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Diamond Touch (DT) based on hyperactive game in applying the concept of life science in early childhood education

K Karnadi¹, K Sasmita², B Badrudin³, E Palenewen⁴, S Solihin⁵

¹Department of Early Childhood Education, Faculty of Education, Jakarta State University, Jakarta, Indonesia

²Department of Community Education, Faculty of Education, Jakarta State University, Jakarta, Indonesia

³Department of Al-Qur'an and Tafsir Science, Faculty of Usuludin and Adab State Islamic University Sultan Hasanuddin, Banten, Indonesia

⁴Department of Early Childhood Education, Faculty of Teacher Training and Education, University Mulawarman, Samarinda, Indonesia

⁵Biology Education, Faculty of Mathematics and Natural Sciences, Jakarta State University, Jakarta, Indonesia

solihinone@yahoo.com

Abstract. Media DT based on this simple innovation hyperactive game is an alternative learning media used during the Covid-19 pandemic. This quantitative research aims to see the influence of these media on student learning outcomes. Forty-six primary school respondents were selected using a purposive sampling technique. The research instrument was a questionnaire and multiple choices. Data were analyzed by a simple regression test at a significance level of 0.05. The results showed the influence of hyperactive game-based DT media in increasing understanding of the concept of life science. The results of this study imply that the selection of attractive media is an important requirement in the learning process of the 21st century.

1. Introduction

The awareness of healthy living and loving the environment in Indonesian society is deficient. This can be proven by the Covid-19 outbreak, there are still many people who do not understand the importance of healthy living and loving the environment that they do not comply with the regulations that have been passed by the government [1] [2]. As a result, the number of Covid-19 victims is increasing every day and this causes tremendous problems starting from educational to the economic problems. In fact, the absence of awareness of healthy living and loving the environment can cause paralysis of a country's economy. This problem is one proof that the value and character of healthy living and loving the environment in Indonesian society is still lacking [3].

This problem has a very high impact, so it is necessary to have the appropriate solution on how to make Indonesian people have sensitivity to love the environment and live healthy [2] [4]. However, this cannot be done briefly and practically [5]. The process of growth and application of the character of loving the environment and living a healthy life certainly takes a very long time and must be carried out at an early age [6].



The process of applying the character of environmental love and healthy living needs to be done from an early age to an old age [7]. As we know, we do not know that a disease can attack early childhood to old age so this needs to be done starting from early childhood education [8]. One thing that can be conducted is the concept of what is good and what media can be integrated in implementing and conveying the values of loving the environment and living a healthy life [3]. One of the concepts related to the values and character of loving the environment and healthy living is a concept in the field of Biology. The field of Biology discusses all about the relationship of life on earth, one of which is humans and the factors that influence their life and growth. It commonly refers to as Life Sciences (LS) [1].

Life Science (LS) is a concept that emphasizes the values of life and how to maintain life either by analysing the environment or analysing the factors that affect the life of living things, especially humans. There are several important things why it is necessary for the LS concept to be given to students[9]. The reasons why the LS concept is important to be given to students are how LS concept providing a higher level of scientific literacy experience and being able to form the character of students more critically[10]. LS concept provides students with experiences on how to live a healthy life and treat the environment to be more balanced [11]. The implementation of LS concepts certainly requires a media that is able to be integrated into these concepts and the media is able to adapt to the surrounding environment of the students [12]. One media that can be integrated or developed from the environment of students gives a deep impression, especially in the process of making it involving students [13].

Learning media is one of the most important parts of the learning process at a level of education. The media is a device capable of conveying information from sources to students[3]. The capability of the media in the learning process is very multifunctional [14]. The functions of the media are being able to provide complex concepts, speeding up time, attracting attention, making students more active, and others. One of the Medias that has these functions is Media Diamond Touch (DT) [15]. DT media is a learning media developed from the basic material of cardboard trip-blocks, where it gives the impression of a game concept based on simple concepts that students must understand [15]. The basis for the gameplay of this DT game starts with a touch [7]. This pandemic causes learning to be conducted in a long-distance learning process. It is certainly necessary to have a media that can minimize the needs of the distance learning process [3]. Therefore, it is necessary to research media development in improving the understanding of the LS concept [1].

2. Method

The development of DT media into digital media based on the Hyperlink game in improving the understanding of the LS concept uses the R&D method, to determine the impact of the media in improving the understanding of the LS concept[15]. The pre-test and post-test tests were conducted on students before and after learning certain concepts. The media was validated by a team of experts then a regression and a correlation test were performed after the data were obtained. Research sample. The number of respondents in the study was 46 students taken with random sampling technique. Data were collected using multiple choice instruments and questionnaires. The results of the data were analysed using simple regression and correlation test.

3. Result and Discussion

Table 1. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.647 ^a	.418	.405	7.646

a. Predictors: (Constant), Y
b. Dependent Variable: X

Table 2. Anova

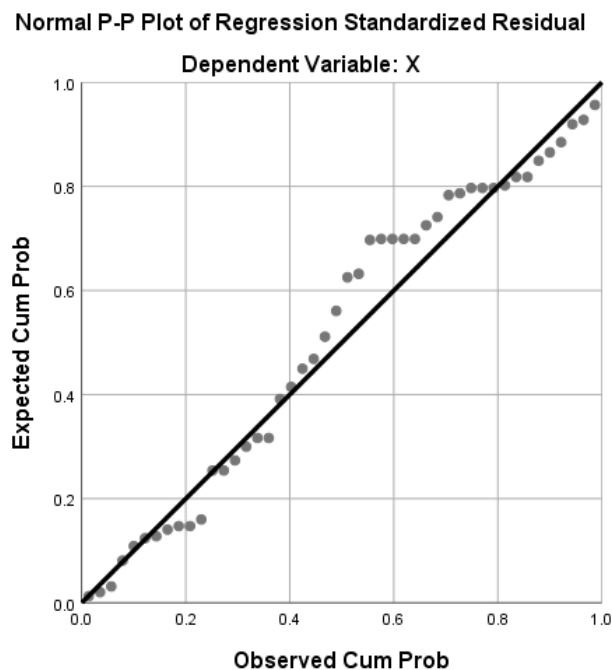
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1849.195	1	1849.195	31.633	.000 ^b
	Residual	2572.109	44	58.457		
	Total	4421.304	45			

a. Dependent Variable: X
b. Predictors: (Constant), Y

Table 3. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.220	8.846		.590	.558
	Y	.704	.125	.647	5.624	.000

a. Dependent Variable: X

**Figure 1.** Normality of Data

Based on table 1, the R square score data has a percentage value of 0.418. This indicates that learning using the Hyperlink game-based DT media is able to have an impact of 41, 8%, and the rest is influenced by other factors. In table 2, the significance value of anova shows that the alpha value is 0.00 and this states that learning using the Hyperlink game based DT media is able to influence learning outcomes on the concept of LS. Table 3 explains that the number of t-count scores is higher than the table, which is equal to 5.624, the data shows that the effectiveness of using the Hyperlink game-based DT learning media is very significant at an alpha value of 0.05. The results of the validation of learning media were conducted by several expert lecturers and field tests. Starting from

the manual instructions formed media to DT media based on the Hyperlink game. 85% of validators explain that the media is very suitable to use with the LS concept integrated in it. 15% of the validators explain that the media is worth using. Based on the results of the small-scale field, the respondent's N-Gain value is high. This suggests that the media is suitable and worth using in research [16].

An early age in the learning process is certainly a thing to note, considering that the age at that time was still at the level of children enjoying to play. Students certainly become interested in games, especially they have a turn to touch the media and will feel anxious and tremble [14]. Whether the DT symbol they touch is a basic concept of simple LS or the game play that makes them embarrassed or difficult to do.

DT is a media that can be used at every level of education, in which teachers or lecturers can integrate the concepts, games and certain instructions as well as quizzes on boxes marked with different symbols. The ability of this media which shows high value is different from other media [17]. DT can be integrated with strategies and learning models that have been developed so far [15].

DT media is a place or facility in the learning process that is full of a sense of caution, games, and surprises. In fact, in the DT box we can insert gift codes and specific research instructions. In addition, DT media is able to be collaborated with general maple concept or religion. [20] The concepts from all existing fields of study are integrated in a button and stored clearly and neatly [19]. The value of this media is what gives this media its uniqueness [18].

Learning media has a positive impact in influencing student' learning outcomes because media has its own character in the learning process [6] [21]. However, we know that not all media are suitable and worth using at every event and level of education, even in certain environments. This ability is challenging the teacher in choosing and developing existing media by adapting the media to the needs of the children in the environment where the teacher teaches. According to explaining that the media has different characteristics from one another, so that its use will also be different [22].

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A teacher in the learning process must be able to develop existing media and integrate with other media so that learning results are maximal.

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