



Integration of Canva Media With Problem Based Learning and Its Effect on Students Digital Literacy Ability on Environmental Change Material

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Abstract. The purpose of this study was to see the ability of canva media integration in the Problem Based Learning model on students' digital literacy. This type of research uses a quasi-experimental form in the form of Post-test Only Control Group Design. The population in this study were all class X. The samples were class X.10 and class X.12 with a total of 30 students. The sampling technique used in this study was Purposive Sampling. Data collection techniques used are teacher activity sheets, and digital literacy questionnaires. The results of the t test analysis research can be obtained sig value. (2-tailed) of $0.000 < 0.05$, then according to the basis for decision making in the independent sample t-test, it can be concluded that H_0 is rejected and H_a is accepted, meaning that there is a significant effect of learning using canva media integration of the Problem Based Learning model (X) on students' digital literacy skills (Y) so that the results of this study have answered the formulation of the problem, namely that the integration of canva in the Problem Based learning (PBL) model can improve students' digital literacy. Suggestions from researchers to teachers, especially class teachers, so that students' digital literacy is given more attention and more often use canva integration in problem-based learning in the learning process.

Keywords: problem based learning, digital literacy, learning media

1 Introduction

The rapid advancement of information technology marks the onset of the digital revolution era in Indonesia, significantly impacting and dominating all sectors of society, including education. This technological progress has led to varying academic demands at each educational level in Indonesia [1].

The accelerated advancement of information technology and the internet has directed to a wide range of digital information resources [2]. While these developments have brought numerous benefits, they also present challenges, with both

positive and negative impacts on society. As a result, the importance of digital literacy has become increasingly evident, particularly in education, making it an essential area of focus [3].

Describe digital literacy as the combination of interests, attitudes, and competencies that individuals use when engaging with digital technology and communication tools [4]. This literacy involves more than just accessing and managing information; it includes the ability to integrate, analyze, and evaluate data critically. Additionally, digital literacy enables individuals to construct new knowledge, create content, and effectively communicate with others. By mastering these skills, individuals can actively and meaningfully participate in today's digitally-driven society, contributing to both personal growth and community development. In this era of technological development, educators must be more creative and active in making learning media because technological developments can be utilized by educators to create learning media. Consequently, learning media deliver and transmit information to recipients, resulting in effectively and efficiently planned teaching and learning activities. This, in turn, creates a conducive learning environment, facilitates students' understanding of topics, and increases their interest in further learning [5].

One of the applications that can be used is Canva. Canva is a graphic design platform used to create visual content such as social media graphics, presentations, posters, documents, and more. This application also provides various design templates as references for creating designs. The use of Canva in education can enhance students' digital literacy.

The choice of learning model is crucial for ensuring a smooth and effective classroom experience. In this context, the Problem-Based Learning (PBL) model is utilized. The PBL model emphasizes student-centered learning, where students actively engage in solving real-world problems that are relevant and meaningful. This approach encourages students to draw on their existing knowledge and resources to find solutions, fostering critical thinking and deeper understanding [6].

Problem-Based Learning (PBL) is a teaching method where students are given real and meaningful problems to solve, encouraging them to do research and study. PBL involves many problems that need real investigation, meaning students must find actual solutions to real issues. PBL as a learning approach that helps students become active and independent thinkers. It encourages them to develop problem-solving skills by searching for data to find logical and real solutions. PBL helps students engage with realistic problems, think critically, and work independently to solve real-world challenges [7].

Based on the above statement regarding the Problem Based Learning model, it can be concluded that this learning model is a learning model that focuses students on working more actively and solving problems encountered in real learning.

One of the problems found in our environment is the problem of environmental change. In education, environmental change material can be very harmonious if taught using the PBL learning model. The living environment can be defined

as the physical environment that supports life and the processes involved in the flow of energy and the cycle of matter. Environmental balance can be disrupted if changes occur in the form of reduced function of a component or the loss of multiple components, which can lead to a breakdown in the food chain of the ecosystem in that environment [8].

A well-balanced ecosystem has significant resilience and carrying capacity. Resilience is the ability to return to a stable state while carrying capacity refers to the environment's ability to support the needs of a certain number of living things, allowing them to grow and develop naturally. Additionally, this balance in the environment is influenced by the balance of energy coming in and going out, the balance between the production and consumption of food, and the balance between biotic and abiotic factors. Disruption of one of the factors can disrupt the balance of the environment. Development activities aimed at meeting human needs often lead to environmental changes. These changes make environmental damage which is sometimes at an alarming level. Environmental changes due to environmental pollution have now become a local, national and global issue [8].

Environmental changes that cause environmental damage can occur due to natural and human factors. Environmental changes due to natural factors can be in the form of natural disasters such as volcanic eruptions, tsunamis and earthquakes, while environmental changes due to human actions such as deforestation, illegal mining and housing construction.

Building on the previous discussion, this study aims to explore the effect of integrating Canva media with PBL models on students' digital literacy skills, specifically within the context of environmental change material. This research will investigate how the combination of these teaching tools influences students' ability to navigate and utilize digital resources effectively while engaging with topics related to environmental change.

2 Method

This research will be conducted at SMA Negeri 1 Gorontalo City, Gorontalo Province, during the first semester of the 2022/2023 academic year. A quantitative approach will be used, employing inferential statistical methods, specifically a t-test, to determine differences between the experimental and control classes and compare their average results.

The research design is the Post-test only Control Group Design, where the experimental and control groups are not randomly selected. In this design, the experimental group, which receives the treatment, is compared to the control group, which does not receive the treatment. The Post-test Control Group Design is illustrated in Table 1.

The independent variables in this study are the Canva media learning model and Problem-Based Learning (PBL). The dependent variable is the students' digital literacy. The operational variable focuses on students' digital literacy. This research integrates Canva media with the PBL model to assess its impact on digital literacy.

Table 1. Post-test Only Control Group Design

Group	Treatment	Posttest
Experiment	X	O
Control	-	O

The population for this study comprises 12 classes of Grade 12 students at SMA Negeri 1 Kota Gorontalo, including 7 social studies classes and 5 science classes, totaling 412 students (197 male and 215 female). The sample consists of classes X.10 and X.12, with X.10 serving as the experimental class and X.12 as the control class. Data collection was conducted using non-test instruments.

3 Result and Discussion

3.1 Description of Post-test Questionnaire Data

The posttest results for student digital literacy were analyzed using SPSS Version 26.0 to obtain a detailed data description. The posttest results for both the experimental and control groups have been analyzed and summarized. The resulting descriptive statistics are compiled in the table below, offering a clear comparison between the two classes' performances. These statistics provide insights into the effectiveness of the intervention applied to the experimental class compared to the control group. This analysis provides a clear comparison of the performance between the two groups, highlighting the effectiveness of the intervention used in the experimental class compared to the traditional methods employed in the control class.

The experimental class achieved a cumulative score of 2701, with an average score of 90.03. The highest score recorded in this group was 95, while the lowest was 84. On the other hand, the control class garnered a total score of 1987, with an average of 66.23. This group had a highest score of 78 and a lowest score of 52. Comparing the two classes, the experimental group consistently outperformed the control group, with a significantly higher average score of 90.03 compared to 66.23. This performance difference indicates that students in the experimental class demonstrated superior digital literacy skills compared to those in the control class, suggesting that the intervention applied in the experimental class was more effective in enhancing digital literacy.

The table above indicates that the highest score of 95 was achieved by 2 students (6.7%). The lowest score was 84, obtained by 1 student (10%). The majority of students, 7 in total (23.3%), scored 92. Based on this data, it can be concluded that students have successfully improved their digital literacy on environmental change material, as all students received an average score above 70.

Based on the table above, it can be observed that the highest score was 78 (3.3%), achieved by 1 student, and the lowest score was 52 (3.3%), also obtained by 1 student. The most common score was 65 (13.3%), achieved by

Table 2. Post Test Results of Experimental And Control Classes

Experiment Class		Control Class	
Respondent	Total Score	Respondent	Total Score
X1	88	X31	60
X2	92	X32	68
X3	95	X33	70
X4	84	X34	73
X5	91	X35	74
X6	84	X36	67
X7	92	X37	78
X8	85	X38	72
X9	93	X39	66
X10	93	X40	77
X11	88	X41	66
X12	92	X42	69
X13	85	X43	60
X14	94	X44	65
X15	94	X45	65
X16	89	X46	65
X17	92	X47	71
X18	84	X48	68
X19	90	X49	69
X20	93	X50	52
X21	86	X51	58
X22	95	X52	71
X23	87	X53	67
X24	92	X54	59
X25	91	X55	61
X26	90	X56	60
X27	92	X57	65
X28	93	X58	64
X29	85	X59	57
X30	92	X60	70

4 students. From the post-test results, it is evident that some students scored below 70, indicating that conventional learning methods are no longer effective in improving students' digital literacy. Thus, it can be concluded that using Canva as a teaching medium is a more effective and appropriate method for enhancing students' digital literacy compared to conventional methods.

3.2 Analysis Prerequisite Test

Based on Table 6, which presents the Kolmogorov-Smirnov test results, the experimental class has a value of 0.127 and the control class has a value of 0.200. Since both values are greater than the alpha value of 0.05, it can be concluded that the samples come from a normally distributed population.

Table 3. Description of Posttest Data for Experimental and Control Classes

Descriptive Statistics	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Eksperimen	30	84	95	2701	90.03	3.5475
Kontrol	30	52	78	1987	66.23	6.0267
Valid N	30					

Table 4. Experimental Class Posttest Data Distribution

Score	Freq	Percent	Valid (%)	Cumulative (%)
84.00	3	10.0	10.0	10.0
85.00	3	10.0	10.0	20.0
86.00	1	3.3	3.3	23.3
87.00	1	3.3	3.3	26.7
88.00	2	6.7	6.7	33.3
89.00	1	3.3	3.3	36.7
90.00	2	6.7	6.7	43.3
91.00	2	6.7	6.7	50.0
92.00	7	23.3	23.3	73.3
93.00	4	13.3	13.3	86.7
94.00	2	6.7	6.7	93.3
95.00	2	6.7	6.7	100.0
Total	30	100.0	100.0	-

Based on the table above, the significance value based on the mean is 0.228, which is greater than 0.05. This indicates that the two classes, the experimental class and the control class, have the same or homogeneous variance.

Based on this data, it can be seen that the comparison of the two classes is seen from the average acquisition of digital literacy of experimental class students of 90.03 greater than the control class average of 66.23 (Experiment Posttest 90.03; 66.23 control posttest), so descriptively there are differences in the results of digital literacy of class X students of SMA Negeri 1 Gorontalo.

The average acquisition of digital literacy of experimental class students of 90.03 is greater than the control class average of 66.23 (Experiment Posttest 90.03 ; 66.23 control posttest) so descriptively there is a difference in the results of digital literacy of students in class X SMA Negeri 1 Gorontalo with the experimental class as the highest. Seeing this data, it can be emphasized that the class that has the highest score is the one that has applied Canva integration, namely the experimental class. Students become very enthusiastic in participating in the learning process, seen from the activeness of students in asking questions, answering and presenting their work.

However, in the control class, students' weakness lies in the use of canva media because there is no learning process with the application of canva media. Students excel in accessing information because they access information using the internet which they have generally learned. The questions on the indicators of understanding information, assembling information and disseminating information have the lowest average score due to questions about the use of canva

Table 5. Control Class Posttest Data Distribution

Score	Freq	Percent	Valid (%)	Cumulative (%)
52.00	1	3.3	3.3	3.3
57.00	1	3.3	3.3	6.7
58.00	1	3.3	3.3	10.0
59.00	1	3.3	3.3	13.3
60.00	3	10.0	10.0	23.3
61.00	1	3.3	3.3	26.7
64.00	1	3.3	3.3	30.0
65.00	4	13.3	13.3	43.3
66.00	2	6.7	6.7	50.0
67.00	2	6.7	6.7	56.7
68.00	2	6.7	6.7	63.3
69.00	2	6.7	6.7	70.0
70.00	2	6.7	6.7	76.7
71.00	2	6.7	6.7	83.3
72.00	1	3.3	3.3	86.7
73.00	1	3.3	3.3	90.0
74.00	1	3.3	3.3	93.3
77.00	1	3.3	3.3	96.7
78.00	1	3.3	3.3	100.0
Total	30	100.0	100.0	

Table 6. Normality Test Results

Factor	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Digital Literacy Experiment	.142	30	.127	.897	30	.017
Control	.119	30	.200*	.984	30	.917

media in the biology learning process, namely environmental changes. Some students are familiar and some have never used the canva application. However, a small number of students in the control class had used the canva application in editing photos and flyers, so they understood the use of the canva application a little.

The learning process will feel boring if you have to use notebooks, students will now be excited if they use gadgets for learning. The digital literacy learning process using canva integration can train students to think creatively, thus arousing students' curiosity in the material being taught. It can be seen how students respond when carrying out the learning process with the canva application and without using the canva application. However, it cannot be denied that there are some students who are smart but not creative so that they can improve digital literacy without using canva integration.

The findings of this research are consistent with those of Siswanjaya [9], who observed that utilizing Canva as a learning tool can significantly enhance student creativity. Similarly, Hapsari and Zulherman [7] conducted a study fo-

Table 7. Homogeneity Test Results

	Levene Statistic	df1	df2	Sig.
Digital Literacy Based on Mean	5.057	1	58	0.228
Based on Median	4.945	1	58	0.230
Based on Median and with adjusted df	4.945	1	50.74	0.231
Based on trimmed mean	5.088	1	58	0.228

Table 8. Statistical Test

	Mean	N	Std. Deviation	Std. Error Mean
Experiment	90.03	30	3.547	0.6476
Control	66.23	30	6.026	1.1003

cusing on the development of animated video media through Canva, aiming to boost students' motivation and academic performance. Their research demonstrated that when students engage with animated learning materials created using Canva, both their motivation and academic outcomes tend to improve. This suggests that the use of interactive and visually appealing learning media, such as Canva-designed animated videos, can play a crucial role in enhancing students' educational experiences by making learning more engaging and effective. Overall, these studies highlight the potential of Canva as a powerful tool for fostering creativity and academic success in educational settings.

Literacy is very important to be mastered by us, especially those who study and work every day by utilizing digital content, especially students who still have to continue the process of improving their abilities in the digital world because they live and interact every day through digital media. In addition to the ability to master digital literacy, students can access learning planned and carried out by teachers according to their own rhythm and timing and can obtain the information needed more quickly and precisely. Digital literacy is the ability that a person has regarding their skills in operating digital media, communication tools, or networks to be able to find, evaluate, use, create information and utilize it properly. However, sometimes there are some students who do not need to have the ability to access the internet. Therefore, to stimulate students' interest in operating digital media, one of them is by integrating canva with problem-based learning (PBL).

Canva is one type of graphic design tools that can facilitate users in designing various types of creative materials online. On the other hand, problem-based learning (PBL) involves using real-world problems as a focus for students to develop their critical thinking and problem-solving skills, while also acquiring essential knowledge and concepts (Corebina, 2010, p. 64). When it comes to environmental change, which encompasses events happening around us daily, this subject matter is particularly suitable for case studies in digital literacy. By integrating Canva as a media tool within the PBL model, students can explore and analyze environmental change topics more effectively, making the learning experience more engaging and relevant.

Improving digital literacy by using Canva integration in problem-based learning makes students look happy in participating in learning, students are free from tension because they feel there are no demands for more writing tasks, then create without burden and make all children look active in participating in learning so that the digital literacy skills of each child can be seen properly. After experiencing changes from the first meeting, there was an increase in digital literacy individually. The application of canva integration in problem-based learning will greatly help the effectiveness of learning. In addition to arousing the motivation and interest of students, canva integration in program based learning can also help students access the internet in more useful things, not just playing games or watching YouTube.

The obstacles and shortcomings in using canva media are in accessing images/materials of environmental changes where there are several images that are not found in the canva application so students still need to search for these images on the internet/google. Another obstacle is also found in the use of templates or images that are paid (VIP) so that only those registered as VIP members can access and download these images/templates. However, students can use free templates/images that can make it easier to organize learning materials. Despite these obstacles, students are still enthusiastic in learning by using Canva media because it is considered more challenging and tests students' creativity.

Table 9. Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error	Lower Interval of the Difference	Upper Interval of the Difference			
Ekspesimen – Kontrol	23.80	6.370	1.163	21.42	26.17	20.46	29	.000

The paired samples test table (hypothesis testing) provides information on the mean values for the experimental and control groups, which is 23.80. This value represents the difference between the mean post-test results of the experimental group (90.03) and the control group (66.23). Additionally, it includes the confidence interval for the difference (95% Confidence Interval of the Difference Lower and Upper) ranging from 21.42 to 26.17.

The t-test results reveal a significance value of 0.000, which is less than the alpha level of 0.05. This leads to the rejection of the null hypothesis (H0) and acceptance of the alternative hypothesis (Ha). Consequently, it is evident that integrating Canva with the Problem-Based Learning (PBL) model (X) significantly impacts students' digital literacy skills (Y). Thus, this study effectively addresses the research question by showing that the use of Canva within the PBL framework can significantly enhance students' digital literacy. This finding underscores the value of combining digital tools like Canva with innovative teaching methods such as PBL to improve educational outcomes.

4 Conclusion

The results and discussion indicate a significant improvement difference between the control class and the experimental class. In the control class, where learning was conducted using the internet, student responses were notably lower compared to the experimental class, which employed Canva as a learning media. This suggests that students in the experimental class engaged more positively and effectively with the material. Therefore, it can be concluded that the integration of Canva with conventional teaching methods results in a significant improvement in the literacy of Grade X students at SMA Negeri 1 Gorontalo. This conclusion highlights the effectiveness of combining interactive and visually engaging tools like Canva with educational approaches. Such integration not only enhances student engagement but also fosters better learning outcomes, thereby significantly improving literacy levels among students.

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