JPIS JURNAL PENDIDIKAN ILMU SOSIAL

p-ISSN: 1412-3835
e-ISSN: 2541-4569
VOL 35, NO.2, DES 2025

DEVELOPMENT OF DIGITAL TEACHING MATERIALS FOR STRENGTHENING CULTURAL AND CIVIC LITERACY OF PRIMARY SCHOOL STUDENTS

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ABSTRACT

This study aims to develop digital teaching materials designed to strengthen cultural and civic literacy among elementary school students in the monocultural context of Singkawang City. Using the ADDIE model as the instructional design framework, the research employed mixed methods combining expert validation, small-group testing, and field trials. The materials were developed by integrating local wisdom and cultural identity into interactive and engaging digital formats. Validation results from content and media experts indicated high feasibility with an average score of 94. Small-group testing showed a practicality level of 83.6%, while field testing demonstrated a significant increase in students' learning outcomes, with pretest and posttest scores improving from 42.12 to 83.45. These findings confirm that the developed materials are effective and suitable for Civic and Pancasila Education at the elementary level. The study's novelty lies in embedding local culture into digital learning design to foster deeper understanding, cultural pride, and active citizenship. Although limited to one cultural setting and short-term outcomes, the findings highlight the potential of culturally grounded digital materials to enrich learning. Future research should expand their application to broader contexts and explore advanced technologies to further enhance engagement and cultural literacy.

Keywords: *Teaching materials, cultural literacy, monocultural*

Received: *31 Oktober 2025*
Accepted: *15 Desember 2025*
Published: *30 Desember 2025*

INTRODUCTION

In 21st-century education, schools are pivotal in developing students' cultural and civic literacy, especially at the elementary level. The rapid flow of information intensifies the need to foster these literacies as part of holistic learning (Macharia & Pelser, 2014). However, a persistent challenge is the prevalence of learning materials that are unengaging and misaligned with students' cultural contexts (Mayer et al., 2008). Designing culturally relevant materials is thus a promising strategy to enhance engagement and effectiveness.

In this study, define *cultural literacy* as a student's ability to recognize, understand, analyze, and appreciate the values, symbols, practices, and heritage of their local and national culture. Concurrently, *civic literacy* is defined as the capacity to understand rights and responsibilities and to participate actively and democratically in society, grounded in a conscious cultural identity. These interconnected literacies are essential for fostering critical analysis, evidence-based reasoning, and constructive social participation (Blyznyuk & Kachak, 2024; Akramova, 2017).

While prior research acknowledges the importance of contextual learning (e.g., Siswoyo et al., 2023) and the potential of digital media (e.g., Suryani et al., 2024), a clear empirical and theoretical gap remains. Existing studies often list the benefits of technology or local content but frequently lack: (1) a precise operational definition of the cultural and civic literacy constructs being measured; (2) a coherent theoretical model explaining *how* the design of digital media translates into improved literacy outcomes; and (3) rigorous empirical evidence isolating the effect of culturally-grounded digital materials from other instructional variables (cf. Kostiainen & Tarhonen, 2022; Alsaleh, 2020). This study aims to address this gap.

Elementary students in Singkawang live within a community rich in local wisdom (e.g., Kanzunnudin et al., 2018; Kusnita et al., 2017), offering an ideal context for this investigation. Integrating this wisdom into interactive digital formats (Maisaroh et al., 2019; Salaberry, 2001) could stimulate engagement and deepen understanding. Therefore, this study has two primary objectives: (1) to develop valid and practical digital teaching materials that strengthen the defined constructs of cultural and civic literacy for monocultural elementary students in Singkawang; and (2) to empirically analyze the impact of these materials on students' literacy development, while critically examining the validity of the claimed effects.

RESEARCH METHOD

This research is intended to produce digital teaching materials to strengthen cultural and civic literacy and how to apply it in learning in schools, where the design used as the basis in this study is using the ADDIE (2011) model, with the procedure as shown in Figure 1.

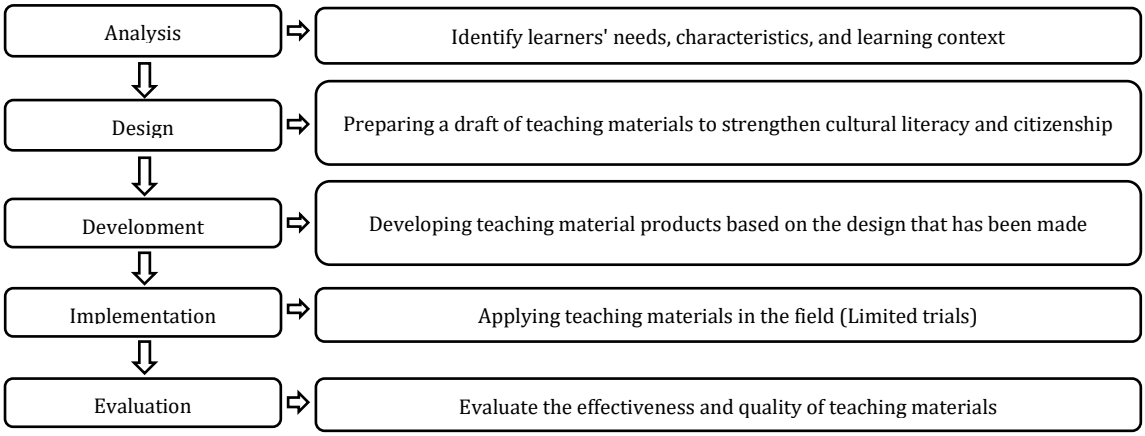

Figure 1.
Research Stages

The first stage of analyze is in the form of, 1) Needs analysis, namely conducting an interview with one of the educators at an elementary school in Singkawang City as an analysis of initial needs and analysis through literature study, 2) Identifying goals, namely to help and facilitate educators in identifying cultural and civic literacy that can be used as a source of strengthening insights. The second stage of design is to determine the design team, determine the resources needed, prepare a schedule for the mixing of teaching materials, select and determine the scope, structure and sequence, make a storyboard, and make product specifications. The third stage of development. At this stage, the teaching materials are the initial products validated by a team of media experts and practitioners. The fourth stage of Implementation, namely carrying out learning with teaching materials that have been developed, carrying out observations during learning, collecting data on research results. The fifth stage is evaluation, analyzing and processing research data results, implementing improvements to teaching materials, drawing conclusions from research results.

The purpose of using this research procedure is to design products and test the quality of products in achieving goals, which leads to a validation function. Before these goals are carried out, a needs analysis is first carried out which is intended to determine and define learning conditions. This stage includes initial analysis, learner analysis, task analysis, concept analysis, and goal specification. Furthermore, the next stage is carried out, namely designing a design where this stage includes the preparation of texts, the selection of teaching materials, the selection of formats, and the initial design, at this stage a learning tool has been developed which includes the flow of learning objectives, teaching modules, and student worksheets. The steps in the design stage of this digital teaching material include; (a) Validation, carried out to test the developed device whether it meets the valid and practical criteria based on the assessment of validators and practitioners, (b) Limited trial, the purpose of which is to test the practicality and effectiveness of

the developed device, (c) Product packaging after the materials needed for the design of digital teaching materials are collected.

Furthermore, product trials were carried out which aimed to collect data on the quality of the digital teaching materials developed, both in terms of learning, appearance and content or material. Before the product is tested to students, the product that has been developed is validated by one instructional expert and one material expert. Product trials include one to one evaluation, small group evaluation, and field trial. For the test subjects, sampling was carried out randomly by taking parallel classes with a distribution including: (a) One to one evaluation of 5 students where the students represented each low, medium, and high group. (b) Small group evaluation of 15 students, excluding students in the one-to-one evaluation where the students represent each low, medium, and high group. (c) Field trial of 35 students consisting of 35 students of class V and excluding students in both one-on-one and small group trials where students represent each low, medium, and high group.

The types of data obtained in this study are qualitative and quantitative data. Qualitative data is obtained from product quality research on digital teaching materials that can be used for the purpose of product quality development. Quantitative data was obtained from material experts, instructional media experts and students. Data preparation techniques and instruments, following the stages of compiling instrument grids, consulting instrument grids that have been made to experts, compiling instrument details based on instrument grids, and consulting instruments to instructional media experts and material experts until obtaining instruments that have obtained expert judges. The data analysis technique is carried out through three steps, namely to answer the first and second problem formulations, namely the development of digital teaching materials containing the value of local wisdom of the Tidayu community through expert assessment, by going through the phase of making a questionnaire with five options to provide feedback on the interactive media developed, then convinced into a five-scale qualitative data, with a reference to the formula quoted from Sukardjo (2008) as follows in Table 1.

Table 1.
Guidelines for Conversion of Quantitative data to Qualitative data on a Scale of Five Based on the standard deviation of the ideal score (SBi)

Score		Criterion
Formula	Account	
$X > \overline{Xi} + 1.80SBi$	$X > 4.21$	Excellent
$\overline{Xi} + 0.60SBi < X \leq \overline{Xi} + 1.80SBi$	$3.40 < X \leq 4.21$	Good
$\overline{Xi} - 0.60SBi < X \leq \overline{Xi} + 1.80SBi$	$2.60 < X \leq 3.40$	Enough
$\overline{Xi} - 0.60SBi < X \leq \overline{Xi} - 1.80SBi$	$1.79 < X \leq 2.60$	Less
$X \leq \overline{Xi} - 1.80SBi$	$X \leq 1.79$	Very Less

To answer the formulation of the problem of the impact of change arising from the implementation of cultural and civic literacy teaching materials for elementary school students who are monocultural and monoethnic in the city of Singkawang after the implementation of digital teaching materials, a statistical test used is a t-

test, which is used to analyze the results of the test comparison before and after learning (pre-test and post-test).

RESULTS AND DISCUSSION

This media design research was carried out seven meetings with six meetings for the implementation of learning and one meeting for the test of students' critical thinking skills and cultural literacy. The results of this study are explained based on the stages of ADDIE's research and development as follows.

1. The Results of The Research from The Interactive Learning Media Design Activity Contained the Value of The Local Wisdom of The Tidayu Community that is Valid Through Expert Assessment is Carried Out Through Two Steps, Namely by Material Validation and Media Validation

a. Material Validation

The validation of the material began with learning materials validated by a material expert from a lecturer in Social Sciences at the Singkawang Institute of International Science & Business. The assessment instrument used was a questionnaire with a likert scale consisting of five answer choices, namely very good, good, quite good, not good, and not good. This material assessment instrument is divided into nine statements that assess aspects of the content of the material and five statements that evaluate the feasibility of presentation. Teaching materials are validated by subject matter experts to be revised later. The results of the assessment given by the subject matter experts before and after the revision can be seen in the Table 2.

Table 2.
Results of Material Expert Assessment Before and After Revision

No.	Statement	Score	
		Before	After
	Content Eligibility Indicators		
1.	Clarity of the purpose of the preparation of learning materials	4	5
2.	The breadth of the material is in accordance with the direction of the preparation of attractive teaching materials	3	5
3.	The depth of the material is in accordance with the preparation of the teaching material	3	5
4.	Clarity of material and content	5	5
5.	Accuracy of facts and data	5	5
6.	Concept/theory accuracy	4	4
7.	Image and illustration accuracy	3	5
8.	Conformance to the latest developments in science today	4	5
9.	Present the latest examples that are actual	3	4
10.	Consistency of the Consistency of the Dish	5	5
11.	The logic of presentation and the collapse of the concept	4	4
12.	Suitability of illusion with material	3	5

No.	Statement	Score	
		Before	After
13.	Arouse reading motivation	3	5
14.	Typing accuracy and image selection	5	5
	Total Content Eligibility Component Score	**54 (76%) Eligible**	**67 (96%) Very Eligible**

The Table 2 shows the results of assessments by material experts on digital teaching materials containing cultural studies around students before and after revisions. This assessment is carried out to evaluate the feasibility of the content of the teaching material. Prior to the revision, the assessment of subject matter experts showed that the digital teaching materials had a total component score of 54 (76%), which was categorized as "Decent." However, after revisions, the total component score increased to 67 (96%), which was categorized as "Very Feasible".

On the content eligibility indicator, all statements get an increased score after revision. Clarity of the purpose of the preparation of digital teaching materials, breadth of material, depth of material, clarity of material and content, accuracy of facts and data, accuracy of concepts/theories, accuracy of images and illustrations, conformity with the latest developments in current science, and presentation of actual cutting-edge examples all have higher scores after revision. In other content feasibility indicators, all of these indicators also showed a significant improvement in scores after revision. Overall, the results of the material expert's assessment show that the revision of digital teaching materials has succeeded in improving the quality and feasibility of the content of the teaching materials, so this is considered very suitable for use in learning.

b. Media Validation

The media validation was carried out by a media expert who is also a lecturer in media experts at the Singkawang Institute of International Science and Business. The assessment was carried out using a questionnaire with a likert scale consisting of five answer choices, namely very good, good, quite good, not good, and not good. This assessment instrument consists of 15 statements, with 8 statements evaluating the feasibility of the content and 7 statements assessing the design. The results of this media expert's assessment are a reference to improve and revise aspects that are considered lacking in the product. After being revised, the media is then re-validated by experts. The results of the validation of media experts before and after the revision can be seen in the Table 3.

Table 3.
Results of Media Expert Assessment Before Revision

No.	Statement	Score	
		Before	After
	Media Eligibility Indicators		
1.	The composition of the attractive teaching materials is in accordance with the objectives of the preparation of the attractive teaching materials that are developed	4	5
2.	Use of proportional text and graphics	3	5
3.	Attractiveness of layaout and layout	3	5
4.	Interesting color selection	5	5
5.	Text and graphic compatibility	5	5
6.	Teaching material products help develop readers' knowledge	4	4
7.	Engaging teaching material products are informative to readers	3	5
8.	Overall, the product of engaging teaching materials requires the reader's curiosity	4	5
	Development Indicators		
1.	Consistency of the systematics of the presentation in the material	3	4
2.	The logic of presentation and the collapse of the concept	5	5
3.	Coherence of substance between materials	4	4
4.	Balance of substance and matter	3	5
5.	Appropriateness and accuracy of illustrations	3	5
6.	Compatibility between images and descriptions	5	5
7.	The existence of a reference	3	4
	Total Content Eligibility Component Score	**59 (77%) Eligible**	**74 (93%) Very Feasible**

Table 3 shows the results of the assessment by media experts on the interactive media design before revision. This assessment is carried out to evaluate the feasibility of the content and design of the interactive media. Prior to the revision, expert assessments showed that digital teaching materials containing cultural studies around students had a total component score of 59 (77%), which was categorized as "Decent."

On the content feasibility indicator, it can be seen that some statements get an increased score after revision. For example, the use of proportional text and graphics, the choice of eye-catching colors, the compatibility of text and graphics, products that help design reader knowledge, products that are informative to users, and products that foster readers' curiosity all have higher scores after revision. On the design indicators, most statements have scored high before the revision, and some of them have remained high after the revision. For example, the consistency of the systematics of the presentation, the logic of the presentation and the collapse of

the concept, the balance of substance between the materials, and the existence of reference references have high scores both before and after the revision. Overall, the results of the expert assessment show that digital teaching materials containing cultural studies around students before the revision are quite feasible with a score of 77%. However, after revision, the quality of these teaching materials increased significantly with a total component score of 93%, which was categorized as "Very Feasible." This shows that the revision has succeeded in improving the quality and feasibility of the content and the design to be better and more ready to be used in learning.

The results of this study show, based on the results of validation from experts, digital teaching materials containing cultural studies around students to strengthen the cultural literacy and citizenship of elementary school students characterized by monoculture and monoethnicity in the city of Singkawang which is designed to meet very feasible criteria in terms of material presentation and in terms of appearance. Therefore, products in the form of digital teaching materials that have been made can be considered legitimate and meet the criteria to be used in the learning process in grade V of SD Negeri 22 and 63 Singkawang.

The feasibility of the content of digital teaching materials containing cultural studies around students helps elementary school learners to better understand the material, so that the learning objectives that have been set in advance can be achieved to the maximum. The results of this study are in line with research by Martha, et al. (2022) which stated that the use of teaching materials containing local wisdom in the feasible category can increase the achievement of the results of the previously set goals. In line with that, Kusmana, et al. (2021) said that digital teaching materials that are designed using technology and have been validated with a good category will get better results compared to conventional media.

In the validation of media experts, there are indicators of content feasibility and presentation feasibility. The results of the validation carried out by the media expert validator obtained a score of 93 which shows that the media aspect in the interactive media that has been designed is also very adequate and suitable for use in the learning process. This is also in line with research conducted by Putri & Puspasari (2022) which states that digital teaching materials that have met the eligibility requirements in the media aspect are very good for use in the learning process because they can increase learning motivation and make it easier for learners to understand.

2. The Results of The Research from the Interactive Learning Media Design Activities are Loaded with The Value of The Local Wisdom of The Tidayu Community that is Effective Through Small Group Trials and Field Tests

a. Small Group Test Results

In the small group stage, 9 students in grade V of SD 22 Singkawang were selected by students in the categories of low, medium and high learning outcomes. The results of the student questionnaire at the small group stage can be seen in the Table 4.

Table 4.
Recapitulation of Average Scores of Practicality Teaching Materials by Small Group Students

No.	Name	Value	Interpretation
1.	Student 1	84%	Very Practical
2.	Student 2	86%	Very Practical
3.	Student 3	92%	Very Practical
4.	Student 4	84%	Very Practical
5.	Student 5	80%	Very Practical
6.	Student 6	86%	Very Practical
7.	Student 7	82%	Very Practical
8.	Student 8	82%	Very Practical
9.	Student 9	86%	Very Practical
	SUM	**762%**	
	Average	**84,6%**	
	Category	**Very Practical**	

Based on the Table 4, the data results at the small group test stage can be obtained an average score of 84.6% with a very practical category. The results of the small group are supported by research conducted by Yusri et al., (2021) showing that the percentage score of 83.33 with the category of very practical, this shows that the design of digital teaching materials containing cultural studies around students is very practical.

b. Field Test Results

The filed test stage involved all grade V students of SD Negeri 63 Singkawang. This stage aims to determine the potential effect on student learning outcome tests. At the filed test stage, the researcher asked students to work on 7 questions after learning using the interactive learning media containing the local wisdom values of the Tidayu community that were designed. The results of the students' field trials when doing the pre-test and post-test can be seen in the Figure 2.

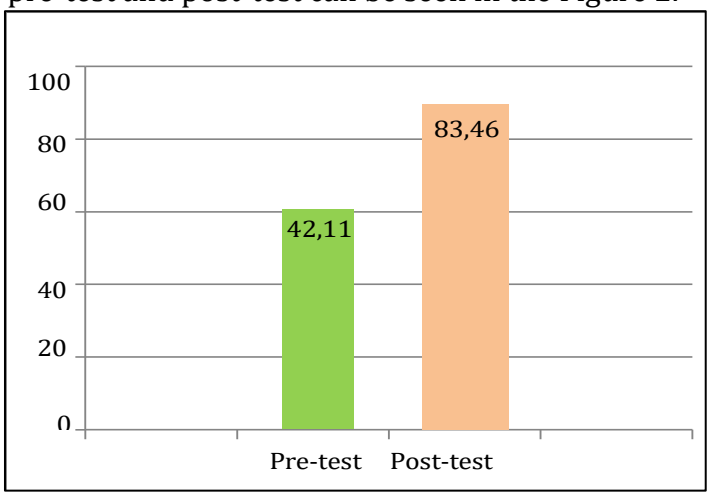

Figure 2.
Pre-Test Post-Test Score Comparison Chart

Based on Figure 2, the data obtained at the field test stage involving 26 students obtained a pretest score of 42.11 and a posttest score of 83.46, resulting in an increase of 41.35. During learning, digital teaching materials are used. The following is a summary of the n-gain data recapitulation table for grade V students of SD Negeri 63 Singkawang presented in the Table 5.

Table 5.
Recapitulation of N-Gain Data in Grade V Students of SD Negeri 63 Singkawang

Average ***pretest score***	**Average** ***posttest score***	**N-Gain Limitations**	**Number of Students**	**Category**
		N-gain > 0.7	13	Tall
42,11	83.46	*0.3 ≤ N-gain ≤ 0.7*	12	Keep
		N-gain < 0.3	1	Low

Based on Table 5, it can be concluded that many students who get scores below the minimum completeness criteria (KKM) can be said that the student's score has not been completed. Furthermore, in the posttest questions, there was an increase of 41.35 where many students got scores above the KKM so that it can be said that the student score was complete. However, even though it has increased, there are questions that students find difficult, judging from the answers to students' pretest-posttest scores, questions that are not understood by students, namely numbers 4 and 6, as seen from the answers of students who still cannot answer the questions. This is because students do not understand the essence of the question items given. To determine the cultural literacy and citizenship of students, the n-gain formula was used from 26 students who were the subjects of the study. Judging from the n-gain in the table above, it shows that there are 13 students in the high category, 12 in the medium category and 1 student in the low category. This proves that the use of digital teaching materials containing cultural studies around students designed in the learning process can improve students' cultural literacy and citizenship in PKn/Pancasila learning. This is supported by research on the development of e-modules based on local wisdom conducted by Azhari & Armanda (2018) obtained an average value of n-gain of students of 0.70 with a high category. This shows that the development of attractive media is worth using.

3. The Results of The Research from The Activity Describe Students' Cultural Literacy and Citizenship after The Application of Digital Teaching Materials Containing Cultural Studies Around Students

The data obtained from the pretest and postest were analyzed using inductive statistical tests. Before conducting statistical test analysis, a prerequisite test was carried out, namely normality and homogeneity tests. Normality test data was obtained from the results of the pretest and posttest of the VA class of SD Negeri 22 as the experimental class and the VB class of SD Negeri 63 Singkawang as the control class. The following results of the normality test of the distribution of pretest and posttest data in the experimental class and the control class assisted by the SPSS program can be seen in the Table 6.

Table 6.
Normality Test Results of Experimental Class and Control Class

Data	Results (Sig.)	Information
Experimental Class Pretest	0,087	*Sig*. > 0.05, normally distributed
Control Class Pretest	0,069	*Sig*. > 0.05, normally distributed
Posttest Experiment Class	0,114	*Sig*. > 0.05, normally distributed
Control Class Posttest	0,082	*Sig*. > 0.05, normally distributed

Based on Table 6 Significance is more than 0.05, it can be concluded that the data of students' critical thinking skills in the experimental class and the control class are normally distributed. After the normality test is carried out, then a homogeneity test is carried out. The following results of the homogeneity test of pretest and posttest data variants in the experimental class and the control class assisted by the SPSS program are in the Table 7.

Table 7.
Homogeneity Test Results of Experimental Class and Control Class

Data	Research group	Statistics levene	Results (Sig.)
Pretest	Experiment Control	1,145	0.291
Posttest	Experiment	3,491	0,069

Based on Table 7 Significance of more than 0.05, it can be concluded that the data on students' critical thinking skills in the experimental class and the control class have homogeneous variance. After the data meets the normality test and homogeneity test, the analysis used is the t-test with the help of SPSS.

Based on the calculation using SPSS 20, it can be seen that the value of Sig. = 0.075 > 0.05, then H_0 is rejected or H_1 is accepted. This means that the average critical thinking skill score of students who use interactive learning media containing the value of local wisdom of the Tidayu community is higher than those who do not use these digital teaching materials. This means that learning using digital teaching materials containing the study of the culture around students is more effective than learning that does not use digital learning materials.

4. The Results of The Research from The Activity Describe Students' Cultural Literacy and Citizenship After Applying Digital Teaching Materials Containing Cultural Studies Around Students

The increase in cultural literacy and citizenship of students in monocultural and monoethnic elementary schools in the city of Sisngkawang after the use of digital teaching materials with cultural content around students showed results as expected. The results showed a significant difference between the experimental group that used digital teaching materials with the cultural content of the students and the control group that used conventional learning materials. In the experimental group, there was a significant increase in posttest scores compared to pretests. The results of the calculation using SPSS 20 on the data before treatment (pretest) in the experimental class were 25 valid samples, the average range mean = 52.20, median

= 45.00, standard deviation = 2.082, minimum value = 25 and maximum value = 90. Meanwhile, the results of the calculation on the data after treatment (Posttest) in the experimental class obtained the number of valid samples 25, the average range is: mean = 49.80, median = 50.00, standard deviation = 2.252, minimum value = 10, and maximum value = 90. More fully can be found in the Table 8.

Table 8.
Results of Improving Students' Understanding of Experimental Classes Before (Pretest) and After Practice (Posttest)

		Pretest	Posttest
N	Valid	25	25
	Mising	0	0
Mean		52.20	49.80
Median		45.00	50.00
Std. Deviation		2.082	2.252
Range		65	80
Minimum		25	10
Maximum		90	90

In contrast, in the control group, although there was an increase in values, the change was not as significant as in the experimental group. The results of the pretest calculation using SPSS 30 in the control class had a valid sample number of 25, the average range was: mean = 38.60, median = 35.00, standard deviation = 1.965, minimum value = 10 and maximum value = 85. Meanwhile, the results of the calculation on the posttest data in the experimental class were obtained as a valid sample number of 25, the average range was: mean = 41.40, median = 40.00, standard deviation = 2.028, minimum value = 10, and maximum value = 85. As shown in the Table 9.

Table 9.
Results of Students' Comprehension of Control Class in Pretest and Posttest

		Pretest	Posttest
N	Valid	25	25
	Mising	0	0
Mean		38.60	41.40
Median		35.00	40.00
Std. Deviation		1.965	2.028
Range		75	75
Minimum		10	10
Maximum		85	85

a. Statistical Test

The t-test showed that the difference between the pretest and posttest was average in the experimental group. The results of the calculation from the hypothesis test with paired samples t-test to measure before and after being treated with results from before being treated 0.237 and after being treated 0.473, the results were significant.

Table 10.
Output Analisis Paired Samples Test

	Paired Differences							Significance	
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	One-sided p	Two-sided p
Pair 1 Before-After	2.400	16.464	3.292	-4.396	9.196	.729	24	.237	.473

The hypothesis test with paired samples t-test is used to compare the average of two paired or related samples, for example to measure the same subject before and after treatment. Furthermore, the independent samples t-test is used, this test is carried out to measure the average pretest and posttest of both classes, as Table 11.

Table 11.
Average Results from Experimental Class and Control Class Pretest and Posttest with Independent Samples T-Test

		Levene's Test for Equality of Variances		**T-test for Equality of Means**							
		F	**Sig.**	**t**	**df**	**One-Sided p**	**Two-Sided p**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
										Lower	**Upper**
Pretest	Equal variances assumed	.471	.496	-2.375	48	.011	.022	-13.60000	5.72713	-25.11516	-2.08484
	Equal variances not assumed			-2.375	47.484	.011	.022	-13.60000	5.72713	-25.11614	-2.08386
Posttest	Equal variances assumed	.077	.783	-1.386	48	.086	.172	-8.40000	6.06218	-20.58883	3.78883
	Equal variances not assumed			-1.386	47.484	.086	.172	-8.40000	6.06218	-20.59225	3.79225

The results of the calculation from the hypothesis test with independent samples t-test to find out the two samples can be said to be significant because the p-value < 0.05. The independent samples t-test is used to compare the average of two unrelated or independent data groups.

b. Student Engagement and Perception

Based on the results of the questionnaire and observations, students in the experimental group showed a higher level of involvement during learning. They are more enthusiastic and active in participating in learning by using digital teaching materials with cultural content around students. Most students stated that they felt more interested in learning that used culturally charged digital teaching materials around students, which made their understanding of cultural literacy and citizenship clearer and more interesting.

This experimental class questionnaire has been calculated using SPSS 20 with the results of the validity calculation showing that the significant value of the

questionnaire that has been disseminated, which is below 0.05, is valid which means that the instrument can be used to measure what should be measured, and the results of reliability calculations using SPSS 20 show that Cronbach's Alpha value From the questionnaire that has been distributed, it is above 0.6, which is 0.889 which means that the respondents are reliable or consistent to answer the questionnaire.

This control class questionnaire has been calculated using SPSS 20 with the results of the validity calculation showing that the significant value of the questionnaire that has been disseminated, which is below 0.05, is valid which means that the instrument can be used to measure what should be measured, and the results of the reliability calculation using SPSS 20 show that Cronbach's Alfa value From the questionnaire that has been distributed, it is above 0.6, which is 0.771 which means that the respondents are reliable or consistent to answer the questionnaire.

The results of this study show that the use of digital teaching materials with cultural content around students can significantly increase students' understanding of cultural literacy and student citizenship in PKn/Pancasila learning. These findings support the results of previous research that stated that technology-based learning media, especially those that are interactive, can increase students' motivation and understanding (Listiarini, 2014). This happens because the culturally charged digital teaching materials around students provide clear and engaging visualizations, which help students understand the concepts of cultural literacy and citizenship in a contextual and in-depth way.

A significant increase in the experimental group also showed that digital teaching materials were more effective in capturing students' attention compared to conventional media. This success may be due to the ease of use of digital teaching materials that contain about the surrounding culture, which allows students to view and interact with learning materials in a more dynamic format. Students feel more engaged and motivated because they can actively participate in the learning process through the visual elements provided, such as characters, icons, text, and audio. The control group that only used conventional media (lectures) showed a lower improvement. This indicates that non-interactive media tends to make students less engaged and less motivated in understanding complex material, such as cultural literacy.

This research makes a significant contribution to the development of learning based on digital teaching materials, especially in the application of these teaching materials to improve students' cultural literacy and citizenship in elementary schools. These findings are in line with previous research that suggested the use of technology in education to improve students' understanding of more abstract concepts (Jafnihirda, 2023). Overall, this study confirms that digital teaching materials can be an effective solution in increasing students' understanding of strengthening students' cultural literacy and citizenship in learning PKn/Pancasila, which in turn can increase student involvement and motivation in the learning process.

CONCLUSION

This study successfully developed and implemented digital teaching materials that are valid, practical, and effective in significantly improving short term assessment scores related to cultural and civic literacy among elementary students in Singkawang. The core novelty lies in the deliberate operationalization of these literacies through a digital design deeply embedded in local wisdom.

The conclusion extends beyond restating results to address theoretical and practical significance: The research provides a replicable model for connecting local culture, digital pedagogy, and literacy objectives. It underscores that technology in education serves cultural sustainability when it is designed with contextual relevance at its core. Critically, the study acknowledges that while the results are promising, they represent an initial step. True validation of the materials' impact on fostering culturally literate and civically engaged citizens requires long term study.

ACKNOWLEDGEMENT

This study was conducted through a collaboration between the Directorate General of Higher Education (DIKTI), the Institute of Science and International Business (ISBI) Singkawang, and State Elementary Schools 22 and 63 Singkawang. This work was supported by the Independent Curriculum and research grants from DPPM 2025 in the form of research collaborations with numbers (0419/C3/DT.05.00/2025) and (132/C3/DT.05.00/PL/2025), as well as the Affirmative Research Grant for Beginner Lecturers (PDPA) managed by the Directorate of Research, Technology, and Community Service, Directorate General of Higher Education, Research, and Technology, Ministry of Education, Culture, Research, and Technology. The author declares that ethical research permits have been obtained by the researcher from the Institute of Science and International Business (ISBI) Singkawang with number (0028/B.5/U/VI/2025). Written informed consent was also obtained from all research participants.

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