The Effectiveness of Digital Learning Media in Social Studies Learning in Public Middle Schools in Singaraja Regency

AA. Dewi Adhi Utami[1], I Wayan Budiarta[2], Ni Nyoman Asri Sidaryanti[3]

{adhi.utami@undiksha.ac.id[1], wyn.budiarta@undiksha.ac.id [2], nsidarianti@undiksha.ac.id[3]}

Universitas Pendidikan Ganesha, Indonesia[123]

Abstract. This study aims to explain the effectiveness of digital-based learning media in learning the field of Social Sciences when viewed from the aspects of knowledge, attitudes and skills of students. This study will utilize quantitative descriptive methods. The subjects of this study are junior high school students in Singaraja City. The data collection method uses knowledge tests, scales and observations. The research instrument uses observation guidelines, tests and questionnaires. The data analysis technique used in this study is quantitative descriptive. The hypothesis of this study describes that there is an increase in knowledge, better attitudes and better skills in students when using digital-based learning media compared to conventional media.

Keywords: media; effectiveness; digital.

1 Introduction

Learning activities are communication activities that involve three main components, namely the teacher as the sender of the message, students as the recipient of the message and the message itself in the form of learning materials. In this process, communication failures often occur, where the message to be conveyed does not arrive properly as intended. Or not all students are able to receive the message as it is. To avoid failure in delivering learning materials, teachers need learning media that can facilitate students. Media is the plural form of medium which means an intermediary so that the message can be conveyed to the recipient. Media applies to various activities or efforts, such as media in delivering messages, magnetic or heat conducting media in the field of engineering, including in the field of education. Learning media is something that can convey messages and can stimulate a person's thoughts, feelings, and desires, so that it can encourage the achievement of the learning process in him[1]. By using learning media, teachers can help students understand facts, data, concepts, or theories that will be transformed in learning by simplifying abstract material into concrete, far into near, less interesting into interesting, one way into many directions, diverse into uniform, and long into short[2]. Learning media is very important for the success of the learning process and the achievement of learning objectives[3]. Therefore, learning media must be packaged in such a way that it is interesting, invites attention, arouses curiosity, is fun, and encourages students to participate in learning activities.

There are several reasons why learning media is needed in learning activities, namely: (1) student-centered learning shows higher learning success compared to teacher-centered learning[4]. Learning media must attract students to participate in the learning process if the

learning process is to be student-centered[5], (2) research results show that information obtained by someone through the senses only shows 6% of the smell process, 6% of the touch process, 13% of the hearing process, and 75% of the vision process[6]. The largest contribution of sensory activity is contributed by the visual or vision process, so that the learning process requires media that can be seen by students, not only expository learning, (3) rapid progress in technology and science, especially learning media that can be used by students to improve their abilities, only requires the teacher's willingness to use it in the learning process, (4) the digitalization era or the industrial revolution 4.0 era requires technological literacy, information literacy and critical thinking skills which require teachers to always uselearning resources during the learning process [7], and (5) the spread of various types of media (print media, electronic media, modern media, outdoor media, traditional media, interpersonal media) in personal spaces requires effective utilization through the learning process [5].

By creating these psychological conditions, students will be challenged to be able to improve their level of knowledge, attitudes, and social skills[8]. Providing stimulation of knowledge, morals, and skills can be done through digital learning media that comprehensively present things that are audio, visual, and combined audiovisual at once[7]. The digital learning media that is developed must also be actual (developing socio-political issues), contextual (can be used for real life of students) and based on the cultural values of the community where the learning practice takes place[9]. Thus, it is very important to test the effectiveness of digital learning media in social studies learning[10]. This test is carried out by comparing digital learning media with other learning media to determine which learning media is more suitable for running the learning process[11].

2 Research Method

This study uses a quantitative research model (quasi-experimental) [12]. The population in this study were all social studies teachers and junior high school students in Singaraja Regency, Bali Province. While the sample of this study was two classes, one control class and one experimental class determined by random sampling[13]. In this study, data were collected through tests, student assessment questionnaires and observations. The research instruments used were knowledge tests and attitude questionnaires as well as skill observation guidelines. The data analysis technique used in this study was a quantitative data analysis technique[1]. To test the four hypotheses above, MANOVA (multivariate analysis of variance) statistical analysis was used by finding the A* coefficient using the following formula:

3 Result and Discussion
3.1 The Effectiveness of Digital Learning Media in Developing Knowledge.

The data obtained in this digital learning media experiment are knowledge data, attitudes and data on groups of students who use digital learning media and those who use conventional learning media[14]. This data is used to compare the knowledge, attitudes, and skills of students in the digital learning group with the conventional learning group. For comparison, here is the data on the knowledge, perspectives, and skills of students who take part

in learning through digital learning media compared to the group of students who take part in learning through conventional learning media:

Table 1. Recapitulation of Statistical Values

	Experimental Group			Control Group		
	year 1	Y2	year 3	year 1	Y2	year 3
N	81	81	81	52	52	52
Means	25.60	147.95	121.05	22.88	128.08	114.27
Average	26.00	145.00	122.00	22.50	127.50	115.00
Mode	26	120	115	21	129	115
Standard Deviation	2,458 people	20,965	8,387 people	2,881	23,100 people	10,119 years
Variants	6,042 people	439,548	70,348 people	8,300 people	533,602 people	102,397 people
Range	10	84	35	12	90	37
Minimum	20	105	100	18	85	96
Maximum	30	189	135	30	175	133
Amount	year 2074	year 11984	9805	year 1190	6660	5942

source: Suastika, 2021: 1667-1672 [6]

Information:
Y1: Knowledge
Y2: Attitude
Y3: Knowledge

The data of students' knowledge scores using learning with digital learning media were obtained as follows[13]. The number of data n = 81, average = 25.60, maximum score = 30, minimum score = 20, range = 10, variance = 6.04, and standard deviation = 2.46. To see the picture of the distribution of students' knowledge data in the experimental group, a frequency distribution table was made as follows:

Table 2. Frequency Distribution of Experimental Group Knowledge Scores

Hose	Middle	Frequency	Percentage	Relative Frequency
19 - 20	18.5	1	1.2%	1.23
21 - 22	21.5	9	11.1%	11.11
23 - 24	23.5	16	19.8%	19.75
25 - 26	25.5	25	30.9%	30.86
27 - 28	27.5	19	23.5%	23.46
29 - 30	29.5	11	13.6%	13.58

Amount		81	100.0%	100.00

source: Suastika, 2021: 1667-1672 [6]

The data of students' knowledge scores who participated in conventional learning media learning obtained the following data[15]. The number of data n = 52, average = 22.88, maximum score = 30, minimum score = 18, range = 12, variance = 8.30 and standard deviation = 2.88.

Table 3. Frequency Distribution of Control Group Knowledge Scores

Hose	Middle	Frequency	Percentage	Relative Frequency
17 - 18	17.5	3	5.8%	5.77
19 - 20	19.5	8	15.4%	15.38
21 - 22	21.5	15	28.8%	28.85
23 - 24	23.5	10	19.2%	19.23
25 - 26	25.5	10	19.2%	19.23
27 - 28	27.5	5	9.6%	9.62
29 - 30	29.5	1	1.9%	1.92
Amount		52	100.0%	100.00

source: Suastika, 2021: 1667-1672 [6]

The level of student knowledge in the group of students using digital learning media and the group of students using conventional learning media can be described as follows, according to the criteria for classifying student knowledge in the research method:

Table 4. Distribution of Students' Knowledge Levels

Score	Qualification	Experiment		Control	
		F	Percentage	F	Percentage
$22.50 \le x < 30.00$	Very high	71	87.7%	26	50.0%
$17.50 \le x < 22.50$	Tall	10	12.3%	26	50.0%
$12.50 \le x < 17.50$	Currently	number 0	0.0%	number 0	0.0%
$7.50 \le x < 12.50$	Low	number 0	0.0%	number 0	0.0%
$0 \le x < 7.50$	Very Low	number 0	0.0%	number 0	0.0%
Amount		81	100.0%	52	100.0%

source: Suastika, 2021: 1667-1672 [6]

The table above shows that the level of knowledge of students who follow learning with digital learning media is mostly in the high and very high categories. Students who use conventional learning media have a better level of knowledge, with a very high percentage.

3.2 Effectiveness of Digital Learning Media in Developing Attitudes

The data on the attitude scores of students who were given learning treatment with digital learning media obtained the following data. The number of data n = 81, average = 147.95, maximum score = 189, minimum score = 105, range = 84, variance = 439.55 and standard deviation = 20.96. To see the picture of the distribution of the experimental group's attitude data, a frequency distribution table was made as follows:

Table 5. Frequency Distribution of Experimental Group Attitude Scores

Hose	Middle Value	Frequency	Percentage	Relative frequency
105 - 115	105.5	5	6.2%	6.17
116 - 126	116.5	8	9.9%	9.88
127 - 137	127.5	15	18.5%	18.52
138 - 148	138.5	16	19.8%	19.75
149 - 159	149.5	13	16.0%	date 16.05
160 - 170	160.5	8	9.9%	9.88
171 - 181	171.5	12	14.8%	14.81
182 - 192	182.5	4	4.9%	4.94
Amount		81	100.0%	100.00

source: Suastika, 2021: 1667-1672 [6]

The following data shows the multicultural attitude scores of students who follow learning with conventional learning media. The number of data n = 52, average = 128.08, maximum score = 175, minimum score = 85, range = 90, variance = 533.60 and standard deviation = 23.10. To see the picture of the distribution of control group attitude data, a frequency distribution table is made as follows:

Table 6. Frequency Distribution of Control Group Attitude Scores

Hose	Middle	Frequency	Percentage	Relative frequency
85 - 97	85.5	5	9.6%	9.62
98 - 110	98.5	8	15.4%	15.38
111 - 123	111.5	10	19.2%	19.23
124 - 136	124.5	11	21.2%	date 21.15
137 - 149	137.5	6	11.5%	11.54
150 - 162	150.5	8	15.4%	15.38
163 - 175	163.5	4	7.7%	7.69
		52	100.0%	100.00

source: Suastika, 2021: 1667-1672 [6]

Students' perspectives on learning through digital and conventional media can be described as follows, according to the criteria for classifying knowledge and attitudes used in the research method:

3.3 Effectiveness of Digital Learning Media in Developing Students' Skills.

The data on the skill scores of students who participated in learning with digital

learning media were obtained as follows. Data lot n = 81, average = 121.05, maximum score = 135, minimum score = 100, range = 35, variance = 70.35 and standard deviation = 8.39. To see an overview of the distribution of the experimental group's skill data, a frequency distribution table was created as follows:

Table 7. Frequency Distribution of Experimental Group Skill Scores

Hose	Middle	frequency	Percentage	Relative frequency
99 - 103	99.5	2	2.5%	2.47
104 - 108	104.5	4	4.9%	4.94
109 - 113	109.5	11	13.6%	13.58
114 - 118	114.5	13	16.0%	date 16.05
119 - 123	119.5	19	23.5%	23.46
124 - 128	124.5	11	13.6%	13.58
129 - 133	129.5	17	21.0%	20.99
134 - 138	134.5	4	4.9%	4.94
Amount		81	100.0%	100.00

source: Suastika et.al, 2021: 1667-1672 [6]

Table 8. Distribution of Student Skill Levels

Score	Qualification	Experiment		Control	
		F	Percentage	F	Percentage
$108.00 \leq x < 135.00$	Very high	75	92.6%	37	71.2%
$90.00 \leq x < 108.00$	Tall	6	7.4%	15	28.8%
$72.00 \leq x < 90.00$	Currently	number 0	0.0%	number 0	0.0%
$54.00 \leq x < 72.00$	Low	number 0	0.0%	number 0	0.0%
$27.00 \leq x < 54.00$	Very Low	number 0	0.0%	number 0	0.0%
Amount		81	100.0%	52	100.0%

source: Suastika, 2021: 1667-1672 [6]

The table states that students who implement learning with digital media tend to show skills that are categorized as high or very high. If you look at the percentage, of course students who implement digital media in learning tend to have better skills than students who use conventional media.

4 Conclusion

      The results of the hypothesis test on the subjects of this study, namely junior high school students in Singaraja City when digital and non-digital or conventional learning were applied to social science subjects showed uniformity[4]. The first hypothesis is on the knowledge aspect. The third hypothesis is on the attitude aspect. The third hypothesis is on the skills aspect. These three aspects are applied to junior high school students in Singaraja City, in the social science subject. The research subjects were given two treatments, namely using digital learning media and conventional media. The results of the three hypotheses show a trend of increasing knowledge in the knowledge aspect, increasing attitudes in the attitude aspect, increasing skills in the skills aspect. Thus, there is a kind of tendency for a productive increase if students receive treatment using digital media.

References

[1]   R. Aisahsari and F. U. Ermawati, "Validitas Dan Reliabilitas Instrumen Four-Tier Diagnostic Test Untuk Materi Arus Listrik Searah," *Inov. Pendidik. Fis.*, vol. 8, no. 2, pp. 565–568, 2019.

[2]   W. Muga, B. Suryono, and E. L. Januarisca, "Pengembangan Bahan Ajar Elektronik Berbasis Model Problem Based Learning Dengan Menggunakan Model Dick and Carey," *J. Educ. Technol.*, vol. 1, no. 4, p. 260, 2017, doi: 10.23887/jet.v1i4.12863.

[3]   A. Hyman *et al.*, "Testing a school-based program to promote digital health literacy and healthy lifestyle behaviours in intermediate elementary students: The Learning for Life program," *Prev. Med. Reports*, vol. 19, no. June, p. 101149, 2020, doi: 10.1016/j.pmedr.2020.101149.

[4]   I. Ivanov, J. C. Cobo, and M. Kosonogova, "Implementation of developmental education in the digital learning environment," *Procedia Comput. Sci.*, vol. 172, no. 2019, pp. 517–522, 2020, doi: 10.1016/j.procs.2020.05.062.

[5]   B. Bowyer and J. Kahne, "The digital dimensions of civic education: Assessing the effects of learning opportunities," *J. Appl. Dev. Psychol.*, vol. 69, no. June, p. 101162, 2020, doi: 10.1016/j.appdev.2020.101162.

[6]   I. N. Suastika, I. K. Suartama, D. B. Sanjaya, and K. S. Arta, "Application of multicultural-based learning model syntax of social studies learning," *Cypriot J. Educ. Sci.*, vol. 16, no. 4, pp. 1660–1679, 2021, doi: 10.18844/cjes.v16i4.6030.

[7]   T. Nurrita, "Pengembangan Media Pembelajaran Untuk Meningkatkan Hasil Belajar Siswa," *MISYKAT J. Ilmu-ilmu Al-Quran, Hadist, Syari'ah dan Tarb.*, vol. 3, no. 1, p. 171, 2018, doi: 10.33511/misykat.v3n1.171.

[8]   N. P. Dewi, Y. L. Rahmi, H. Alberida, and R. Darussyamsu, "Validitas dan Reliabilitas Instrumen Penilaian Kemampuan Berpikir Tingkat Tinggi ten-tang Materi Hereditas untuk Peserta Didik SMA/MA," *J. Eksakta Pendidik.*, vol. 4, no. 2, p. 138, 2020, doi: 10.24036/jep/vol4-iss2/512.

[9]   M. Dhamayanti, A. D. Rachmawati, N. Arisanti, E. P. Setiawati, V. K. Rusmi, and N. Sekarwana, "Validitas dan Reliabilitas Kuesioner Skrining Kekerasan terhadap Anak 'ICAST-C' versi Bahasa Indonesia," *J. Keperawatan Padjadjaran*, vol. 5, no. 3, pp. 281–289, 2018, doi: 10.24198/jkp.v5i3.650.

[10] R. Adolph, "済無No Title No Title No Title," vol. 4, pp. 1–23, 2016.

[11] C. Suwartono *et al.*, "IDENTITAS SOSIAL," vol. 14, no. 2, pp. 176–188, 2017.

[12] J. W. Creswell *et al.*, "Planning, Conducting, and Eva I uati ng Quantitative and Qua I itative Research FIFTH EDITION," *Educ. Res.*, pp. 10–12, 2012.

[13] R. Masykur, N. Nofrizal, and M. Syazali, "Disamping memiliki beberapa kelebihan,

Macromedia Flash juga tidak terlepas dari kekurangan. Kekurangan Macromedia Flash adalah sebagai berikut: 1. Macromedia Flash hanya dapat dilihat dengan komputer atau VCD player, 2. Proses belajar Macromedia Flash ti," *Al-Jabar J. Pendidik. Mat.*, vol. 8, no. 2, p. 177, 2017.

[14]   A. Horvat, M. Dobrota, M. Krsmanovic, and M. Cudanov, "Student perception of Moodle learning management system: a satisfaction and significance analysis," *Interact. Learn. Environ.*, vol. 23, no. 4, pp. 515–527, 2015, doi: 10.1080/10494820.2013.788033.

[15]   H. Retnawati, "Validitas Dan Reliabilitas Konstruk Skor Tes Kemampuan Calon Mahasiswa," *J. Ilmu Pendidik.*, vol. 23, no. 2, pp. 126–135, 2017.