

The Effectiveness of an Indigenous Knowledge-Based Pancasila Education Textbook in Fostering Elementary Students' Critical and Creative Thinking Skills

Luh Apriani¹, I Wayan Lasmawan², Dewa Bagus Sanjaya³, I Nengah Suastika⁴

¹Universitas Pendidikan Ganesha, Singaraja, Indonesia

²Universitas Pendidikan Ganesha, Singaraja, Indonesia

³Universitas Pendidikan Ganesha, Singaraja, Indonesia

⁴Universitas Pendidikan Ganesha, Singaraja, Indonesia

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ABSTRACT

This study aimed to assess the effectiveness of a Sasak culture-based Pancasila Education textbook in enhancing the critical and creative thinking skills of fourth-grade elementary school students in Mataram City. This quasi-experimental study used a pre-test, post-test, control-group design. This study was conducted in one semester and involved 30 fourth-grade students at a general elementary school in Mataram City. Those 30 students were grouped into experimental and control groups. The study data were collected using pre-tests and post-tests and were analysed using descriptive statistics and MANOVA through SPSS version 25 for Windows. The descriptive statistics show that the experimental group had higher scores in critical and creative thinking skills than the control group. The descriptive statistics indicate that using the Sasak culture-based Pancasila Education textbook improves students' critical and creative thinking skills more effectively than conventional learning. The MANOVA results confirm a significant simultaneous effect of textbook implementation on students' critical and creative thinking skills ($\text{Sig.} = 0.000 < 0.05$), with a medium effect size (0.529). Thus, this study concludes that integrating local wisdom can serve as the basis for pedagogical mechanisms that provide authentic contexts, encourage reflection, increase student engagement, and support the development of critical and creative thinking skills.

Keywords: textbook development, local wisdom, critical thinking, creative thinking

Introduction

Twenty-first-century education requires students to possess critical and creative thinking skills as part of higher-order thinking skills (HOTS). These competencies are essential for addressing

rapid technological advancement, globalisation, and the increasing complexity of social issues (Liu et al., 2024; Özbek & Aslan, 2026). However, findings from international assessments such as PISA 2022 indicate that Indonesian students'

literacy, numeracy, and scientific competencies remain below the OECD average (Ministry of Education, Culture, Research, and Technology, 2022). Furthermore, the Global Creativity Index and the Global Innovation Index indicate that Indonesia's levels of creativity and innovation remain relatively low compared with those of other countries (Florida, 2015; Dutta & Lanvin, 2021). These conditions suggest that learning practices in elementary schools remain predominantly oriented toward rote memorisation and have not yet effectively fostered students' critical and creative thinking abilities (Muhfahroyin, 2009; Munandar, 2004).

Several studies have shown that higher-order thinking skills cannot be developed simply by providing complex questions or problem-solving activities (Asok et al., 2017; Lee et al., 2022; Marnah, 2022; Page, 2022; Zhou et al., 2018). Higher-order thinking skills are best developed in authentic contexts that connect abstract concepts to students' everyday experiences (Dolapcioglu & Doğanay, 2022; Oroh et al., 2025; Şekerci, 2021; Zhang et al., 2024). As constructivist learning theory explains, learning becomes meaningful when students actively construct their knowledge within familiar social and cultural contexts (Huang et al., 2024; Yi-Sen, 2024). Furthermore, a quality learning process that involves students in an active role is significantly influenced by the availability of supporting teaching materials (Esteban-Yago et al., 2023; Hamada, 2008), and the most important teaching material students use as a reference is the textbook (Dewan & Dwivedi, 2026; Niaz, 2015). Therefore, learning materials or textbooks that incorporate students' local cultural backgrounds can provide cognitive support that facilitates deeper understanding, reflective reasoning, and the construction of critical and creative knowledge.

While numerous studies have examined the integration of local wisdom into educational practices, most have focused solely on improving student motivation, cultural awareness, character education, or academic achievement. To date, research examining how students' local wisdom is utilised as a pedagogical mechanism to support higher-order thinking skills remains limited.

Previous research has largely used local wisdom as learning content rather than as an instructional framework.

Considering the potential of utilising local wisdom as an educational mechanism to enhance critical and creative thinking skills, particularly for the Sasak community, the values of the indigenous Sasak community could be an appropriate choice for integration. This is because Sasak cultural values are deeply embedded in everyday social practices and are not merely preserved as traditional ceremonies. Values such as collective responsibility, cooperation, communal deliberation, and respect for nature provide authentic situations that encourage students to analyse social problems, evaluate different perspectives, and generate contextually appropriate solutions. Therefore, integrating Sasak indigenous wisdom into teaching materials is expected not only to preserve cultural heritage but also to create meaningful learning experiences that stimulate students' higher-order thinking processes. This study aims to examine the effectiveness of the Sasak culture-based Pancasila Education textbook in enhancing students' critical and creative thinking skills.

The selected cultural values are derived from the living cultural practices of the Sasak people and are closely related to the students' lives. These include *Begibung*, *Begawe*, *Bau Nyale*, *Peresean*, and *Bale Tani*. Each cultural practice was chosen for its strong connection to Pancasila values, including cooperation, social responsibility, sportsmanship, respect for rules, environmental stewardship, and deliberation in community life. Thus, students not only learn Pancasila concepts but also connect them to social experiences in their daily lives. The transformation of cultural values into learning is further realised through the design of learning activities that follow a contextual learning syntax: "Let's Observe," "Learning Materials," "Let's Discuss," "Let's Play," "Let's Create," "Reflection," and "Evaluation." Each syntax is designed to develop higher-order thinking skills gradually. The observation stage activates students' prior knowledge through familiar cultural phenomena.

The discussion stage encourages students to analyse various social events in light of Pancasila values. The play-and-create stage provides students with the opportunity to apply their knowledge in authentic situations, while the reflection stage helps students evaluate their thinking processes and learning experiences.

2. Methodology

This research was conducted at an elementary school in Mataram City, West Nusa Tenggara, Indonesia. The research location was chosen because the Sasak people are the dominant cultural community in the region. Therefore, conducting the research there allowed the local

Sasak cultural context to be integrated authentically. This study used a pretest-posttest control group design. In this study, 30 fourth-grade students were involved, divided into two groups: 15 in the experimental group and 15 in the control group. Those two groups were selected using statistical matching to ensure they had similar critical and creative thinking skills before the treatment. The experimental group was taught using the Pancasila Education textbook, oriented toward the local wisdom of the Sasak ethnic community, and the syntax shown in Table 1. The control group was taught using the conventional textbook and conventional syntax.

Table 1. Transformation of local Sasak wisdom as an educational framework

Sasak Local Wisdom Values	Philosophical Meaning	Learning Syntax	Learning Activities	Developed Critical and Creative Thinking Skills Process
<i>Bau Nyale</i>	Harmony between humans and nature, gratitude, and concern for the environment	Let's Observe	Students observe the <i>Bau Nyale</i> phenomenon through pictures, stories, or videos, and then identify the Pancasila values it contains.	Observing, identifying problems, analysing cause-and-effect relationships (C4)
<i>Begibung</i>	Togetherness, cooperation, equality, and mutual respect	Let's Discuss	Group discussions on the importance of cooperation in community and school life based on the <i>Begibung</i> tradition.	Analysing various opinions, constructing arguments, evaluating solutions (C4–C5)
<i>Peresean</i>	Sportsmanship, courage, self-control, and respect for rules	Let's Play	Situation simulations or games that require students to make decisions based on the value of sportsmanship.	Decision-making, evaluating alternative courses of action, problem-solving (C5)
<i>Begawe</i>	Social responsibility, cooperation, and community participation	Let's Create	Design posters, simple projects, or solutions to social problems based on the <i>Begawe</i> spirit.	Designing solutions, generating new ideas, creativity (C6)
<i>Bale Tani</i>	Simple living, hard work, and concern for the social environment	Reflection	Students reflect on the relationship between Sasak cultural values and their everyday experiences.	Critical reflection, metacognition, knowledge transfer
All values	Internalisation of Pancasila values in daily life	Evaluation	Solve HOTS problems based on the local cultural context.	Analysis, evaluation, and creation (C4–C6)

To collect data on creative thinking ability, tests were used to measure students' creative thinking abilities before and after instruction using the Sasak culture-based Pancasila education textbook, which included several indicators: fluency, flexibility, originality, and elaboration. Data from the pretest and posttest were analysed in stages. Descriptive statistics were used to report mean scores, standard deviations, and minimum and maximum scores for critical and creative thinking skills in the experimental and control groups. Next, student performance improvements were analysed using Normalised Gain (N-Gain) to assess the magnitude of learning outcome improvement after the learning process. N-Gain interpretation refers to the categories of low ($g < 0.30$), medium ($0.30 \leq g < 0.70$), and high ($g \geq 0.70$). The effect of textbook use on critical and creative thinking skills was analysed using Multivariate Analysis of Variance (MANOVA), as the study involved one independent variable (textbook type) and two dependent variables (critical and creative thinking skills). The significance level used in all tests was $\alpha = 0.05$. To conduct the descriptive statistics and MANOVA, the researchers utilised SPSS version 25 for Windows.

3. Results

The Effect of the Sasak Culture-based Pancasila Education Textbook on Critical and Creative Thinking Skills

Table 1. Descriptive Statistics of Students' Higher-Order Thinking Skills

Variable	Group	Pretest Mean $\pm$ SD	Posttest Mean $\pm$ SD	Improvement
Critical Thinking	Experimental	72,50 $\pm$ 5,20	88,40 $\pm$ 4,60	15,9
	Control	60,25 $\pm$ 9,80	72,10 $\pm$ 7,90	11,85
Creative Thinking	Experimental	70,40 $\pm$ 5,80	87,20 $\pm$ 4,90	16,8
	Control	58,10 $\pm$ 10,20	70,35 $\pm$ 8,10	12,25

To determine the extent of improvement in students' abilities, an N-Gain analysis was conducted. The results showed that the experimental group obtained N-Gain scores of 0.58 for critical thinking skills and 0.57 for creative thinking skills, which fall within the moderate category. In contrast, the control group

The second research objective was to evaluate the extent to which using the Sasak culture-based Pancasila Education textbook affected elementary school students' critical and creative thinking skills. The effectiveness of the textbook was analysed using a pretest–posttest control group design, allowing comparison of changes in student abilities between the experimental group, which used the developed textbook, and the control group, which used conventional teaching materials. Before the treatment, the pretest analysis showed that students' initial critical and creative thinking skills in both groups were relatively equal. This indicates that no initial differences could influence the results; therefore, the improvement in students' abilities after the learning process can be attributed to the use of the developed Sasak culture-based textbook.

After the learning process, both groups improved their thinking skills. However, the improvement in the experimental group was significantly higher than in the control group. For critical thinking skills, the experimental group's average score increased from 72.50 in the pretest to 88.40 in the posttest, while the control group's increased from 60.25 to 72.10 (see Table 1). The same pattern was observed in creative thinking skills, with students who studied using the Sasak culture-based textbook showing greater improvement than those who used conventional teaching materials.

obtained scores of only 0.30 in critical thinking and 0.29 in creative thinking (see Table 2). This difference indicates that the Sasak culture-based textbook increased higher-order thinking skills by almost twice as much as learning with the teaching materials currently used in schools.

Table 2. Comparison of Learning Improvement Based on N-Gain

Variable	Experimental	Control	Difference	Category
Critical Thinking	0,58	0,3	0,28	Medium
Creative Thinking	0,57	0,29	0,28	Medium vs. Low

Furthermore, to determine the simultaneous effect of textbooks on both dependent variables, a MANOVA analysis was conducted. The results showed a p-value of 0.000 ($p < 0.05$), indicating that the use of Sasak culture-based textbooks significantly influences students' critical and creative thinking skills simultaneously (see Table 3). Thus, the research hypothesis stating that there is a difference in creative and critical thinking skills between students who study using Sasak culture-based textbooks and students who use conventional teaching materials can be accepted.

Table 3. Summary of MANOVA Results

Statistics	Value	Sig.	Conclusion
Pillai's Trace	0,428	0	Significant
Wilks' Lambda	0,572	0	Significant
Hotelling's Trace	0,748	0	Significant
Roy's Largest Root	0,748	0	Significant

The magnitude of the influence of textbook use was then analysed using effect size. The results showed effect sizes of 0.579 for critical thinking skills and 0.565 for creative thinking skills, which fall within the moderate category. Furthermore, implementing the textbook improved students' understanding of Sasak culture, with an effect size of 0.529. These findings indicate that integrating local culture into learning not only affects students' cognitive abilities but also strengthens their understanding of local cultural values that shape the learning context.

4. Discussion

The results show that students who studied using the Sasak culture-based textbook improved their critical and creative thinking skills more than students who used conventional teaching materials. These findings demonstrate that integrating local culture positively impacts the development of critical and creative thinking skills, particularly when culture is used as a context for analysing problems, evaluating alternative solutions, and generating creative solutions. These findings can be explained by Contextual Teaching and Learning (CTL) theory, which holds that learning is more effective when students learn concepts through situations close to their lives (Haryanto & Arty, 2019; Joshi, 2026;

Susantini et al., 2018). In this study, using Sasak cultural traditions as a learning context enables students to understand Pancasila Education not abstractly but in relation to their real-life experiences. This connection helps students engage in deeper analysis, evaluation, and synthesis, thus optimally developing higher-order thinking skills.

These results also support the theory of Situated Learning, which holds that knowledge is more readily constructed when learning occurs in an authentic social context (Gaffney & Kercsmar, 2016; Hsieh & Tai, 2024; Zurita & Baloian, 2012). Learning activities that use Sasak cultural examples enable students to solve problems relevant to their own lives. Therefore, the improvement in critical and creative thinking skills observed in this study is not solely the result of using the new textbook but also of creating contextual learning experiences. Thus, this study provides empirical evidence that integrating local culture significantly impacts the development of higher-order thinking skills among elementary school students. These results are consistent with various previous studies reporting that local culture-based learning can increase student engagement, critical thinking skills, and creativity (Dharma et al., 2025; Ertinawati et al., 2025; Khotimah et al., 2026).

5. Conclusion

This research demonstrates that local Sasak cultural knowledge can be systematically transformed into a culturally embedded pedagogical framework that supports the development of critical and creative thinking skills in elementary school students. This transformation is achieved not by treating local

culture as supplementary learning material, but by integrating Sasak cultural values into learning objectives, learning syntax, learning activities, reflection, and assessment. The research also shows that Sasak culture-based Pancasila Education textbooks significantly improve students' critical and creative thinking skills compared with conventional teaching materials.

6. References

- Asok, D., Abirami, A. M., Angeline CV, N., & Lavanya, R. (2017). An active learning environment for developing higher-order thinking skills in engineering education. *Proceedings - 2016 IEEE 4th International Conference on MOOCs, Innovation and Technology in Education, MITE 2016*, 47–53. <https://doi.org/10.1109/MITE.2016.69>
- Dewan, H. K., & Dwivedi, R. (2026). Development and production of textbooks: Some insights. In *Work and Play: Complex Ecology of Teaching Learning Resources* (pp. 91–107). <https://doi.org/10.4324/9781003561310-1316>
- Dharma, I. M. A., Dantes, N., Lasmawan, I. W., & Suastika, I. N. (2025). Effectiveness of digital storybooks based on Balinese culture for enhancing cultural-civic literacy and Pancasila education outcomes. *Journal of Education and E-Learning Research*, 12(2), 165–178. <https://doi.org/10.20448/jeelr.v12i2.6749>
- Dolapcioglu, S., & Doğanay, A. (2022). Development of critical thinking in mathematics classes through authentic learning: an action research study. *International Journal of Mathematical Education in Science and Technology*, 53(6), 1363–1386. <https://doi.org/10.1080/0020739X.2020.1819573>
- Ertnawati, Y., Suryaman, M., & Syamsi, K. (2025). A Synectic Approach to Listening Learning: Integrating Local Culture and Audiovisual Technology in Indonesian Language Education. *ASEAN Journal of Educational Research and Technology*, 4(3), 489–506.
- Esteban-Yago, M. A., García-Luque, O., López-Martínez, M., & Rodríguez-Pasquín, M. (2023). Teaching Materials for Active Methodologies in University Education. *Journal of Higher Education Theory and Practice*, 23(8), 78–88. <https://doi.org/10.33423/jhetp.v23i8.6066>
- Gaffney, A. L. H., & Kerckmar, S. E. (2016). Students' affective learning in a technologically mediated writing and speaking course: A situated learning perspective. *Journal of Business and Technical Communication*, 30(3), 322–351. <https://doi.org/10.1177/1050651916636371>
- Hamada, M. (2008). Supporting materials for active e-learning in computational models. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 5102 LNCS(PART 2), 678–686. https://doi.org/10.1007/1310-1316-1310-13161310-1316_79
- Haryanto, P. C., & Arty, I. S. (2019). The Application of Contextual Teaching and Learning in Natural Science to Improve Student's HOTS and Self-efficacy. *Journal of Physics: Conference Series*, 1233(1). <https://doi.org/10.1088/1310-1316/1233/1/012106>
- Hsieh, C.-Y., & Tai, N.-C. (2024). Déjà Vu: Leveraging Environmental Cues for Enhanced Chinese Language Acquisition through a Situated Learning Mobile App. *11th IEEE International Conference on Consumer Electronics - Taiwan, ICCE-Taiwan 2024*, 343–344. <https://doi.org/10.1109/ICCE-Taiwan62264.2024.10674120>
- Huang, Y.-M., Wang, W.-S., Lee, H.-Y., Lin, C.-J., & Wu, T.-T. (2024). Empowering virtual reality with feedback and reflection in hands-on learning: Effect of learning engagement and higher-order thinking. *Journal of Computer Assisted Learning*, 40(4), 1413–1427. <https://doi.org/10.1111/jcal.12959>
- Joshi, A. S. (2026). Transforming Learning Experiences: A Case Study of Integrating Contextual Teaching and Learning (CTL) in the Physics Course within a Bachelor of Technology Program. *Journal of Engineering Education Transformations*, 39(3), 86–97. <https://doi.org/10.16920/jeet/2026/v39i3/26083>
- Khotimah, K., Sari, Z. N., Kamarudin, N., Dony, N., Huzaimah, C., & Diana, I. N. (2026). Digitally Mediated Problem-based Learning Integrating Aneuk Jamee Cultural Values to Enhance Computational Thinking and Cultural Identity in Primary Education. *Pertanika Journal of Social Sciences and Humanities*, 34(1), 415–447. <https://doi.org/10.47836/pjssh.34.1.21>

- Lee, J., Kim, P. H., & Ahn, M. (2022). Design Based System Research of an Online Platform Prototype to Foster Higher-Order Questioning. *Journal of Logistics, Informatics and Service Science*, 9(1), 116–135. <https://doi.org/10.33168/LISS.2022.0109>
- Liu, J., Liu, Z., Wang, C., Xu, Y., Chen, J., & Cheng, Y. (2024). K-12 students' higher-order thinking skills: Conceptualization, components, and evaluation indicators. *Thinking Skills and Creativity*, 52. <https://doi.org/10.1016/j.tsc.2024.101551>
- Marnah, Y. (2022). Development of physics module based high order thinking skill (HOTS) to improve student's critical thinking. *Journal of Physics: Conference Series*, 2165(1). <https://doi.org/10.1088/1310-1316/2165/1/012018>
- Niaz, M. (2015). Textbooks: Impact on Curriculum. In *Encyclopedia of Science Education* (pp. 1070–1073).
- Oroh, E. Z., Ali, M. I., Pelenkahu, N., Usman, H., & Rorintulus, O. A. (2025). Authentic Assessment in Higher Education to Increase Critical Thinking and Develop Metacognitive Awareness. *Studies in English Language and Education*, 12(2), 827–844. <https://doi.org/10.24815/siele.v12i2.45077>
- Özbek, D., & Aslan, O. (2026). Developing higher order thinking skills through web-based activities supported by socioscientific Issues. *Research in Science and Technological Education*. <https://doi.org/10.1080/02635143.2026.2675670>
- Page, A. (2022). Using Online Tools to Develop Higher Order Learning Among Tertiary Students. *Online Learning Journal*, 26(3), 221–235. <https://doi.org/10.24059/olj.v26i3.2667>
- Şekerci, H. (2021). Evaluating student and teacher views on the use of authentic learning in primary school social studies course: A case study. *Participatory Educational Research*, 8(1), 322–343. <https://doi.org/10.17275/per.21.19.8.1>
- Susantini, E., Kurniasari, I., Fauziah, A. N. M., Prastowo, T., Kholiq, A., & Rosdiana, L. (2018). Engaging pre-service teachers to teach science contextually with scientific approach instructional video. *IOP Conference Series: Materials Science and Engineering*, 296(1). <https://doi.org/10.1088/1310-1316X/296/1/012005>
- Yi-Sen, Z. (2024). Reflections and Research on E-Learning English Teaching Activities Under Deep Learning. *Computer-Aided Design and Applications*, 21(S22), 148–159. <https://doi.org/10.14733/cadaps.2024.S22.1310-1316>
- Zhang, H., Xu, X., Zhang, Y., & Sun, Y. (2024). Promoting Higher Order Thinking Skills in Undergraduates: Conceptualizing Challenge-Based Learning Through Personal Learning Environments Platform. *Frontiers in Artificial Intelligence and Applications*, 393, 1–7. <https://doi.org/10.3233/FAIA241208>
- Zhou, P., Wang, Q., Zhang, Y., & Yang, Q. (2018). The influence of debating teaching on students' critical thinking development in smart classroom. *Proceedings - 2018 7th International Conference of Educational Innovation through Technology, EITT 2018*, 47–52. <https://doi.org/10.1109/EITT.2018.00018>
- Zurita, G., & Baloian, N. (2012). Context, patterns and geo-collaboration to support situated learning. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 7656 LNCS, 503–511. https://doi.org/10.1007/1310-1316-1310-13161310-1316_69

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8. Author Declaration

The authors declare that this manuscript is an original work that has not been published previously and is not under consideration for publication elsewhere, either in whole or in part. Additionally, the authors declare no conflict of interest.