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Implementation of Dakon-themed game media: Encourage curiosity 21st century in primary school

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ABSTRACT

Thematic learning, especially thematic integrative, basically requires the optimization of the use of varied learning media so that it will help students in understanding the concepts of material which are abstract. Therefore, the use of learning media is important in learning. This study aims to reveal: 1) the eligibility of Dakon-themed game media on the topic "Where I Live", and 2) the effectiveness of Dakon-themed game media in improving the curiosity of grade IV students of elementary school. This development research was conducted in Kulonprogo Regency, Special Region of Yogyakarta, Indonesia and developed the media according to the 10 steps developed by Borg & Gall. The testing subjects consisted of 9 students in the initial field trial phase, 34 students in the main field trial and 74 students in the operational field trial which were divided into experimental and control groups. The data collection was trough tests, expert rating scale and response questionnaire. The effectiveness of the media of media on the theme of topic Where I live in improving the curiosity of analytical students with N-gain, and t-test with an alpha level of 0.05.The results reveal that: (1) the developed Dakon-theme on the topic Where I Live meets the eligibility criteria based on the results of the validation with very feasible criteria; and (2) the developed game is effective in improving curiosity of the fourth grade students of elementary schools.

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1. INTRODUCTION

Education is an important part of life. Through education, all one's potential can be developed maximally. A person's level of education also has an important role in determining the intelligence of a nation. In the education process, knowledge cannot be transferred just from educators to students but must have a goal to develop the potential of students. This is in accordance with the national education goals stated in Law No. 20 of 2003 Article 3, namely, "National Education aims to develop the potential of students to be faithful and fearful people of God Almighty, noble, healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens."

In achieving these educational goals, the government has carried out various standardizations and professionalization as stated in in Government Regulation No. 32 of 2013. The National Education Standards include eight standards, one of which is the graduate competency standard, namely the criteria regarding graduate qualifications which include attitudes, knowledge and skills. In achieving graduate competency standards, the 2013 curriculum develops aspects of attitude, knowledge and skills.

On the other hand, in the context of realizing character education as the goal of the 2013 curriculum is applied, Presidential Regulation No. 87 of 2017 appears on Strengthening Character Education (PPK). This Presidential Regulation states that PPK is integrated with all activities of learning and teaching activities in schools. In order to implement the Character Education Strengthening program, the Kulon Progo regional government, Yogyakarta Special Region Province issued the Kulon Progo District Regulation No. 18 of 2015 concerning the management of character education. In addition, there is also the Kulon Progo District Head Regulation No. 65 of 2017 concerning Guidelines for the Implementation of Character Education in Kulon Progo. The purpose of the regent's drafting is to develop the values of the nation's character including those which include preserving the culture and identity of the Indonesian people in general and specifically the Kamataraman culture. One of the cultural elements and material content of traditional Javanese food is to know various *dolanan* (Javanese games).

Instructional media can help to achieve learning goals. Instructional media is used as a means to facilitate conveying material in learning activities. Instructional media is anything that is used to channel messages from the sender to the recipient so that it can stimulate students' thoughts, feelings, concerns and interests so that the learning process occurs [1, 2]. In correlation to learning, the instructional media as a tool provided by the teacher as a distributor of information to students to encourage students to learn quickly, precisely, easily, and correctly.

Thematic learning, especially integrative thematic, basically requires the optimization of the use of varied learning media so that it will help students understand the concepts of abstract material. Accordingly, there are several functions of instructional media especially for learning. These functions aim to support the students for enjoy the learning. The functions of instructional media are 1) Clarify the learning process; 2) Increase student interest and interactivity; 3) Increase the efficiency of time and energy; 4) Improve the quality of student learning outcomes; 5) Allows to do the learning process anywhere and anytime; 6) Fostering students' positive attitude towards the material and learning process; 7) Changing the role of the teacher to be more productive; 8) Overcoming the limitations of the five human senses; 9) Presenting learning objects in the form of rare and dangerous objects or events into the classroom; 10) Increasing the retention power of students towards learning [3, 4].

In the other hand, learning occurs when students process new information or knowledge. In a supportive situation, students can find a relationship between the knowledge. Knowledge they have just acquired with the problems that are around them. Integration of games into classrooms is an excellent way to promote students' creative thinking [5]. This will facilitate the process of internalizing the knowledge they have acquired so that in the later stages students can apply the knowledge they have to solve problems in their daily lives. The apparent infrequency with which children ask questions and engage in exploratory behaviour in their classrooms is worth learning more about, given the common intuition that curiosity is an important part of education [6]. Traditional games can be used as media to help students apply their knowledge. One type of traditional game is the Dakon game which is a traditional game that develops in the community. The Dakon game can be used as a learning medium. Indonesian children's traditional games are one of the nation's cultural treasures that have noble values of community life so that it is necessary to bring Indonesian children as the next generation. Another advantages of traditional games is that there is a content of local wisdom that benefits the development of a child [7].

The same opinion was expressed that Mancala teaches children to think ahead before acting. Mancala is played in Africa [8]. Mancala is the same name with Dakon. In Indonesia and Malaysia the game is known as congka or Dakon where it is played on two row s or three with up two rows of nine or more holes with two store holes at each end [9, 10]. Planning out moves and considering an opponent’s strategy all building rigorous and problem solving skills for strategic thinking Dakon teaches many things to students. Some of them are teaching students to think one step further with other students' thinking [11, 12].

Character is one of the driving factors in developing one's skills. One of the characters that needs to be developed and included in the 18 characters of character education programs is student curiosity. In accordance with the research and development body, the curriculum centre of the reveals that the value of curiosity is an attitude and action that always seeks to find out more deeply and extends from something it has learned, seen and heard. As educators, we also know that the earlier students begin developing and mastering curiosity and ingenuity [13]

The above statement is supported which states that "curiosity is described as a cognitive induced deprivation that arises from the perception of a gap in known knowledge and understanding." Curiosity is an attitude or character caused by cognitive processes that arise from the perception of gaps in knowledge and understanding [14]. Curiosity moves students to want to learn more about the information received. Curiosity can motivate students to enjoy doing exploration [15]. In other words, curiosity can be characterized by behavior to study information scientifically through exploration and investigation. Curiosity also is an individual's natural drive to want to know about something whereas inquiry is the process of asking questions

to satisfy the curiosity. Without inquiry, students would have no way satisfy their curiosity but without curiosity students have no need to ask questions [16].

Curiosity needs to be developed as a character for students. So it is important to keep the curiosity alive in order to achieve efficient education and consequences because curiosity is one of the key factors for education [17, 18]. Curiosity is one of the important keys in the world education. One of the reasons why it is important is because when someone is doing the learning process, a person experiences internal stimulation, especially in the form of curiosity. Then, the curiosity will encourage students to explore deeper.

Curiosity becomes something important for students. Deep curiosity is an essential factor as a driving force for societal and scientific growth, and to maintain its development and wellbeing throughout childhood in science education is an urgent task. I preschool, curiosity should be nourished by means of maximise, which encourages children to inquire and wonder [19]. Deep curiosity is one important factor as a driving force for community and scientific growth. For pre-schoolers, curiosity is an important character to have and to improve especially for elementary school students. Curiosity must be fostered by encouraging children to love to ask.

Dakon-themed media on the topic "where I live" has characteristics that make students actively participate, have the highly curiosity and build student knowledge independently. The media of Dakon-themed games in the area "where I live" is designed with attractive colours with the aim of attracting the attention of students. In this regard, learning media has a very important role to attract the attention and concentration of students. Because thousands of information actually are around humans all the time but if they are not heeded they will not enter the mind. This is like theory model which showed by Atkinson and Shiffrin. The Atkinson and Shiffrin information processing theory model [20] is shown in Figure 1.

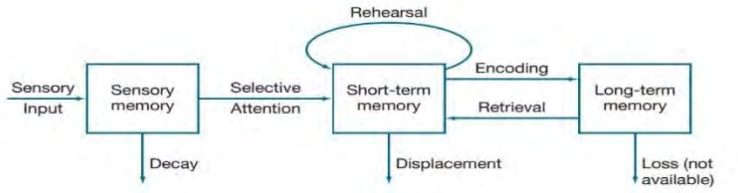

Figure 1. The Atkinson and Shiffrin information processing theory model [20]

Based on the picture above can be seen the human thought process. Information received is then interpreted by the senses. The initial receiver of the sensory device is referred to as sensory memory. According to existing research, information from vision can last less than one second in sensory memory, while information from hearing can last three to four seconds. Therefore, attention must be given to the information so that information is forwarded to short term memory (short term memory) that can maintain information for up to 15 seconds. Based on the explanation, it can be seen that attention or concentration in processing information has an important role.

On the other hand, if information in short-term memory is not given repeated attention then that information will be lost. However, if repetition is done, information can be forwarded to long term memory. Long-term memory can store information for a very long time. This process is called memorizing or remembering. Dakon-theme game media on the topic "where I live" facilitates students to repeat learning information for students through question cards and material cards. Through the question card students can repeat the material that has been included on the material card by answering the questions provided. In the use of the Dakon-themed game media on the topic "where I live" there are also a number of activities that make students actively involved. These activities include using the media in groups so that the process of group discussion is carried out, in the form of a game that makes students play an active role in thinking and acting, and students are directly involved in building knowledge independently.

2. RESEARCH METHOD

The research method used in this research is Research and Development (R&D). The choice of method is because researchers want to develop learning media. This is consistent that research and development (research and development) is a research method used to develop or validate products used in learning and education. Furthermore, the procedure in this research development consists of 10 stages [21, 22]. The R&D procedures are as follow Figure 2.

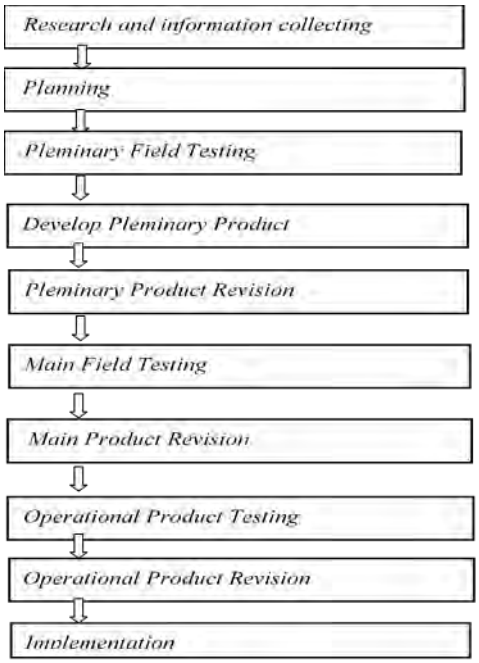

Figure 2. R&D procedures

The research and information collecting stage (preliminary research and information gathering) consists of three activities including: conducting a literature study by examining research and development theories and relevant research results. The research theories studied are related to the play of the game on learning, and students' curiosity; conduct need analysis or preliminary research through questionnaires, interviews and observations at the research location that is exploring the needs of teachers, students, and materials that are in accordance with the curriculum and essential material by referring to teacher input at the research location. Besides identifying the teacher's needs regarding the media needed in integrative thematic learning; analyze integrative thematic learning media that are relatively similar and pre-existing to see shortcomings.

3. RESULTS AND DISCUSSION

The result of development Dakon-themed game media on the topic Where I Live decided into 2 section. They are the eligibility of Dakon-themed game media on the topic Where I Live, and the effectiveness of of Dakon-themed game media in improving the curiosity of grade IV students of elementary school. Questionnaires in the form of expert's responses and observation questionnaires can be used for know curiosity [23, 24].

3.1. The eligibility of Dakon-themed game media on the topic Where I Live

The eligibility of Dakon-themed game media on the topic Where I Live assessed by experts judgement. Product validation is assessed by media experts and material experts. Media validation assessment was conducted by Dr. Christina Ismaniati, M.Pd. and evaluation of material validation carried out by Dr. Anwar Senen, M.Pd. The results of the assessment that have been validated by experts are then converted to the feasibility of learning media. The results of the conversion of the product multiply by media experts are as follow Table 1.

Table 1. Conversion of the total feasibility score of a media expert product [25]

No	Score	Value	Category
1	X > 121. 8	A	Very Eligible
2	98.5< X ≤ 121.8	B	Worthy
3	75. 4 < X ≤ 98.5	C	Decent enough
4	52.2 < X ≤ 75.4	D	Inadequate
5	X ≤ 52.2	E	Very Inadequate

The conversion of the total product worthiness score by the media experts above is used to determine the feasibility of the media game media on the topic where I live from media experts. Media development can be said to be feasible if at least it is included in the "feasible" category. Based on the table above, a decent score ranges from 98.5 to or equal to 121.8. If the scores obtained from the media experts do not meet the appropriate criteria, it is necessary to revise the product until it is declared appropriate by the media expert. The results of the assessment of the media of the game media on the topic where I live by media experts are as follow Figure 3.

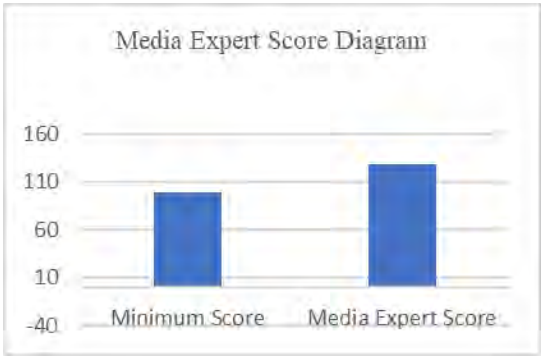

Figure 3. Media expert rating score results

Based on the diagram above, the score obtained by media experts is 128. The score exceeds the minimum score that states the criteria "Worthy" which is 98.5. Thus, the scores obtained from media experts are categorized as "Very Eligible". The development of Dakon-themed game media with the topic where I live can be said to be feasible if at least it is included in the "feasible" category. Based on the table above, a decent score ranges from 98.5 to or equal to 121.8. If the scores obtained from the material experts do not meet the appropriate criteria, it is necessary to revise the product until it is declared appropriate by the material experts. The results of the assessment of the Dakon-themed game media on the topic where I live by material experts are as follow Figure 4.

Figure 4. Results of expert material assessment scores

Based on the assessment of the material expert, the result of the score obtained by the material expert is 142. The score exceeds the minimum score that states the criteria "Eligible" which is 98.5. Thus, the scores obtained from media experts are categorized as "Very Eligible". Material expert and media expert validation was used to measure the appropriateness of the developed theme media product. Inputs and suggestions from material experts and media experts are very useful for improving product development before being piloted in the initial field.

3.2. The effectiveness of of Dakon-themed game media in improving the curiosity of grade IV students of elementary school.

The assessment of students' curiosity characters is carried out through observation assessments when the learning process takes place. Observation assessment is used to determine the effectiveness of the media game with the theme of the area where my dwelling was developed. Observation of student curiosity carried out in the control class and experimental class. Observation is carried out for 6 meetings per class with the help of observation. Pre observation of students' curiosity conducted to determine the character of students' initial curiosity and post observation of students' curiosity carried out to find out the students' curiosity after participating in the learning process of students' curiosity carried out using the media of Dakon-themed game media on the topic where I live in the experimental class and in the control class by not using Dakon-themed game media on the topic where I live. The following data are the results of pre-observation and post-observation scores of students presented in the Table 2.

Table 2. Data on pre and post observation curiosity values

No	Class	Average		Gain	Category
		Pre observation	Post observation		
1	Control	70	75	0.17	Low
2	Experiment	75	84	0.37	Medium

Based on the table above, the average value of pre-observation of students 'curiosity in the control class is 70. Furthermore, the learning process is carried out for 6 times and observations of students' curiosity and obtain an average value of 75. The results of pre-observation and post-observation curiosity of students in the control class increased by 5 with a gain of 0.17 included in the low category. The average value of pre-observation of students' curiosity in the experimental class is 75. Furthermore, the learning process is carried out for 6 times and observation of students' curiosity and the average value of 84 is obtained. The results of pre-observation and post-observation of students' curiosity on the experimental class increased by 9 with a gain of 0.37 which was included in the medium category. Figure 5 shows the result of the pre and post observations in the control class and the experimental class.

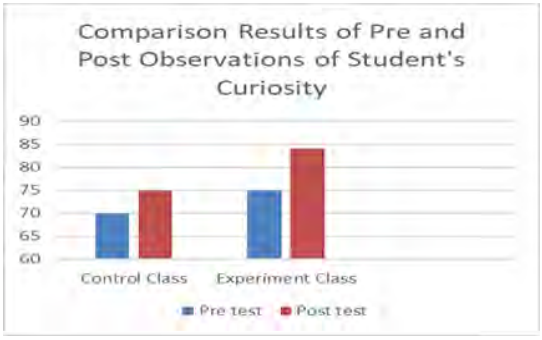

Figure 5. Comparison results of pre and post observations of student's curiosity

Based on the Figure 5, it can be seen that the increase in the average value of pre and post curiosity of students in the experimental class is higher when compared to the increase in the average value of pre and post of curiosity observation of students in the control class. Furthermore, it can be concluded that the curiosity of students in the experimental class using the media theme game media on the topic Whre I Live increased significantly when compared to the control class who did not use the media theme game area themed. Thus it can be concluded that the media of the game media on the topic where I live can be declared effective in increasing student curiosity with a moderate level of effectiveness. Then to find out the increase in the variable of curiosity in the control class and the experimental class can be seen by doing t-test. There are requirements to meet the t test, which is to test the normality and homogeneity tests. The curiosity normality test of students in this study was carried out using the SPSS 16 for windows program with the one simple Kolmogorov Sminov test. Data is stated normally distributed if it has a significance (p)> 0.05. Here is a Table 3 for the results of tests of curiosity normality of students in the control class and the experimental class.

Table 3. Data normality test results curiosity

No	Class	Data	Sig (2-tailed) value	Criteria
1	Control	Pre observation	0.217	Normal
		Post observation	0.520	Normal
2	Experiment	Pre observation	0.596	Normal
		Post observation	0.599	Normal

Based on the results of the normality test of pre-observation and post-observation of curiosity in the control class and the experimental class, it can be seen that all sig values. (p) is greater than 0.05. Therefore, curiosity data is normally distributed so that the next pre-requisite test can proceed. The next prerequisite test is homogeneity test. In this study, homogeneity test was performed with the Levene Test. The research data is declared homogeneous if it has (p)> 0.05. The following Table 4 shows the results of curiosity homogeneity test.

Table 4. Homogeneity test results curiosity

No	Data	df1	df2	Sig. (p)	Criteria
1	Pre observation	2	69	0.196	Homogeneous
2	Post observation	2	69	0.475	Homogeneous

Based on the homogeneity test results of curiosity scale in the control class and the experimental class it can be seen that the value of sig. (p) more than 0.05. Therefore, curiosity data is declared homogeneous. Independent t test was carried out after the normality test and homogeneity test data were met. The t-test is aimed at finding out whether there are differences in the curiosity of the control class students and the experimental class.

The following hypotheses are used to test the independent t test of curiosity variables, namely:

Ho: There is no difference in curiosity between students who use Dakon-themed game media on the topic Where I Live with students who do not use Dakon-themed game on the topic “where I live”

Ha: There is a difference in curiosity between students who use Dakon-themed game media on the topic Where I Live with students who do not use Dakon-themed game on the topic “where I live”

The criteria for acceptance and rejection of Ho at a significance level of 0.05 have criteria that is if the significance value is more than 0.05 then Ho is accepted and if the significance value is less than 0.05 then Ho is rejected. The following Table 5 shows the result of independent t test.

Table 5. Independent t test result

No	Data	Class	df	Sig. (p)	Criteria
1	Pre observation	Experiment & Control	46	0.666	Ho accepted
2	Post observation	Experiment & Control	46	0.005	Ho rejected

Table 5 informs that the significance value in the pre-observation of students' curiosity> 0.05 each of 0.666 so that Ho is accepted. Whereas in the post observation the students' curiosity showed a significance value <0.05, each of them was 0.005 so that Ho was rejected and Ha was accepted. In this way, it can be concluded that there is a difference in the curiosity of students who use Dakon-themed game on the topic where I live and students who do not use Dakon-themed game media on the topic “where I live.”

4. CONCLUSION

Based on the results of the development and research of the media game on the theme of the area where I live, it can be concluded that Dakon-themed media where I live is used on of the feasible and effective learning media to improve the curiosity of fourth grade students in elementary schools, especially in the Kulonprogo.

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