



Adaptive Media Based on The Game “Maze Marbles” to Improve Concentration in ADHD Students

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Abstract: This study aims to produce a product in the form of adaptive media based on the maze marbles game which will be used as a means of increasing student Attention Deficit Hyperactivity Disorder (ADHD). This research method uses the Research and Development method approach or is referred to as an innovative work research method with a research design for the development of maze marbles media using the 4D development model by Thiagarajan. The results of this study indicate that the development of adaptive media based on the maze marbles game has gone through the stages of the development process and product feasibility trials get an overall average value from the recapitulation of experts with an assessment score of 107 with a percentage of 82.30% and included in the very good category. It can be concluded that the development of adaptive media based on the maze marbles game is urgently needed as a means of supporting media and learning media, especially for students with indications of ADHD. However, the validity of increasing the ability of students needs to be carried out in stages and carried out repeatedly so that the expected ability development can be seen.

Keywords: Attention Deficit Hyperactivity Disorder (ADHD), Research and Development, Media Adaptive, Maze Marbles

I. Introduction

Education is the most important factor in advancing a nation. Education is inseparable from humans and is a basic need of every human being that must be fulfilled. Therefore, education is one of the human rights guaranteed and protected by various international and national legal instruments, including children with special needs. According to the Law of the Republic of Indonesia No. 20 of 2003 (2014) on the National Education System, article 5, paragraph 1 emphasizes that every citizen has the same right to obtain a quality education. The citizens in question are those who have special talents and intelligence, those who have physical, emotional, mental, intellectual and social disorders. They are children with special needs, both permanent and temporary (Darmaningtyas, 2015).

Learners who have excessive activity or experience Attention Deficit Hyperactivity Disorder (ADHD) are often considered or labeled as naughty children. So that Attention Deficit Hyperactivity Disorder (ADHD) learners tend to get unfavorable treatment or violence committed by their parents and class teachers. The treatment experienced by Attention Deficit Hyperactivity Disorder (ADHD) learners is due to the lack of attention and understanding of parents and educators about Attention Deficit Hyperactivity Disorder (ADHD). If there is a mistake in handling Attention Deficit Hyperactivity Disorder (ADHD) learners, it will make the development of learners more disturbed. Therefore, special treatment is needed for students who experience Attention Deficit Hyperactivity Disorder (ADHD) or other developmental disorders.

The learning process is a challenge for teachers to create interesting and fun learning. This aims to attract students' interest in learning including students with Attention Deficit Hyperactivity Disorder (ADHD), the learning media to be used must be made as interesting as possible so that students can be motivated in learning. Innovative learning media is expected to help students' performance in learning in order to achieve optimal results.

Based on the results of observations of students who are indicated to have Attention Deficit Hyperactivity Disorder (ADHD) disorder in a kindergarten school, namely, KB-TK Labschool, it is known that Attention Deficit Hyperactivity Disorder (ADHD) students tend to have an interest in

something unique, interesting, and palpable. In addition, during the observation at the kindergarten school, the researcher found a game tool used as a learning medium. The tool is a board that is arranged abstractly to form a winding and branching path to find a way out so as to achieve a predetermined goal. Students are very enthusiastic about this learning media.

Therefore, to help improve the concentration of students in learning in order to receive material well and help students in completing their assignments, a suitable and appropriate media is needed with the needs of Attention Deficit Hyperactivity Disorder (ADHD) students. The media is certainly a learning media that has been modified in such a way as to suit the needs of Attention Deficit Hyperactivity Disorder (ADHD) students.

Based on this description, the researcher has an idea to develop game-based adaptive media that can help students who experience indications of Attention Deficit Hyperactivity Disorder (ADHD) disorder type combination in order to increase concentration in learning. In this study, researchers will develop a medium, namely game-based adaptive media called "Maze Marbles" which is designed to stimulate concentration skills in Attention Deficit Hyperactivity Disorder (ADHD) students of the combination type. With this adaptive media, it is hoped that students can reduce hyperactive behavior because this game-based adaptive media "Maze Marbles" is one of the educational games that requires concentration, perseverance, calmness and patience in going through it. If the development of this media is carried out properly and seriously, it will be able to become an alternative adaptive learning media and is a breakthrough to improve concentration in Attention Deficit Hyperactivity Disorder (ADHD) students of the combination type.

II. Methods

This research uses the research and development method or also known as the innovative work research method. The Research and Development method or referred to as the innovative work method is a step or process for developing a new product or improving existing products and can be accounted for (Sujadi, 2002). The research design for the development of maze marbles media uses the 4D development model by Thiagarajan. In essence, the 4D development model consists of four stages, namely: Define, Design, Develop, and Dissaminate. This 4D development model was developed by Thiagarajan, Semmel and Semmel (Hobri, 2010).

The instruments used in this study were validation sheets and observation sheets. The validation sheet serves to assess the suitability of the media and the quality of the product designed. Meanwhile, the observation sheet is used by researchers to find out the weaknesses and advantages of this game-based adaptive media. The field trial function is carried out to identify the suitability of learning media to be used by Attention Deficit Hyperactivity Disorder (ADHD) learners of the combination type in actual conditions. At this stage, the trial was conducted once on a student named Jensen with an indication of Attention Deficit Hyperactivity Disorder (ADHD) type combination and carried out in the classroom to determine the feasibility of the products produced.

III. Results and Discussion

A. Results

This game-based adaptive media development refers to the 4D model which goes through four stages of development, namely; the defining stage (define), the design stage (design), the development stage (develop) and the dissemination stage (disseminate). The research stages are as follows:

B. Defining Stage

The initial analysis begins with conducting field observations, this observation aims to find out the conditions, characters and needs of students in actual circumstances. The problem found was that researchers found a learner named Jensen who had indications of ADHD showing behavior patterns such as not being able to maintain his attention for three seconds when the teacher was giving lessons in front of the class, running around the class, doing activities that were not related to learning such as playing fan remotes, fiddling with the teacher's desk, and others. So that with Jensen's behavior caused Jensen difficulty in completing various tasks given by the teacher. Another problem experienced by teachers and ADHD learners at IGEL Kindergarten East Jakarta is the

limited media equipment that is still conventional. The teacher also revealed that there is no supporting media for students with special needs in the school, especially for ADHD students. This certainly affects their learning outcomes so far so that learning outcomes have not achieved maximum results.

C. Design Stage

There are two steps in the design stage, including determining the concept of developing adaptive media based on Maze Marbles games that are tailored to the criteria and needs of students with indications of ADHD, and designing adaptive media based on Maze Marbles games that can be integrated into learning materials tailored to the needs and characteristics of ADHD students.

D. Development Stage (Develop)

This stage aims to produce adaptive media based on maze marble games, to then be validated by experts, namely, media experts, material experts, and ADHD specialization experts. The result of this stage is that the adaptive media based on the Maze Marbles game gets very good feasibility assessment results and no improvement is needed.

E. Dissemination Stage

At this stage the media that has been developed and modified in such a way as to be adapted to the characteristics and needs of ADHD students so as to produce an appropriate product in the form of adaptive media based on the Maze Marbles game to help improve concentration will then be implemented in the feasibility trial. The results of visual observations that researchers got from the feasibility trial of this Maze Marbles game-based adaptive media were that students looked very enthusiastic when the teacher showed the game media, when trying the game students were very excited and explored the game media they were using. It can be concluded that Maze Marbles game-based adaptive media can be used as a supporting tool in learning, especially to help improve the concentration of ADHD students.

Furthermore, data analysis is carried out obtained from research conducted at the Maze Marbles Game-Based Adaptive Media development stage. Analysis of the quantitative data obtained is based on a questionnaire filled out by the validator, which validator is the East Jakarta IGEL Kindergarten teacher.

The validity results show that on a questionnaire containing 8 questions regarding the views of East Jakarta IGEL kindergarten teachers on the maze marble game obtained an assessment score of 28 and obtained a percentage of 70% in the good category. The validity results show that in a questionnaire containing 8 questions regarding the views of East Jakarta IGEL kindergarten teachers on the maze marbles game media obtained an assessment score of 35 and obtained a percentage of 87.5% in the very good category. The validity results show that in a questionnaire containing 10 questions regarding the views of media experts on adaptive media maze marble obtained an assessment score of 44 and obtained a percentage of 88% with a very good category.

IV. Discussion

The results that have been obtained based on previous studies in the field, then reviewed with related theories so as to produce adaptive media based on the Maze Marbles game which obtained a feasibility assessment with a very good category as a means of supporting media for students who experience indications of ADHD at IGEL Kindergarten School, East Jakarta.

This research is in line with research conducted by Ulandari (2020) with the results of research that the development of three-dimensional maze media for fine motor skills, namely, 1) validity aspects with the achievement of valid category assessments, 2) practicality aspects with the achievement of high category assessments, and 3) effectiveness aspects with the achievement of good and very good category assessments and getting positive responses. /However, there is a slight difference in the research conducted by the researcher as for the difference is in the objectives of the research conducted. The purpose of the above research was carried out to improve fine motor skills in students, while the research conducted by researchers was more focused on improving the concentration ability of students. However, the research that has been done above has similarities with what is done by researchers, namely in the form of developing maze games.

Children with special needs are defined as individuals who have different characteristics from other individuals with one type being Attention Deficit Hyperactivity Disorder (Tufvesson 2007). Attention Deficit Hyperactivity Disorder (ADHD) is a brain dysfunction disorder that causes learners to have difficulty focusing or concentrating and have hyperactive and impulsive behavior. Hyperactivity or uncontrolled behavior as the main symptom in Attention Deficit Hyperactivity Disorder (Dewantoro et al, 2022). The development of three-dimensional maze games for gross motor skills is good and feasible to use by paying attention to the size of the distance between footprints and the size between post 1 and other posts.

V. Conclusions

The development of adaptive media based on the Maze Marbles game that has gone through the stages of the development process and product feasibility trials found the results of the recapitulation of the overall average value of the experts with an assessment score of 107 and obtained a percentage of 82.30% in the Very Good category. Then the next media trial was conducted to students with ADHD indications named Jensen which was carried out at IGEL Kindergarten School, East Jakarta. This visual observation obtained the results that students with ADHD indications looked very enthusiastic and very interested in the game media, especially students exploring the game media with more attention. So it can be concluded that the development of adaptive media based on the Maze Marbles game is needed as a means of supporting media and learning media, especially for students with ADHD indications. However, the validity of increasing the ability of students needs to be carried out gradually and repeatedly so that the expected development of abilities can be seen.

Teachers can use Maze Marbles media to make it easier for teachers to help stimulate and stimulate concentration skills in students with indications of Attention Deficit Hyperactivity Disorder (ADHD) It is hoped that teachers will be more enthusiastic and creative in developing media products in other learning.

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