

THE EFFECT OF CHATGPT-BASED PROJECT-BASED LEARNING MODEL AND DIGITAL LITERACY ON NEWS TEXT WRITING SKILLS

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Article Info	Abstract
<p>Article History Received: April 2024 Revised: May 2024 Published: July 2024</p> <p>Keywords Project-based learning; ChatGPT; Digital literacy; News text;</p>	<p>Through conventional learning, learning news text writing skills is still oriented towards completing tasks given by the teacher. In addition, the teacher's role in learning is more dominant so that students have very little opportunity to explore their abilities. The purpose of this study is to evaluate how project-based learning using ChatGPT and digital literacy affect students' learning outcomes related to news text writing skills. Furthermore, this study aims to investigate how digital literacy and the ChatGPT-based project-based learning model interact to influence news text writing skills. This study, which used an experimental design with an independent samples test and an ANOVA 2-way analysis, demonstrates that using the ChatGPT-based project-based learning model greatly enhances the capacity to produce news articles. The tcount value of $4.025 > t_{table} 1.672$ and the sig value of $0.000 < 0.05$, which indicate that H_a is accepted, support this. However, with the value of $F_{o(p*L)} 0.248$ and sig value $0.621 > 0.05$, indicating that H_a is rejected, there is no interaction between the ChatGPT-based project-based learning model and digital literacy in influencing the capacity to create news material. The results of this test provide an assumption that between the ChatGPT-based project-based learning model and digital literacy skills do not jointly influence the learning outcomes of the ability to write news texts. This means that it is necessary to consider various factors that influence student learning success, both in the context of digital literacy and psychological factors that play an important role in the development of news text writing skills. This study adds significantly to our understanding of the efficacy and ramifications of the ChatGPT-based project-based learning model. It also emphasizes the significance of a comprehensive strategy for fostering students' news text writing abilities.</p>
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INTRODUCTION

Learning in the independent curriculum offers greater flexibility for schools to adapt the curriculum to the needs of students and the local context. One of the most important needs for students is writing. One of the key linguistic skills that pupils should acquire is writing (Afnita, 2022). Students can develop their analytical abilities, critical thinking, and creativity through writing. Through writing, kids develop excellent organizing abilities, logical thought processes, and clear presentation of their ideas (Nadhifah, 2018; Puspitasari, 2017). In addition, writing also allows students to develop sensitivity to audiences which will help students in conveying messages effectively to different types of readers. Writing skills can provide a strong foundation for students' communication skills in various life contexts (Limpo & Alves, 2017). In line with that, Tarigan (2008) explains that writing is an activity of producing and expressing language as a form of verbal communication. One of the signs that

students are able to write when they are able to express ideas clearly and use linguistic rules in accordance with applicable rules (Syazali et al., 2020; Afnita et al., 2017).

News text is one form of writing skill that is important for students to master. Writing news texts not only develops students' writing skills, but also helps students understand the structure and language style used in certain types of writing. News texts have their own characteristics that distinguish them from other types of writing. Usually, news texts are written in a short, clear and concise manner, focusing on information that is relevant and important to the reader. Students who learn to write news texts will be taught to organize information hierarchically, by presenting the most important facts first followed by additional supporting information. Writing news texts also requires the capacity for information analysis and synthesis. Students must be able to sort information from a variety of sources, assess its veracity and significance, and organize it into a writing style that readers will find engaging and understandable.

In fact, the teacher's role in learning is more dominant so that students have very little opportunity to explore their abilities. Teachers predominantly use printed books, and lack of introducing digital literacy which is the current trend. ChatGPT is one of the digital literacies that is growing rapidly and can be applied as a support for learning the ability to write news texts. The utilization of ChatGPT can be a valuable alternative to overcome this gap, because it provides opportunities for students to be more independent in acquiring knowledge and abilities, especially in writing news texts (Mukhlis et al., 2023). By utilizing ChatGPT, learning can be more inclusive, responsive to students' needs, and relevant to the changing trends and demands of the times.

In addition, learning the ability to write news texts is still oriented towards completing tasks given by the teacher. This kind of learning is often known as conventional learning that does not focus on students' needs and is not in accordance with the demands of the current curriculum. Kasmita (2021) states that learning packaged with conventional models is less effective in improving learning outcomes, tends to make students reluctant to ask questions, and results in low student argumentation skills. The conventional approach in learning the ability to write news texts tends to ignore technological developments and digital literacy skills. In today's rapidly changing world, students need to be equipped with writing skills that not only meet conventional standards, but are also able to adapt to technological and information developments. Mahdiyanto et al. (2016) revealed that the cognitive domain is the result of the development of knowledge and abilities. One model that focuses on the development of students' abilities is the Project-based Learning model (Himawan et al., 2024). This model requires students to practice critical thinking skills independently, digging for information, and problem solving.

The use of the project-based learning paradigm can greatly enhance students' writing skills (Lu, 2021; Praba' et al., 2018). According to some research, the project-based learning approach can enhance students' capacity to compose news texts (Aidawati, 2018; Artha et al., 2023; Sunarsih, 2016). Through their findings, Mayasari et al. (2016) said that there is a strong chance that the project-based learning approach will enhance higher order thinking abilities, synthesis, analysis, and assessment. The best learning model to employ in order to enhance writing abilities is the project-based learning model (Hasanudin et al., 2022). When compared to other learning models, the project-based learning model has numerous advantages, while being considered an outdated learning model. Numerous people have also created this learning model with the intention of allowing students to have firsthand experience by passing a number of processes (Mahendra, 2017). Hidayati (2021) found that the project-based learning paradigm is student-centered, constructively investigates real-world problems, and uses an inquiry process.

In addition to learning models that have various advantages to improve the ability to write news texts, digital literacy skills are one of the factors that affect student learning success. Mastering digital literacy today is important because it can train students' independence in learning (Naufal, 2021). The ability to write news texts is closely related to the context of modern media and information, so students should have excellent digital literacy skills. Dinata (2021) says that in order to prepare for the Industrial Revolution 4.0, kids should acquire digital literacy abilities at a young age. Today's scientific advancements make digital literacy abilities as crucial to other abilities (Fatmawati & Safitri, 2020; Kemendikbud, 2017; Nurcahyo, 2020). Several studies have shown that utilizing good digital literacy can improve the ability to write news texts (Nufus et al., 2023; Oktafiani et al., 2020; Widiani et al., 2023). Good utilization of digital literacy gives students an understanding that the ability to write news texts requires good analytical skills, factual information, and clear source evaluation so as to produce quality news texts, informative, and in accordance with the needs of modern readers.

This research seeks to study several issues, namely whether the ChatGPT-based project-based learning model affects the learning outcomes of news text writing skills, both students with high and low digital literacy skills and whether there is an interaction between the ChatGPT-based project-based learning model and students' digital literacy skills in influencing news text learning outcomes. With a focus on adaptation to technological and information developments, this research aims to provide deeper insights into the effectiveness of ChatGPT-based project-based learning models in learning news text writing skills in the digital and globalization era.

RESEARCH METHOD

Research Design

This study employed a factorial research design combined with an experimental methodology. The experimental approach was selected because it enables researchers to systematically alter independent variables and track their impact on the dependent variable (Sugiyono, 2018). This approach is particularly useful for establishing cause-and-effect relationships between variables. The experimental methodology was chosen for its ability to provide a controlled environment where independent variables can be manipulated with precision. This control allows researchers to observe the direct effects of these manipulations on the dependent variable, thus ensuring the reliability and validity of the results. The factorial research design was specifically chosen to examine the interaction between two or more independent variables simultaneously. This design offers a comprehensive understanding of how multiple variables interact and influence each other (Jankovic et al., 2021). It is particularly advantageous in studies where complex interactions between variables are expected.

By employing a factorial design, researchers can identify both the individual effects of each independent variable and the combined effects or interactions among these variables. This dual analysis capability provides a richer and more nuanced understanding of the phenomena under study. The ability to analyze interactions is crucial for producing accurate and detailed findings, which can offer deeper insights into the research question. Therefore, the combination of an experimental methodology with a factorial research design allows for a robust and detailed exploration of the relationships between variables. This approach enhances the accuracy and depth of the research findings, contributing to a more comprehensive understanding of the studied phenomenon.

Population and Sample

The study's sample comprised 267 grade XI students from SMK Negeri 3 Pekanbaru in the 2023–2024 academic year, split across 8 classes and 4 majors. Additionally, purposive sampling, or sampling based on many factors, was used to conduct research sampling (Campbell et al., 2020; Etikan et al., 2016). The considerations in sampling this research are that the school has implemented an independent curriculum, the average learning ability of students, and the results of testing the normality and homogeneity of student scores. Therefore, the experimental group in this study was represented by 30 students in the XI-Bs 1 class, which used a ChatGPT-based project-based learning model, and the control group was represented by 30 students in the XI-Bp 3 class, which used a Conventional learning model.

Instruments

Questionnaires and test instruments (performance) are used in this study. With the exception of multiple choice, matching, true false, and short answer exams, Utomo & Ardiyarta (2013) state that performance evaluation is one of the assessment strategies that encompasses all assessments in the form of writing, products, or behavior. The instrument for assessing the ability to write news texts in this study is presented as follows.

Table 1
News Text Writing Ability Indicators

No.	Indicators	Sub- Indicators
1.	Elements of news text	<ol style="list-style-type: none"> 1. There is a “what” element in the news text 2. There is a “who” element in the news text 3. There is a “where” element in the news text 4. There is a “when” element in the news text 5. There is a “why” element in the news text 6. There is a “how” element in the news text
2.	Language of news text	<ol style="list-style-type: none"> 1. Use verbs that refer to objects 2. Uses the word “copula” 3. Using material verbs 4. Using emotive adjectives
3.	News text structure	<ol style="list-style-type: none"> 1. Presents identification/general statements 2. Presents a description of the passage 3. Presents a conclusion

(Kosasih & Kurniawan, 2018)

Furthermore, the instrument for assessing digital literacy skills in this study is a questionnaire which is compiled based on the following digital literacy indicators.

Table 2
Digital Literacy Indicators

No.	Indicators	Sub- Indicators
1.	Reading gestures	<ol style="list-style-type: none"> 1. Frequency of accessing articles or blogs online 2. Ability to evaluate the veracity of online information
2.	Cultivating <i>e-learning</i>	<ol style="list-style-type: none"> 1. Ability to use e-learning platforms 2. Participation in group discussions related to news texts 3. Creativity in utilizing digital resources to write news texts
3.	Habit of utilizing electronic teaching materials	<ol style="list-style-type: none"> 1. Amount of time spent learning by using electronic teaching materials 2. Ability to search and find relevant online news text learning materials 3. Ability to integrate various electronic resources in writing news texts
4.	Utilization of e-literacy facilities	<ol style="list-style-type: none"> 1. Ability to search for information effectively using search engines 2. Creativity in writing news texts

Data Analysis

The IMB SPSS Statistics program was used to analyze the data for this investigation. The first stage of data analysis for this study involved screening using homogeneity and

normality tests. By comparing the L_0 value and the Critical L value ($\alpha = 0.05$), the Liliefors test was used to determine the normality of the data. If $L_0 < \text{Critical L}$ or asymptotic sig. (2-tailed) > 0.05 , then H_0 is accepted, indicating that the data originates from a normally distributed population. The variance of two or more data groups is homogeneous if the p-value is greater than 0.05, which indicates that the data are homogeneous. Additionally, the independent samples test used in this study's hypothesis testing was designed to reject H_0 if t_{count} is less than or equal to t_{table} or p-value is less than 0.05. ANOVA-2-way analysis is used to examine the impact of interaction; if the p-value is less than 0.05, H_0 is discarded.

RESEARCH FINDINGS AND DISCUSSION

Data Description

The focus of this study was Indonesian, and the research material was news text writing proficiency. involving two distinct classes: the control class received traditional instruction, while the experimental class received project-based learning based on ChatGPT. In order to determine the pupils' degree of digital literacy, a questionnaire on the subject was also presented to both classrooms. The following are the learning objectives for the two classes' news writing skills.

Table 1.
Data Description

Kelas	N	Range	Min	Max	Mean		Std. Dev	Var
					Statistic	Error		
P1	30	41	57	98	79,60	2,103	11,521	132,731
P2	30	52	41	93	66,97	2,310	12,653	160,102
P1L1	15	26	67	93	80,07	1,970	7,630	58,210
P2L1	15	52	41	93	69,20	3,570	13,826	191,171
P1L2	15	41	57	98	78,73	3,793	14,689	215,781
P2L2	15	40	41	81	64,73	2,941	11,392	129,781

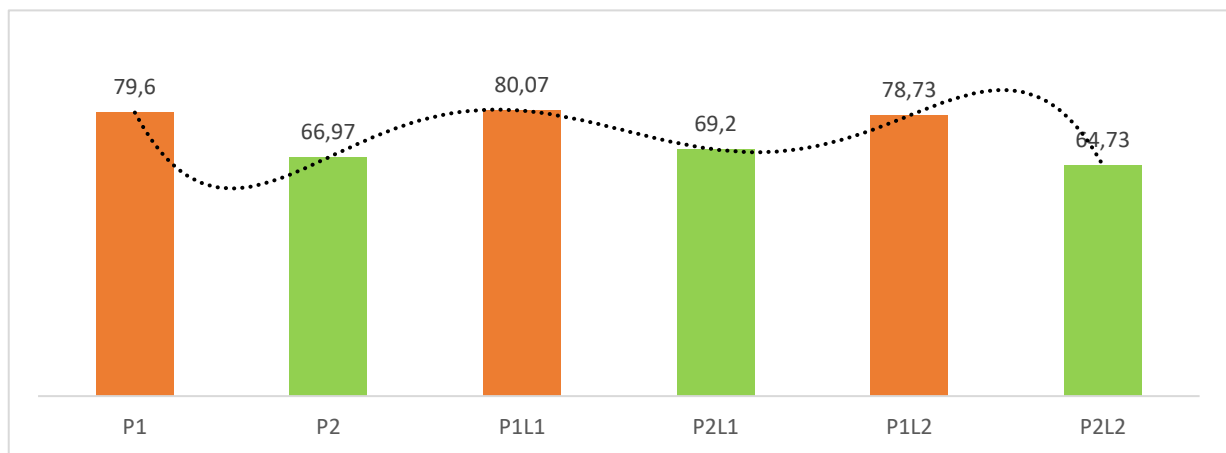


Figure 2. Average Learning Outcome Score

Description:

- P1 : The value of the experimental class learning outcomes
- P2 : Control class learning outcome score
- P1L2 : Experimental class learning outcomes with high digital literacy skills
- P2L1 : Control class learning outcomes with high digital literacy skills
- P1L2 : Learning outcome score of experimental class with low digital literacy skills
- P2L2 : Learning outcome score of control class with low digital literacy skills

The experimental class (P1) has an average learning outcome value of news text writing skill that is 79.60 more than the average learning outcome value of the control class (P2),

which is 66.97, according to the results of descriptive statistical analysis. This demonstrates that, when compared to the control class using a traditional learning model, the experimental class treated with ChatGPT-based project-based learning model generally achieved better learning outcomes for news text writing abilities. Furthermore, the experimental class outperforms the control class in terms of learning outcomes for both high and low digital literacy groups.

Normality Test

The purpose of this study's normality test is to confirm that the data is normally distributed. The experiment and control classes' ability to write news texts was tested for normality in the following ways: first, the value of the ability to write news texts; second, the value of the ability to write news texts with high digital literacy skills; third, the value of the ability to write news texts with low digital literacy skills; and fourth, the value of the ability to write news texts with both high and low digital literacy skills.

Table 2
Tests of Normality

	P1	P2	P1L1	P2L1	P1L2	P2L2	P*L
Statistic	0,112	0,152	0,133	0,143	0,180	0,211	0,092
df	30	30	15	15	15	15	60
Sig.	0,200*	0,075	0,200*	0,200*	0,200*	0,071	0,200*

Referring to the results of the Liliefors analysis, several conclusions can be drawn, first, the sig value is obtained. $0.200 > 0.05$ in the experimental class (P1), meaning that H_0 is accepted (data is normally distributed); second, obtained sig. $0.075 > 0.05$ in the control class (P2), meaning that H_0 is accepted (normally distributed data); third, sig. $0.200 > 0.05$ in the experimental class with high digital literacy skills (P1L1), meaning that H_0 is accepted (normally distributed data); fourth, sig. $0.200 > 0.05$ in the control class with high digital literacy skills (P2L1), meaning that H_0 is accepted (normally distributed data); fifth, obtained sig. $0.200 > 0.05$ in the experimental class with low digital literacy skills (P1L2), meaning that H_0 is accepted (normally distributed data); sixth, obtained sig. $0.071 > 0.05$ in the control class with low digital literacy skills (P2L2), meaning that H_0 is accepted (normally distributed data); and the first seventh, obtained a sig. $0.200 > 0.05$ in experimental and control classes with high and low digital literacy skills (P*L), meaning that H_0 is accepted (data is normally distributed).

Homogeneity Test

The goal of this study's homogeneity test is to confirm that there is uniformity in the variation of the data across groups or treatments. The value of being able to write news texts was tested for homogeneity in four different ways: first, by writing news texts with high digital literacy skills; second, by writing news texts with low digital literacy skills; and fourth, by writing news texts with both high and low digital literacy skills.

Table 3.
Tests of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Learning Outcomes of News Text Writing Skills	0,004	1	58	0,953
Learning Outcomes with High Digital Literacy Skills	2,710	1	28	0,111
Learning Outcomes with Low Digital Literacy	2,522	1	28	0,124
Learning Outcomes with High and Low Digital Literacy Skills	2,223	3	56	0,096

Referring to the results of the analysis of tests of homogeneity of variances, several conclusions can be drawn, first, obtained sig value. $0.953 > 0.05$ on the learning outcomes of the ability to write news text, meaning that H_0 is accepted (homogeneous data variance); second, obtained sig. $0.111 > 0.05$ on learning outcomes with high digital literacy skills, meaning H_0 is accepted (homogeneous data variance); third, sig. $0.124 > 0.05$ on learning outcomes with low digital literacy skills, meaning that H_0 is accepted (homogeneous data variance); and fourth, obtained a sig. $0.096 > 0.05$ on learning outcomes with high and low digital literacy skills, meaning H_0 is accepted (homogeneous data variance).

Hypothesis Test

Hypothesis testing in this study includes statistical procedures used to make decisions about population parameters based on information contained in data samples. The results of the hypothesis test analysis in this study, the authors present as follows.

Table 4
Independent Samples Test

	t	df	Sig. (2-tailed)
Equal variances assumed Hipotesis 1	4,025	58	0,000
Equal variances assumed Hipotesis 2	2,665	28	0,013
Equal variances assumed Hipotesis 3	2,917	28	0,007

Referring to the results of the independent samples test analysis, several hypothesis testing conclusions were obtained. The first hypothesis, obtained the t_{count} value of $4.025 > t_{\text{table}}$ 1.672 and sig value. $0.000 < 0.05$, meaning that H_a is accepted with the conclusion that there is a significant effect of the application of ChatGPT-based project-based learning model on the ability to write news text. The second hypothesis, obtained the t_{count} value of $2.665 > t_{\text{table}}$ 1.701 and sig value. $0.013 < 0.05$, meaning that H_a is accepted with the conclusion that there is a significant effect of the application of the ChatGPT-based project-based learning model on the ability to write news texts of students with high digital literacy skills. The third hypothesis, obtained the t_{count} value of $2.917 > t_{\text{table}}$ 1.701 and sig value. $0.007 < 0.05$, meaning that H_a is accepted with the conclusion that there is a significant effect of the application of ChatGPT-based project-based learning model on the ability to write news texts of students with low digital literacy skills.

In addition, this study tested the interaction of ChatGPT-based project-based learning model with digital literacy skills. The results of the interaction test analysis in this study, the authors present as follows.

Table 5
Tests of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2481.783 ^a	3	827,261	5,562	0,002
Intercept	321348,017	1	321348,017	2160,530	0,000
Kelas	2318,817	1	2318,817	15,590	0,000
LD	126,150	1	126,150	0,848	0,361
Kelas * LD	36,817	1	36,817	0,248	0,621
Error	8329,200	56	148,736		
Total	332159,000	60			
Corrected Total	10810,983	59			

a. R Squared = .230 (Adjusted R Squared = .188)

With reference to the findings of the analysis of between-subjects effects, $F_{(p*L)}$ has a sig value of 0.248. With the conclusion that there is no interaction between the ChatGPT-based project-based learning model and digital literacy abilities on the capacity to compose

news content, H_0 is rejected ($0.621 > 0.05$). The test's results support the hypothesis that digital literacy abilities and the ChatGPT-based project-based learning model do not mutually affect the learning outcomes of the capacity to compose news texts.

Discussion

Project-based learning model is an approach that emphasizes active and collaborative learning, where students engage in projects that create real products (Maros et al., 2021). With the speed at which technology is developing, the project-based learning approach combined with ChatGPT to teach students how to create news stories seeks to give them real-world and comprehensive learning experiences. Students can work on projects that require them to perform research, collaborate with other students, and publish real news texts thanks to the project-based learning paradigm (Guo et al., 2020). In this situation, ChatGPT can be a useful tool to help students write, provide them feedback, and increase their understanding of how to create news texts.

The application of the ChatGPT-based project-based learning model in this research shows the results of the analysis of the t_{count} value of $4.025 > t_{\text{table}} 1.672$ and sig value. $0.000 < 0.05$, meaning that H_0 is accepted with the conclusion that there is a significant effect of the application of ChatGPT-based project-based learning model on the ability to write news text. This indicates that the application of project-based learning model based on ChatGPT has a significant influence in improving the ability to write news text. The results of this analysis provide a strong assumption of the effectiveness of the ChatGPT-based project-based learning model as an effective learning model that facilitates student learning in improving the ability to write news texts better and more efficiently. According to Fahrezi et al. (2020) project-based learning model encourages students' creativity, independence, and analytical thinking skills.

The ChatGPT-based project-based learning model is one of the revolutionary models in the realm of education (Pasaribu & Simatupang, 2020). Several studies have shown that ChatGPT-based project-based learning models are potentially revolutionary in education, as they can increase student engagement, personalized learning, and critical thinking, although they still require further research and have concerns related to privacy, academic integrity, and potential bias (Alseddiqi et al., 2023; Castro, 2023; Chaudhry et al., 2023; Gilson et al., 2023; Lee, 2023; Ratnam et al., 2023; Sallam, 2023; Wu, 2023). These studies show that the ChatGPT-based project-based learning model can increase student engagement in learning, create a more personalized learning experience, and stimulate deep critical thinking.

Furthermore, when considering students' digital literacy ability, the second and third hypothesis test results show similar findings. The second hypothesis, related to students who have high digital literacy skills, shows that the application of the ChatGPT-based project-based learning model also has a significant effect on the ability to write news texts with a t_{count} value of $2.665 > t_{\text{table}} 1.701$ and sig value. $0,013 < 0,05$. Similarly, the third hypothesis, related to students who have low digital literacy skills with a t_{count} value of $2.917 > t_{\text{table}} 1.701$ and sig value. $0,007 < 0,05$. The results of the two hypothesis tests confirm that the ChatGPT-based project-based learning model significantly improves the ability to write news texts, both for students with high and low digital literacy levels. This underlines the great potential of this learning model in expanding the accessibility and effectiveness of learning, as well as providing equal opportunities for all students to develop in improving news text writing skills.

Student involvement in learning the ability to write news texts is the key to successful results-oriented learning (Sunarsih, 2016). This research provides a clear assumption that traditional learning models that only rely on providing information by the teacher are no longer sufficient to generate maximum student interest and motivation. Therefore, ChatGPT-based project-based learning model offers an interesting and effective solution. By utilizing

artificial intelligence technology, this model allows students to engage in challenging, relevant and in-depth news text writing projects (Chaudhry et al., 2023). ChatGPT as a learning partner provides timely and personalized guidance, feedback and resources, significantly enriching students' learning experience. Thus, ChatGPT-based project-based learning model not only strengthens students' engagement in learning, but also opens the door to deeper understanding and continuous lifelong learning.

Referring to the results of the interaction hypothesis analysis, this study assumes that there is no significant interaction between the ChatGPT-based project-based learning model and digital literacy skills in influencing the ability to write news texts. This is evidenced by the results of the analysis of tests of between-subjects effects, obtained the value of $F_{(p*L)}$ 0.248 with a sig value. $0.621 > 0.05$, meaning H_a is rejected. The success of student learning is basically not determined by one factor, but there are other factors that may determine the success of students in developing the ability to write news texts. Jones (2008) explains that students' self-beliefs, specifically self-efficacy, are important predictors of students' success in writing in the first semester. Locus of control, or the belief that one has control over the outcomes they achieve, was found to be the strongest predictor of success in writing. Other factors include automation in handwriting, reading strategies, questioning, paraphrasing, vocabulary acquisition, listening ability, use of audiovisual media, prior experience, modeling techniques, and learning motivation (Anggraini, 2020; Harahap et al., 2023; Henanggil et al., 2019; Jones & Christensen, 1999).

Thus, this study concludes that the implementation of ChatGPT-based project-based learning model has a significant impact on the development of news text writing skills, both for students with high and low digital literacy skills. This finding shows that the learning model provides an authentic and deep learning experience for students, allowing students to engage in projects that produce authentic news texts. The implication is that the ChatGPT-based project-based learning model can be an effective solution in increasing students' engagement in learning, as well as opening the door to deeper understanding and continuous lifelong learning. The research also shows that ChatGPT-based project-based learning model has great potential in improving student engagement, personalized learning, and critical thinking. Thus, this study makes an important contribution to the understanding of the effectiveness and implications of ChatGPT-based project-based learning model in improving students' news text writing ability. In addition, it is also important to consider various factors that influence students' learning success in developing news text writing skills holistically and sustainably.

CONCLUSION

This study confirms that the application of ChatGPT-based project-based learning model significantly improves the ability to write news texts for students, regardless of the high or low level of students' digital literacy skills. However, there was no significant interaction between the learning model and digital literacy in influencing the ability to write news texts. This finding reinforces the idea that the learning model not only provides an authentic and deep learning experience, but also opens the door for more personalized and sustainable learning. The implication is that this model can be an effective solution in increasing students' engagement in learning as well as encouraging critical thinking. Nonetheless, it is important to continue to consider the various factors that influence students' learning success, both in the context of digital literacy and the psychological factors that play an important role in the development of writing skills. Thus, this study makes an important contribution in understanding the effectiveness and implications of ChatGPT-based project-based learning model, as well as highlighting the importance of a holistic approach in developing students' news text writing skills.

Based on the results of the research that has been conducted, the authors provide recommendations to further investigate potential barriers or issues that affect the outcomes of implementing ChatGPT-based project-based learning models. One aspect that should be considered is further development related to student data privacy and security in using artificial intelligence technologies such as ChatGPT. In addition, it is also important to take into account differences in technology accessibility and digital literacy among students and how these factors may affect the effectiveness of the learning model. Furthermore, more in-depth research on how to overcome these barriers and minimize potential bias and other ethical vulnerabilities in the application of this model could provide valuable insights for the development of more inclusive and sustainable learning approaches in the future.

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