The Effectiveness of Using Interactive Multimedia (Smart Apps Creator, Articulate Storyline, and E-Module) and Conventional in Bartending Courses

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ABSTRACT

Learning media cannot be separated from technological developments as a teaching and learning aid to achieve learning objectives. The use of interactive multimedia looks more attractive because there is a visualization of the material displayed so that students can understand it easily. This research was conducted to find out whether the use of interactive multimedia (Smart Apps Creator, Articulate Storyline, and E-Module) in the Bartending course can increase students' understanding at the Family Welfare Education Study Program on Hospitality Accommodation concentration, Universitas Negeri Jakarta. The effectiveness of this interactive multimedia is seen in student learning outcomes. Based on the results of the analysis of the effectiveness test of interactive multimedia in Bartending learning in the control class, the control class obtained an N-gain value of 39.0% in the ineffective category and the experimental class obtained an N-gain value of 62.2% in the effective enough category, which means that there is a difference in understanding significant student learning. Based on the results of the pretest and post-test that have been done, it can be concluded that the use of interactive multimedia has more influence on students' understanding of bartending learning compared to the use of conventional media.

Keywords: Interactive Multimedia, Smart Apps Creator, Articulate Storyline, E-Module, Bartending.

1. INTRODUCTION

Science and technology continue to grow rapidly and provide a broad influence in various fields, one of which is the education field. With technological advances, renewal efforts in utilizing technological results in the learning process are increasingly encouraged by the development of science. Currently, educators are required to use technology in accordance with the times. Then educators are also required to develop their skills to create more innovative learning media in order to encourage students to learn independently Education in Indonesia currently It has entered the Industrial Revolution 4.0 era and is starting to prepare itself to enter the Society 5.0 era. Today technology in general has expanded to various sectors of society, starting from the economic, social, and educational industries, especially learning [1]. Along with the development of technology, learning facilities and infrastructure also develop [2]. Various kinds of increasingly sophisticated and developing technological products have been created and spread to all fields. Now the learning process between educators and students that used to be done face-to-face can be done online using media that can support [3]. Distance and time are now no longer significant problems for gaining knowledge [4].

Learning media can be said to be inseparable from existing technological developments. Media development is a tool in the teaching and learning process to achieve learning objectives. Learning media that is inherent in the current digital era is media that can combine text, images, video, and audio [5]. Learning media can overcome the limitations of available facilities and infrastructure. Such objects that are too large to be displayed in class can be replaced with pictures, photos, or slides [6]. Increasing students' understanding of the use of multimedia in education is a

new opportunity to achieve effective and efficient learning.

According to Kemenristekdikti [7] there are several important elements that are of concern to become competent in facing the challenges of the industrial revolution 4.0, namely: (a) Preparing a more innovative learning system in tertiary institutions by integrating physical, digital and human objects to produce competitive tertiary graduates and skilled especially in the aspects of data literacy, technology literacy and human literacy; (b) Preparing human resources, especially lecturers and researchers and engineers who are responsive, adaptive and reliable to face the industrial revolution 4.0; (c) Opening breakthroughs in research and development that support the industrial revolution 4.0 to improve the quality and quantity of research and development in Higher Education. Learning media can be said to be inseparable from technological developments as a tool for teaching and learning processes in order to achieve learning objectives.

Multimedia is a combination of two or more media consisting of text, graphics, images, photos, audio, video, and animation [8]. Multimedia is divided into two categories, namely: linear multimedia and interactive multimedia. Interactive multimedia is a multimedia where users can control what and when multimedia elements will be displayed. Examples of interactive multimedia are Smart Apps Creator, Articulate Storyline, and E-Module. Interactive media is an alternative that can be used by educators and students to improve the quality of education, thus enabling students to study independently and start and end lessons as they wish and can repeat material that is not clearly understood [9].

Bartending is one of the subjects in the Hospitality Accommodation concentration, in the Family Welfare Education Study Program, Universitas Negeri Jakarta. This course consists of both theory and practice. In hotel management, bar is one of the subdepartment of Food and Beverage Services which is responsible for making and serving beverage products. Bartending itself is the knowledge of how to operate a bar in the activities of making, mixing, and creating various types of mixed drinks, both alcoholic (cocktails) and non-alcoholic (mocktails) from various different ingredients into drinks and can be sold to customers [10].

Bartending learning media in the Hospitality Accommodation concentration, Family Welfare Education Study Program, Universitas Negeri Jakarta still not diverse, namely still in the form of power point, printed media or conventional learning. Students need new learning media that can increase interest and understanding. Developing interactive multimedia in the Bartending course is one possible solution. Interactive multimedia is designed to make it easier for students to study Bartending courses because of the ease of access to using learning media. There are 3 types of interactive multimedia provided according to Bartending learning materials, namely in the form of media based on Smart Apps Creator, Articulate Storyline, and E-Module.

Based on the results of the research that has been done, the three interactive multimedia Bartending courses produced are included in the valid and practical category. Therefore, it will be continued to see the level of effectiveness. Measuring the level of effectiveness will be seen from the student learning outcomes in the two classes that are given treatment and not given any treatment. Based on this, the authors conducted research on the effectiveness of interactive multimedia in the Bartending course entitled "The Effectiveness of Using Interactive Multimedia (Smart Apps Creator, Articulate Storyline, and E-Module) and Conventional in Bartending Courses".

2. METHOD

Based on the problems studied, this study used a quasi-experimental method by giving pretest and post-test questions. Research data were analysis using descriptive statistics. The data collection technique used was in the form of pretest and post-test scores. Pretest and post-test were given to the experimental class and control class using the same questions. The increase in understanding of the Bartending course was analysis by calculating the average normalized gain value ($<g>$) from the pretest and post-test scores. Data analysis was carried out, namely the normality test, homogeneity test, and effectiveness test using the t-test on samples that were used as research with the SPSS (Statistical Program for Social Science) version-22 program.

3. RESULTS AND DISCUSSION

This research was conducted by providing pretest questions for the experimental class and control class to determine the knowledge possessed by students. Furthermore, the experimental class will be treated with interactive multimedia (Smart Apps Creator, Articulate Storyline, and e-module) and the control class will be treated as usual without using interactive multimedia. After that, the experimental class and the control class were given post-test questions. The following are the results of the pretest and post-test from the experimental class and the control class. The data can be seen in Figure 1.

The results showed that the average pretest score in the experimental class was 5.9 and the post-test average score in the experimental class was 8.7. These results indicate that there is an increase in knowledge based on the average value of Bartending learning in the experimental class before and after being treated with interactive multimedia. While the pretest average score

in the control class was 6.3 and the post-test average score in the control class was 7.9. These results indicate that there is an increase in knowledge based on the average value of Bartending learning in the control class. However, the increase in knowledge in the control class was not as big as the increase in the average value in the experimental class.
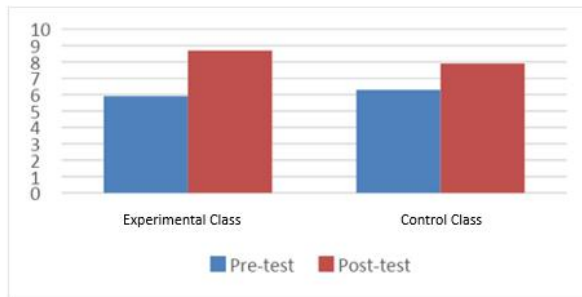

Figure 1 Pretest and Post-test Results

Although the difference is very small. This difference indicates a learning process has occurred. This is in line with the concept of constructivism theory that learning is a process of forming knowledge. This formation must be carried out by individuals who learn. He must actively carry out activities, actively think, develop concepts and give meaning to the things he learns [11]. Teachers can and should take the initiative to organize an environment that provides optimal opportunities for learning to occur. However, what ultimately determines the realization of learning symptoms is the student's learning intention itself. In other terms, it can be said that in essence the control of learning lies entirely with the students. For constructivists, learning activities are active activities of students to discover something and build their own knowledge, not a mechanical process to gather facts. Students are responsible for their learning outcomes. Students make reasoning on what is learned by looking for meaning, comparing it with what is already known and resolving discrepancies between what is known and what is needed in new experiences. Every student has a suitable way to construct knowledge which is sometimes very different from other friends. In this case it is very important that students are enabled to try various ways of learning that are suitable and it is also important that the teacher creates various situations and methods that help students [12].

3.1 Knowledge Improvement Results

After the learning process was carried out in both classes, the next step was giving the posttest. Then the posttest and pretest value data can be seen to what extent Bartending learning knowledge increases with the normalized gain formula (N-Gain). The results of the N-Gain data regarding Bartending learning

knowledge can be presented in the table below. The data can be seen in Table 1.

In the experimental class the N-gain result of 62.2% is categorized as quite effective, meaning that using interactive multimedia learning media can improve student learning outcomes. In the control class, the N-gain result, namely 39.0%, was included in the ineffective category. It can be said that the use of conventional learning media is not suitable for Bartending learning.

3.2 Data Analysis Prerequisite Test

3.2.1 Experimental Class

After testing the data to determine the increase in Bartending learning knowledge is calculated using the normalized gain formula (N-Gain). The results of testing the hypothesis in this study were carried out through three stages. The first stage is to do a normality test. The data is said to be normally distributed if the sig. pretest > 0.05. If the normality test is normally distributed, then the second stage is carried out, namely the homogeneity test. The data is said to be homogeneous if the sig. >0.05. If the homogeneity test is accepted or homogeneous, then the third stage is carried out, namely the t-test. The data can be seen in Table 2.

From the results of the data analysis that has been carried out in the experimental class, the final result is a sig pretest <0.05, which means that the data is not normally distributed. In the experimental class analysis requirement test, the data were not normally distributed, then a non-parametric statistical analysis test was performed as an alternative using the Wilcoxon test. The data can be seen in Table 3.

The Wilcoxon test is a non-parametric test used to measure two samples of paired data on an ordinal or interval scale but the data is not normally distributed. The Wilcoxon test in this study was used to determine the effectiveness hypothesis of the use of interactive multimedia.

The results of the Wilcoxon test above the negative rank table resulted in 1 respondent experiencing a decrease from the pretest to the post-test. Then in the positive rank table there were 22 respondents who experienced an increase in scores from pretest to post-test and in the rank ties table there were no respondents who experienced the same value. The data can be seen in Table 4.

In the Wilcoxon statistical test table above, the sig. 0.00 < 0.05 then H0 is rejected, so there is a difference in the average scores in the pretest and post-test of the experimental class.

Table 1. N-Gain Results

	Category			Statistic	Std. Error
NGain_Persen	Experiment	Mean		62.2027	5.44468
		95% Confidence Interval for Mean	Lower Bound	50.9111	
			Upper Bound	73.4942	
		5% Trimmed Mean		65.5511	
		Median		66.0000	
		Variance		681.826	
		Std. Deviation		26.11179	
		Minimum		-42.86	
		Maximum		95.24	
		Range		138.10	
		Interquartile Range		14.84	
		Skewness		-3.019	.481
		Kurtosis		12.537	.935
	Control	Mean		38.9503	8.12179
		95% Confidence Interval for Mean	Lower Bound	22.1067	
			Upper Bound	55.7938	
		5% Trimmed Mean		41.0584	
		Median		42.1053	
		Variance		1517.158	
		Std. Deviation		38.95071	
		Minimum		-58.82	
		Maximum		94.00	
		Range		152.82	
		Interquartile Range		51.85	
		Skewness		-.691	.481
		Kurtosis		.341	.935

Table 2. Experimental Class Kolmogorov-Smirnov Shapiro-Wilk Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre-Test Experiment	.162	23	.120	.943	23	.204
Post-Test Experiment	.201	23	.017	.886	23	.013

Table 3. Experimental Class Wilcoxon Test

		N	Mean Rank	Sum of Ranks
Post-Test Experiment - Pre-Test Experiment	Negative Ranks	1[a]	1.00	1.00
	Positive Ranks	22[b]	12.50	275.00
	Ties	0[c]		
	Total	23		

Table 4. Experimental Class Wilcoxon Test

	Post-Test Experiment - Pre-Test Experiment
Z	-4.172[b]
Asymp. Sig. (2-tailed)	.000

3.2.2 Control Class

After carrying out the normality test in the experimental class, the next step is to carry out the normality test in the control class. The data can be seen in Table 5.

Table 5. Control Class Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre-Test Control	.159	23	.136	.972	23	.726
Post-Test Control	.150	23	.196	.935	23	.141

From the results of data analysis in the processed control class, the final result was a sig pretest > 0.05, which means that the data is normally distributed. Then proceed with the homogeneity test with the ANOVA formula.

From the results of data analysis in the processed control class (table 6), the final result was a sig pretest > 0.05, which means acceptable or homogeneous. After that, the next step is the t-test using the Paired Sample Test formula.

The paired sample t-test (table 7) conducted to see if there is a difference between pretest and posttest in control class. The Paired Samples Statistics table shows an average pretest score of 6.348 and a posttest of 7.861. The next is paired sample correlation test.

The paired sample correlation conducted (table 8) to see if there is a correlation between pretest and posttest in control class. The Paired Sample Correlation Table shows that there is no relation between posttest and pretest.

The Paired Samples Test table 9 shows that there is a difference between the pretest and posttest but not significant difference.

Table 6. Control Class Homogeneity Test

Levene Statistic	df1	df2	Sig.
2.250	1	44	.141

Table 7. Control Class Paired Sample T-Test

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest Control	6.348	23	1.0018	.2089
	Posttest Control	7.861	23	1.3419	.2798

Table 8. Control Class Paired Sample T-Test

		N	Correlation	Sig.
Pair 1	Pretest Control & Pos-test Control	23	.247	.257

Table 9. Control Class Paired Sample Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest Control - Posttest Control	-1.5130	1.4633	.3051	-2.1458	-.8803	-4.959	22	.000

3.3 Discussion

Based on the research results, it was found that the use of interactive media can increase students' knowledge in Bartending, these changes can be seen from the results of the students' pretest and post-test scores. The experimental group subjects showed better results than the control group. The experimental subjects obtained a significant increase as seen in the acquisition of a higher average gain score than the control group. The treatment in the experimental group was given Bartending material using interactive learning multimedia. While the control group was not given any treatment or just go with conventional learning. This aims to see the differences obtained by the experimental and control groups as a comparison of research success.

After determining the N-Gain, the researcher conducted a t-test. Before determining the t test, normality and homogeneity tests were first carried out. The normality test is a test carried out with the aim of assessing the distribution of data within a group whether it is normally distributed or not [13]. If the normality test data is not normally distributed, then a non-

parametric statistical analysis test is performed as an alternative. The non-parametric statistical analysis test used is the Wilcoxon Test [14]. After the normality test was carried out in the experimental class, the resulting data were not normally distributed, so the next step was to carry out the Wilcoxon test. The Wilcoxon Signed Rank Test is used to compare two conditions when the same participants participate in each condition and the resulting data is not normally distributed [15]. Based on the analysis of the Wilcoxon signed rank test pretest and posttest results in the experimental class, it can be seen that there is a significant difference in increasing student knowledge before and after being given interactive learning media.

Furthermore, the normality test was carried out in the control class to obtain samples that were normally distributed. After the sample is proven to come from a normally distributed population, a homogeneity test is carried out with the aim of knowing whether the variances of the sample classes are the same or not. From the results of the homogeneity test that has been carried out it is proven to be homogeneous, in the sense that they have the same ability. After that, the t-test was carried out by producing a sig value. 0.257 > 0.05 which means there is no relationship between pretest and posttest in the control class. It can be concluded that the application of interactive multimedia in Bartending learning has a significant effect. Interactive learning multimedia enables students to obtain information and learning materials effectively and efficiently. Students will remember and learn things faster with colorful media and display higher visuals than writing [16]. This is similar to the results of research, that the practicality of using learning media seen from the positive responses of students has a significant influence on student learning outcomes [17].

4. CONCLUSION

In this study it was found that the increase of students' knowledge in Bartending learning in the experimental class was categorized as quite effective. Increasing Bartending learning knowledge for control class students is included in the ineffective category. There is a significant difference between the average acquisition value of Bartending learning knowledge of students in the experimental class and the control class. The effectiveness of learning media using interactive multimedia is proven by an increase in student understanding of Bartending learning. Some of the advantages obtained during the research are the use of interactive multimedia in Bartending learning which can increase student learning motivation. They become interested in studying Bartending courses. However, there are weaknesses in the use of interactive multimedia in Bartending learning, which requires a supporting internet connection. The use of interactive multimedia has great potential to be used in the learning process in the future.

REFERENCES

[1] Riyana, E-Leraning Konsep dan Implementasi, UPI Press, 2017.

[2] F. Rohdiani, L. Rakhmawati, Pengembangan Media Pembelajaran Berbasis Web pada Mata Kuliah Fisika Dasar Elektronika di SMK Negeri 3 Jombang, Jurnal Pendidikan Teknik Elektro, vol. 6, 2017, pp. 105-110.

[3] F. Nastiti, R. Abdu, Kesiapan Pendidikan Indonesia Menghadapi era Society 5.0, Edcomtech, vol. 5, 2020, pp. 61-66.

[4] C. Danaswari, A. Gafur, Multimedia Pembelajaran Berbasis Web pada Mata Pelajaran Akuntansi SMA untuk Peningkatan Motivasi dan Hasil Belajar, Jurnal Inovasi Teknologi Pendidikan, vol. 5, 2018, pp. 204-218. DOI: 10.21831/jitp.v5i2.15543.

[5] T. Mei and C. Zhang, Pembelajaran Mendalam untuk Analisis Video Cerdas, Tadris: Jurnal Keguruan dan Ilmu Tarbiyah, vol. 2, 2017, pp. 97-104. DOI: http://dx.doi.org/10.24042/tadris.v2i2.1559.

[6] A. Arsyad, Media Pembelajaran, Jakarta: Raja Grafindo Persada, 2016.

[7] Anonymous, Kompetensi Tantangan Revolusi Indusri 4.0, Kemenristekdikti, 2018.

[8] W. A. Surasmi, Pemanfaatan Multimedia untuk Mendukung Kualitas Pembelajaran, Prosiding Temu Ilmiah Nasional Guru (TING) VIII, 2016, pp. 593–607.

[9] L.Y. Sari, D. Susanti, Uji Efektivitas Media Pembelajaran Interaktif Berorientasi Konstruktivisme pada Materi Neurulasi untuk Perkuliahan Perkembangan Hewan, BioCONCETTA: Jurnal Biologi dan Pendidikan Biologi, vol. 2, 2016, pp. 158-164, DOI: https://doi.org/10.22202/bc.2016.v2i1.1806

[10] I. Isdarmanto, Pengetahuan Bartending Mixing Drink, Yogyakarta: Gerbang Media Aksara, 2016.

[11] Haryadi, Iskandar, D. Nofriansyah, The Constructivist Approach: Radical and Social Constructivism in the Relationship by Using the Implementation Career Level on the Vocational Education, vol. 1, Invotec XII, 2016, pp. 16-21.

[12] N. Sugrah, Implementasi Teori Belajar Konstruktivisme dalam Pembelajaran Sains, Humanika, Kajian Ilmiah Mata Kuliah Umum, vol. 19, 2019, pp. 121-138, DOI: 10.21831/hum.v19i2.29274

[13] E. P Ramdhani, F. Khoirunnisa, and N. A. N. Siregar, Efektifitas Modul Elektronik Terintegrasi Multiple Representation pada Materi Ikatan Kimia, Jurnal Riset dan Teknologi, vol. 6, 2020, pp. 162-167.

[14] F. Rahmawati, V. Fatimah, N. L. Buraidah, A. R. E. L. Wa'fa, S. N. Faizah, and A. Mukaromah, Efektifitas Video Belajar dalam Pembelajaran Daring Matematika Materi Transformasi Pada Siswa SMP, Jurnal TEOREMA (Penelitian Asli Matematika), vol. 5, 2021, pp. 202–211, DOI: 10.31949/th.v5i2.2668

[15] Maryadi, Membandingkan Hasil Uji Statistik Parametrik dan Nonparametrik (Studi Kasus: Pelaksanaan Kebijakan Pengendalian Dana Idle Pemerintah Daerah), Jurnal Akuntansi Manajerial Terapan, vol. 4, 2020, pp. 142–149, DOI: 10.30871/jama.v4i1.1949

[16] W. A. Septiko, M. A. Akbar and T. Afirianto, Pengembangan Game Edukasi Platformer Kisah Gajah Mada Menyatukan Nusantara Menggunakan Metode Iterative with Rapid Prototyping, Jurnal Pengembangan Teknologi Informasi Dan Ilmu Komputer, vol. 2, 2018, pp. 5983-5989.

[17] J. Susilowibowo, S. Susanti, H. T. Hardini, I. Widayati and M. D. Bahtiar, Factors Affecting Student Accounting Practicum Learning Outcomes During the Covid-19 Pandemic, EDUKATIF: JURNAL ILMU PENDIDIKAN, vol. 3, 2021, pp. 2720- 2733.