http://infor.seaninstitute.org/index.php
JURNAL SCIENTIA, Volume 11 No 2, 2022 ISSN 2302-0059

LEARNING ACHIEVEMENT BETWEEN STUDENTS TEACHED USING THE DIRECT TEACHING MODEL ASSISTED WITH PAPER CARDBOARD MEDIA AND ICT MEDIA ON FLAT SIDE SPACE CONSTRUCTION MATERIALS

Agus Subaidi[1], Septi Dariyatul Aini[2], Lili Supardi[3], Amaliya Rahmahwati[4], Aan Hidayat[5]
Universitas Madura
Email: agus_math@unira.ac.id

Article Info
Received: 12/11/2022
Revised: 19/11/2022
Accepted: 30/11/2022

ABSTRACT

This study aims to determine whether or not there is a difference in learning achievement between students who are taught using a direct teaching model assisted by cardboard media and ICT media on flat sided geometric material. While the research method used is quantitative and comparative research because the data obtained is in the form of numbers from the test results and from the test results the difference can be seen. The population in the study were all fifth grade students at SD Plus Nurul Hikmah Pamekasan. Researchers used a purposive random sampling technique in determining the research sample. Class VA as the control class as many as 21 students and class VD as the experimental class as many as 23 students. The data collection technique used is a test in the form of essay questions. While the data analysis technique used is the t-test. Based on the results of data analysis, the value of t_{count} = 1.92 and t_{table} = 2.021 with dk = (23+21-2) = 42 at a significant level of 5%. Thus $t_{count} < t_{table}$ means that H_0 is accepted and H_1 is rejected. So it can be concluded that there is no difference in learning achievement between students who are taught using a direct teaching model assisted by cardboard media and ICT media on flat sided geometric material.

Keywords: Direct Teaching Model; Cardboard Media; ICT Media

1. INTRODUCTION

The learning model is a pattern that is used as a guide in planning learning in class and tutorials. According to Joyce (in Suprijono, 2009) through the learning model the teacher can help students get information, ideas, skills, ways of thinking, and expressing ideas. The learning model also functions as a guide for learning designers and teachers in planning teaching and learning activities. So that if the teacher prepares the learning model well, it can make the learning process run smoothly and achieve the learning target.

There are various learning models that can be used in learning mathematics. One of the learning models commonly used by teachers is the direct teaching model. The direct teaching model is a teaching approach specifically designed to support student learning processes related to well-structured declarative knowledge and procedural knowledge that can be taught with a gradual pattern of activities, step by step (Trianto, 2007: 41; Asmah, 2018). In short, with this direct teaching model, the teacher can control the sequence and extent of learning material. In this way, the teacher can find out how far students have mastered the material presented. However, in reality the application of this direct teaching model is felt boring by students. So there is a need for innovation in its application. For this reason, in order to better apply this model, learning media can also be involved so that there is an interesting side for students about what is being studied.

In the teaching and learning process, media is indeed needed to support the success of learning, where in this case educational experts and teachers are of the opinion that media is very much needed for children from elementary to secondary levels and will decrease a lot if they have reached the higher education level. At the elementary and middle school levels, teachers will help students a lot by developing all the existing senses, namely by hearing, seeing, touching, manipulating, or demonstrating with the media that can be chosen. In this regard, according to Hamalik (in Arsyad,

2006) suggests that the use of teaching media in the teaching and learning process can generate new desires and interests, generate motivation and stimulate learning activities, and even bring psychological influences on students. Meanwhile, in a psychological study according to Haban (in Daryanto, 2010), argued that the actual value of the media lies in its realistic level in the process of instilling concepts, he makes levels of various types of media from the most real to the most abstract. Therefore, the use of media is necessary for students in learning.

In choosing learning media it is also necessary to adapt it to the learning material. For example, in determining the volume and surface area of a flat side shape, it is very necessary to understand the concept. According to the author, in observing students who have studied the material without using learning media, their understanding of the area and volume of a flat sided geometric shape is lacking. So that they seem to just memorize formulas without knowing deeply about the concepts and meanings being studied.

There are several learning media that can be used in learning mathematics, for example visual learning media and multimedia-based learning media. The two media have quite contrasting differences. Visual learning media is often used in schools and the benefits are obvious because students can feel and see directly. Examples of forms of visual media are real/imitation objects that resemble the original object. According to Munadi (2012, 108) original objects are very effective for learning, because besides being able to concretize abstract things they can also attract attention. Its approach to reality provides a better understanding. Adam (2015) also stated that the function of learning media is as a learning resource that functions imaginatively, semantic and motivationally.

Meanwhile, multimedia-based learning media are media that are usually displayed on LCDs that have a large enough range. Munadi (2012, 150) states that by utilizing multimedia it can accommodate students according to their learning modalities, especially for those who have visual, auditory, kinesthetic or other types. The use of multimedia-based media has recently been frequently used in line with the co-19 pandemic. Students have started to adapt their learning through multimedia.

Based on the explanation above, an interesting question arises to find the answer, which student achievement is better when taught using multimedia-based visual media. So that in this case it is interesting to do further research on the differences in student achievement between those taught using the direct teaching model assisted by cardboard media (as a visual medium) and ICT media (as a multimedia-based learning medium) on flat sided geometric material.

2. METHOD

This research is a quantitative and comparative research because the data obtained are the numbers from the test results and from the test results you can see the difference. This research was conducted at SD Plus Nurul Hikmah Pamekasan. The research population was all elementary school students in class V even semester 2022/2023 consisting of 4 classes consisting of VA class, VB class, VC class and VD class. After knowing the many classes, then determined the research sample. The sampling technique used was purposive sampling. Sampling was also based on the consideration of the fifth grade teacher, namely choosing a class with relatively the same student abilities. The classes chosen were the VA Class with 21 students and the VD Class with 23 students. The VA class as the control class was given a direct teaching model with ICT media. While the VD class is an experimental class that is given a direct teaching model using cardboard media.

The data collection technique used is the test. The test used aims to obtain data on the learning achievement of students who are taught using a direct teaching model assisted by cardboard media with ICT media on flat sided geometric material. Before the test is given to the research subject, it is validated first by the validator which aims to determine whether the test is appropriate or not. The test is taken from National Examination (UN) questions so that it does not need to be tested again for its feasibility, but only checked by a validator. The National Examination questions that were taken were only about the shape of the flat side (cube). Questions that were originally in the form of multiple

choices were changed to questions in the form of descriptions. Then from that question an alternative answer is made.

Analysis of the data with the prerequisite test, namely by testing the similarity of the two variances (homogeneity) in the two samples. Furthermore, after testing the prerequisites, the researcher used a parametric test, namely a statistical test. The researcher conducted a hypothesis test (t-test). This test was conducted to find out whether there is a difference between classes taught using the direct teaching model assisted by cardboard media and ICT media so that it can show whether the hypothesis proposed is accepted or rejected. Researchers used manual calculations (formulas) and SPSS in analyzing the data.

The hypothesis that the researcher proposes is as follows:

a. Working Hypothesis (H_1). There is a difference in learning achievement between students who are taught using a direct teaching model assisted by cardboard media and ICT media on flat sided geometric material.
b. Null Hypothesis (H_0). There is no difference in learning achievement between students who are taught using a direct teaching model assisted by cardboard media and ICT media on flat sided geometric material.

3. RESULTS AND DISCUSSION

Providing treatment using a direct teaching model assisted by paperboard media with ICT media on flat sided geometric shapes in both research classes. The VA class as the control class is a class that is taught using a direct teaching model assisted by ICT media. The VD class as an experimental class is a class that is taught using a direct teaching model assisted by paperboard media. Each class is given treatment 2 times learning. Then on the last day a test was given to find out the learning outcomes of students. The following is a picture of cardboard and ICT media used in the study.

Figure 1. Cardboard Media

The cardboard paper above consists of 27 unit cubes. The outside is a large cube made of acrylic material. In its use, this media is used to explain the concept of cubic shapes and determine the volume of cubes. By using the help of cardboard media students learn the material feels more real.

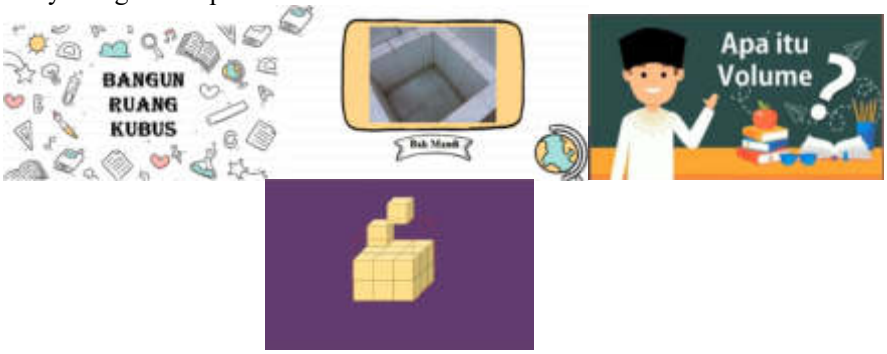

Figure 2. ICT Media

The ICT media used in this research is Power point (PPT) and is accompanied by a video in it. Picture above some of the slides in the PPT. PPT is made as attractive as possible and is accompanied by pictures related to cubical shapes. The integration of ICT media like this in learning mathematics can overcome students' displeasure in mathematics. As well as abstract mathematics will be helped by the visualization of ICT (Harsa, 2016).

After the data is obtained, then data analysis is carried out. Data analysis that was carried out first was prerequisite analysis, namely checking the homogeneity of the data obtained. The sample homogeneity test is used to determine whether the variance between the groups tested is different or not, so that the results of the study can be generalized to the population.

Table 1. Sample Homogeneity Analysis

Kelas	N	Mean	Std. Deviation	Std. Error Mean	F	Sig
Control (VA)	21	43.00	28.480	6.215	.421	.520
Experimental (VD)	23	25.39	32.129	6.699		

Based on Table 1 above, the significance of the F test was 0.421. Because sig = 0.520 which is 0.520 > 0.05 then H0 is accepted and H1 is rejected. This means that there is no difference in learning achievement variance between the control class and the experimental class (homogeneous).

The analysis prerequisite test for hypothesis testing has been fulfilled, where the data for the two classes is homogeneous, then a hypothesis test is carried out with the t-test. The t-test analysis in this study used a two-sample uncorrelated t-test. Hypothesis testing is done to test whether or not there are differences in several treatments (implementation of teaching models with different media) on student achievement. The following is an analysis of learning achievement data between the experimental and control classes.

Table 2. t-test Analysis

Learning Achievement	t-tes for Equality of Means						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Equal variances assumed	1.916	42	.062	17.609	9.189	-.936	36.153
Equal variances not assumed	1.927	41.969	.061	17.609	9.138	-.833	36.050

From the output obtained t count of 1.916. Because sig = 0.062 which is 0.062 > 0.05 then H0 is accepted and H1 is rejected. This means that there is no difference in the average learning achievement between the control class and the experimental class or there is no difference in learning achievement between students who are taught using a direct teaching model assisted by cardboard media and ICT media on flat sided geometric material. So it can be concluded that the average learning achievement between the two classes is the same.

The direct teaching model is an effective model for teaching concepts and skills to even low-ability students. The teacher can also control the content of the material and the sequence of information received by students so that they can maintain focus on what students must achieve. In learning using the direct teaching model more emphasis on teacher demonstrations and guided exercises. Teachers must be able to provide information as clearly as possible to students, so that it has a positive impact on students. In addition, the use of appropriate media in learning makes it easier for students to understand the concept of the lesson. In this study, two different teaching aids were

used, namely manual media made of cardboard and ICT media. Researchers applied it in two different classes and saw differences in learning achievement.

At the time of the research, it was seen that the students were enthusiastic about participating in the lesson, especially accompanied by the use of teaching aids so that they quickly and easily understood the subject matter. Even the results of the study test are quite good. This is in accordance with research (Pusfandari, 2014) which uses direct learning accompanied by paper media, resulting in an increase in student activity and learning outcomes. The use of media in direct learning models can attract students' interest in participating in the learning process, especially students' mathematical knowledge competencies (Handayani, 2020). In addition, Mastika (2013) and Utari (2016) in their research concluded that through the application of explicit instruction learning it had an effect on student learning outcomes. However, in this study, it was also found that students whose scores were still low were due to not knowing multiplication by heart even though they were already in fifth grade.

After analyzing the data in the form of research test scores, it turned out that there was no difference between the learning achievement of students who were taught using a direct teaching model assisted by cardboard media and ICT media on flat sided geometric material. Based on this, the use of any media is equally beneficial in making it easier for students to understand the concept of subject matter, provided that the media chosen is appropriate.

4. CONCLUSION

Based on the results of data analysis, the value of tcount = 1.92 and ttable = 2.021 with dk = (23 + 21-2) = 42 at a significant level of 5%. Thus tcount < ttable means that H0 is accepted and H1 is rejected. So it can be concluded that there is no difference in learning achievement between students who are taught using a direct teaching model assisted by cardboard media and ICT media on flat sided geometric material.

We can give suggestions as follows: `1) To other researchers who want to do research that is almost the same. Researchers suggest that the instrument in the trial use other than the existing UN questions. It can be developed by yourself and carried out by the validator, 2) For teachers to make more use of media in learning, especially for teachers at the elementary school level. This really helps students understand the lesson and is in accordance with the development of their thinking in concrete operations, 3) For schools to facilitate teachers who need facilities and infrastructure to support learning.

REFERENCE

[1] Adam, S. (2015).Pemanfaatan Media Pembelajaran Berbasis Teknologi Informasi Bagi Siswa Kelas X SMA Ananda Batam. *CBIS Journal, 3*(2), 78-90.
[2] Arsyad, A. (2006). *Media Pembelajaran*. Jakarta: Raja Grafindo Persada.
[3] Asmah. (2018). Penerapan Model Pembelajaran Langsung untuk Meningkatkan Hasil Belajar Matematika Siswa Kelas II SD Negeri 016 Buluh Kasap. *Jurnal PAJAR (Pendidikan dan Pengajaran), 1*(1), 110-114, http://dx.doi.org/10.33578/pjr.v2i1.4884
[4] Daryanto. (2010). *Media Pembelajaran*. Bandung : Satu Nusa.
[5] Handayani, N. & Abadi, I. B. G. S. (2020). Pengaruh Model Pembelajaran Langsung Berbantuan Media Gambar Terhadap Kompetensi Pengetahuan Matematika Siswa Kelas IV SD. *Jurnal Mimbar Ilmu, 25*(1), 120-131, https://doi.org/10.23887/mi.v25i1.24767
[6] Harsa, F.J. (2016). Integrasi ICT dalam Pembelajaran Matematika. *Jurnal Paedagogi, 8*(2), https://doi.org/10.1234/paedagogi.v8i2.8165.
[7] Mastika, A. D. (2013). Pengaruh Model Pembelajaran Explicit Instruction Berbantuan Media Gambar Terhadap Hasil Belajar IPA Kelas V SD Gugus I Kecamatan Buleleng : *Jurnal Mimbar Ilmu Universitas Pendidikan Ganesha, 1*(1), https://doi.org/10.23887/jjpgsd.v1i1.755
[8] Munadi, Y. (2012). *Media Pembelajaran*. Jakarta: Gaung Persada.
[9] Pusfandari, A. D. A., & Budiyono. (2014). Penerapan Model Pembelajaran Langsung untuk

Meningkatkan Hasil Belajar Matematika Siswa Kelas III SDN Ngagel Rejo III/398 Surabaya. *Jurnal Penelitian Pendidikan Guru Sekolah Dasar, 2*(2), 1-7

[10] Suprijono, Agus. (2009). Cooperative Learning. Yogyakarta: Pustaka Belajar

[11] Utari, R., Parmiti, D.P., & Sudana, D.N. (2016). Pengaruh Model Pembelajaran Explicit Instruction Berbantuan Lingkungan Alam Sekitar Terhadap Hasil Belajar IPA Siswa Kelas IV di MIN Air Kuning Tahun Pelajaran 2015/2016. *Jurnal Penelitian Pendidikan Guru Sekolah Dasar, 4*(1), 1-7, https://doi.org/10.23887/jjpgsd.v4i1.7420

[12] Trianto. (2007). *Model Pembelajaran Inovatif Berorientasi Konstruktivistik.* Jakarta: Prestasi Pustaka.