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The Influence of Canva-Based Learning Media on Creativity and Critical Thinking of Vocational School Students

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Abstract: The creativity and critical thinking of class XI students at SMK Plus Bustanul Ma'arif is still relatively low. One of the reasons for this is that teachers in carrying out learning do not use media. The aim of this research is to describe the influence of Canva-based learning media on the creativity and critical thinking of class XI students at SMK Plus Bustanul Ma'arif. The method used is Quasi Experiment with a Pretest-Posttest Only Control Group Design. The research instruments used were creativity and critical thinking tests. The homogeneity test results show that the sig value. creativity of 0.115 and a sig value. critical thinking is 0.773, so it can be concluded that the sample variance is homogeneous. Meanwhile, the normality test results show that the sig. creativity and critical thinking in the control group and experimental group were normally distributed because > 0.05. After fulfilling the prerequisite tests, the researcher collected posttest data on creativity and critical thinking in the control class and experimental class which were analyzed using the MANOVA test with an error degree of 5%. The results show that there is the significant influence of Canva-based learning media on the creativity and critical thinking of class XI students at SMK Plus Bustanul Ma'arif; H_a accepted and rejected H_0.

Keywords: Canva; Creativity; Critical thinking; Media

Introduction

Education has a crucial role in forming human resources (HR) and developing individual potential. In general, education includes a series of formal and informal processes that enable individuals to acquire knowledge, skills and values that are essential for everyday life. Specifically in Law No. 20 of 2003 concerning the National Education System (*Sisdiknas*) education is defined as "conscious and planned efforts to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble morals, and the skills needed by themselves, society, nation and state" (Indonesian Government, 2003). Therefore, education is not only about receiving information, but also has a significant social role, forming moral and ethical values that become the basis for individual attitudes and behavior in society.

Nowadays there are many challenges in the world of education, one of which is the change in learning paradigm in line with technological developments. According to Thaariq & Surahman (2021), technology has a significant role in education, especially in facilitating the learning process and solving various educational challenges. Technology can be used as an intermediary in efforts to achieve learning goals (Maritsa et al., 2021). Especially in the current digital era, education is also increasingly open through the use of technology that can provide access to information and knowledge. One technology product that is currently widely used in the learning process is Canva (Almulla & Al-Rahmi, 2023).

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According to Tanjung & Faiza (2019), Canva is an online design program, where the program provides various graphic designs, such as presentations, posters, pamphlets, graphics, banners, invitation cards, photo editing, and Facebook covers. Furthermore, Tanjung & Faiza (2019) also pointed out one of Canva's advantages, namely that it can increase creativity in designing learning media because it has many features provided, such as drag and drop. Next, Salam & Mudinillah (2021) and Riono & Fauzi (2022) explained Canva as an online-based application that is able to provide various attractive template designs with various functions and categories. Furthermore, Salam & Mudinillah (2021) also stated that Canva is widely used as a learning medium, such as creating interesting presentation materials and audio-visual based learning videos.

Even though Canva is widely used in the learning process, the reality in the field that researchers found is not the case. The results of observations made by researchers in class Teachers still seem comfortable implementing conventional learning through lectures, discussions, demonstrations and questions and answers. Teachers are also seen occasionally giving assignments to their students. When the researcher interviewed, the teacher said that conventional learning was more familiar and easier to implement. Furthermore, the teacher also has a preference that the use of media in the learning process will require additional time for the understanding and skills required. This condition is clearly very unfortunate, considering that media has very important benefits in learning. This is as stated by (Sidqi et al. (2023) that media is useful for creating reasoning, creative and active thinking for students, and can help in achieving predetermined competencies.

Table 1. Creativity indicators

Indicator	Explanation
Fluency	The number of ideas or solutions generated.
	Speed of generating ideas.
Flexibility	Ability to move between different categories of thought.
	Ability to generate varied ideas.
Originality	Novelty of idea or solution.
	The level of uniqueness compared to ideas or solutions in general.
Elaboration	Ability to provide further explanation on an idea or solution.
	Quality of explanation and development of ideas.

(Torrance in Filsaime, 2008)

Apart from the problems above, researchers also discovered the fact that the creativity and critical thinking of class XI students at SMK Plus Bustanul Ma'arif is still relatively low. The results of the initial test that the researchers gave to 44 students showed that the average scores for creativity and critical thinking of students were 58 and 64 respectively. This certainly requires finding a solution, considering that creativity and critical thinking are skills needed in the 21st century. According to Putri (2013), creativity is defined as the ability to imagine, interpret and put forward ideas and efforts that have creative power with the aim of creating new combinations from existing ones, so that students can develop themselves by improving their qualities. Critical thinking is the ability to think rationally in providing an assessment of something. Before a decision or action is taken, individuals who think critically will gather as much information as possible about a matter (Karim & Normaya, 2015).

The Torrance Tests of Creative Thinking (TTCT) reveal four key components that are assessed in creativity, where the four indicators are explained in the Table 1 (Torrance in Filsaime, 2008).

Meanwhile, according to Facione (1994), there are four criteria for critical thinking indicators which can be seen in the Table 2.

Table 2. Critical thinking indicators

Indicator	Explanation
Interpretation	Explain and describe information appropriately.
	Identify the important points of information.
	Understand the context of the information provided.
	Linking information with existing knowledge and concepts.
	Recognize the perspective of information.
Analysis	Separating information into more detailed parts.
	Identify the relationships between the parts.
	Identify cause and effect relationships between information elements.
	Analyzing the impact of information.
	Recognize hidden patterns in information.
	Comparative analysis between data or information.
Evaluation	Assess the credibility of information.
	Identify reliable sources of information.
	Assess the consistency of information.
	Identify contradictions in information.
	Evaluate the arguments given.
	Identify the weaknesses of an argument.
Inference	Use existing information to draw conclusions.
	Identify the implications of information.
	Understand the consequences of decisions or actions.
	Forecast the likely outcome of a situation.
	Make inferences based on evidence and logic.
	Avoid unfounded inferences.

(Facione, 1994)

The indicators of creativity and critical thinking above certainly have a central role in the development of students' intellectual abilities. Critical thinking and creative thinking can make a significant contribution to cognitive learning outcomes, although the effective contribution of creative thinking is greater than critical thinking (Siburian et al., 2019; Prihatiningtyas & Rosmaiyadi, 2020; Anggraeni et al., 2022). Creativity is the key for students to respond to challenges in innovative ways. In addition, critical thinking allows students to build solid arguments and make informed decisions. The two complement each other, creating a comprehensive rationale. According to Supena et al (2021), creativity and critical thinking have a positive influence on student learning outcomes, both in aspects such as cognitive, affective and psychomotor. Learning that strengthens indicators of creativity and critical thinking not only prepares students to face future challenges, but also forms leaders who can face global complexity with a critical and creative attitude.

By referring to the background above, the researcher is interested in carrying out research with the title "The Influence of Canva-Based Learning Media on the creativity and critical thinking of Vocational School Students". This is due to the gap that researchers found, where in implementing learning teachers do not use media, which is exacerbated by the condition of students' creativity and critical thinking which is still relatively low. Thus, the aim of this research is to describe the influence of Canva-based learning media on the creativity and critical thinking of class XI students at SMK Plus Bustanul Ma'arif.

Method

This study uses an experimental research design. The experimental design used is Quasi Experiment, which is a study in which the control variables cannot be used to control external variables that affect the implementation of the study (Payadnya & Jayantika, 2018). The design used by the researcher is Pretest-Posttest Only Control Group Design. Sugiyono (2019) explains that quantitative methods can be divided into two, namely experimental methods and survey methods. The experimental method is a research method used to find the effect of certain treatments under controlled conditions. While the survey method is research conducted in large or small populations but the data studied is data from samples taken from the population so that relative events, distributions, and relationships between variables are found. The flow of research implementation is depicted in Figure 1.

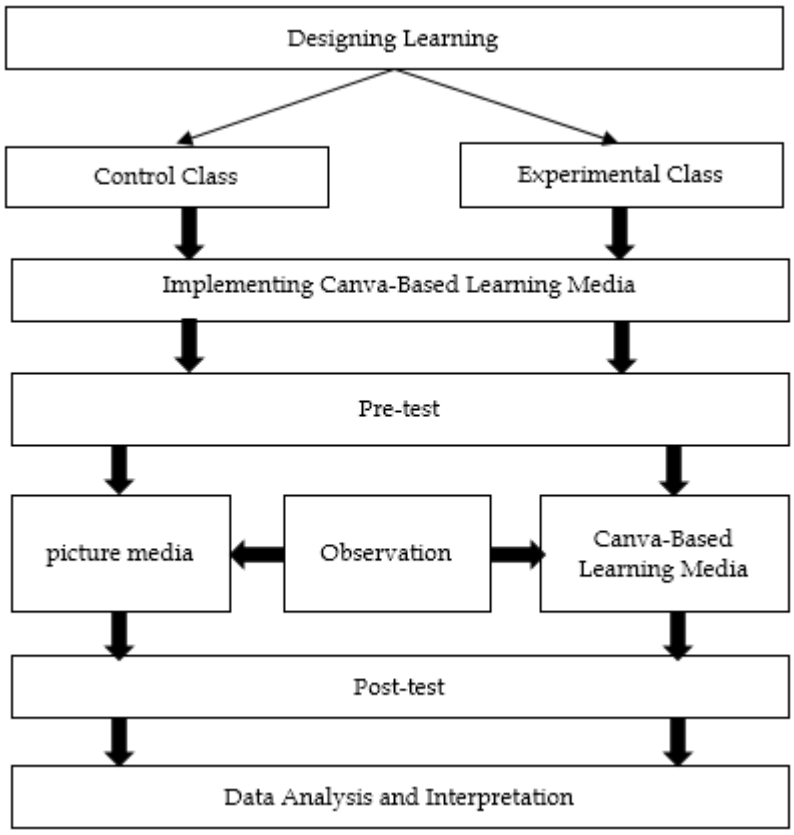

Figure 1. Research flow

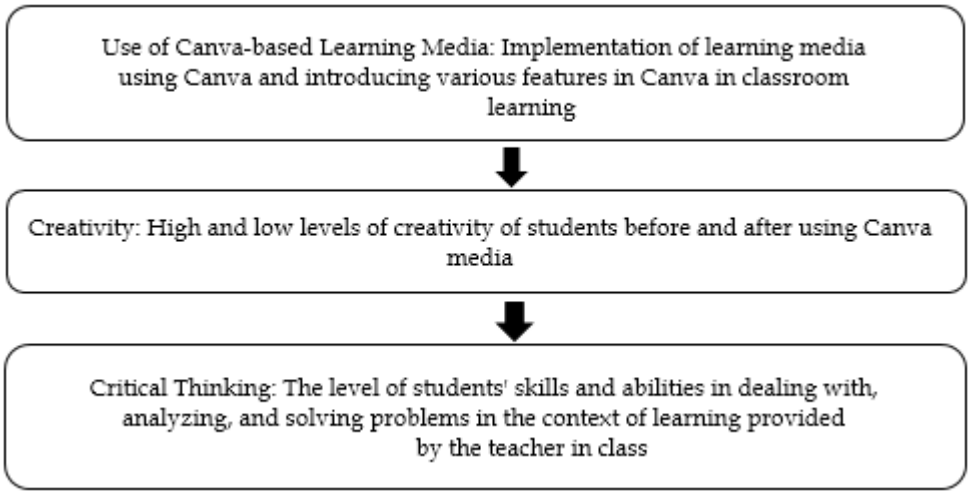

Figure 2. Conceptual framework

This conceptual framework helps in visualizing the relationship between the variables to be studied, explaining the association between the strategy of using Canva-Based Learning Media on students' creativity and critical thinking. The conceptual framework in Figure 2.

This type of research is Quasi Experiment, namely research in which the control variables cannot be used to control external variables that influence the implementation of the research (Payadnya & Jayantika, 2018). The design used by researchers is Pretest-Posttest Only Control Group Design.

Table 3. Pretest-posttest with nonequivalent control group design

Class	Pretest	Treatment	Posttest
Control	T_1	-	T_2
Experiment	T_1	X	T_2

(Payadnya & Jayantika, 2018)

The population in this study were students SMK Plus Bustanul Ma'arif with class XI research samples. The research was carried out in the odd semester of the 2023/2024 academic year with the theme Getting used to critical thinking and loving science and technology. The data collection technique that researchers use is tests. According to Cohen et al. (2007), in educational research, tests are one of the most powerful data collection techniques for collecting numerical data. In this research, tests were carried out to determine the creativity and critical thinking of class XI students Bustanul Ma'arif Plus Vocational School.

The creativity and critical thinking pretest data that has been collected in this research will first be subjected to prerequisite tests, namely the homogeneity test and normality test with the following formula.

The formula for the homogeneity test is:

$$F = \frac{{S_1}^2}{{S_2}^2} \quad (1)$$

Information:
F = F-test value
S_1^2 = Largest variance
S_2^2 = Smallest variance

The normality test formula is:

$$\chi^2 = \frac{\sum(f_0 - f_h)^2}{f_h} \quad (2)$$

Information:
χ^2 = Chi squared
f_0 = Existing frequency
f_h = Expected frequency

Researchers carry out homogeneity tests to confirm if the groups to be compared have the same variability. Meanwhile, researchers carry out normality tests with the aim of being able to check whether the normal distribution assumption is acceptable or not.

After fulfilling the prerequisite tests, researchers collected posttest data creativity and critical thinking in the control class (not using Canva-based learning media) and the experimental class (using Canva-based learning media). On this data, a Multivariate Analysis of Variant or MANOVA test will be carried out at 5% error degree on the following basis (Sugiyono, 2019).

H_0 : There is no influence of Canva-based learning media on the creativity and critical thinking of class XI students at SMK Plus Bustanul Ma'arif.

H_a : There is an influence of Canva-based learning media on the creativity and critical thinking of class XI students at SMK Plus Bustanul Ma'arif.

The formula that researchers use for MANOVA test with the help of SPSS 21 for Windows are as follows. The MANOVA test formula is:

$$Y_1 i, Y_2 i = \alpha_0 + \beta_1 X_i + \varepsilon_i \quad (3)$$

MANOVA itself can be interpreted as a statistical method that aims to explore the relationship between several independent variables of the categorical type (nominal or ordinal) with several dependent variables of the metric type (interval or ratio) (Santoso, 2015).

Result and Discussion

Results

The use of Canva for Education learning media can make it easier and save teachers' time in designing learning media and make it easier for teachers to deliver learning materials. Canva for Education is an application that provides more attractive templates so that it attracts students' interest in the learning process (Nurhayati et al., 2022). Teachers can use many examples in the Canva application to present to students, one of which is various creative Power Point templates. From previous relevant research, it can be said that Canva learning videos can be one solution because learning videos that use the Canva application have a choice of file sizes and types when downloading the video results so that we can choose according to our needs. Learning videos using the Canva application can be applied to all levels of education and all subjects. In this study, an example of its application is in science learning or called natural science (Rahmawati & Atmojo, 2021).

Irwin et al. (2012) regarded creative teaching as encouraging a teacher changing the teaching methods whenever necessary. Liu et al. (2011) defined web-based Canva, creative teaching as utilizing web-based development and applying novel, original, or inventive teaching methods. Crooks et al. (2012) mentioned that web-based Canva and creative teaching was a teacher designing teaching activities through web-based curriculum contents to induce students' creation behaviors, i.e. allowing students applying the imagination to cultivate the sensitive, fluent, flexible, unique, and elaborative thinking abilities. Padilla-Meléndez et al. (2013) referred web-based creative teaching as changing web-based instruction to cultivate students' creative thinking and problem solving abilities. Accordingly, Canva media and creative thinking teaching utilizes creative thinking strategies matching with curricula for students applying the imagination so as to cultivate students' fluent, flexible, unique, and elaborative thinking abilities. A teacher, on the other hand, could perceive happy fulfilment and achievement in the lively web-based instruction (Jong et al., 2013).

Cheng & Tsai (2011) proposed three web-based thinking teaching principles of teaching for thinking, teaching of thinking, and teaching about thinking. Teaching for thinking intended to create school and classroom environments to facilitate thinking development; teaching of thinking aimed to teach students thinking skills and strategies; and, teaching about thinking would help students perceive individual and others' thinking processes and apply such cognition processes to daily life and problem-solving situations. Referring to Hasan & Abuelrub (2011), Canva-based learning media on the creative thinking teaching is divided into three dimensions, and student behaviors from the interaction between teaching contents and teaching strategies are the expected creative teaching goal. Cognition: It is to understand students' thinking fluency, flexibility, uniqueness, and elaboration. Affection: It concerns students' curiosity, challenge, risk, and imagination. Skill: It stresses on expertly applying creative thinking strategies to create novel and proper works. Based on the research conducted, the following researchers will first present the results of the homogeneity test and normality test as a form of prerequisite test.

The homogeneity test is analyzed based on the results of the creativity and critical thinking pretest to find out whether the groups to be compared have homogeneous variances or not. As for the results can be seen in the Table 4 and 5.

Table 4. Creativity homogeneity test

Levene Statistics	df1	df2	Sig.
2.523	1	118	.115

Table 5. Critical thinking homogeneity test

Levene Statistics	df1	df2	Sig.
.084	1	118	.773

Based on the homogenies test results above, it shows that the sig. creativity of 0.115 and a sig value. critical thinking of 0.773. Because the sig value. both are > 0.05, so it can be concluded that the sample variance is homogeneous.

The normality test is analyzed based on the results of the creativity and critical thinking pretest to find out whether the normal distribution assumption is acceptable or not. As for the results can be seen in the Table 6 and 7. Based on the normality test results in Table 6 and 7, it shows that the sig. creativity and critical thinking in the Kolmogorov-Smirnov column in the

control group and experimental group are normally distributed because > 0.05.

Table 6. Creativity normality test

	Kolmogorov-Smirnov		
Group	Statistics	df	Sig.
1	.109	60	.073
2	.110	60	.066

Table 7. Critical thinking normality test

	Kolmogorov-Smirnov		
Group	Statistics	df	Sig.
1	.127	60	.084
2	.095	60	.200*

After fulfilling the prerequisite tests, researchers collected posttest data creativity and critical thinking in the control class (not using Canva-based learning media) and the experimental class (using Canva-based learning media). Here are the results.

The highest student score obtained in the control group was 86 and the lowest was 73. The mean score was 77.87 with a standard deviation of 3.95. A complete description of the control group's creativity posttest score analysis can be seen in the Table 8.

Table 8. Statistical data on control group creativity posttest scores

Statistics Posttest Control		
N	Valid	44
	Missing	0
Mean		77.8750
Std. Error of Mean		.69958
Median		77.0000
Mode		73.00
Std. Deviation		3.95743
Variance		15.661
Skewness		.629
Std. Error of Skewness		.414
Kurtosis		-.661
Std. Error of Kurtosis		.809
Range		13.00
Minimum		73.00
Maximum		86.00
Sum		2492.00
Percentiles	25	75.0000
	50	77.0000
	75	81.0000

The highest student score obtained in the experimental group was 89 and the lowest was 75. The mean score was 83.5 with a standard deviation of 4.45. A complete description of the posttest creativity score analysis for the experimental group can be seen in the Table 9.

Table 9. Statistical data on posttest creativity values of the experimental group

Statistics Posttest Experiment		
N	Valid	44
	Missing	0
Mean		83.5188
Std. Error of Mean		.65644
Median		87.0000
Mode		87.00
Std. Deviation		4.45340
Variance		13.789
Skewness		.663
Std. Error of Skewness		.414
Kurtosis		-.078
Std. Error of Kurtosis		.809
Range		15.00
Minimum		75.00
Maximum		89.00
Sum		2791.00
Percentiles	25	84.0000
	50	87.0000
	75	89.0000

Table 10. Statistical data on control group critical thinking posttest scores

Statistics Posttest Control		
N	Valid	44
	Missing	0
Mean		67.7875
Std. Error of Mean		.69741
Median		72.0000
Mode		75.00
Std. Deviation		5.71259
Variance		21.544
Skewness		-.304
Std. Error of Skewness		.414
Kurtosis		-.842
Std. Error of Kurtosis		.809
Range		14.00
Minimum		58.00
Maximum		78.00
Sum		2302.00

Statistics Posttest Control		
Percentiles	25	69.0000
	50	72.0000
	75	75.7500

The highest student score obtained in the control group was 78 and the lowest was 58. The mean score was 67.78 with a standard deviation of 5.7. A complete description of the control group's critical thinking posttest score analysis can be seen in the Table 10.

The highest student score obtained in the experimental group was 97 and the lowest was 72. The mean score was 85.3 with a standard deviation of 6.54. A complete description of the critical thinking posttest score analysis for the experimental group can be seen in the Table 11.

From the results of the control and experimental group scores obtained through students' creativity and critical thinking tests, the MANOVA test results will be presented which can be seen in the Table 12.

Based on the output of the MANOVA test results in Table 12, it is known that the valuePillai's Trace, Wilk's Lambda, Hotelling's Traceand Roy's Largest Root has sig. 0.000 < 0.05. This can be interpreted that there is the significant influence of Canva-based learning media on the creativity and critical thinking of class XI students at SMK Plus Bustanul Ma'arif; H_a accepted and rejected H_0.

Table 11. Statistical data on critical thinking posttest scores for the experimental group

Statistics Posttest Experiment		
N	Valid	44
	Missing	0
Mean		85.3438
Std. Error of Mean		.65320
Median		85.0000
Mode		85.00
Std. Deviation		6.54320
Variance		42.814
Skewness		.419
Std. Error of Skewness		.414
Kurtosis		-.403
Std. Error of Kurtosis		.809
Range		16.00
Minimum		72.00
Maximum		97.00
Sum		2731.00
Percentiles	25	83.0000
	50	85.0000
	75	90.0000

Table 12. MANOVA significance test results

Effect		Value	F	Hypothesis df	df error	Sig.	Non cent. Parameter	Observed Power
Intercept	Pillai's Trace	.998	20050.996	2.000	61.000	.000	40101.992	1.000
	Wilk's Lambda	.002	20050.996	2.000	61.000	.000	40101.992	1.000
	Hotelling's Trace	657.410	20050.996	2.000	61.000	.000	40101.992	1.000
	Roys's Largest Root	657.410	20050.996	2.000	61.000	.000	40101.992	1.000
Class	Pillai's Trace	.626	50.997	2.000	61.000	.000	101.995	1.000
	Wilk's Lambda	.374	50.997	2.000	61.000	.000	101.995	1.000
	Hotelling's Trace	1.672	50.997	2.000	61.000	.000	101.995	1.000
	Roys's Largest Root	1.672	50.997	2.000	61.000	.000	101.995	1.000

Computed using alpha = 0.05

Discussion

The results above show that there is an influence of Canva-based learning media on the creativity and critical thinking of class XI students at SMK Plus Bustanul Ma'arif. Canva-based learning media provides a platform that allows students to express their ideas visually in a unique and interesting way. With an intuitive interface and a variety of design options, Canva allows students to easily combine elements such as images, text, and graphics to create impressive projects. Real-time collaboration also encourages students to share ideas, provide feedback, and build on each other, which stimulates student imagination and creativity. Additionally, Canva allows students to customize designs to suit their preferences and vision, giving them the freedom to explore ideas without strict boundaries. The ease of sharing projects digitally also allows students to gain inspiration from classmates' work and broaden their horizons about different design approaches and techniques. In this way, Canva-based learning media not only facilitates enjoyable learning, but also stimulates students' creativity and helps develop the skills needed to face future challenges. This discussion is in line with the opinion of Churiyah et al. (2022) who state that Canva allows students to maximize their preparation to become graduates who are ready to

work and have various skills needed by the industrial world, as well as creative skills in the digital era. Teacher creativity in learning can be applied in two ways, namely in classroom learning management and in the use of learning media (Hapsari & Zulherman, 2021).

Apart from that, Canva-based learning media can also have an influence on the critical thinking of class colors and types of fonts that are most effective for conveying messages or information; In selecting content to include in the design, students should conduct critical analysis of the information they obtain, considering its accuracy, relevance, and credibility; and When students collaborate on Canva projects, students engage in discussions and exchange of ideas that require critical thinking to evaluate multiple perspectives and arguments. These findings reveal that project-based learning optimizes critical and creative thinking skills (Zulyusri et al., 2023). During this process, students also learn to provide constructive feedback to classmates, which can develop their critical evaluation skills. Thus, Canva-based learning media provides an environment that stimulates critical thinking, where students can hone their analysis, evaluation and problem solving skills to succeed in education and everyday life. This discussion is in line with what Sari (2022) stated that the attractive design and variety of materials found on Canva can make a positive contribution to improving students' critical thinking.

Conclusion

Based on the results and discussion above, it can be concluded that: there is the significant influence of Canva-based learning media on the creativity and critical thinking of class XI students at SMK Plus Bustanul Ma'arif, H_a accepted and rejected H_0. Before obtaining these conclusions, researchers carried out homogeneity tests and normality tests as a form of prerequisite test. The result is H_0 homogenies test shows a sig value of creativity of 0.115 and a sig value of critical thinking is 0.773, so it can be interpreted that the sample variance is homogeneous. Meanwhile, the normality test shows a sig value. creativity and critical thinking in the control group and experimental group were normally distributed because > 0.05.

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Author Contributions
All authors have a role in preparing the draft until this article is completed. A.Z. is responsible for preparing the research instrument and collecting data. W. performed the validation of the instrument and research design. K. played a role in the study of research data analysis.

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There is no conflict of interest.

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