Student perceptions of creativity and information literacy following project-based learning in Indonesian language instruction

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Article info	Abstract
	The issue of low levels of creativity and information literacy among elementary school students necessitates an innovative, contextual learning approach. This study aims to describe the level of students' creativity and information literacy following the implementation of a Project-Based Learning (PjBL) in third-grade Indonesian language instruction at SD Negeri Pao-Pao, Makassar. Employing a descriptive quantitative method, 24 students were selected through purposive sampling. Data were collected using a four-point Likert scale questionnaire designed to assess creativity (fluency, flexibility, originality, elaboration) and information literacy (ability to identify, evaluate, and apply information). Data analysis was conducted using SPSS version 25, including tests of validity and reliability and descriptive statistics. All instruments were found to be valid and reliable, with Cronbach's Alpha values exceeding 0.883. The mean creativity score was 82.04, and the mean information literacy score was 82.06, on a 0-100 scale, indicating that both fell within the "High" category. These findings suggest that after the implementation of PjBL, students demonstrated strong creative abilities and information literacy. Project-based learning fosters active engagement and independent information management among students. The study highlights the potential of PjBL as a pedagogical strategy to support the development of 21st-century skills in elementary education.

1.   Introduction

In the 21st century, education systems worldwide face increasingly complex demands, particularly in fostering students' creativity and information literacy. These two competencies are not merely fundamental for academic success but also crucial for navigating a rapidly

evolving, information-saturated global landscape. In Indonesia, the results of international assessments such as the Programme for International Student Assessment (PISA) consistently show that elementary students' literacy skills remain below the global average (Aulianesia et al., 2025). This problem is not limited to reading but extends to a broader range of literacies, including digital and information literacy. Furthermore, several national-level evaluations confirm a concerning trend—students often struggle to engage with information critically and creatively—limits their capacity for independent learning and problem-solving (Rahmayanti et al., 2025).

Creativity, defined as the ability to generate original, flexible, and elaborated ideas, is increasingly acknowledged as an essential educational outcome. According to Dasna (2022), creativity equips students to respond to challenges with innovation and resilience, skills that are vital in facing unpredictable socio-economic and technological changes. However, current classroom practices, particularly in elementary education, still emphasise conventional, teacher-centred instruction that does not adequately stimulate critical thinking or creative engagement (Musa & Kamal, 2021). Students are often positioned as passive recipients of knowledge rather than active participants in their learning. This pedagogical approach tends to suppress curiosity and experimentation—two key components of creative development.

Parallel to the creativity challenge is the issue of low information literacy among elementary school students. In today's digital age, students are constantly exposed to vast and unfiltered information through various technological platforms. Without adequate skills to identify, evaluate, and apply this information effectively, students are vulnerable to misinformation and fail to develop the critical thinking needed to become informed digital citizens (Harliani et al., 2024). Information literacy is not merely a technical competence but also involves cognitive and metacognitive skills that support deeper learning and decision-making (Sukirno et al., 2020). Unfortunately, empirical studies in Indonesian elementary schools report that many students lack foundational skills to independently search for information, assess its credibility, and synthesise it meaningfully within academic contexts (Kurnianingsih et al., 2020).

Field observations indicate that numerous elementary students continue to experience gaps in digital literacy and creativity, particularly in Indonesian language instruction. PISA reports and several local surveys highlight students' low levels of critical thinking, technological proficiency, and creativity. Traditional, rote-based learning methods often fail to provide opportunities for exploration and innovation. Observations at SD Negeri Pao-Pao reveal that students' information literacy in Indonesian language learning remains weak. This is evidenced by low literacy test scores and students' limited ability to filter and apply information appropriately. Such conditions result in decreased learning motivation, diminished creativity, and weakened problem-solving abilities (Kurnianingsih et al., 2020). Therefore, an innovative, contextual learning model such as PjBL is urgently needed to enhance students' information literacy and creativity in Indonesian language classes.

This issue is particularly evident in language instruction, where the development of both creativity and literacy should ideally intersect. Observations conducted at SD Negeri Pao-Pao, Makassar, revealed that third-grade students demonstrated limited initiative in exploring ideas and low competence in filtering and utilising information from texts and digital sources. These findings were supported by literacy scores from internal school assessments, which indicated that only 40% of students met the minimum competency standards in Indonesian language subjects in the previous academic year. Furthermore, classroom activities were predominantly reliant on textbooks and direct instruction, with minimal opportunities for collaborative learning or project-based tasks. These contextual challenges provide a strong rationale for exploring

learning models that can enhance students' engagement and foster 21st-century competencies.

One such promising approach is Project-Based Learning (PjBL), which offers a structured, student-centred framework wherein learners work collaboratively on meaningful projects that integrate various knowledge domains (Marcheilla et al., 2025). PjBL promotes inquiry, collaboration, and real-world problem solving, key elements that support both creativity and information literacy development (Apriansyah et al., 2024; Satria et al., 2024). Empirical studies have demonstrated that PjBL is effective in increasing student motivation, critical thinking, and the ability to access and apply information meaningfully (Duke et al., 2020). For instance, in the context of elementary education, students involved in project-based tasks tend to exhibit higher engagement levels and are better equipped to articulate their ideas, both orally and in writing (Rosalina & Sanoto, 2023).

Despite the growing evidence supporting the effectiveness of PjBL (Sriwahyuni & Eliza, 2024), its implementation in Indonesian elementary schools remains limited and often inconsistent. Several teachers are unfamiliar with how to design and manage project-based activities effectively, and school infrastructures frequently lack necessary resources, such as internet connectivity, instructional media, and teacher training. Moreover, studies examining the impact of PjBL are often conducted at the secondary or vocational education level, with relatively few focusing specifically on the primary school context (Acevedo et al., 2024; Sriwahyuni & Eliza, 2024) (Acevedo et al., 2024; Sriwahyuni & Eliza, 2024). This gap underscores the need for more context-specific research on how PjBL can be implemented and the outcomes it yields in elementary school settings, particularly in language instruction.

This study aims to design a Project-Based Learning model to enhance the creativity and information literacy of elementary school students in Indonesian language learning. PjBL was selected because it promotes active student engagement in problem-solving, critical thinking, collaboration, and the production of contextual outcomes (Suhartini et al., 2024). The implementation of this model is expected to improve various aspects of creative thinking, including fluency, flexibility, originality, and elaboration (Rosalina & Sanoto, 2023). The main issue addressed in this study is the low level of creativity and information literacy among students in Indonesian language instruction, largely due to the dominance of conventional teaching methods and the lack of strategies that support idea exploration (Kiramang & Rusanda, 2024). Furthermore, teachers often face difficulties in designing instruction that integrates cognitive, affective, and psychomotor aspects in a balanced manner (Safitri & Fatimah, 2024).

This study was therefore conducted to capture and describe the level of student creativity and information literacy following the implementation of a PjBL-based learning approach in a literacy model in a third-grade Indonesian language classroom at SD Negeri Pao-Pao. It does not aim to design a new model, but rather to examine student responses and performance within an existing PjBL framework adapted by the teacher. The descriptive quantitative method employed focuses on measuring post-implementation outcomes rather than testing the effectiveness of an intervention in an experimental sense. Thus, the research objective is to provide a detailed portrait of how third-grade students performed across creativity and information literacy indicators after participating in project-based learning activities.

Creativity in this study is operationalised through four core indicators: fluency, flexibility, originality, and elaboration. These dimensions capture the extent to which students can generate multiple ideas, switch perspectives, produce novel solutions, and develop ideas in detail (Rosalina & Sanoto, 2023). Meanwhile, information literacy is assessed through three competencies: the ability to recognise information needs, evaluate sources critically, and apply

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the acquired information in academic tasks (Putrayasa et al., 2024; Sistarina, 2020). The instrument used to measure these variables has undergone validity and reliability testing to ensure accurate and consistent results (Krisnawati et al., 2024). The research findings are intended to enrich the growing body of literature on PjBL in primary education and to offer practical insights for teachers, curriculum developers, and education policymakers seeking to strengthen 21st-century learning outcomes.

In light of these considerations, this study addresses the following research question: *To what extent do third-grade students at SD Negeri Pao-Pao demonstrate creativity and information literacy following the implementation of a PjBL-based learning approach in Indonesian language instruction?* By answering this question, the research contributes to a better understanding of how project-based methods can be integrated into everyday classroom practice and how they relate to measurable student outcomes. Unlike intervention-based or model-development studies, this research limits its scope to post-implementation evaluation and provides an evidence-based snapshot of student performance under the PjBL framework.

2. Method

The research employed a descriptive, quantitative approach. This approach was chosen to provide an objective and systematic depiction of students' perceptions and experiences regarding project-based learning, particularly in relation to creativity and information literacy (Jayusman & Shavab, 2020). Quantitative research, by definition, emphasises the collection and analysis of numerical data to explain specific phenomena (Waruwu et al., 2025). Within this context, the quantitative method offers a significant advantage, as its findings are less influenced by the researcher's subjectivity, thereby enhancing the objectivity and validity of the results (Annisa et al., 2024).

This research employed a descriptive quantitative (Waruwu et al., 2025) method to capture the levels of creativity and information literacy among third-grade students after participating in a Project-Based Learning (PjBL) (Jayusman & Shavab, 2020) literacy learning experience in an Indonesian language classroom. The study was conducted in a natural classroom setting, with no experimental intervention, control group, or pre-test involved. Thus, this method was selected not to evaluate the effectiveness or to measure causal effects, but rather to provide a systematic overview of students' self-reported competencies following the implementation of PjBL.

The study was conducted at SD Negeri Pao-Pao in Makassar and involved 24 third-grade students as research participants. The sample was selected using purposive sampling, based on specific inclusion criteria: students were chosen if they had regular attendance and were actively involved in classroom activities during the PjBL implementation. While this approach ensured that participants had adequate exposure to the PjBL model, it also introduced a sampling bias, as students who were already more engaged and participatory were more likely to report higher self-perceptions. This limitation is acknowledged and discussed in the conclusion, where it is noted as a factor potentially affecting the generalizability of the findings.

Data collection involved distributing the questionnaire to all third-grade students at SD Negeri Pao-Pao. The instrument consisted of a set of closed-ended statements designed to assess students' attitudes, perceptions, and experiences regarding the project-based learning model. The study specifically examined how students perceived the effectiveness of this learning model in enhancing their creativity and information literacy. Student responses were compiled and analysed using SPSS version 25.0.

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The primary data collection instrument was a Likert-scale questionnaire designed to elicit students' self-assessments of their creativity and information literacy. It is important to emphasise that the instrument did not measure actual performance or observable outcomes, but rather students' perceptions of their abilities relative to the competencies targeted by PjBL-based instruction. Each item was rated on a four-point Likert scale: (1) strongly disagree, (2) disagree, (3) agree, and (4) strongly agree. Two dimensions were assessed: Creativity, comprising four indicators: fluency, flexibility, originality, and elaboration; and Information literacy, comprising three indicators: the ability to recognise, evaluate, and apply information.

The questionnaire development process included validity and reliability testing (Annisa et al., 2024). Instrument validity (Sitinjak, 2006) was determined through item-total correlation analysis, comparing each item's correlation coefficient (r-count) with the critical value from the r-table (Suarlin et al., 2021). Items with r-count values above the r-table threshold (at a significance level of 0.05, n = 24) were deemed valid. Due to space limitations in the main text, a complete breakdown of r-count vs. r-table values for each item is available upon request. The results confirmed that all questionnaire items exceeded the minimum threshold and were considered valid for use.

In processing the Likert scale data, raw scores were converted into standardised scores on a scale of 0 to 100 using the following formula:

$$\text{Standard Score} = \left(\frac{\text{Total Score Obtained}}{\text{Maximum Possible Score}}\right) \times 100$$

To interpret these scores, the study adopted a categorical classification adapted from Suharto et al. (2022), with the following interpretation thresholds:

Table 1. Classification of score interpretation

Scores	Categories
81–100	Very High
61–80	High
41–60	Moderate
21–40	Low
0–20	Very Low

Data are analysed using SPSS version 25, focusing solely on descriptive statistics, including measures of central tendency (mean), variability (standard deviation), and frequency distributions for each indicator. No inferential statistical analyses (e.g., t-tests, regression) are conducted, as the study design does not support hypothesis testing or causal inference. Moreover, the earlier statement suggesting the study describes conditions "before and after" the PjBL implementation has been removed, as no pre-test data are collected.

After confirming the instrument's validity and reliability, the data were subjected to descriptive statistics. This analysis aimed to summarise the general characteristics of the data, including measures such as mean, standard deviation, and frequency distribution. Descriptive statistics offered an overview of students' conditions before and after the implementation of project-based learning. This information was instrumental in identifying patterns in the data that emerged during the study. For instance, an increase in average scores in creativity or information literacy could indicate a positive effect of the instructional intervention.

Furthermore, descriptive statistics were used to assess the distribution of improvements among students. By examining the standard deviation, researchers could determine whether

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significant variations existed in individual responses to the applied learning model. This process provided a robust foundation for evaluating the intervention's effectiveness and determining whether project-based learning had a positive impact across the entire student cohort.

Additionally, the absence of a control group further reinforces the descriptive nature of this study. The research was not designed to measure the effectiveness or impact of PjBL compared to other instructional methods. Therefore, any claims regarding the enhancement of creativity or information literacy must be interpreted cautiously and limited to students' self-reported experiences following participation in a PjBL-based class project.
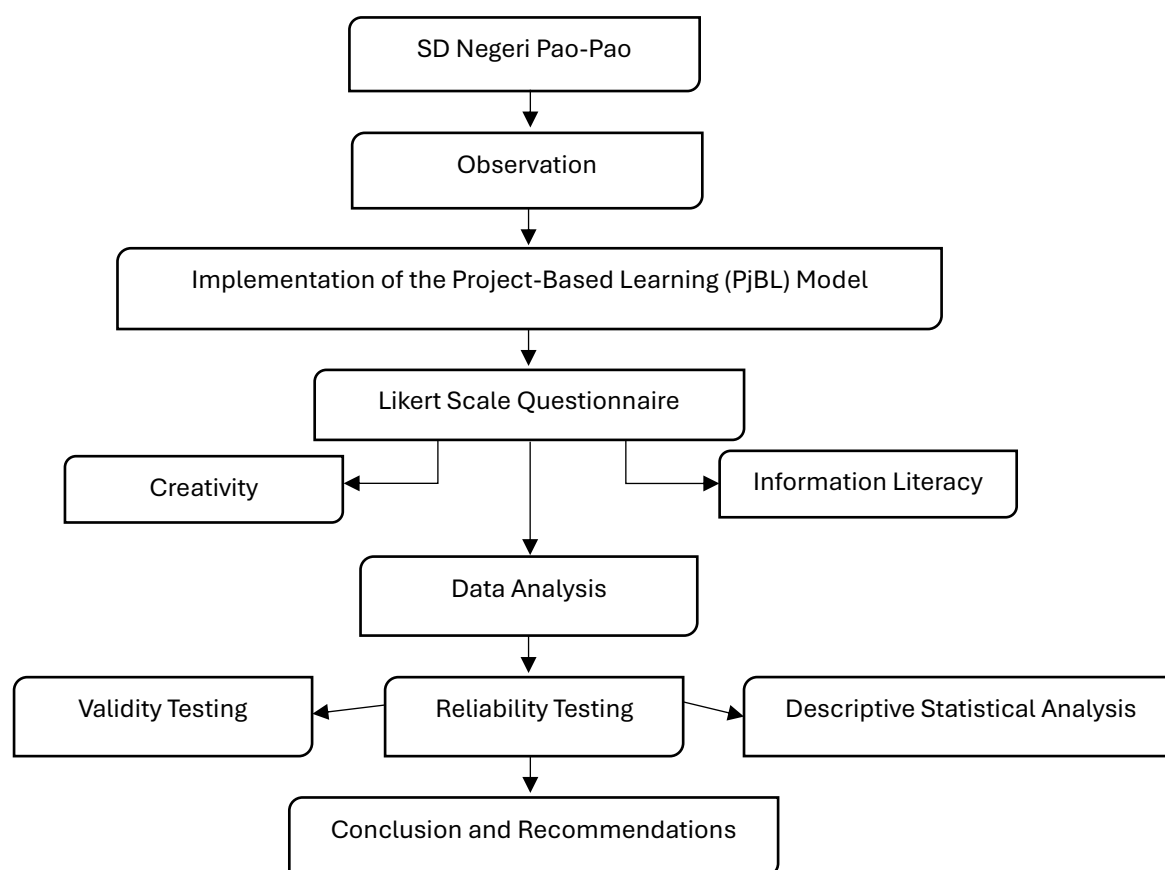

Figure 1. Data collection diagram

3. Results

This study aimed to develop and examine the effectiveness of project-based learning in enhancing creativity and information literacy in Indonesian language instruction among third-grade students at SD Negeri Pao-Pao, Makassar, South Sulawesi. The main research focus was to explore how students can not merely read and write proficiently but also access, evaluate, and utilise information wisely. Project-Based Learning (PjBL) was selected as the instructional model due to its potential to engage students actively in learning through real-life contexts, promote critical thinking, and encourage creativity in problem-solving.

In addition, this study sought to offer practical solutions for teachers at SD Negeri Pao-Pao to implement a more effective, enjoyable, and student-centred instructional approach. As such, the research findings are expected to contribute meaningfully to improving the quality of literacy

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education and equipping students with essential 21st-century skills, while also providing valuable insights for educational practices at the elementary level.

Table 2 presents the validity test results for the research instrument used to assess the two main variables, creativity and information literacy. This test is conducted to evaluate the extent to which each item in the instrument accurately and consistently reflects the theoretical construct it was intended to measure.

Table 2. Instrument validity for creativity and information literacy variables

Case Processing Summary			
		N	%
Cases	Valid	24	100.0
	Excluded[a]	0	.0
	Total	24	100.0

This study aims to describe students' levels of creativity and information literacy following the implementation of Project-Based Learning (PjBL) in an Indonesian language classroom. The data were collected using a self-assessment questionnaire comprising Likert-scale items measuring two main constructs, creativity and information literacy. The results are presented in three parts: (1) instrument validity and reliability testing, (2) frequency distribution analysis per indicator, and (3) descriptive statistics and interpretation based on predefined scoring categories.

3.1 Instrument validity and reliability

Before analysis, the research instrument underwent construct validity testing using item-total correlation analysis. Table 2 presents the validity test results for each item related to the creativity and information literacy constructs. The correlation coefficient for each item (r-count) was compared with the critical r-value from the 0.05 significance level for n = 24, which is 0.404. Items with an r-count exceeding this value were deemed valid.

Table 3. Instrument validity (item-total correlation)

No	Item Statements	r-count	r-table	Valid
	Creativity			
P1	Students can mention various potential sources of information (books, the internet, experts, magazines).	0.667	0.404	Yes
P2	Students generate various criteria or reasons and select information they consider relevant.	0.949	0.404	Yes
P3	Students can express various ways to acknowledge sources (mentioning the source, avoiding plagiarism).	0.923	0.404	Yes
P4	Students learn in the library, at home, or in the classroom, depending on their comfort and project needs.	0.924	0.404	Yes
P5	Students consult books when the internet is slow or, when possible, ask resource persons directly.	0.690	0.404	Yes
P6	Students may rewatch the learning video if they do not understand the material, or play it at a faster speed if they already comprehend it.	0.936	0.404	Yes
P7	Students can generate unique ideas or concepts on the topic that differ from those of their classmates.	0.754	0.404	Yes
P8	Students can choose new and creative ways to find information about animals, such as through interviews, direct observation,	0.664	0.404	Yes

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No	Item Statements	r-count	r-table	Valid
	or creating surveys.			
P9	Students combine information from multiple sources to create an original literary work, such as a guidebook or a picture story.	0.949	0.404	Yes
P10	Students can accurately conclude scientific concepts from the information they have gathered.	0.879	0.404	Yes
P11	Students can develop and clarify ideas or information with additional examples and explanations.	0.825	0.404	Yes
P12	Students can present concepts clearly, easily, and systematically.	0.509	0.404	Yes
Information Literacy				
P1	I can identify topics or issues that require information	0.787	0.404	Yes
P2	I know where to find the information I need	0.681	0.404	Yes
P3	I distinguish the types of information that are relevant to my needs	0.642	0.404	Yes
P4	I can assess whether the information I find is trustworthy	0.543	0.404	Yes
P5	I compare sources of information before making a decision	0.559	0.404	Yes
P6	I can identify bias or vested interests in information	0.901	0.404	Yes
P7	I use the information I obtain to solve problems	0.825	0.404	Yes
P8	I am able to communicate the information I obtain effectively	0.763	0.404	Yes
P9	I can integrate information from various sources into my assignments	0.769	0.404	Yes

The validity test is conducted to ensure that each statement item in the questionnaire accurately measures the variables under study, namely Creativity and Information Literacy. Item validity is assessed using Pearson correlation (r-count), comparing the r-count with the r-table value of 0.404 at the 5% significance level. For the Creativity variable, there are 12 statement items (P1–P12). The results indicate that all r-count values exceed the r-table value (0.404). The highest r-count is 0.949, and the lowest is 0.509. This suggests that all statement items for the Creativity variable are valid and suitable for use as research instruments. For the Information Literacy variable, there are 9 statement items (P1–P9). Similar to the previous variable, all r-count values are also greater than the r-table value. The highest r-count is 0.901, and the lowest is 0.543. Thus, all items in the Information Literacy variable are also valid.

As shown in Table 2, all 21 items (12 for creativity and 9 for information literacy) have r-count values above the minimum threshold, thus confirming the instrument's construct validity.

Subsequently, the instrument's reliability is assessed using Cronbach's Alpha. Table 3 presents the reliability values for both constructs.

Table 4 displays the reliability test results for the instrument measuring the creativity variable. This test assesses the internal consistency of the instrument items and their ability to yield reliable data.

Table 4. Creativity instrument reliability test

Reliability statistics		
Cronbach's alpha	Cronbach's alpha based on standardised items	N of items
0.960	0.960	12

Table 4 displays a Cronbach's alpha of 0.960, which is exceptionally high. This indicates that the research instrument used is highly reliable. A Cronbach's Alpha above 0.90 is

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categorised as excellent, suggesting that the instrument provides consistent results and can be trusted to measure the intended variable accurately. The reliability test is conducted on 12 items, indicating a comprehensive assessment of the creativity construct.

Table 5. Instrument reliability statistics

Constructs	Cronbach's alpha	Number of items	Interpretation
Creativity	0.960	12	Very high reliability
Information literacy	0.883	9	High reliability

The reliability test results in the table indicate that the research instruments exhibit high reliability. The creativity construct has a Cronbach's alpha of 0.960 across 12 statement items, which falls within the "very high" category. Meanwhile, the information literacy construct achieves a Cronbach's alpha of 0.883 across 9 statement items, indicating high reliability. Based on these results, all research instruments are reliable, as the Cronbach's Alpha values exceed 0.7. This means that each statement item in the instrument consistently measures the variables under study.

These results confirm that the research instrument has excellent internal consistency, indicating that the items within each construct consistently measure the intended competencies.

Table 6 presents the frequency distribution of student creativity across four primary indicators: fluency, flexibility, originality, and elaboration. These indicators are used to assess different dimensions of creativity within the context of Indonesian language learning.

Table 6. Frequency distribution of student creativity

No	Indicators	Number of students	Total score	Relative frequency
1.	Fluency	7	215	29,17%
2.	Flexibility	5	208	20,83%
3.	Originality	6	215	25.00%
4.	Elaboration	6	218	25.00%
	Total	24	856	100%

Table 6 describes that creativity is distributed fairly evenly across the four measured indicators. The fluency indicator is represented by 7 students, yielding a total score of 215 and a relative frequency of 29.17%, indicating the students' ability to generate ideas fluidly and spontaneously. The flexibility indicator, involving adaptability in learning strategies, is demonstrated by 5 students, with a score of 208 and 20.83% frequency. The originality indicator, reflecting students' capacity to generate novel ideas, is shown by 6 students, with a total score of 215 and a 25% frequency. Lastly, the elaboration indicator, referring to the ability to develop ideas with logic and detail, is also evidenced by 6 students with the highest score of 218 and a 25% frequency. A cumulative score of 856 is recorded across all four creativity indicators, with scores evenly distributed among the student sample. These results suggest that students not merely exhibit fluent and original thinking but also demonstrate strong adaptability and a systematic approach to idea development in Indonesian language instruction.

3.2 Indicator-level frequency distribution

Tables 7 and 8 provide a breakdown of cumulative scores for each indicator within the creativity and information literacy constructs.

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Table 7. Creativity indicator frequency distribution

No	Indicators	Number of Items	Total Score	Relative Contribution (%)
1.	Fluency	3	215	25.1%
2.	Flexibility	3	208	24.3%
3.	Originality	3	215	25.1%
4.	Elaboration	3	218	25.5%
	Total	**12**	**856**	**100%**

The cumulative scores indicate a balanced distribution across all creativity indicators, with elaboration slightly contributing more. This suggests that students perceive themselves as capable of developing ideas thoroughly, which aligns with one of the PjBL model's objectives, to encourage detailed and contextualised thinking.

Table 7 above presents the frequency distribution of creativity indicators, which consist of four aspects: fluency, flexibility, originality, and elaboration. Each indicator comprises the same number of items, with three statements per aspect. Based on the analysis, the fluency indicator obtains a total score of 215 (25.1%), flexibility 208 (24.3%), originality 215 (25.1%), and elaboration 218 (25.5%). Overall, the total score achieved is 856, with a relatively balanced distribution across all indicators. This indicates that all aspects of creativity contribute equally, with the elaboration indicator slightly ahead of the others, suggesting that students are able to develop ideas with more detailed, in-depth elaboration.

Table 8. Frequency distribution of information literacy

No	Indicators	Number of Students	Total Score	Relative Frequency
1.	Ability to recognise information	10	217	41,67%
2.	Ability to evaluate information	6	215	25.00%
3.	Ability to apply information	8	209	33,33%
	Total	24	641	100%

The distribution indicates that the ability to recognise information scores highest, with 217 points (41.67%), suggesting that most students possess adequate skills in identifying and comprehending information from various sources. The ability to apply information follows, with a score of 209 (33.33%), reflecting that a substantial number of students are capable of effectively utilising information in appropriate learning contexts. Meanwhile, the ability to evaluate information scores 215 (25%), indicating that students' evaluative competencies, such as assessing the accuracy, relevance, and validity of information, require further enhancement. Overall, the findings suggest that while students demonstrate strong proficiency in the initial stages of information literacy (recognition and application), there remains a need to strengthen their critical evaluation skills through targeted instructional strategies in Indonesian language learning.

Table 9. Information literacy indicator frequency distribution

No	Indicators	Number of Items	Total Score	Relative Contribution (%)
1.	Recognize information	3	217	33.9%
2.	Evaluate information	3	215	33.5%
3.	Apply information	3	209	32.6%
	Total	**9**	**641**	**100%**

All three indicators receive relatively equal contributions, suggesting that students perceive themselves as consistently capable across all dimensions of information literacy.

Based on the results presented in Table 4 on the Frequency Distribution of Information Literacy Indicators, students' information literacy skills encompass three main aspects: recognising, evaluating, and applying information. The calculations yield that the element of recognising information achieves the highest score of 217, contributing 33.9%, followed by assessing information with a score of 215 or 33.5%, and applying information with a score of 209 or 32.6%. Overall, these three aspects contribute almost equally to the total score of 641. This balanced contribution indicates that students possess relatively uniform abilities in understanding and utilising information across the stages of recognition, evaluation, and application. Therefore, students demonstrate a stable level of information literacy across all three dimensions, with no single ability dominating.

Table 10 presents the minimum, maximum, mean, and standard deviation for each measured variable: creativity and information literacy.

Table 10. Descriptive statistics

Variables	N	Minimum	Mean	Standard deviation
Creativity score	24	60	82.04	10.49
Information literacy score	24	71.0	82.058	5.1377
Valid N (Listwise)	24			

The descriptive statistics indicate that the creativity scores range from 60 to 99, with a mean of 82.04 and a standard deviation of 10.49. These figures suggest that although most students exhibit high levels of creative engagement, there are a number of variations, reflecting the diversity of student participation in project-based activities. A minimum score of 60 is still within an acceptable range and highlights individual differences in student characteristics. Furthermore, group project performance and presentation scores, as key indicators of creativity, average 82.04, with a moderate standard deviation, indicating that student engagement and communication skills in presenting project outcomes are generally within the "good to excellent" range. Regarding information literacy, the scores range from 71.0 to 91.7, with a mean of 82.06 and a standard deviation of 5.14. The relatively narrow distribution indicates that most students demonstrate a consistently high level of information literacy. These outcomes suggest that the project-based learning model effectively supports students in accessing, understanding, and managing information in Indonesian language learning.

3.3 Descriptive statistical analysis

Table 11 summarises the central tendencies and variability of the overall scores for each construct, as converted from raw Likert scores to a standardised 0–100 scale. As explained in the methodology, a score conversion was used to facilitate interpretation, and categorisation criteria were applied as follows:

Table 11. Descriptive statistics

Variables	N	Minimum	Maximum	Mean	Std. Devitation	Category
Creativity Score	24	60	99	82.04	10.49	Very High
Information Literacy	24	71	91.7	82.06	5.14	Very High

Based on the classification above, the mean scores for creativity and information literacy are 82.04 and 82.06, respectively, and both fall within the Very High category. This indicates that, following the PjBL experience, students perceive their creative and informational competencies to be highly developed.

The standard deviation for creativity (10.49) is notably higher than that for information literacy (5.14), suggesting greater variability in students' ratings of their creative abilities. This may reflect individual differences in ideation, originality, or confidence levels when engaging in project-based tasks.

4. Discussion

A growing body of research supports the effectiveness of Project-Based Learning (PjBL) in enhancing students' creativity and information literacy at the elementary level. A study conducted by Krisnawati et al. (2024) specifically examined the impact of PjBL on the literacy skills of fourth-grade students at SDN Cicenang I, Cigasong in Majalengka. Utilising a pre-experimental design with a one-group pre-test-post-test approach, the study found that students' average literacy scores increased from 49.37 (pre-test) to 66.93 (post-test), with a gain score of 0.4002. These findings indicate that implementing the PjBL model had a significant positive effect on students' text comprehension and critical thinking skills through contextual, application-based project activities.

This result is reinforced by a literature review by Marcheilla et al. (2025), which analysed 15 scholarly articles and concluded that PjBL is highly effective in fostering both digital literacy and student creativity. In practice, PjBL encourages students to actively explore ideas, collaborate with peers, and utilise digital technologies to seek and process information. This process not merely improves critical thinking skills but also bolsters students' innovative and reflective capacities. Similarly, a study by Pasaribu & Zakiah (2024) employing a Problem-Based Learning (PBL) approach produced comparable outcomes. Conducted among vocational high school students at SMK Negeri 10 Medan, the study found a significant increase in information literacy scores from 52.00 (pre-test) to 82.92 (post-test) following the application of problem-based instruction in the experimental class. These findings further emphasise that both project- and problem-based learning models foster active student engagement in the processes of searching, evaluating, and effectively using information.

In addition, Acevedo et al. (2024), in a systematic review of 53 international studies, emphasised that information literacy is a core 21st-century competency. Information literacy encompasses the ability to seek, evaluate, use, and create information critically and ethically. The study also highlighted the importance of active and experiential learning approaches in cultivating these skills from an early age. In this context, the PjBL model is highly relevant for its ability to integrate literacy development with authentic, collaborative, and technology-supported activities. Further support for the effectiveness of PjBL comes from Sriwahyuni & Eliza (2024), whose study at the early childhood education level demonstrated the model's versatility. By developing a project-based e-module on Minangkabau culture, they enhanced children's scientific literacy and character development. The interactive and contextual nature of the module provided a meaningful and enjoyable learning experience. Both the validity and practicality of the module were rated highly, reinforcing the argument that PjBL is a flexible and relevant approach across different educational settings.

Based on these various findings, the Project-Based Learning approach is not merely effective in enhancing students' creativity but also plays a strategic role in strengthening information literacy skills. The strength of PjBL lies in its ability to support active, collaborative, real-world problem-solving and learning that is relevant to students' daily lives. The model empowers learners to construct knowledge meaningfully through direct engagement in planning, exploration, analysis, and the development of authentic products or solutions.

The research implications are particularly significant for elementary education in Indonesia, particularly at SD Negeri Pao-Pao. First, teachers' role must undergo a fundamental transformation from mere transmitters of knowledge to active facilitators of learning. Teachers are expected to guide students in exploring information, selecting relevant data, and synthesising and presenting it in meaningful projects. The success of Project-Based Learning (PjBL) implementation largely depends on the teacher's ability to design project activities that are contextual and aligned with students' cognitive development levels. Second, schools as foundational educational institutions must provide optimal support for the effective implementation of PjBL. Such support includes the provision of adequate infrastructure and learning resources, such as internet access, digital devices, and project-oriented instructional materials. Moreover, schools should offer regular training and mentoring programs for teachers to help them master innovative instructional strategies and effectively integrate digital and information literacy into their teaching practices. Third, education policies at both regional and national levels should prioritise the development of project-based learning models as a key pedagogical approach within the elementary school curriculum. Strengthening the role of PjBL within educational policy can foster more meaningful, relevant, and competency-oriented learning, particularly by cultivating 21st-century skills. In the long term, this supports the creation of a literate, creative, and globally competent generation prepared to meet the complex challenges of the future.

The research results revealed that students reported high levels of creativity and information literacy following their participation in Project-Based Learning (PjBL) activities in an Indonesian language classroom. Specifically, the mean scores for creativity and information literacy were 82.04 and 82.06, respectively, both falling within the "Very High" category according to the established interpretation criteria. These findings indicate that students perceived themselves to be highly competent in the areas targeted by the PjBL approach. However, it is essential to emphasise that the data reflect self-assessed perceptions rather than direct measurements of actual performance or skill mastery. Therefore, while these results are promising, they must be interpreted with appropriate methodological caution.

Although this study does not employ a pre-test/post-test design and thus cannot claim to measure learning improvement, the descriptive findings are consistent with trends reported in the literature on the potential benefits of PjBL. For instance, Krisnawati et al., (2024) demonstrated a significant gain in student literacy scores through a pre-experimental design involving PjBL, while Pasaribu & Zakiah (2024) observed improvements in information literacy through problem-based learning interventions. Unlike those studies, however, the present research did not track changes over time; rather, it captured a snapshot of students' perceived competencies at a single post-implementation point. As such, comparisons with experimental or quasi-experimental studies should be viewed as contextual parallels rather than empirical equivalences.

Nonetheless, the consistently high scores across both creativity and information literacy domains suggest that students positively received the learning environment facilitated by PjBL and may have contributed to greater engagement, motivation, and self-reflection. This aligns

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with findings from previous studies indicating that PjBL encourages students to take an active role in constructing knowledge, collaborating with peers, and producing creative solutions within real-world contexts (Acevedo et al., 2024; Apriansyah et al., 2024) . The balanced distribution of scores across creativity indicators—such as fluency, flexibility, originality, and elaboration—further supports the notion that students were exposed to diverse cognitive tasks requiring multiple modes of thinking, a hallmark of the PjBL framework.

Of an information literacy perspective, students reported relatively equal confidence across the abilities to recognise, evaluate, and apply information. This outcome suggests that the project tasks may have provided opportunities for students to engage in various stages of the information processing cycle, including seeking, filtering, and synthesising relevant content. Such findings resonate with earlier work by Sistarina (2020) and Putrayasa et al. (2024), who emphasise the importance of embedding information literacy in meaningful, inquiry-driven tasks to prepare students for digital learning environments.

However, it is essential to acknowledge several critical research limitations for the further researchers. First and foremost, the instrument utilised was a self-assessment questionnaire, which inherently captures students' perceptions of their abilities rather than their demonstrated competencies. This distinction is crucial, as self-perceptions can be influenced by various factors, including students' confidence, prior experience, classroom climate, and social desirability bias. Consequently, high scores do not necessarily equate to high actual performance. Future research should consider complementing self-report instruments with performance-based assessments or teacher evaluations to generate a more comprehensive picture of students' abilities.

Second, the research design was purely descriptive, without a pre-test, post-test, or control group. As such, no claims can be made about the effectiveness of PjBL in improving student outcomes over time. The study does not establish causality, nor does it allow for the measurement of progress. Any interpretation suggesting that PjBL "enhanced" or "improved" student skills would be methodologically unfounded within this research framework. Instead, it is more appropriate to state that students reported high levels of perceived competence following PjBL activities. These results can be viewed as supportive evidence of PjBL's potential, rather than conclusive proof of its impact.

Third, the sample size was relatively small and limited to a single third-grade class at a single school, with participants selected through purposive sampling based on attendance and active participation. While this sampling approach ensured that the chosen students had consistent exposure to the PjBL model, it introduces a selection bias that may inflate the results. Students who are already engaged and participatory are more likely to report positive experiences and higher self-assessments, regardless of the instructional model. This limitation further restricts the generalizability of the findings.

Despite these limitations, the study provides valuable insights into how students perceive their own creativity and information literacy following the implementation of PjBL in an Indonesian elementary school. The descriptive findings contribute to a growing body of literature suggesting that student-centred, inquiry-based models such as PjBL can create classroom environments conducive to fostering 21st-century skills. While causality cannot be established, the results reinforce the relevance of integrating such approaches in elementary education and highlight the need for further investigation using more robust experimental or mixed-methods designs.

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5. Conclusion and Implications

This study concludes that implementing the Project-Based Learning (PjBL) in literacy model significantly enhances elementary school students' creativity and information literacy in Indonesian language instruction. The PjBL approach enables students to actively participate in the learning process, including designing projects, accessing information, conducting analysis, and presenting their work collaboratively. Based on the descriptive statistics, there was an increase in the average scores across both creativity and information literacy indicators. Creativity showed comprehensive improvement across the dimensions of fluency, flexibility, originality, and elaboration, while information literacy demonstrated gains in the ability to recognise, evaluate, and apply information effectively. Moreover, this model fosters a pedagogical shift, encouraging teachers to move from mere transmitters of knowledge to active learning facilitators, and it requires schools to provide adequate infrastructure and resources to support this process. Therefore, the PjBL approach can be adopted as an innovative instructional strategy to support the development of 21st-century competencies in elementary education.

Despite these promising results, the study has several limitations. First, the sample size was relatively small, comprising only 24 students from a single class at one elementary school, which limits the generalizability of the findings. Second, data collection relied solely on a Likert-scale questionnaire, without triangulation through qualitative methods such as interviews or in-depth observations, which could have enriched the understanding of the learning process. Third, the duration of PjBL implementation was limited to a single instructional cycle, which may not adequately capture the model's long-term effects on student development. Future research is recommended to involve larger, more diverse samples across classes and to adopt a mixed-methods approach to yield more comprehensive and nuanced findings.

This descriptive study underscores that third-grade students at SD Negeri Pao-Pao who participated in Project-Based Learning (PjBL) reported high levels of perceived creativity and information literacy. The mean scores for creativity and information literacy were 82.04 and 82.06, respectively, both of which fall within the "Very High" category according to the predefined scoring criteria. These findings suggest that students perceived the PjBL learning experience as supportive of their ability to think creatively and manage information effectively. However, these outcomes reflect self-reported perceptions rather than direct measurements of competence. Therefore, the results should be interpreted as indicative of students' subjective experiences rather than objective evidence of skill mastery or development.

The research implications suggest the potential value of PjBL as a pedagogical approach that aligns with student-centred and skills-oriented education in the 21st century. However, several methodological limitations must be acknowledged. The study employed a descriptive design without a control group or pretest, making it unsuitable for establishing causality or measuring learning gains. Additionally, purposive sampling introduced selection bias, as only students with regular attendance and active classroom participation were included. This may have contributed to the high reported perception scores. Finally, the instrument assessed students' perceptions rather than actual performance, limiting the extent to which the findings can be generalised or used as definitive evidence of PjBL's impact. Future studies are encouraged to employ mixed-method or experimental designs to more rigorously evaluate the effectiveness of PjBL in enhancing elementary student competencies.

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Credit authorship contribution statement

1) K.M.M. contributed to the methodology, formal analysis, data curation, and conceptualisation of the study.
2) P.A.S. provided resources, project administration, and contributed to the methodology.
3) A.B. was involved in funding acquisition, formal analysis, data curation, and conceptualisation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Ethical declaration

All participants provided informed consent before their involvement in the study. They were informed of the study's purpose and procedures, and of their right to withdraw at any time without consequence.

References

Annisa, M., Abrori, F. M., Asrani, Prasetio, T., & Prastitasari, H. (2024). Questionnaire of Natural Disaster for Mitigational Education. *Jurnal Penelitian Dan Pengembangan Pendidikan*, *8*(2), 257–265. https://doi.org/10.23887/jppp.v8i2.54816.

Apriansyah, A., Sari, N., Nizaar, M., & Alaa, S. (2024). *Project Based Learning Model on Elementary School Students ' Science Process Skills and Creative Thinking Skills*. *Jurnal Ilmiah Sekolah Dasar*, *8*(1), 120–128. https://doi.org/10.23887/jisd.v8i1.64273.

Acevedo, C. L., Köhler, J., & Coscarelli, (2024). Information literacy development and assessment at school level : a systematic review of the literature. (arXiv Preprint 2404.19020). *arXiv*. Retrieved from https://arxiv.org/abs/2404.19020.

Aulianesia, B., Aryanto, S., Yohamintin, Y., & Gumala, Y. (2025). Optimalisasi literasi siswa sekolah dasar melalui metode Project Based Learning: Kajian literatur sistematis. Diniyah: *Jurnal Pendidikan Dasar*. *5*(2), 95–109. https://doi.org/10.31332/dy.v5i2.10682.

Chistyakov, A. A., Zhdanov, S. P., Avdeeva, E. L., Dyadichenko, E. A., Kunitsyna, M. L., & Yagudina, R. I. (2023). Exploring the characteristics and effectiveness of project-based learning for science and STEAM education. *Eurasia Journal of Mathematics, Science and Technology Education*, *19*(5). https://doi.org/10.29333/EJMSTE/13128.

Duke, N. K., Strachan, S. L., & Kim, J. , & Konstantopoulos, S. (2020). Putting PjBL to the Test: The Impact of Project-Based Learning on Second Graders' Social Studies and Literacy Learning and Motivation in Low-SES School. Settings. *American Educational Research Journal, 58*(1), 1–41. https://doi.org/10.3102/0002831220929638.

Erza, E. K., Kurnianingsih, I., & Hafifah, F. R. (2020). Desain Instruksional Literasi Informasi Menggunakan Model I-Learn Di Perpustakaan Universitas Yarsi. *IQRA`: Jurnal Ilmu Perpustakaan Dan Informasi (e-Journal)*, *14*(2), 91. https://doi.org/10.30829/iqra.v14i2.8154.

Hapsari, D. D., Lisdiana, L., & Sukaesih, S. (2016). Pengaruh Pembelajaran Berbasis Proyek Berbantuan Modul Daur Ulang Limbah pada Literasi Sains. *Journal of Biology Education*, 5(3), 302–309. 2540-833X. https://journal.unnes.ac.id/sju/ujbe/article/download/14864/8102/.

Harliani, R., Anggraeni Dewi, D., & Hayat, R. (2024). Menantang Tren: Mendekati Krisis Literasi Digital di Era Informasi. *JLEB: Journal of Law, Education and Business*, *2*, 614–617. https://doi.org/10.57235/jleb.v2i1.1948.

Iman, B. N. (2022). Budaya literasi dalam dunia pendidikan. *Conference of Elementary Studies*, 23–41. http://journal.um-surabaya.ac.id/index.php/Pro/article/view/14908

Irianto, P. O., & Febrianti, L. Y. (2017). Pentingnya Penguasaan Literasi Bagi Generasi Muda Dalam Menghadapi Mea. *Conference Proceedings Center for International Language Development of*

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[e-**ISSN** **2598-5949** | p-**ISSN** **2303-1514**]
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Unissula, 640–647. http://jurnal.unissula.ac.id/index.php/ELIC/article/view/1282.

Jayusman, I., & Shavab, O. A. K. (2020). Aktivitas Belajar Mahasiswa Dengan Menggunakan Media Pembelajaran Learning Management System (Lms) Berbasis Edmodo Dalam Pembelajaran Sejarah. *Jurnal Artefak*, *7*(1), 13. https://doi.org/10.25157/ja.v7i1.3180.

Kiramang, K., & Rusanda, A. (2024). Integrasi Literasi Informasi dalam Kurikulum: Pendekatan Informed Learning. SIPAKATAU: *Jurnal Pendidikan dan Kebudayaan,* 1(2), 55–69. https://jurnal.staialgazalibone.ac.id/index.php/sipakatau/article/download/54/25.

Krisnawati, E., Artanti, K. D., & Umar, N. H. (2024). Uji Validitas dan Reliabilitas Instrumen Penelitian Dukungan Suami terhadap Hambatan Penggunaan Metode Kontrasepsi Jangka Panjang pada Multipara Akseptor Aktif di Surabaya. *Media Gizi Kesmas*, *13*(2), 659–664. https://doi.org/10.20473/mgk.v13i2.2024.659-664.

Kurnianingsih, I., Rosini, R., & Erza, E. K. (2020). Library Class: Model Pembelajaran Literasi Informasi Tingkat Sekolah Dasar (Studi Kasus SD Madania). *Jurnal Perpustakaan Pertanian*, *27*(2), 51. https://doi.org/10.21082/jpp.v27n2.2018.p51-58.

Marcheilla, Oktaviana, & Oriyani. (2025). Efektivitas Project-Based Learning Dalam Meningkatkan Keterampilan Literasi Digital Dan Kreativitas Siswa Sekolah Dasar. *PENDIS (Jurnal Pendidikan Ilmu Sosial)*, *4*(1), 15–21. https://doi.org/10.61721/pendis.v4i1.403.

Musa, M. M., & Kamal, R. (2021). Project-based learning model for strengthening elementary school students ' creativity in science. *Jurnal Kependidikan: Penelitian & Inovasi Pembelajaran,* 8(1), 29–42. P-ISSN 2580-5525, E-ISSN 2580-5533.*8*(1). https://doi.org/10.21831/jk.v8i1.71718.

Minata, Z. S., Rahayu, S., & Dasna, I. W. (2022). Context-Based Chemistry Learning: A Systematic Literature Review. *Jurnal Pendidikan MIPA*. 23(4), 1446–1463. https://doi.org/10.23960/jpmipa/v23i4.pp1446-1463.

Ningsih, L. S., & Sayekti, R. (2023). Peran perpustakaan dalam meningkatkan literasi informasi di kalangan masyarakat: sebuah systematic literature review. *Pustaka Karya : Jurnal Ilmiah Ilmu Perpustakaan Dan Informasi*, *11*(2), 141–156. https://doi.org/10.18592/pk.v11i2.10104.

Pasaribu, I. M., & Zakiah, D. M. (2024). Pengaruh Literasi Informasi terhadap Model Pembelajaran Problem Based Learning. *Jurnal Trilogi Ilmu Teknologi Kesehatan Homaniora,* *5*(4), 632–643. https://doi.org/10.33650/trilogi.v5i4.9739.

Putrayasa, I. M., Suwindia, I. G., & Ari Winangun, I. M. (2024). Transformasi literasi di era digital: tantangan dan peluang untuk generasi muda. *Education and Social Sciences Review*, *5*(2), 156. https://doi.org/10.29210/07essr501400.

Rahmayanti, W., Indriyani, & Destrinelli. (2025). Literasi Peserta Didik: Pencapaian Melalui Rapor Satuan Pendidikan Sekolah . *Didaktika: Jurnal Kependidikan*, *14*(2 Mei SE-Articles), 2423–2434. https://jurnaldidaktika.org/contents/article/view/2182.

Rosalina, M., & Sanoto, H. (2023). Upaya peningkatan kreativitas siswa dengan model Project Based Learning pelajaran seni rupa kelas II di SD Negeri Pulutan 02. Didaktik: *Jurnal Ilmiah PGSD FKIP Universitas Mandiri*, *9(5),* *34–46.* https://jurnal.unma.ac.id/index.php/didaktik/article/view/1895.

Suharto, B, Firdaus, A.A, Kristanto, D, Suharno, N,D, Putra, D.F.U & Kusuma, V.A. (2022). Pengaruh Kemampuan Literasi Mahasiswa Universitas Airlangga Di Berbagai Bidang Keilmuan. *Jurnal Layanan Masyarakat (Journal of Public Services)*, 6(2), 325–333. https://doi.org/10.20473/jlm.v6i2.2022.325-333.

Suhartini, A. (2024). Systematic Literature Review: Keterampilan Berpikir Kreatif Melalui Model Project-Based Learning. JPSS: Jurnal Pendidikan Sang Surya, 10(2), 405–421. P-ISSN: 2443-1915, E-ISSN: 2776-1940. https://jurnal.umbulukumba.ac.id/index.php/jpss/article/view/341.

Suryanti, S., Nursalim, M., Choirunnisa, N. L., & Yuliana, I. (2021). TEAM-Project-Based Learning: A Catalyst for Elementary School Students' Scientific Literacy Skills. *European Journal of Educational Research*, 13(1), 1–14. https://doi.org/10.12973/eu-jer.13.1.1.

Safitri, S., & Fatimah, S. (2024). Project Based Learning (PjBL) Oriented Textbook to Increase Student Creativity. *Jurnal Pendidikan dan Pengajaran*, 57, 249–262. https://doi.org/10.XXXX/jpp.v57i2.80460.

Satria, T. G., Syaefudin, U., Riyana, C., Syamsijulianto, T., & Helandri, J. (2024). Enhancing Learning Outcomes and Creative Thinking through Project-Based Learning Modules in Fourth Grades. *International Journal of Pedagogy and Teacher Education,* *8*(2), 281–295. https://doi.org/10.20961/ijpte.v8i2.89320.

Shalihat, E., Zain, M. I., & Oktaviyanti, I. (2022). Implementasi Program Literasi Dasar pada Anak Sekolah Dasar. *Journal of Classroom Action Research*, *4*(4). https://doi.org/10.29303/jcar.v4i4.2390.

Sistarina, A. (2020). Implementasi Literasi Informasi Sebagai Upaya Perpustakaan Universitas Airlangga Mendukung Tri Dharma Perguruan Tinggi. JPUA: *Jurnal Perpustakaan Universitas Airlangga: Media Informasi Dan Komunikasi Kepustakawanan*, 10(2), 104. https://doi.org/10.20473/jpua.v10i2.2020.104-115.

Sitinjak, T. (2006). Riset Operasi: Untuk Pengambilan Keputusan Manajerial dengan Aplikasi Excel. *Jurnal Kualita Pendidikan*, *3*(3), 133–139. https://balaiyanpus.jogjaprov.go.id/opac/detail-opac?id=89992.

Sriwahyuni, E., & Eliza, D. (2024). *Project-Based Learning E-Modules Improve Science Literacy Skills and Character on Minangkabau Cultural Themes*. Jurnal Pendidikan Indonesia, *13*(2), 383–392. https://ejournal.undiksha.ac.id/index.php/JPI/article/download/75873/30205/238039.

Suarlin, Elpisah, Nurwajidah, & MY, N. (2021). *Pengaruh Pola Asuh Orang Tua terhadap Hasil Belajar Siswapada Pembelajaran PKn Kelas IV SD Kompleks PerumnasKecamatan Rappocini Kota Makassar*. *JPPI (Jurnal Penelitian Pendidikan Indonesia),* 7(4), 631–641. https://doi.org/10.29210/020211182.

Sukirno, S., Kenedi, A. K., & ... (2020). Peningkatan Kemampuan Literasi Informasi Siswa Sekolah Dasar Melalui Model Project Based Learning. *Seminar Nasional Peningkatan Mutu Pendidikan*, *1*(1), 131–136. http://publikasi.fkip-unsam.org/index.php/semnas2019/article/view/111.

Sutisnawati, A., Rosfiani, O., Hermawan, C. M., Iqbal, M., Azie, I., Wahyuni, S., Mardiyah, A., Kamila, A., Sukabumi, U. M., & Jakarta, U. M. (2022). Penerapan Model Pembelajaran Konstrutivis Berbasis Berbasis Proyek untuk Meningkatkan Keterampilan Literasi Siswa Kelas V Sekolah Dasar. *Jurnal Cakrawala Pendas,* 8(4), 1604–1615. https://doi.org/10.31949/jcp.v8i4.3326 . 8(4), 1604–1615.

Waruwu, M., Pu`at, S. N., Utami, P. R., Yanti, E., & Rusydiana, M. (2025). Metode Penelitian Kuantitatif: Konsep, Jenis, Tahapan dan Kelebihan. *Jurnal Ilmiah Profesi Pendidikan*, 10(1), 917–932. https://doi.org/10.29303/jipp.v10i1.305.

Zaenal Abidin. (2020). Efektivitas Pembelajaran Berbasis Masalah, Pembelajaran Berbasis Proyek Literasi, dan Pembelajaran Inkuiri dalam Meningkatkan Kemampuan Koneksi Matematis. *Profesi Pendidikan Dasar,* 7(1), 37–52. https://doi.org/10.23917/ppd.v1i1.10736.