher then continued with the homogeneity test. Table 12 is the result of the homogeneity test of the observation sheet datamotor skills before and after the use of e-modules.

Table 12. Homogeneity Test Results

Variable	Sig.
Motor skills beforeuse of e-module	0.061
Motor skills afteruse of e-module	0.649

Homogeneity test is used to see whether the data obtained have come from the same population or not. Based on Table 12 the significance value of the homogeneity test for the observation sheet datamotor skills before the use of e-modules is 0.061, whileobservation sheetmotor skills after using the e-module is 0.649. Furthermore, the researchers conducted a linearity prerequisite test which aims to see whether the data from the two variables used have a linear relationship. The results of the linearity test can be seen from Table 13.

Table 13. Linearity Test Results

Variable	sig,
Response* Motor Ability After using e-module	0.137

Base on Table 13, the results of the linearity test showed that the significance value ofthe response to motor skills after using the e-module is 0.137. After a prerequisite test was conducted and it was known that the data had been normally distributed, homogeneous, and linear, then the hypothesis test was carried out, namely the T test and the correlation test. T-test was conducted to see the difference in students' gross motor skills before and after using the e-module of the frog jumping game with the results presented in Table 14.

Table 14. T-test Results of Students' Gross Motor Skills

		F	Df	Sig.(2-tailed)
Motor skills before the use of e-modules	Equal variances assumed	12.081	48	0.000
	Equal variances not assumed		39.351	0.000
Motor skills after using the e-module	Equal variances assumed	0.209	48	0.030
	Equal variances not assumed		47.99	0.030

Based on Table 14, it is found that the value of sig.(2-tailed) motor ability before the use of the e-module is 0.000 and the motor ability after the use of the e-module is 0.030. Furthermore, a correlation test was conducted to see the relationship between student responses and students' gross motor skills after the e-game module was developed. The results of the correlation test between student responses and students' gross motor skills can be seen in Table 15.

Table 15. Correlation Test Results Between Student Responses and Gross Motor Skills After Using E-Modules

Correlations

		Student response	Motor skills after
Student response	Pearson Correlation	1	0.637**
	Sig. (2-tailed)		0.000
	N	50	50
Motor skills after using the e-module	Pearson Correlation	0.637**	1
	Sig. (2-tailed)	0.000	
	N	50	50

**. Correlation is significant at the 0.01 level (2-tailed).

Based on Table 15 which has been presented, it is known that there is a relationship between student responses to motor skills after using e-modules. This can be seen from the significance value obtained is 0.000 which is smaller than 0.05. Meanwhile, when viewed from the Pearson correlation value, it is known that the relationship between student responses to motor skills after the use of e-modules is strong. This is evidenced by the Pearson correlation value of 0.637.

Discussion

This research was conducted to develop an e-module for the frog jumping game as a form of preserving the local wisdom of rural communities in the Mentawai village. The product that has been produced from this development research is an electronic module (e-module) for the frog jump game in the form of a flipbook that can be accessed via a smartphone or laptop. This frog jumping game e-module product has been validated by media experts and material experts. Based on the results of the validation of media experts and material experts, it was found that the e-module product was valid so that the e-module could be continued at the implementation stage, namely to see student responses. Student responses have a very important role in seeing how successful the e-game module is being developed. A positive response indicates that the e-module has been assessed as good by students, otherwise if the student's response is negative, the e-module developed has poor quality. Based on the results obtained, it is known that elementary school students at SDN 2 Matotonan and SDN 10 Mara, Mentawai district gave a very good response to the e-module developed. And based on the results of observations, the motor skills of elementary school students when the e-module of the frog jumping game increased. This happens because of the use of e-modules that are applied as a form of utilizing technology in the face of the modernization era.

Based on the results of the inferential statistical test, the prerequisite tests, namely the normality test, homogeneity test, and linearity test, it was found that the normality test results obtained response data of 0.200, motor ability sheet before using the e-module 0.150, and motor ability data sheet after using the e-module. ie 1.39. Furthermore, homogeneity testobservation sheet datamotor skills before the use of e-modules is 0.061, whileobservation sheetmotor skills after using the e-module is 0.649. And the results of the linearity test of the response to motor skills after the use of the e-module is 0.137. Based on these results, it can be said that the data has met the prerequisite test requirements. This is because the significance value obtained is greater than 0.05 (Darmaji et al., 2021; W. A. Putri et al., 2021). Then, the hypothesis test was conducted, namely the T test and the correlation test. Where based on the results of the T test to see the difference in students' gross motor skills before and after the use of e-modules. It can be seen that the value of sig.(2-tailed) obtained ismotor skills beforethe use of e-modules is 0.000 andmotor skills aftere-module usage 0.030. Based on these results, it can be said that the gross motor skills of elementary school students at SDN 2 Matotonan and SDN 10 Mara, Mentawai district have differences. This is because the significance value obtained is smaller than 0.05 (Budiaman et al., 2021; Tarumasely, 2020). Furthermore, when viewed from the correlation test, it can be seen that there is a relationship between student responses to motor skills after the use of e-modules of 0.637. Based on these results, it can be categorized that the relationship between student responses to motor skills after the use of e-modules is in the strong category.

Response is a process of students interpreting, evaluating, receiving, and giving opinions on something. The importance of student responses is used as a reference for teachers in designing effective and more directed learning. Therefore, it is necessary for students to respond to the E-module of the frog jumping game to improve students' gross motor skills, namely the ability of the leg muscles.. Frog jumping is a form of exercise that uses both legs to jump like a frog. The sequence in carrying out the frog jump movement, namely standing relaxed, hands behind the body when making a jump, then squatting with both feet, knees bent and both hands in front of knees for balance when jumping (Ichwal et al., 2020; Ikramansyah & Shandi, 2019). Jumping frogs can train leg muscle strength which is one of the important elements in achieving maximum jumps, so it needs to be trained regularly and regularly (Sitepu, 2019; Wahyudin, 2018). Therefore, through development and coaching, the game of jumping frogs in sports learning must be taught in schools from the elementary school level as an effort to preserve local wisdom that can be packaged in the form of electronic modules. Several studies that are relevant to this research have been carried out in a village in the interior of the Mentawai Islands (Hermanto & Komaini, 2019), with the results of his research, namely the skills in basic movements of children in the Mentawai hinterland village are categorized as very good. The difference between this research and research is in this study the researchers developed the frog jump game into an electronic module to face the modernization era. Through the developed e-module, the researcher examines how students respond and students' motor skills before and after using this electronic module. As for other research that is relevant to this research has been conducted about the development of the Android-based pentaque sports e-

module (Wulandari & Wibowo, 2022). The results of his research indicate that the e-module petanque is appropriate to be used as a training medium for athletes and students. The difference between this research and that conducted is on the subject and variable that is careful. In this study, the research subjects were rural elementary school students in the Mentawai village, while the research subjects were in college students. And in this study, the variables studied by the researchers were student responses and students' gross motor skills before and after the e-module of the frog jump game. While in research the variables studied were only developing the pentaque sports e-module to see whether the e-module developed was valid or not.

Based on several relevant studies above, this research is in line with previous studies. The novelty of this research is to complement existing research with several updates that have never been done in previous research. The novelty is the development of an e-game module on frog jumping material by reviewing students' responses to the frog jumping game e-module that was developed. The novelty of this research is to see how students' motor skills before the development of the frog jumping game e-module and after the development of the frog jumping game e-module affect gross motor skills of students' leg muscles. The implication of this research is that this research can contribute to the world of education, especially in the learning process so that it runs effectively with the use of technology-based media to face the era of modernization. Through the results of this study, it will be known how the contribution of the e-module of the frog jumping game in physical learning can improve the gross motor skills of elementary school students. In addition, the research provides implications for teachers to be able to create effective and efficient learning by utilizing and developing an interesting learning media that can increase students' interest and enthusiasm in learning. Therefore, the researcher recommends that educators can design an effective and efficient learning by utilizing technology. In addition, it is hoped that further research can examine the development of electronic media, especially electronic modules in other games in physical learning. The next researcher can add the variables studied as a form of updating that is given and can conduct a gender review to obtain more specific results.

4. CONCLUSION

Based on the research that has been done, the conclusion that can be drawn is the creation of an electronic module for the frog jump game with a good category based on the results of media expert validation and material expert validation that can be accessed via a smartphone or laptop. Furthermore, there are differences in the results of gross motor skills of students at SDN 2 Matotonan and SDN 10 Mara, Mentawai District before and after using the e-module. This can be seen from the significance values obtained, namely 0.000 and 0.030. In addition, there is a strong relationship between students' responses to students' gross motor skills after using the e-module, which is equal to 0.637.

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