The Effect of Using Powtoon Interactive Learning Media to Improve Learning Outcomes in Class X Informatics Subjects at SMK Kesehatan Samarinda

Anisa Permata Sari *
Computer Education, Mulawarman University, Samarinda, 75119, Indonesia
anisaprmtaa18@gmail.com
Corresponding author

Haeruddin
Computer Education, Mulawarman University, Samarinda, 75119, Indonesia
haeruddin22@gmail.com

Galih Yudha Saputra
Computer Education, Mulawarman University, Samarinda, 75119, Indonesia
galih.yudha@fkip.unmul.ac.id

Abstract—This study aims to determine the effect of using Powtoon interactive learning media to improve learning outcomes in learning Informatics class X students at SMK Kesehatan Samarinda. This type of research is quantitative, namely experimental research (pre-experimental design) using a one group pretest-posttest design research design, namely an experiment that in its implementation only involves one class as an experimental class without a control class (comparison class). Data analysis used descriptive analysis techniques and inferential analysis techniques. The results of descriptive statistics show that the average student pre-test score is 46.56 and has increased after being treated with an average student post-test score of 80.31. The results of inferential statistical analysis by testing the normality of pre-test and post-test data were normally distributed. The results of hypothesis analysis using the Paired Sample T-Test test, namely significance, obtained a value smaller than 0.05, namely 0.000 <0.05, meaning that there is a difference when the initial test (pre-test) and the final test results (post-test) so that the null hypothesis (Ho) is rejected and the alternative hypothesis (Ha) is accepted. The results of the analysis of student learning on the use of Powtoon interactive learning media in Informatics subjects obtained an N-Gain of 0.72 which is included in the high category. This study shows that there is an effect of using Powtoon interactive learning media to improve student learning outcomes in Informatics class X Nursing 2 at SMK Kesehatan Samarinda.

Keywords—Interactive Learning Media, Powtoon, Learning Outcomes, Pre-Experimental Design, One Group Pretest-Posttest Design.

I. INTRODUCTION

Education is an effort to prepare the younger generation to welcome and face the times in the global era. Technological developments have an impact on the field of education. Media can be used as a means of delivering educational material delivered by teachers to students. In addition, learning outcomes are measured effectively and efficiently to determine students' abilities and interests in the subject.

By using interactive learning media so that learning becomes more interactive, effective, efficient, and interesting. As in the use of the Powtoon application which is a web application that can be used as a learning media in which there are various interesting features such as features for creating presentations or animated videos that can be used easily and interestingly. The advantages of Powtoon animation media are as a creative, interactive and innovative learning tool that can be learned anywhere and anytime. Meanwhile, the disadvantage of this Powtoon animation media is the use of paid applications (Arifah, Sari, & Abdullah, 2020).

Based on research conducted by Ravena Hardyanti. T, Lambang Subagiyo, & Riskan Qadar (2021), research with the title "Use of Audio-Visual Based Interactive Learning Media with Powtoon Application to Increase Interest and Learning Outcomes of Physics Students at SMK Negeri 6 Samarinda". The method used in this study is quantitative with a one group pretest posttest design, and research conducted by Tio Fanky Kresnandya, Edi Hernawan, & Egi Nuryadin (2020), research with the title "The Effect of Powtoon-Based Animated Video Media on Student Learning Outcomes on Vertebrate Sub-Concepts". The method used in this research is true experiment with pretest-posttest control group design, as well as research conducted by Nur Arifah, Nadra Mutiara Sari, & Rijal Abdullah (2020), research with the title "The Effect of Using Powtoon Animation Media on Learning Outcomes of Construction Cost Estimation at Smk Negeri 1 West Sumatra". The method used in this research is an experiment with a non-equivalent control group design. It was concluded that based on the results of the three studies, there was an effect of using Powtoon media on student learning outcomes. This is evidenced by the acquisition of the average pre-test and post-test scores of students who have

increased after being given treatment in the form of learning using Powtoon media.

In an interview with Informatics subject teacher Mr. Agus Riadi, S.Kom, S.Pd who teaches class X at SMK Kesehatan Samarinda, he explained that during the learning process the problem that often occurs is the lack of student concentration so that efforts are needed to make the learning process fun and can improve student learning outcomes.

Meanwhile, according to Mr. Agustiyawan, S.Kom, the problems that often arise when carrying out teaching and learning activities in class are the absence of students, the availability of practical tools and materials, lack of literacy, lack of knowledge of the use of digital devices. He also explained that it is very important to use learning media because learning media is one of the ways or tools used in the teaching and learning process. This is done to stimulate learning patterns in order to support the success of the teaching and learning process. Like the use of the Powtoon application is very good, because Powtoon is an online presentation creation service with some very interesting animation features such as handwriting animation, cartoon animation, and livelier transition effects that are very good for interesting learning that is interactive. He explained that the learning outcomes of students when using interactive learning media reached 75% good.

Based on interviews conducted by the author with several grade X students at SMK Kesehatan Samarinda, they argue that the learning media often used by teachers during the learning process are Microsoft Power Point and PDF. Some students also argue that using interactive learning media can improve learning outcomes and increase knowledge.

Low student learning outcomes can be influenced by several factors. So the author uses Powtoon interactive learning media as a learning medium to achieve learning objectives in delivering messages that attract students through vision and hearing so as to improve student learning outcomes. From these problems, it is necessary to carry out research actions so that students are able to master material that can improve their learning outcomes, and it is also hoped that it can provide solutions for teaching teachers to innovate in using media, especially interactive learning media by following existing developments.

II. LITERATURE REVIEW

A. Interactive Learning Media

Interactive learning media according to Prior et al. (in Yanto, 2019) is a form of learning media that in its use can create a relationship between the user and the learning media by providing mutual influence, action and reaction between one another in helping to convey learning material. In other words, interactive learning media is an intermediary tool for delivering learning materials by teachers to students whose use creates interaction between students and media by connecting and providing actions and reactions between one another.

B. Powtoon

The Powtoon application is an internet-connected or online web application that presents presentations and materials. The display is in the form of a video with various animations that can attract students' attention. This application can be accessed by everyone, including teachers and students, and the many features available make creating animated videos very easy. That's why Powtoon applications are increasingly being used in the world of education (Deliviana, 2017).

The Powtoon app has the following advantages (Deliviana, 2017):
1. Increase student creativity,
2. Sharpen or sharpen student skills,
3. Improve communication and cooperation,
4. Achieving learning objectives becomes more effective and efficient,
5. There are various animation features and transition effects that are more evocative,
6. The presentation in this Powtoon media in the form of audio-visual media can be adjusted to the needs of users anywhere and anytime.

The Powtoon application has disadvantages, as follows (Yulia & Ervinalisa, 2017):
1. The results of videos made using the Powtoon application must go through several processes that are a little complicated.
2. The operation of this media requires the main tool in the form of a laptop / PC and when used as a learning media in the classroom an LCD projector is needed to produce maximum images.

III. METHODS

A. Research Methods

This research was conducted at SMK Kesehatan Samarinda which is located at Jalan Perjuangan No. 02 RT. 003. Samarinda North Samarinda District. This research was conducted on 07, 08, and 10 February 2023 even semester of the 2022/2023 school year. This study uses an experimental method of pre-experimental design type whose implementation involves or uses one class, aims to determine whether there is an effect of Powtoon interactive learning media on student learning outcomes. This research design uses a one group pretest posttest design. The group was given a pre-test to determine the initial state of students before being given treatment. After being given a new pre-test, treatment is given, then a post-test is carried out. Finally, comparing the pre-test and post-test scores to determine the results of the treatment. The results of the treatment can be known more accurately because it compares before and after being given treatment. This design aims to determine a significant increase in student learning achievement (Prastica, Hidayat, Ghufron, & Akhwani, 2021). The research design is shown in table 1.

Table 1. Research design

Group	Measurement	Action	Measurement
Experimental group of class X Nursing 2 at SMK Kesehatan Samarinda	O_1	X	O_2

Source: Sugiyono in Elmawati, Musfirah, & Pasinggi (2021)

Description :

O1 : Pre-test

X : Use of Powtoon interactive learning media

O2 : Post-test

B. Population and Sample

The population of this study were grade X students at SMK Kesehatan Samarinda in the even semester of the 2022/2023 school year. The sampling technique used in this study was nonprobability sampling with purposive sampling technique which is sampling done by deliberately selecting samples according to research objectives (Sugiyono in Retnawati, 2017). The sample used was class X Nursing 2 students as many as 32 students.

C. Research Procedure

1. Research Preparation Stage

The first stage is to conduct interviews with grade X students and Informatics subject teachers and collect initial data on student grades then make several preparations, namely compiling a Learning Implementation Plan, syllabus, and making multiple choice test questions used for pre-test and post-test which have been consulted with Informatics subject teachers and Powtoon interactive learning media.

2. Research Implementation Stage

a. The implementation stage of this research begins with giving a pre-test to determine student learning outcomes before treatment.

b. Given treatment in the classroom during the implementation of the learning process using Powtoon interactive learning media until the computer network and internet material is complete.

3. End of Research

a. At the last meeting on computer network and internet material, a post-test was given in class to determine whether there was an effect of Powtoon interactive learning media to improve student learning outcomes after treatment.

b. Conducting interviews with students regarding teaching and learning activities using Powtoon interactive learning media.

c. Collecting research data from the field.

d. Analyzing and processing the research data, the data collected from the field is analyzed and processed to find conclusions.

D. Data Collection Techniques

1. Documentation

Documentation is an information collection technique using existing written documents or records. Documentation comes from the word document which means something written (Musyadad, Hanafiah, Tanjung, & Arifudin, 2022). Documentation is used to find out the initial condition of the subject to be studied. Documentation was conducted to request initial data on student learning outcomes in Informatics subjects. Documentation was also collected in the form of lesson plans and syllabus of computer network and internet material.

2. Test

Test is a tool used to measure knowledge of material (Elmawati, Musfirah, & Pasinggi, 2021). The tests carried out are pre-test and post-test. The tests carried out in this study were pre-test and post-test. The form of the test given in this study is a multiple choice test question totaling 20 numbers. The selection of this form of multiple choice questions is done to reduce the level of difficulty in giving scores. In each question, if the respondent answers correctly, a score of 1 is given, otherwise if the respondent answers incorrectly or incorrectly, a score of 0 is given.

E. Data Analysis Techniques

1. Descriptive Statistical Analysis

Sugiyono stated that descriptive statistics are statistics used to analyze data by describing or describing the data that has been collected as it is without intending to make conclusions that apply to the public (Elmawati, Musfirah, & Pasinggi, 2021). The following descriptive statistical steps that researchers take are:

a. Scoring

Scoring is used to determine the answers in this study on the ability of students to answer multiple choice questions on computer network and internet material, on each question if the respondent answers correctly then a score of 1 and a score of 0 if wrong.

b. Summing up

Summing up the observation scores of students' ability to answer multiple choice questions about computer networks and the internet.

c. Calculating Median, Mean, and Mode

1) Calculating Median (Me)

Median is the middle value of a cluster that has been compiled from small data or vice versa. The following formula for calculating the median (Me) is written in equations (1) and (2) (Sutisna, 2020).

Median of odd single data:

$$Me = \frac{1}{2}(n+1) \qquad (1)$$

Median of even single data:

$$Me = \left(\frac{1}{2}n\right) + \left(\frac{1}{2}n+1\right) \qquad (2)$$

Where (1) and (2)
Me = Median
n = Number of data

2) Calculating Mean (average)
Mean or average is the sum of the data divided by the number of students. With the formula written in equation (3) (Sutisna, 2020).
Single data average:

$$\frac{\sum x_i}{n} \tag{3}$$

Where (3)
$\sum x_i$ = The result of summing each data
n = Number of students

3) Calculating the Mode (Mo)
Mode is the value of some data that has the highest frequency. With the formula written in equation (4) (Sutisna, 2020).
Group data mode:

$$\text{Mo} = B_b + P\left(\frac{F_1}{F_1 + F_2}\right) \tag{4}$$

Where (4)
Mo = Mode
B_b = Lower limit of the class containing the mode value
P = Class Length
F_1 = Difference between the frequency value in the mode class (f) and the frequency before the mode class
F_2 = Difference between the frequency value in the mode class (f) and the frequency after the mode class

2. Inferential Statistical Analysis
Inferential statistics are statistical techniques used to analyze sample data and apply the results to the population (Sugiyono in Elmawati, Musfirah, & Pasinggi, 2021). Inferential statistical analysis aims to draw conclusions based on the data obtained from the research sample that has been carried out.
a. Data Normality Test
Normality test is one of the prerequisite tests to fulfill the assumption of normality in parametric statistical data analysis to determine whether the data distribution is normally distributed or not (Sugiyono in Elmawati, Musfirah, & Pasinggi, 2021). The normality test was obtained from the initial and final test scores. The normality test in this study was carried out using a system with the Kolmogorov-Smirnov method written in equation (5) (Elmawati, Musfirah, & Pasinggi, 2021).

$$Z_i = \frac{xi - \tilde{x}}{s} \tag{5}$$

Where (5)
Zi = data/value
xi = average (mean)
s = standard deviation

The test criteria use SPSS (Statistical Package for the Social Sciences), which is said to be normally distributed data if the significance obtained is $\geq$ 0.05. Conversely, it is said that the data is not normally distributed if the significance obtained is <0.05 (Elmawati, Musfirah, & Pasinggi, 2021).

b. Hypothesis Test
Hypothesis testing is used to analyze data that has been obtained from pre-test and post-test results. To simplify the calculation and to get more accurate results, how to find the tcount using a computer system or software called Statistical Package for Social Science (SPSS) version 25. The data was analyzed using the Paired Sample T-Test test formula. This test is used to determine whether there is a difference in the average of two samples in this case pre-test and post-test data whose data sources are the same (Elmawati, Musfirah, & Pasinggi, 2021).

The statistical hypothesis :
H0 : μ1 = μ2
Ha: μ1 ≠ μ2

Description :
μ1 : Student results before teaching (Pre-test)
μ1 : Student results after teaching (Post-test)
H0 : There is no difference in the learning outcomes of class X students at SMK Kesehatan Samarinda before and after being taught using Powtoon interactive learning media.
Ha: There is a difference in the learning outcomes of class X students at SMK Kesehatan Samarinda before and after being taught using Powtoon interactive learning media.

Hypothesis testing criteria :
Reject: H0 if P ≤ α, α = 0.05
Accept: H0 if P > α α = 0.05

c. N-gain test
In this study, the learning outcomes measured were students' cognitive learning outcomes with multiple choice test questions. The improvement of learning outcomes after implementing learning with Powtoon interactive learning media can be known by the N-gain score criteria (Wijayanto, Supriadi, & Nuraini, 2020). The N-Gain test is calculated using the Microsoft Excel application. By using the formula written in equation (6) (Wijayanto, Supriadi, & Nuraini, 2020).

$$< g > = \frac{Spost - Spre}{Smax - Spre} \quad (6)$$

Where (6)
< g > = Gain value
Spost = Post-test value
Spre = Pre-test Value
Smax = Maximum Value

The N-gain test was conducted to analyze the significant increase in student learning outcomes that can be known by the N-gain score criteria. Furthermore, the results of the N-gain calculation are then converted to the criteria as shown in table 2.

Table 2. Normalized Gain Criteria

N-gain score	Normalized Gain Criteria
$0,70 < $ N-gain	High
$0,30 \leq $ N-gain $\leq 0,70$	Medium
N-gain $< 0,30$	Low

Source: Shilla in Wijayanto, Supriadi, & Nuraini (2020)

IV. RESULTS AND DISCUSSION

A. Descriptive Statistical Analysis

Descriptive statistical analysis aims to obtain an overview of student learning outcomes in Informatics subjects before (pre-test) and after (post-test) applying Powtoon interactive learning media in class X Nursing 2 which is calculated using SPSS (Statistical Package for the Social Sciences) version 25.

1. Pre-test Value Data

Based on table 3 of the initial test before being treated with Powtoon interactive learning media in class X Nursing 2 with a sample size of 32 students, it can be seen that the mean or average value is 46.56, the median value is 45, the mode value is 35. Standard deviation is used to determine whether or not a data is valid, if the standard deviation value is smaller than the average value, then the data is valid (Yolviansyah & Suryanti, (2021). The standard deviation value in the pre-test is smaller than the mean value, namely 17.845 < 46.56, so the data is considered valid.

Table 3. Pre-test score data

Pre-test		
N	Valid	32
	Missing	0
Mean		46,56
Median		45,00
Mode		35
Std. Deviation		17,845
Minimum		5
Maximum		75

Based on table 4, the distribution of learning outcomes categories before treatment obtained values in the very low category 6.2%, low category 37.5%, medium category 31.3%, high category 25%, and very high category 0%.

Table 4. Pre-test Category Distribution

Class	Category	Frequency	Percentage (%)
81-100	Very High	0	0%
61-80	High	8	25%
41-60	Medium	10	31,3%
21-40	Low	12	37,5%
0-20	Very Low	2	6,2%
	Total	32	100%

Based on table 5 the level of learning completeness before being given treatment there were 2 students with a percentage of 6.3% in the complete category and 30 students with a percentage of 93.7% in the incomplete category. Of the 32 students in class X Nursing 2 only 2 students with a complete score of 75 so that it is classified as very low.

Table 5. Description of Pre-test Completion Rate

Score	Category	Frequency	Percentage (%)
≤ 75	Not Completed	30	93,7%
≥ 75	Completed	2	6,3%
	Total	32	100%

2. Post-test Value Data

Based on table 6 of the final test after being treated with Powtoon interactive learning media in class X Nursing 2 with a sample size of 32 students, it can be seen that the mean or average value is 80.31, the median value is 80, the mode value is 80. The standard deviation value in the pre-test is smaller than the mean value, namely 6.468 < 80.31, so the data is considered valid.

Table 6. Post-test score data

Post-test		
N	Valid	32
	Missing	0
Mean		80,31
Median		80,00
Mode		80
Std. Deviation		6,468
Range		25
Minimum		65
Maximum		90

Based on table 7, the category distribution of learning outcomes after treatment obtained values in the very low category 0%, low category 0%, medium category 0%, high category 62.6%, and very high category 37.4%.

Table 7. Post-test Category Distribution

Class	Category	Frequency	Percentage (%)
81-100	Very High	12	37,4%
61-80	High	20	62,6%
41-60	Medium	0	0%
21-40	Low	0	0%
0-20	Very Low	0	0%
	Total	32	100%

Based on table 8, the level of learning completeness after treatment was 29 students with a percentage of 90.6% in the complete category and 3 students with a percentage of 9.4% in the incomplete category. Of the 32 students in class X Nursing 2, there are 29 students with a complete score ≥ 75 which is classified as very high.

Table 8. Description of Post-test Completion Rate

Score	Category	Frequency	Percentage (%)
≤ 75	Not Completed	3	9,4%
≥ 75	Completed	29	90,6%
	Total	32	100%

In Figure 1, the results of the pre-test and post-test analysis show that students obtained pre-test scores from a range of 5 to 75 with a range or difference of 70, while the results of the analysis of students' post-test scores obtained scores from a range of 65 to 90 with a range or difference of 25. A total of 32 students who participated in teaching and learning activities using Powtoon interactive learning media experienced a significant increase in value.
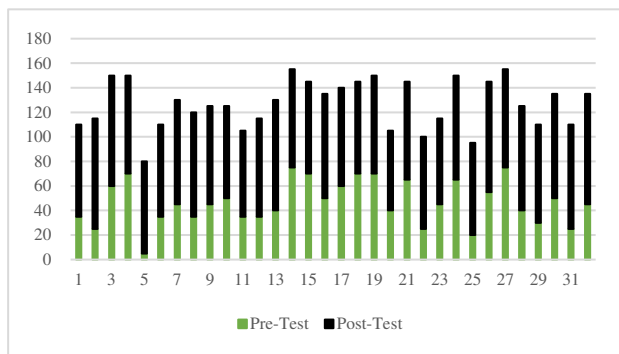

Figure 1. Graph of Pre-test and Post-test Results

B. *Inferential Statistical Analysis*

Inferential statistical analysis aims to draw conclusions based on the data obtained from the research sample that has been carried out.

1. Data Normality Test

The normality test is used to determine whether the data distribution is normal or not using the Kolmogorov-Smirnov test and the calculation is carried out using the SPSS (Statistical Package for the Social Sciences) version 25 program. If the significance obtained ≥ 0.05, it is said that the data is normally distributed. Conversely, if the significance obtained < 0.05 it is said that the data is not normally distributed.

Based on table 9, the significant value of the pre-test results is 0.200 and the post-test is 0.089, meaning that the data from the pre-test and post-test results of class X Nursing 2 are normally distributed. The normality test results only provide information about whether the variables are normally distributed or not. Normally distributed data is data whose distribution pattern is bell-shaped and symmetrical, meaning that the data pattern is not skewed to the left or right. If the data is not normally distributed, it may be necessary to transform the data or use analytical methods that do not rely on the assumption of normality.

Table 9. Normality Test of Pre-test and Post-test Data

One-Sample Kolmogorov-Smirnov Test			
		Pre-test	*Post-test*
N		32	32
Normal Parameters[a,b]	*Mean*	46,56	80,31
	Std. Deviation	17,845	6,468
Most Extreme Differences	*Absolute*	,099	,144
	Positive	,097	,144
	Negative	-,099	-,141
Test Statistic		,099	,144
Asymp. Sig. (2-tailed)		,200[c,d]	,089[c]

In Figure 2, it can be seen that the data spreads around the diagonal line, so the research results for the pre-test of class X Nursing 2 are normally distributed. The Q-Q plot visually shows whether the data follows a normal distribution. If the points are on the line, it can be concluded that the data follows a normal distribution.
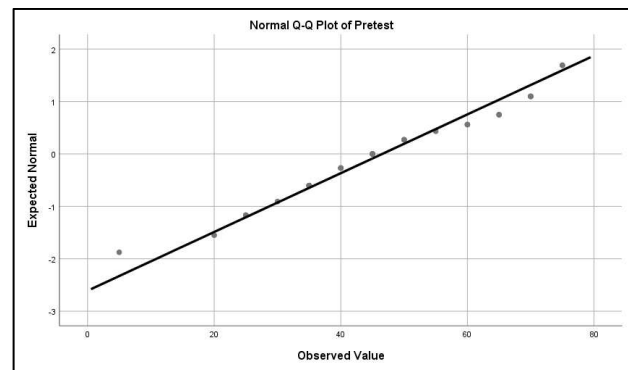

Figure 2. Q-Q Plot of Class X Nursing 2 Pre-test

In Figure 3, it can be seen that the data spreads around the diagonal line, so the research results for the post-test of class X Nursing 2 are normally distributed.
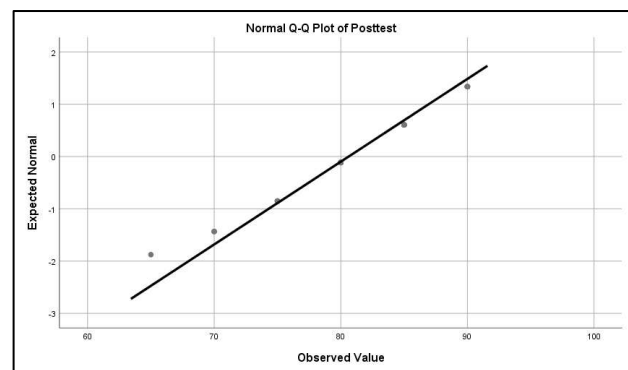

Figure 3. Q-Q Plot of Class X Nursing 2 *Post-test*

2. Hypothesis Test

Hypothesis testing aims to determine the basis for obtaining evidence in the form of data used to make further decisions about whether an assumption is accepted or rejected. In addition, hypothesis testing can support objective decisions. The data used are pre-test and post-test data whose data sources are the same. To test the hypothesis, the Paired Sample T-Test test was used and the calculation was carried out using the SPSS (Statistical Package for the Social Sciences).

The statistical hypothesis :
H0 : μ1 = μ2
Ha : μ1 ≠ μ2

Description :
μ_1 : Student results before teaching (Pre-test)
μ_2 : Student results after teaching (Post-test)

H0 : There is no difference in the learning outcomes of class X students at SMK Kesehatan Samarinda before and after being taught using Powtoon interactive learning media.
Ha: There is a difference in the learning outcomes of class X students at SMK Kesehatan Samarinda before and after being taught using Powtoon interactive learning media.

Hypothesis testing criteria :
Reject: H0 if $P \leq \alpha$, $\alpha = 0.05$
Accept: H0 if $P > \alpha$, $\alpha = 0.05$

Based on table 10, the hypothesis test was conducted at a significance level of 5% (0.05). The results obtained from class X Nursing 2, namely the significance obtained a value smaller than 0.05, namely 0.000 <0.05. Sig. (2-tailed) < 0.05 or 0.000 < 0.05 means that there is a difference before and after being taught using Powtoon interactive learning media, so that the null hypothesis (Ho) is rejected and the alternative hypothesis (Ha) is accepted.

Table 10. *Paired Sample T-Test*

		95% Confidence Interval of the Difference				
Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
18,316	3,238	-40,354	-27,146	-10,423	31	,000

Paired Samples Test / *Paired Differences*

3. N-Gain Test

The N-gain test was conducted to recognize the effectiveness of media use and to analyze the significant increase in student learning outcomes after implementing learning with Powtoon interactive learning media which can be known by the N-gain score criteria. Calculations were made using the Microsoft Excel program. The learning outcomes measured are students' cognitive learning outcomes with multiple choice test questions in the form of pre-test and post-test. Based on the results of the analysis using the N-gain test, it shows that student learning outcomes have an N-gain value of 0.72 which is included in the high category. In table 11, it is known that the N-gain criteria for students of class X Nursing 2 are in the low, medium, and high criteria.

Table 11. N-Gain Criteria for Student Learning Outcomes

N-gain score	Normalized Gain Criteria	Frequency	Percentage (%)
0,70 < N-gain	High	20	63%
0,30 ≤ N-gain ≤0,70	Medium	10	31,25%
N-gain < 0,30	Low	2	6,25%

Figure 4 shows that there are 63% of students who have high N-gain scores, 31.25% of students who have medium N-gain scores and 6.25% of students have low N-gain scores. This shows that the learning carried out is quite good with N-gain which tends to be in the medium to high category. As many as 63% of students with high N-gain scores indicate that the use of Powtoon interactive learning media can significantly improve learning outcomes.
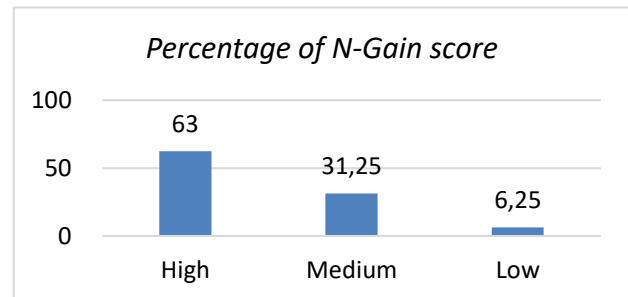

Figure 4. N-Gain classification graph of students in class X Nursing 2

The results of the pre-test data analysis before applying Informatics learning using Powtoon interactive learning media can be seen that from a sample of 32 students, with an average pre-test of 46.56 there were 30 students or 93.7% who did not achieve individual completeness below the average (got a minimum completeness score of 75), while as many as 2 students or 6.3% of students had reached the Minimum Completeness Criteria in other words, student learning outcomes before applying Powtoon interactive learning media were still very low.

The results of post-test data analysis after applying Informatics learning using Powtoon interactive learning media can be seen that from a sample of 32 students with an average of 80.31, which did not reach the Minimum Completeness Criteria as many as 3 students or 9.4% this was due to these students doing more other activities during the teaching and learning process and there were students who paid less attention during the application of the media. Meanwhile, 29 students or 90.6% of students have reached the Minimum Completion Criteria, in other words, student learning outcomes after the application of Powtoon interactive learning media have increased.

The results of this study are in line with previous research, namely the results of research conducted by Nur Arifah, Nadra Mutiara Sari, & Rijal Abdullah (2020), concluding that there is a significant effect of using Powtoon animation media on student learning outcomes in the subject of Construction Cost Estimation class XI DPIB at SMKN 1 West Sumatra. This is evidenced by the acquisition of the average pre-test score of 59.67 which has increased after being treated in the form of learning using Powtoon animation media with an average post-test score of 80.33 in the experimental class.

Based on the results of the normality test using the Kolmogorov-Smirnov test and calculations carried out using the SPSS (Statistical Package for the Social Sciences) version 25 program, it shows that the pre-test

and post-test data have met the normality test. The pre-test and post-test data were normally distributed because the p value $\geq$ 0.05, namely the significant value of the pre-test results was 0.200 and the post-test was 0.089, meaning that the data from the pre-test and post-test results of class X Nursing 2 were normally distributed. Student learning completeness after being taught with the use of Powtoon interactive learning media classically $\geq$ 75%.

The results of hypothesis testing using the Paired Sample T-Test test and calculations were carried out using the SPSS (Statistical Package for the Social Sciences) version 25 program obtained from class X Nursing 2, namely the significance obtained a value smaller than 0.05, namely 0.000 <0.05, meaning that there is a difference when the pre-test and post-test results so that the null hypothesis (Ho) is rejected and the alternative hypothesis (Ha) is accepted. So that there are differences in the learning outcomes of class X students at SMK Kesehatan Samarinda before and after being given teaching using Powtoon interactive learning media.

The results of the analysis using the N-Gain test using the help of the Microsoft Excel program show that student learning outcomes have an N-Gain value of 0.72 which is included in the high category with the highest frequency of high N-Gain criteria with a total of 20 students or 63%. While the least frequency is low N-Gain criteria with a total of 2 students or 6.25%. The frequency of moderate N-Gain criteria was 10 students or 31.25%.

The results of this study are in line with previous research, namely research conducted by Tio Fanky Kresnandya, Edi Hernawan, & Egi Nuryadin (2020), concluding that the effect of Powtoon-based animated video media on student learning outcomes on vertebrate sub-concepts N-gain across the cognitive domain from C1-C5 in the experimental class is higher than the control class. An N-gain of 0.75 was obtained which was included in the high category.

In the results of interviews with students at the end of the session, students hope that Powtoon interactive media can be used in learning activities, in addition to causing feelings of pleasure, students also feel interested because Powtoon interactive media displays videos with quite interesting animations. Students also understand more easily and are not easily bored and excited during the learning process.

Based on descriptive and inferential statistical data obtained from the results of research using Powtoon interactive learning media and findings from relevant research, it can be said that the use of Powtoon interactive learning media can improve student learning outcomes in class X Informatics subjects at SMK Kesehatan Samarinda.

V. Conclusion

That students feel happy and interested because Powtoon interactive learning media displays videos with quite interesting animations. Students also understand more easily and are not easily bored and excited during the learning process. From the results of research using

Powtoon interactive learning media and the findings of several relevant studies, it can be said that the use of Powtoon interactive learning media in teaching and learning activities can improve student learning outcomes in class X Informatics subjects at SMK Kesehatan Samarinda.

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