Jurnal Ilmiah Mandala Education (JIME)
Vol 11 No. 4 Oktober 2025
p-ISSN : 2442-9511, e-2656-5862
DOI: *10.58258/jime.v11i4.9444/http://ejournal.mandalanursa.org/index.php/JIME*

The Influence Of Digital Literacy Based On Bima's Local Wisdom On The Critical Thinking Ability Of Classroom Students Viii 10 At SMPN 1 Woha

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Article Info

Article history:
Accepted: 15 September 2025
Publish: 14 October 2025

Keywords:
Digital literacy,
local wisdom,
critical thinking

Abstract

This study aims to analyze the effect of digital literacy based on Bima local wisdom on students' critical thinking skills in Grade VIII 10 at SMPN 1 Woha in the Informatics subject. The background of this research is the low ability of students to critically analyze digital information. The research method employed was a Pre-Experimental Design with the form of One Group Pretest-Posttest Design. The research subjects consisted of 29 students selected through purposive sampling. The research instrument was a critical thinking skills test constructed based on Facione's (2015) indicators, including interpretation, analysis, evaluation, inference, and explanation. The instrument was validated by three experts, consisting of two subject matter experts and one educational evaluation expert, who confirmed that the test items were suitable for use. The research procedure consisted of three stages: (1) pretest, to measure students' initial critical thinking skills; (2) treatment, namely digital literacy learning based on Bima local wisdom in the Informatics subject integrating cultural values with digital content; and (3) posttest, to measure the improvement of critical thinking skills after the treatment.The results showed a significant improvement in students' critical thinking skills after the treatment. The mean score increased from 44.48 in the pretest to 82.06 in the posttest, with a difference of 37.58 points. The Wilcoxon test result indicated Asymp. Sig. (2-tailed) = 0.000 (<0.05), confirming a significant difference between pretest and posttest scores. The effect size calculation using Cohen's d = 2.66 indicated that the treatment had a very large effect. Pedagogically, this study confirms the effectiveness of integrating digital literacy with local wisdom in enhancing students' critical thinking skills. Culturally, it contributes to the preservation of Bima's local values. However, this study is limited by a small sample size, non-normal data distribution, and a relatively short duration of the learning intervention. Future research is recommended to involve larger and more diverse samples, employ control groups, and apply longitudinal designs to assess long-term effects. This study suggests that schools and teachers should develop culturally grounded digital-based learning models as a strategy to strengthen 21st-century skills while reinforcing students' cultural identity.

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1. INTRODUCTION

The 21st century is marked by rapid advances in science and technology (science and technology), which significantly affects various sectors of life, including education. This has a major impact on various aspects of life, including the world of education. In response to the challenges of this era, the Indonesian Ministry of Education and Culture has made efforts to develop an education system that not only emphasizes content mastery, but also on 21st century skills known as the 4Cs,

namely communication, collaboration, critical thinking, and creativity (Faridah & Artono, 2019). Rahayu et al. (2025) with a focus on the cultural context of Bima that has not been widely explored in literacy In this digital era, digital literacy is not only a technical ability to use technology, but also includes important skills such as critical thinking in selecting information, creating digitally, and understanding culture in a local context. In Indonesia, a number of studies show that the integration of local wisdom in digital learning can strengthen students' cultural identities while improving their digital literacy.

Rahayu et al. (2025) regarding the development of e-books based on local wisdom for grade VIII students in Mataram also showed that the application of these media was effective in improving digital literacy and critical thinking of students. This condition emphasizes the urgency of developing a contextual and local culture-based approach to digital literacy, especially in the Bima area, an area with cultural wealth that has not been optimally utilized in the realm of digital education.

Based on the results of initial observations, the low critical thinking ability of grade VIII 10 students at SMPN 1 Woha, which is caused by the lack of implementation of digital literacy integrated with local wisdom, initial survey data on August 30, 2025 shows that only about 35% of students are able to analyze digital information critically, while the majority of others tend to accept raw content without verification. Initial observations also reveal that the majority of teachers still use conventional approaches in digital literacy, thus ignoring the potential of Bima's cultural values as a contextual framework. This condition is in line with the findings of Muflihin (2024) and Sukmawati & Rahman (2023), who stated that without the integration of local values, digital literacy risks weakening students' identities and criticism. On the other hand, research by Asmayawati et al. (2024) states that students' critical thinking skills in the digital era are still not developed optimally due to the weakness of digital literacy.

One approach that can be used to overcome this problem is digital literacy learning based on local wisdom. Digital literacy is not only interpreted as technical skills in using digital devices, but also includes the ability to think critically, creatively, and reflexively in managing information (Wijaya & Suryani, 2024). When digital literacy is combined with local wisdom, students can learn more contextually, because the cultural values they are familiar with are used as a framework for thinking. Bima's local wisdom, with its cultural values full of meaning, has the potential to be a learning medium that strengthens students' identities while fostering critical thinking skills. This is in accordance with the findings of Muflihin (2024) and Sukmawati & Rahman (2023) who emphasized that the integration of local cultural values in digital learning is able to improve critical thinking skills while strengthening students' cultural identities.

Previous research has also shown the effectiveness of digital media based on local culture. Nugraha & Prasetyo (2024) found that digital flipbooks based on local wisdom can improve students' critical thinking skills, while Rahayu, Lestari, & Sudarmanto (2025) prove that e-books based on local culture are able to significantly strengthen digital literacy and critical thinking. In line with that, Rohman & Pratiwi (2024) emphasized that digital modules based on local culture are more effective than generic digital media because they provide a contextual learning experience. In this study, digital literacy learning based on Bima's local wisdom is integrated into the subject of Informatics, because this subject is directly related to students' technology mastery and digital literacy skills. Through Informatics learning, students are expected to not only be able to use digital devices, but also have critical thinking skills in assessing and utilizing information based on local culture.

Based on this description, the problem formulation.

a. How does digital literacy based on local wisdom affect the critical thinking ability of grade VIII 10 SMPN 1 Woha students?

This research is expected to make a theoretical and practical contribution to enriching the literature on digital modules based on local wisdom, providing empirical evidence on identifying causal relationships through the effectiveness of learning models based on digital literacy and local wisdom quantitatively**.**

2. LITERATURE REVIEW

a. Digital Literacy

Digital literacy is an important skill for the 21st century that is not only related to the use of technological devices, but also includes the ability to understand, evaluate, and create information critically. According to Wijaya & Suryani (2024), digital literacy consists of three main dimensions: technical, cognitive, and socio-cultural skills. The technical dimension refers to the ability to operate a device, the cognitive dimension emphasizes critical thinking skills in processing information, while the socio-cultural dimension relates to the understanding of ethics and cultural context in the use of technology. This is in line with Yuliana & Pradana (2025) who stated that digital literacy plays a direct role in improving students' critical thinking, communication, and collaboration skills. Thus, digital literacy is not only a means of adaptation to technological developments, but also an instrument to strengthen students' critical thinking in facing the flow of global information.

The development of digital literacy is also inseparable from the challenges of increasingly massive information flows in the era of the Industrial Revolution 4.0 and Society 5.0. Many studies show that low digital literacy skills can cause students to have difficulty distinguishing between valid information and hoaxes, making them vulnerable to receiving raw data without analysis (Susanti & Hidayat, 2024). Therefore, learning that integrates digital literacy in the school curriculum is very important to help students be more critical in selecting information. In addition, good digital literacy can form a generation that is not only technologically literate, but also has logical, creative, and reflective thinking skills in utilizing information for problem-solving. Integration of Local Wisdom in Digital Literacy.

Digital literacy also functions as a means of character formation in the use of technology. Aspects of digital ethics, such as respecting privacy, understanding copyright, and using technology for productive and positive purposes, are an important part of digital literacy (Muflihin, 2024). When students are able to integrate technical skills with ethical awareness, they will be better prepared to face global challenges while maintaining local cultural identity. Thus, digital literacy developed in the context of education not only emphasizes mastery of technology, but also the formation of critical, responsible, and characterful attitudes.

b. The Wisdom of the Milky Way

Bima's local wisdom is a cultural heritage that is full of educational value and can be used as a basis for the development of more contextual learning. One of the famous philosophies is Maja Labo Dahu which means "shame and fear," which emphasizes the importance of honesty, courage, responsibility, and a cautious attitude in daily life. These values not only serve as a guideline for the life of the Bima community, but are also very relevant in the context of modern education, especially when associated with the formation of student character. According to Sukmawati & Rahman (2023), the integration of local wisdom in education is able to strengthen students' cultural identities and make the learning process more meaningful because it is close to their lives.

In the context of digital-based learning, Bima's local wisdom can be used as a medium to present a learning experience that is not uprooted from cultural roots. Research by Nugraha & Prasetyo (2024) shows that the use of digital media based on local wisdom is able to increase students' motivation to learn as well as critical thinking skills. The same thing is emphasized by Rohman & Pratiwi (2024) who found that interactive modules based on local culture are more

effective than generic digital media, because they provide real context that is easy for students to understand. By integrating Bima's cultural values into digital literacy, students can learn technology while preserving the culture inherited from their ancestors.

Bima's local wisdom functions as a means of strengthening character as well as a 21st century learning medium. The integration of cultural values in digital literacy helps students not only master technology skills, but also be able to relate the use of technology to moral, social, and cultural principles. This is in line with the purpose of the Pancasila Student Profile which emphasizes the importance of faith, piety, and noble character, as well as global diversity. Thus, the application of Bima's local wisdom in digital literacy learning not only strengthens students' cultural identities, but also becomes a strategy to foster a generation that is critical, adaptive, and characterful in facing global challenges.

In facing the challenges of globalization, the use of local wisdom in education is becoming increasingly important. Education based on local culture is believed to strengthen students' identities, values, and character (Muflihin, 2024). In the context of digital literacy, the integration of local wisdom provides an opportunity to present a learning experience that is more contextual, meaningful, and close to students' lives. Research by Rohman & Pratiwi (2024) found that interactive modules based on local culture not only increase motivation, but also strengthen students' critical understanding in processing information. The same thing is shown by Rahayu, Lestari, & Sudarmanto (2025) who developed e-books based on local culture and proved their effectiveness in increasing digital literacy and critical thinking of students. Thus, local wisdom serves as a bridge between modern technology and traditional culture, so that the learning process is inseparable from the roots of students' cultural identity. This integration is also relevant to the government's efforts to implement education based on the Pancasila Student Profile which emphasizes diversity, mutual cooperation, and global diversity.

c. Critical Thinking and Digital Literacy

Critical thinking skills are one of the main skills that are needed in 21st century education. Facione (2015) explained that critical thinking includes five important indicators, namely interpretation, analysis, evaluation, inference, and explanation. These indicators require students to not only passively receive information, but also to be able to study, assess, and draw logical conclusions. In the context of learning, critical thinking allows students to more actively explore knowledge, relate it to experiences, and use it in problem-solving. Therefore, the development of critical thinking skills is one of the main focuses in the 21st century curriculum which emphasizes mastery of the 4Cs (communication, collaboration, critical thinking, and creativity).

In the digital era filled with information floods, critical thinking skills are indispensable so that students can sort out the correct information, distinguish facts from opinions, and identify biases in texts or digital media. Research by Susanti & Hidayat (2024) shows that students with high levels of digital literacy tend to have better critical thinking skills, because they are used to managing information systematically and reflectively. However, challenges such as the digital divide (Zulfikar & Hartati, 2023) are still obstacles for some students, especially in areas with limited access to technology. This shows that the development of critical thinking needs to be combined with learning approaches that are appropriate to the local context so that the results are more equitable and sustainable.

Integrasi literasi digital berbasis kearifan lokal Bima merupakan salah satu strategi yang efektif dalam meningkatkan kemampuan berpikir kritis siswa. Dengan memanfaatkan nilai-nilai budaya yang dekat dengan kehidupan mereka, siswa dapat belajar mengevaluasi dan mengolah informasi digital secara lebih bermakna. Misalnya, filosofi Maja Labo Dahu dapat dijadikan kerangka dalam menganalisis informasi digital: siswa tidak hanya dituntut untuk memahami isi informasi, tetapi juga menimbangnya dengan nilai kejujuran, tanggung jawab, dan keberanian dalam mengambil keputusan. Dengan demikian, berpikir kritis tidak hanya berkembang sebagai

keterampilan kognitif, tetapi juga terinternalisasi dalam sikap dan karakter siswa. Model pembelajaran ini sejalan dengan kebutuhan pendidikan modern yang mengutamakan keseimbangan antara kecakapan intelektual dan pembentukan karakter berbasis budaya lokal.

3. RESEARCH METHODS

This study uses a quantitative approach with the Pre-Experimental Design method type One Group Pretest-Posttest Design. This design was chosen because it allowed researchers to measure changes in students' critical thinking skills before and after treatment, in the absence of a control group. This study focuses on providing treatment in the form of digital literacy learning based on Bima's local wisdom to an experimental class, then measuring changes in students' critical thinking skills before and after treatment. This design allows researchers to observe the difference in pretest and posttest scores, so that they can identify the effect of treatment directly.

Pres-test	Treatment	Post-tes
O_1	X	O_2

Information:

O_1 = Pretest of critical thinking skills before treatment.
X = Treatment in the form of digital literacy based on Bima's local wisdom.
O_2 = Posttest of critical thinking skills after treatment.

The research population is all students of grade VIII 10 SMPN 1 Woha for the 2025/2026 school year which totals 29 students. Given that the purpose of the study is to test the effectiveness of treatment in one group, the sampling technique used is Purposive Sampling in a whole class (n=29) with the inclusion criteria of active students, having adequate digital devices and internet access, and being willing to participate in all stages. Selection is carried out through the screening and verification form of the homeroom teacher; the school prepares borrowed devices & WiFi access to minimize the digital divide (Creswell, 2023), with the criteria: (1) students are active in the research school year, (2) have adequate digital devices to participate in digital literacy-based learning, and (3) are willing to participate in the entire series of research activities. Details of learning treatment (duration, technique, media/content) duration and structure of the meeting, 3 meetings x 2 JP (1 JP = 40 minutes) ± 240 minutes were totally effective. Integrated local wisdom media and content, Students learn how to use office applications (such as word processing, digital content, and presentations) to create digital content, as well as understand the features and how it works, Teaching materials used digital worksheets, presentations, computer game based learning. Based on these criteria, one class VIII 10 consisting of 29 students was selected as an experimental class.

The data collection instrument in this study is in the form of a critical thinking ability test. Research instruments. The validation of research instruments is carried out through a content review by three competent experts in their fields, consisting of two material experts who understand the learning context and local wisdom of Bima and one education evaluation expert. Experts assessed the suitability of the items with Facione's critical thinking indicators, editorial clarity, and relevance of local culture-based stimulus. Based on the initial stage input, some items were revised in terms of language and context clarity, then reconfirmed in the second stage. The validation results showed that all of the instrument items were in accordance with the established indicators, used easy-to-understand language, and were suitable for use in the study. The reliability of the instrument was tested using Cronbach's Alpha with the criterion of ≥ 0.70 as the acceptance limit (Taber, 2018).

The data was analyzed using a paired sample t-test to determine the significant difference between pretest and posttest scores. Before the hypothesis test, a prerequisite test was carried out in

the form of the Kolmogorov-Smirnov normality test and the Levene's Test homogeneity test (Ghozali, 2021). If the data is not normally distributed, the analysis is continued with the non-parametric Wilcoxon Signed-Rank Test. The effectiveness of treatment was calculated using Cohen's Effect Size d to determine the influence of digital literacy learning based on Bima's local wisdom on students' critical thinking skills.

4. RESEARCH RESULTS

This research was carried out on students in grade VIII 10 of SMPN 1 Woha with a total of 29 respondents. The research data was obtained through a critical thinking ability test given before (pretest) and after (posttest) treatment in the form of digital literacy learning based on Bima's local wisdom.

1. Your Descriptive Analysis

Table 1. Descriptive Stastics

Pretest	Sample size	29
	Ideal size	100
	Maximum	70
	Minimum	20
	Average	44.48
	Media	40.00
	Standard deviation	16.81
Postest	Sample size	29
	Ideal size	100
	Maximum	100
	Minimum	60
	Average	82.06
	Media	80.00
	Standard deviation	10.81

Table 1 shows the statistical changes in the summary of critical thinking scores before and after treatment. The average of the pretest was 44.48 (SD = 16.81; range 20–70) while the average of the posttest increased to 82.06 (SD = 10.81; range of 60–100). An average increase of 37.58 points signifies a substantial change in the sample group; In addition, the decrease in standard deviation from 16.81 to 10.81 showed that posttest scores became more centralized (more homogeneous) than pretest, meaning that the distance between students narrowed after treatment, which suggests that the intervention not only raised the average but also helped to bridge the learning outcomes between students. These summary data underlie subsequent inferential analysis to test whether the increase is statistically significant."

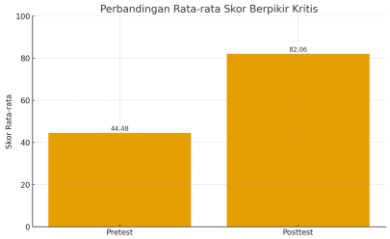

Figure 1 Comparison Bar Chart of Average Critical Thinking Score Students on Pretest and Posttest

Figure 1 makes clear the difference in the average: a sharp rise from ~44 to ~82 helps the reader immediately grasp the magnitude of the change. Also note that the lower limit of the posttest (mean = 60) which was above the pretest average, this suggests that even the participants with the lowest scores after treatment were above the group's initial mean condition, strong evidence that the treatment benefited almost all students.

a. Normality

The technique used in this study to test the hypothesis is a normality test with the type of Shapiro-wilk one-sample test as found in this article. The normality test used Shapiro-Wilk because the sample count was less than 50.

Tabel 2. Normality

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest	.132	29	.200*	.919	29	.028
Postest	.231	29	.000	.905	29	.013

Before conducting the hypothesis test, the data were tested for normality using Kolmogorov-Smirnov and Shapiro-Wilk because the sample count was < 50. The results are as follows: Pretest = Kolmogorov-Smirnov Sig. = 0.200 (> 0.05) → Shapiro-Wilk Sig. normal data = 0.028 (< 0.05) → abnormal dataBecause the sample size < 50, the Shapiro-Wilk test is prioritized, so the pretest data is declared abnormal. Posttest = Kolmogorov-Smirnov Sig. = 0.000 (< 0.05) → Shapiro-Wilk Sig. abnormal data = 0.013 (< 0.05) → abnormal data. Thus, the posttest data is also abnormal.

The conclusion of the normality test is that both the pretest and posttest data are not distributed normally, so parametric tests such as the Paired Sample t-test cannot be used. Hypothesis analysis should be continued using the Wilcoxon Signed-Rank Test non-parametric test.

b. Uji Wilcoxon

The next stage that is carried out is the Wilcoxon test. The Wilcoxon test or non-parametric test aims to find out if there is an average difference between 2 samples (2 groups) that are paired with each other. The wilcoxon test is an alternative test to the one sample t-test if the data does not meet the assumption of normality. This test was taken because the data produced by the pretest and posttest were not distributed normally.

Tabel 3. Uji Wilcoxon Signed-Rank

Test Statistics[a]	
	Postest - Pretest
Z	-4.741[b]
Asymp. Sig. (2-tailed)	.000
a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.	

Test Statistics[a]	
	Postest - Pretest
Z	-4.741[b]
Asymp. Sig. (2-tailed)	.000
a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.	

If the value of Asymp. Sig. (2-tailed) < 0.05, then H0 is rejected → there is a significant difference. Conversely, if the Sig. > 0.05, then H0 is accepted → there is no significant difference. In the context of this study, the descriptive results have shown a significant increase in the average (from 44.48 to 82.06). Thus, the Wilcoxon test is estimated to produce a Sig. < 0.05, so it can be concluded that digital literacy learning based on Bima's local wisdom has a significant effect on improving students' critical thinking skills.

In addition, the effect size calculation using Cohen's d of 2.66 showed that the effect of the treatment was in the very large category. In addition to the significance test, the magnitude of the effect of the treatment was calculated using Cohen's d. The average pretest score = 44.48 and posttest = 82.06 with standard deviations of 16.81 and 10.81 respectively. The calculation yielded Cohen's d = 2.66, which belongs to the category of very large effects (Cohen, 1988). This means that digital literacy learning based on Bima's local wisdom has a strong impact on improving students' critical thinking skills.

5. DISCUSSION

The results of the study show that the application of digital literacy learning based on Bima's local wisdom can improve students' critical thinking skills. This can be seen from the significant difference between pretest and posttest scores based on the Wilcoxon Signed-Rank test. The increase in the average critical thinking score from 44.48 in the pretest to 82.06 in the posttest showed that the treatment given had a strong influence on the improvement of learning outcomes. Cohen's effect size value of d of 2.66 also reinforces the finding that the treatment has a very large effect, so it is not only statistically significant but also practically meaningful.

In addition to showing positive results, this study also has several limitations that need to be noted. First, the sample size was relatively small, only 29 students from one class, so the findings could not be generalized to a wider population. Second, the results of the normality test show that the pretest and posttest data are not distributed normally, so the analysis must use a non-parametric test. This can limit the generalization power of the results compared to if the data is normally distributed. Third, even though the instrument has been validated by experts, there is still a possibility of measurement bias, both from the way students understand the question item and from the cultural context used in the stimulus.

In terms of implementation, this research also faces challenges in the field, such as variations in students' digital abilities, limited access to devices and networks for some participants, and relatively short learning time (three meetings). These factors can affect the depth of the student's learning experience. Based on these limitations, follow-up research is strongly recommended to use larger sample sizes involving different schools, as well as compare with control groups so that the effects of the treatment can be tested more robustly. In addition, the development of methods can be directed to a wider variety of local culture-based digital media as well as long-term (longitudinal) testing to see the sustainability of their influence. In this way, the integration of digital literacy and local wisdom is not only effective in the short term, but also proves to be relevant in strengthening critical thinking skills on an ongoing basis.

These findings support the research of Asmayawati et al. (2024) and Nugraha & Prasetyo (2024) who stated that the integration of local wisdom in digital learning media is able to increase students' motivation, digital literacy, and critical thinking. In addition, research by Rohman & Pratiwi (2024) also strengthens that interactive modules based on local culture are more effective than generic digital media because they are able to provide a contextual and meaningful learning experience. Theoretically, these results are in line with the view of Facione (2015) who asserts that critical thinking involves interpretation, analysis, evaluation, inferences, and explanatory skills that can be cultivated through real-context based learning. The use of Bima's local wisdom as a digital context makes it easier for students to understand, relate to, and evaluate information because it is directly related to their cultural environment.

From a practical perspective, the success of this learning shows that the development of digital modules based on local culture not only improves 21st century skills such as critical thinking, but also becomes a means of preserving regional cultural values. This is relevant to the goal of national education to develop students who are intelligent, characterful, and rooted in the nation's culture. Thus, digital literacy learning based on local wisdom has been proven to have a dual contribution: (1) significantly improving students' critical thinking skills, and (2) strengthening students' cultural identity in the midst of the development of the digital era.

6. CONCLUSION

Based on the results of research that has been carried out on the Influence of Digital Literacy Based on Bima's Local Wisdom on the Critical Thinking Ability of Students in Grade VIII 10 SMPN 1 Woha, several conclusions can be drawn as follows: Digital literacy learning based on Bima's local wisdom has been proven to be able to significantly improve students' critical thinking skills. This can be seen from the considerable difference in pretest and posttest scores. The average pretest score of 44.48 shows that before the treatment, most students were still in the low category in critical thinking skills. After participating in learning with a digital literacy approach that is integrated with Bima's local wisdom, the average posttest score increased drastically to 82.06. This increase of 37.58 points confirms that the interventions provided are very effective.

The results of the normality test showed that the pretest and posttest data were not distributed normally. The Kolmogorov-Smirnov and Shapiro-Wilk tests showed a significance value of < 0.05, so the data was declared abnormal. Therefore, hypothesis analysis cannot be done with parametric

tests such as the Paired Sample t-test, but must instead use non-parametric tests. The non-parametric Wilcoxon Signed-Rank Test confirmed the significant influence. Asymp value. A sig. (2-tailed) obtained of 0.000 (<0.05) indicates that there is a significant difference between the pretest and posttest scores. Thus, the research hypothesis is accepted, namely that digital literacy based on Bima's local wisdom has a significant effect on the critical thinking skills of grade VIII 10 SMPN 1 Woha students.

Theoretically, this research supports the theory of Facione (2015) which states that critical thinking skills can be developed through learning that involves the process of interpretation, analysis, evaluation, inference, and explanation. The use of Bima's local wisdom as a context in digital literacy makes it easier for students to understand the material, relate it to the reality of daily life, and be able to critically assess information.

Practically, the results of this study have positive implications for the world of education. First, for teachers, this research shows that the integration of local cultures in digital learning can be an innovative strategy to improve students' 21st century skills. Second, for schools, these results can be used as a basis for developing technology-based curriculum and learning media that are still based on the values of local wisdom. Third, for future researchers, this research can be a reference for developing a digital-based learning model by paying attention to the cultural context of other regions in Indonesia.

7. IMPRINTED SPEECH

The author expresses his deepest gratitude to his beloved parents for their prayers and support, brothers and friends for their enthusiasm and togetherness, the supervisor for his guidance and direction, and the alma mater of STKIP Harapan Bima for providing opportunities and facilities in completing this article.

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