

The Effect of the Digital-Based Project-Based Learning Model on Student Creativity in the Subject of Moral Beliefs Class X MAN 1 Bone

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ABSTRACT

This study aims to determine the influence of the digital-based Project-Based Learning learning model on student creativity in the subject of moral beliefs class X MAN 1 Bone. This research was conducted through a quantitative approach with a Quasi Experimental research design in the form of a Nonequivalent Post-test Only Control Group Design. The subjects of this study are all students of class X MAN 1 Bone with a population of 360 students. The sampling technique used a simple random sampling technique, class X.3 as a control class totaling 36 students and class X.1 as an experimental class totaling 36 students. The research instruments used were in the form of performance assessment sheets to measure student creativity and questionnaires to see students' responses to the learning model used. Data analysis includes descriptive statistics and inferential statistics. The results of the study show that the digital-based Project-Based Learning learning model has an effect on students' creativity in the subject of moral beliefs in the experimental class. This is evidenced by the results of the Independent Samples T-Test which shows that there is a difference in the average score of student creativity between the experimental group and the control group with a sig (2-tailed) significance of $0.000 < 0.05$ which indicates that H_0 was rejected and H_a was accepted. In addition, a d value of 1.14 was obtained which indicates that the influence of the digital-based Project-based Learning model is in the large category.

Keywords: *Digital, Creativity, Project-Based Learning.*

1) INTRODUCTION

The quality of education in Indonesia today cannot be said to be good. This is based on data released by Worldtop showing that Indonesia's education ranking in 2024 will be 67th out of 203 countries in the world. This figure is still not too superior when compared to other countries in Southeast Asia, such as Singapore (11), Brunei (47), or Vietnam (53) (Worldtop20.org, 2024). One of the factors that causes this to happen is the low level of student innovation and creativity. In fact, one of the studies through the Global Innovation Index (GII) survey in 2023 shows that Indonesia is

ranked 61st out of 132 countries (Dutta et al., 2023). This means that innovation and creativity in Indonesia are still in the unsatisfactory category.

In education in Indonesia, the development of students' creativity has been going well, but it has not yielded maximum results. In fact, creativity is one of the skills that will be very useful in the future. This is in line with 21st century learning, which is learning that requires students to have 6C skills: Critical Thinking, Creativity, Culture, Collaboration, Communication, and Connectivity (Anugerahwati, 2019). Furthermore, Gencer and Gonen state that over the past few years creative thinking and creativity have become essential skills to adapt to rapidly changing the world (Gencer & Gonen, 2015).

Several previous studies have also shown that the Project Based Learning model can have a positive impact on various potential students. For example, in a study by Nisa et al., the use of this project-based learning model can foster students' skills in managing resources so that they can bring out students' creative thinking skills (Nisa, Adiansah, & Holik, 2023). Likewise, according to Aini, student creativity will be maximized if it is carried out through project-based learning, because this model provides freedom of thought and helps students develop ideas

into a project (Aini, 2023). In line with that, Rizkasari, et al. also stated that the application of the Project-Based Learning model has succeeded in improving students' learning outcomes and creativity (Rizkasari, Rahman, & Aji, 2022). Based on some of these studies, Project-Based Learning is considered a learning model that not only affects students' creativity, but also various other student skills.

Applying the Project-Based Learning model in today's era will be more effective if combined with digital-based media. The use of technology in education is not just a means of obtaining information. But more than that, today's technology can also be used as a model or factor that can support in fostering various student skills, including creativity. In learning, technology can be integrated with various learning materials, methods, models and strategies. Thus, the use of technology in the application of the Project-Based Learning model in today's digital era can help students to make their own choices in learning according to their interests, talents and needs, as well as hone students' 6C skills in independent curriculum learning in the 21st century.

Digital-based learning is a form of learning that uses digital media, such as video, visual, audio, animation, and interactive presented in electronic form, which can be accessed by students through

computer devices or mobile devices (Zwart, 2017). Digital development is becoming increasingly important in the world of education because it can help improve the quality of learning in today's digital era. In digital-based learning, students can have a more engaging and interactive learning experience. In addition, with the use of various digital media, students can more easily understand the subject matter provided and develop the ICT skills needed in today's digital era.

Digital-based learning processes that can be carried out, including: 1) The learning process using electronics (e-learning), 2) The learning process based on information technology with an online model using the Learning Management System (LMS), such as; Google Classroom, Zoom Clouds Meeting, and other LMSs, 3) Student-centered learning and using data literacy, human literacy and technology literacy, 4) Reference sources from e-books, digital libraries, YouTube, and other social media, 5) Learning media such as LCD Projectors, Notebooks, TV Monitor, 6) Learning using visual, audio, or multimedia media. 7) The learning process is not limited to time and place and is connected to the internet network (Rajab, Zulmuqim, & Hidayatullah, 2020).

Simply put, creativity is often defined as the ability to create something new. According to Suryosubroto, creativity is a person's ability to give birth to something new, in the form of ideas or real works, in the form of aptitude and non-aptitude characteristics, in new works or combinations with existing things that are relatively different from what already exists (Suryosubroto, 2009). According to Slameto, what is important in creativity is not the discovery of something that people have never known before, but that the product of creativity is something new for oneself and does not have to be something new for others or the world in general (Slameto, 2010). Non-aptitude traits are traits that are more related to attitudes or feelings, motivation or motivation from within to do something, namely: 1) Curiosity, 2) Imaginative, 3) Feeling challenged by pluralism, 4) Daring to take risks, 5) Appreciation (Alamsitoh, 2013).

Based on the background of the problem, the research questions in this study are: First, how is the creativity of class X MAN 1 Bone students in the subject of moral beliefs? Second, how does the digital-based Project-Based Learning model affect the creativity of students in class X MAN 1 Bone in the subject of moral beliefs? The objectives to be achieved in this study are to find out the application of the digital-based Project-Based Learning model in learning moral beliefs in class X MAN 1 Bone and to find out the creativity of students in class X MAN 1 Bone in the subject of moral beliefs, as well as to find out the influence of the Project Based Learning model digital-based on the

creativity of students in class X MAN 1 Bone in the subject of moral beliefs. This research contributes to adding to the wealth of knowledge about the Project-Based Learning model in increasing student creativity in the subject of moral beliefs and can be used as a reference for researchers who discuss the same variable.

Hipotesis

Based on the theoretical foundation and framework of thinking that have been described earlier, the hypothesis in this study is:

Ho: There is no influence of the digital-based Project-Based Learning learning model on student creativity in the subject of moral beliefs class X MAN 1 Bone.

Ha: There is an influence of the digital-based Project-Based Learning learning model on student creativity in the subject of moral beliefs in class X MAN 1 Bone.

2) METHODS

• Types of Research

The type of research used is quantitative research with a research method, namely Experimental Research, in the form of Quasi Experimental Design. According to Sugiyono, experimental research is a type of research that is used to find the effect of certain treatments in controlled conditions (laboratory) (Sugiyono, 2016). In experimental research, two classes were created, namely the experimental class and the control class. For the experimental class, certain treatments or stimuli will be given according to the purpose of the research. The experimental group in this study consisted of one class, namely the group that used the Project Based Learning learning model. As for the control class, no special treatment was given. The control group in this study consisted of one different class using a conventional learning model. The results of the reactions of the two classes will be compared to find out whether there is an effect of the treatment carried out.

a) Research Design

The form of research design used is Nonequivalent Post-test Only Control Group Design. In the post-test only control-group design, the experimental group and the control group were only given post-tests without a pre-test. The results of the pre-test of the experimental group and the results of

the pre-test of the control group are assumed to be the same, so that the comparison of the post-test results between the two groups is sufficient. The design of this research can be described as follows:

Table 1: *Nonequivalent Post-Test Only Control Group Research Design*

Post-test	Treatment	Group
Experiment	X	O1
O2		Control-

Information:

X : Treatment (Learning using *the Project Based Learning model*) O1: Post-test scores in the experimental class

O2: *Post-test value* in the control class

The time of this research was conducted from February 12, 2025 to March 12 2025.

b) Population and Research Sample

Populasi

According to Arikunto, population is the entire object of research or the whole of data that is of concern in a scope (Arikunto, 2006). The population in this study is all students and students of class X MAN 1 Bone for the 2024/2025 school year which totals 360 students, consisting of 10 classes.

Sample

According to Sugiyono, samples are part of the number and characteristics possessed by the population (Sugiyono, 2016). The sampling technique used in this study is using the type of Probability Sampling with the Simple Random Sampling technique. According to Sugiyono, the Simple Random Sampling technique is the collection of sample members from a population that is carried out randomly without paying attention to the strata in that population (Sugiyono, 2016).

Data Collection Techniques

The data collection technique used in this study is in the form of a questionnaire or questionnaire, which is a data collection technique that is carried out by giving a set of questions or written statements

to respondents to be answered (Sugiyono, 2016). The questionnaire used in this study was a closed questionnaire, because respondents only gave a mark to one of the answers that were considered correct. This questionnaire was given to students of class X MAN 1 Bone to obtain data on students' responses in participating in moral faith learning with the Project Based Learning model.

c) Research Instruments

According to Sugiyono (2016), a research instrument is a tool used to measure observed natural and social phenomena. Meanwhile, research instruments according to Arikunto (2006) are tools for researchers in collecting data. Based on the opinions of these two experts, it can be concluded that research instruments are needed as the main tool in collecting data.

• Validitas dan Reliabilitas Instrumen

1. Instrument Validity

A measurement instrument is considered valid if the instrument measures what is to be measured. Validity is with respect to the approximation that comes closest to the truth that can be made, including the proportion of cause and effect. The formula used is the Pearson Product Moment correlation by Karl Pearson (1857-1936), as follows:

$$r = \frac{n(\Sigma XY) - (\Sigma X)(\Sigma Y)}{\sqrt{\{n(\Sigma X^2) - (\Sigma X)^2\} \{n(\Sigma Y^2) - (\Sigma Y)^2\}}}$$

Information:

r = Pearson Product-Moment Correlation Coefficient

n = Multiple subjects

ΣX = The number of question item scores or the score of the statement or question item

ΣY = Total score

Before observation is made on the sample in the study, an instrument validation test is carried out to find out whether the instrument is valid or not. In the validity test, there are two ways, namely empirical validity and validity by experts. Furthermore, in this study, the validity of the expert was

carried out by IAIN Bone lecturers. The observation instrument was validated and declared feasible or not to be used as a research instrument. Meanwhile, to find empirical validity, the researcher used the IMB SPSS Statistic 21 program. If the calculation $>$ table, the data is declared valid.

2. Instrument Reliability

The reliability of an instrument is the consistency of the instrument when given to the same subject even by different people, different times, or different places, it will give the same or relatively the same results (not significantly different) (Lestari & Yudhanegara, 2017). The reliability test aims to find out the extent to which the measurement results remain consistent, if two or more measurements are taken against the same symptoms using the same measuring device. Deep in this study, to measure the reliability test the Alpha Cronbach formula was used by Lee Joseph Cronbach (1951) which is as follows:

$$r_{11} = \left(\frac{n}{n-1} \right) \left(1 - \frac{\sum \sigma_i^2}{\sigma_t^2} \right)$$

Information:

r_{11} : Test reliability coefficient

$\sum \sigma_i^2$: The number of score variances of each item

σ_t^2 : Total variance n : Number of questions

The reliability test of the instrument was carried out using the IMB SPSS Statistic 21 application with the criteria: if the alpha coefficient value > 0.6 , then the instrument is declared reliable, while if the alpha coefficient value is < 0.6 , the instrument is declared unreliable. Based on the instrument reliability test using *the Alpha formula*, the following results were obtained:

Table 2: Reliability Test Results of Performance Assessment Sheet

Reliability Statistic	
Cronbach's Alpha	Information
0,71	Reliabel

Table 3.4 shows that the results of r_{11} (*Cronbach's Alpha*) from the performance assessment sheet obtained are $0.71 > 0.60$, so the creativity assessment test is declared reliable. As for the results of the reliability test on the questionnaire instrument, the r_{11} obtained an r_{11} , which is $0.82 > 0.60$, so that the questionnaire sheet was also declared reliable. This can be seen in the table as follows:

Table 3: *Questionnaire Reliability Test Results*

<i>Reliability Statistic</i>	
<i>Cronbach's Alpha</i>	Information
0,82	Reliabel

3. Data Analysis Techniques

In this study, the researcher used quantitative data analysis techniques, namely data that can be realized with numbers obtained from the field. The quantitative data is analyzed using descriptive statistical analysis and inferential statistical analysis.

- **Descriptive Statistical Analysis**

Descriptive statistics are statistical activities that start from collecting data, compiling or measuring data, processing data, presenting and analyzing numerical data to provide an overview of a phenomenon, event or situation (Hartono, 2010).

- **Inferential Statistical Analysis**

Inferential analysis or inferential statistics or also called probability statistics, is a statistical technique used to analyze sample data and the results are applied to the population (Sugiyono, 2016). The data normality test is carried out to ensure that the data of each research variable to be analyzed must be distributed normally. Therefore, before the hypothesis test is carried out, the data normality test is first carried out using the Kolmogorov-Smirnov test. This test uses basic data that has not been processed into the form of a frequency distribution table. The formula of the test Kolmogorov-Smirnov by Anderson and Darling (1951), namely:

$$\text{Count} = \max_x |F_n(x) - F(x)|$$

$$F(x) = \frac{F_{kum}}{N}$$

Information:

$F_n(x)$ = Empirical cumulative probability

$F(x)$ = Normal cumulative probability

F_{kum} = Cumulative frequency

N = Amount of data

The homogeneity test was carried out to find out that the research data in each data group came from a population that did not differ much in diversity. This analysis was carried out to confirm whether the homogeneity assumptions in each data category have been fulfilled or not. If the homogeneity assumption is proven, then the researcher can conduct it at the stage of advanced data analysis. The hypotheses used in the homogeneity test are:

Ho: The variance in each group is the same (homogeneous)

Ha: The variance in each group is not the same (not homogeneous)

The formula used in the homogeneity test is the formula of the F test by Ronald Fisher (1920), as follows:

$$F = \frac{\text{Size}}{\text{Small}}$$

Information:

Large = Large variance

Small = Small variance

To facilitate the calculation, the researcher used the help of the SPSS version 21 program with the following test criteria:

1. If the sig value is based on mean ≥ 0.05 , then Ho is accepted and Ha is rejected, so that both groups have homogeneous variance.
 2. If the significance value is based on mean < 0.05 , then Ho is rejected and Ha is accepted, so that the two groups do not have homogeneous variance.
- Hypothesis Testing

The hypothesis test used in this study is the T-test. The T test used is the Independent Sample T-Test, because the samples taken are two unrelated samples. Independent Sample T-Test is a model used to compare two mean groups of two different samples.

Before the Independent Sample T-Test analysis is carried out, the data must first meet the requirements for normality and homogeneity. If the data is normal and homogeneous, then it can be continued with a hypothesis test using the Independent Sample T-Test formula by Gosset (1915), namely:

$$t_{cal} = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{x_2 - \frac{(x_1)^2}{n_1} + x_2 - \frac{(x_2)^2}{n_2}}{n_1 \cdot n \left(1 - \frac{2}{N_1 + N_2}\right)}}$$

Information:

n_1 = Number of samples in the first sample group

n_2 = Number of samples in the second sample group

$\bar{X}_1$ = Average sample in the first sample group

$\bar{X}_2$ = Average sample in the second sample group

x_1 = Number of scores or scores in the first group

x_2 = The number of scores or scores in the second group

x_1^2 = Total square score of the first group

x_2^2 = Number of squared scores of the second group

In this study, hypothesis testing was carried out by Independent Sample T-test analysis using the SPSS version 21 program. Decision-making is carried out with the following testing criteria:

1. If the significance value or Sig. (2-tailed) ≥ 0.05 , then H_0 is accepted and H_a is rejected.
2. If the significance value or Sig. (2-tailed) < 0.05 , then H_0 is rejected and H_a is accepted.

a) Uji Effect Size

The effect size in this study was used to determine the influence of the use of the Project-Based Learning model in learning on student creativity. The effect size in this study was calculated using Cohen's formula d, namely:

$$d = \frac{Me - Mc}{SD}$$

Information:

d = Value effect size

E = Average value of the experimental class

Mc = Average value of the control class

SD = Value pooled standard deviation

The criteria for the magnitude of the effect size are classified as follows:

$d < 0.5$ = small effect

$0.5 < d < 0.8$ = moderate effect

$d > 0.8$ = large effect

3) RESULTS AND DISCUSSION

Results

• Creativity of Class X MAN 1 Bone Students in the Subject of Moral Beliefs

The data from the results of this study are the results of the student creativity test taken after the learning process (post-test). The data was used to measure student creativity in the control class and the experimental class in the moral faith subject matter. Data were taken from 72 students, class X.1 as an experimental class of 36 students and class X.3 as a control class of 36 students. In the

experimental class, the learning process is carried out through a digital-based Project Based Learning (PjBL) model, while in the control class the conventional learning model is used.

- **Post-Test Results Data for Control Class and Experimental Class**

- a. Affective Control Class Post-Test

The control class in this study was class X.3 with a total of 36 students consisting of 15 male students and 21 female students. The following data on the post-test values in the control class can be obtained some of the concentration and dispersion values of the data from the post-test values shown in the table below:

Table 4. *Control Class Post-test SPSS Output Results*

N	36
Mean	67.92
Median	67.50
Std.Deviation	14.461
Range	45
Minimum	45
Maximum	90

Source: SPSS Data Processing Version 21

Based on table 4.3 above, it can be seen that the calculation results using SPSS 21 in the control class obtained a mean or average value of 67.92, median or middle value of 67.50, standard.

The standard deviation or deviation value is 14,461, the minimum value is 45 and the maximum value is 90 and the range value is 45. After determining the mean, maximum and minimum values, then look for the results of the control class post-test which will be presented in the form of frequency distribution. The following is a table of the frequency distribution of post-test values in the control class:

Table 5. *Frequency Distribution of Control Class Post-test Values*

No	Interval	f
1	45-51	6
2	52-58	4

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3	59-65	8
4	66-72	3
5	73-79	4
6	80-86	7
7	87-93	4
N		36

Based on the distribution table, the frequency can be depicted in the bar chart as follows:

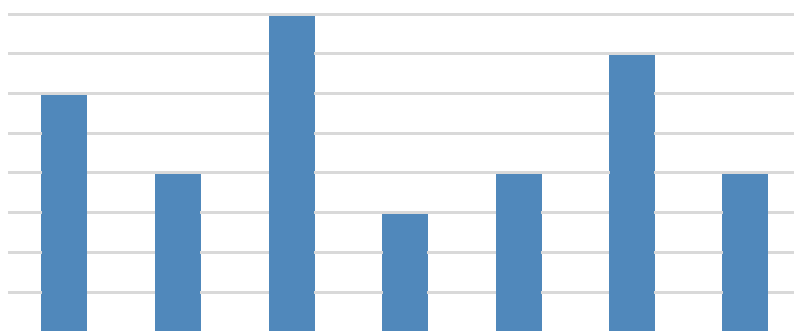


Figure 1. *Control Class Post-test Frequency Distribution Diagram*

Based on the data above, the level of student creativity in the control class can be categorized into several levels, which are as follows:

Table 6. *Creativity Categories Post-test Control Class*

No	Shoes	F	f relative	Category
1.	$X > 89$	4	11%	Very Creative
2.	$75 < X \leq 89$	7	19%	Creative
3.	$61 < X \leq 75$	11	31%	Quite Creative
4.	$47 < X \leq 61$	14	39%	Less Creative
5.	$X \leq 47$	0	0%	Not Creative
Total		36	100%	

b. Post-Test Experiment Class

The experimental class in this study is class X.1 with a total of 36 students consisting of 16 male students and 20 female students. The following is the data on *post-test* scores in the experimental class. From this data, several data centering and dispersion values can be obtained from the post-test values shown in the table below:

Table 7: *Experimental Class Post-test SPSS Output Results*

N	36
Mean	82.08
Median	82.50
Std.Deviation	10.848
Range	35
Minimum	60
Maximum	95

Source: SPSS Data Processing Version 21

Based on table 4.7 above, it can be seen that the calculation results using SPSS 21 in the control class obtained a mean or average value of 82.08, a median or middle value of 82.50, a standard deviation or standard deviation value of 10,848, a minimum value of 60 and a maximum value of 95 and a range value of 35. After determining the mean, maximum and minimum values, then look for the results *of the experimental class post-test* which will be presented in the form of frequency distribution. The following is a table of the frequency distribution of *post-test scores* in the experimental class:

Table 8: *Frequency Distribution of Post-test Values of Experimental Classes*

No	Interval	f
1	60-64	2
2	65-69	3
3	70-74	2
4	75-79	4
5	80-84	7

6	85-89	4
7	90-94	6
8	95-99	8
N		36

Based on the frequency distribution table, it can be depicted in the bar chart as follows:

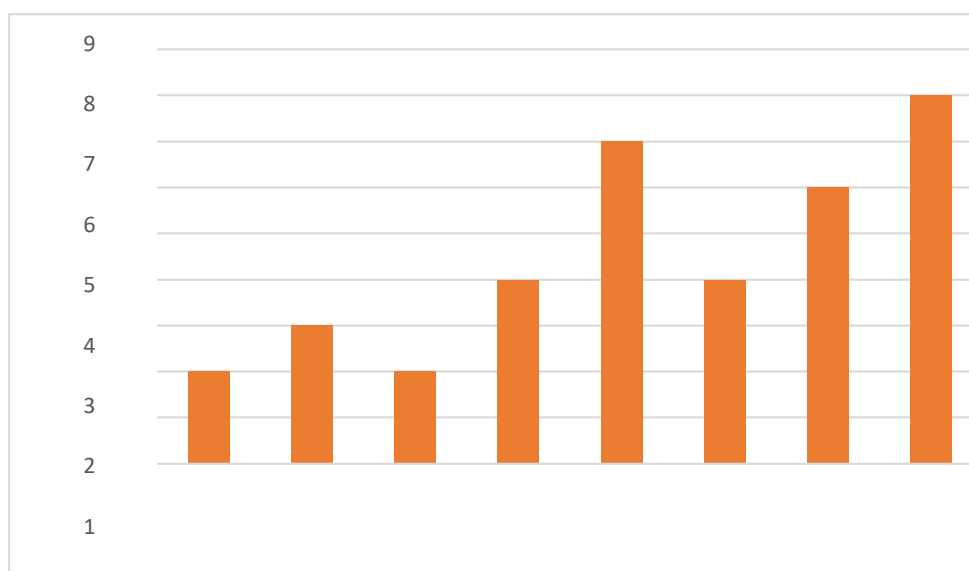


Figure 2. *Experimental Class Post-test Frequency Distribution Diagram*

Based on figure 4.3, it can be seen that there are 2 students who obtained a score in the interval 60-64, 3 students obtained a score in the interval 65-69, 2 students obtained a score in the interval 70-74, 4 students obtained a score in the interval 75-79, 7 students obtained a score in the interval 80-84, 4 students obtained a score in the interval 85-89, 6 students obtained a score in the interval 90-94 and 8 students obtained a score in the interval 95-99.

Based on the data above, the level of student creativity in the control class can be categorized into several levels, which are as follows:

Table 9. *Creativity Category Post-test Experimental Class*

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No	Shoes	f	f relative	Category
1.	$X > 88,5$	14	39%	Very Creative
2.	$77.5 < X \leq 88.5$	11	30%	Creative
3.	$66.5 < X \leq 77.5$	6	17%	Quite Creative
4.	$55.5 < X \leq 66.5$	5	14%	Less Creative
5.	$X \leq 55,5$	0	0%	Not Creative
Total		36	100%	

From the data, it can be concluded that the achievement of student creativity in each indicator in the experimental class with the PjBL model is higher than the control class with the conventional model.

- **The Influence of Digital-Based *Project Based Learning* Model on Student Creativity in the Subject of Moral Beliefs Class X MAN 1 Bone**

1. Normality Test

The normality test is an initial stage of analysis to meet one of the requirements of the hypothesis test. The normality test was carried out to find out whether the research data was distributed normally or not. This test is carried out on the results of students' abilities in the creativity test through assessment sheets and answering questionnaires. The results of the normality test in both sample groups can be seen in the table below:

Table 10: *Normality Test Results Performance Assessment Sheet*

<i>Test of Normality</i>		
	Class	Kolmogorof-Smirnov
Performance Assessment	<i>Post-Test</i> Experiment	0.344
	<i>Post-Test</i> Control	0.826

Source : SPSS Data Processing Version 21

Based on table 4.11 above, it can be seen that the *experimental class post-test* data has a significance of 0.344 while the *class post-test* data control has a significance of 0.826, then it can be concluded that the data is normally distributed with a significant value > 0.05 .

Meanwhile, the results of the questionnaire normality test in both sample groups can be seen in the table below:

Table 11: *Results of the Questionnaire Normality Test*

<i>Test of Normality</i>		
	Class	Kolmogorof-Smirnov
Questionnaire	Eksperimen	0.923
	Control	0.590

Source : SPSS Data Processing Version 21

Based on the table above, it can be seen that the experimental class questionnaire data has a significance of 0.923 while the control class has a significance of 0.590. Therefore, it can be concluded that the significance of the questionnaire data is > 0.05 , so that the data is distributed normally.

2. Homogeneity Test

The homogeneity test was carried out on student data in the form of the value of students' ability in the creativity test through assessment sheets and answering questionnaires from both sample groups. To prove that the two classes have homogeneous data or not, it is necessary to carry out a homogeneity test. The results of the homogeneity test can be seen in the table below:

Table 12: *Homogeneity Test Results Performance Scoresheet*

<i>Test of Homogeneity of Variance</i>					
		<i>Levene Statistic</i>	df1	df2	Sig.
Creativeness	<i>Based on Mean</i>	4.662	1	70	.034
	<i>Based on Median</i>	4.643	1	70	.035
	<i>Based on Median and with adjusted df</i>	4.643	1	67.042	.035
	<i>Based on trimmed mean</i>	4.648	1	70	.035

Source : SPSS Data Processing Version 21

Based on the table above, the calculation of the homogeneity test using *Levene Statistic*, a significant

value was obtained from both sample groups obtained from the performance assessment data, which was 0.034. The value is less than 0.05. Thus, it can be concluded that the data from the two classes are not homogeneous. This test is not an absolute requirement in hypothesis testing, so T-test analysis can still be carried out even though the data obtained in this study is not homogeneous. The results of the homogeneity test on the questionnaire can be seen in the table in below:

Table 13: *Questionnaire Homogeneity Test Results*

Test of Homogeneity of Variance					
		<i>Levene Statistic</i>	df1	df2	Sig.
Questionnaire	<i>Based on Mean</i>	.768	1	70	.384
	<i>Based on Median</i>	.823	1	70	.367
	<i>Based on Median and with adjusted df</i>	.823	1	68.256	.368
	<i>Based on trimmed mean</i>	.821	1	70	.368

Source : SPSS Data Processing Version 21

Based on the table above, it can be seen that the questionnaire data has a significance of 0.384 greater than 0.05 ($\text{sig} > 0.05$), so it can be concluded that the questionnaire data in this study has a homogeneous variance.

3. Uji Independent Sample T-Test

After the prerequisite test is carried out, the next stage is the hypothesis test. This test was carried out to find out whether there was a difference in the two sample groups, namely the experimental group and the control group. In this study, the hypothesis test used SPSS 21 with *the independent sample t-test* technique with a significant level used was 5% (0.05).

Table 14: *Independent Sample Test*

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Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Itsel f.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Creativeness	Equal variances assumed	4.662	.034	4.702	70	.000	14.167	3.013
	Equal variances not assumed			4.702	64.918	.000	14.167	3.013

Source : SPSS Data Processing Version 21

The results of the calculation of performance assessment data showed that F significant Equality Variances assumed was obtained as $0.034 < 0.05$ with the conclusion that the two population variants were not identical. Therefore, to obtain the hypothesis result, look at the value of Equality Variances not assumed sig (2-tailed) which is 0.000. The value is less than 0.05 ($0.000 < 0.05$).

The results of the calculation of the T-test on the questionnaire data can be seen in the table below:

Table 15: *Test Independent Sample Test Questionnaire*

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference

Questionnaire	Equal variances assumed	.768	.384	9.877	70	.000	14.556	1.474
	Equal variances not assumed			9.877	67.920	.000	14.556	1.474

Source: SPSS Data Processing Version 21

The results of the questionnaire data calculation showed that the significant F Equality Variances assumed was $0.384 > 0.05$ with the conclusion that the two variants had identical populations. So, to obtain the hypothesis results, it is done by looking at the value of Equality Variances assumed sig (2-tailed) which is $0.000 < 0.05$.

The two data results showed that the hypothesis was accepted because the significance value was smaller than the significant level (0.05), namely $0.000 < 0.05$ for performance assessment and $0.000 < 0.05$ for questionnaires. Therefore, it can be concluded that the digital-based Project Based Learning learning model has an influence on student creativity in the subject of moral beliefs class X MAN 1 Bone.

4. Uji Effect Size

The effect size test was carried out to find out how much the Project Based Learning method influenced students' creativity. The effect size in this study was calculated using Cohen's formula d, which is as next:

$$d = \frac{M_e - M_c}{SD}$$

$$d = \frac{82,08 - 67,92}{12,41}$$

$$d = \frac{14,16}{12,41}$$

$$d = 1,14$$

Based on the results of the calculation of Cohen's effect size d, the result was 1.14. Then from the calcification of the effect size criteria, it can be seen that 1.14 Included in the large category. This means that the application of the Project-Based Learning model has a great influence on student creativity.

Discussion

The results of this study prove that innovative learning models such as the Project Based Learning (PjBL) model are very important in improving student creativity outcomes. By applying the PjBL model, students are directly involved in real projects, so that students can relate the concepts learned with real experiences so that their learning becomes more meaningful. This statement is in accordance with the Experiential Learning theory developed by David Kolb (2014) which focuses on emphasizing the importance of hands-on experience in the learning process. The reflection process that occurs after this experience can increase students' creativity and understanding of the material studied.

The difference between the creativity value of the experimental class and the control class is also due to the different levels of student satisfaction with the learning model used. This can be seen in table 4.1 of the data collected on the questionnaire, that student satisfaction with the conventional model in the control class only reached 58.25% while in the experimental class with the PjBL model obtained a higher result of 81%. The PjBL model provides a more enjoyable learning experience, so that students feel happy and motivated to learn. The PjBL model is also able to provide a wider space for students to be active, creative and collaborative in the learning process, so that every aspect of creativity can develop more optimally. This is corroborated by research conducted by Aulina, et al. (2024) that the implementation of PjBL can improve the quality of learning, especially in the development of 21st century students' skills, namely active involvement and children's creativity.

Based on this explanation, it can be concluded that the application of the digital-based Project-Based Learning model has an effect on increasing student creativity in the moral faith subject of class X MAN 1 Bone. This is also in line with research conducted by Fitri, et al (2021) which stated that the use of the Project-Based Learning model has a significant influence on student creativity in digital simulation subjects compared to learning without the use of the Project-Based Learning model.

4) CONCLUSION

Student creativity is divided into two types, namely creative in creating works and creative in thinking. Both types of creativity showed positive results in the experimental class compared to the control class. In both classes, the results were different. This difference can be seen from the average score of each class. The creativity of students in the experimental class obtained a higher result of

82.08 while the control class obtained a result of 67.92 with a difference of 14.16. The majority of students in the experimental class are also in the very creative category, in contrast to the control class which is more dominated by less creative students.

There is an influence of the digital-based Project-Based Learning model on the creativity of students in class X MAN 1 Bone in the subject of moral beliefs. This can be seen from the results of the hypothesis test of the data obtained, namely the sig (2-tailed) value of $0.000 < 0.05$, which shows that H_0 is rejected and H_a is accepted. Then from the results of the effect size test, a d result of 1.14 was obtained which indicates that the influence of the Project-based Learning model is in the large category. So, it can be concluded that the digital-based Project-Based Learning model has an effect on students' creativity in the subject of moral beliefs in class X MAN 1 Bone.

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