Prima Magistra: Jurnal Ilmiah Kependidikan
Volume 6 – Number 4, October 2025, pp 774-784
https://doi.org/10.37478/jpm.v6i4.5808
Open Access: https://e-journal.uniflor.ac.id/index.php/JPM/article/view/5808

ISSN 2721-8112 (print)
ISSN 2722-4899 (online)

DEVELOPING INTERACTIVE EDUCATIONAL COMICS ON LOCAL CULTURE TO ENHANCE CRITICAL THINKING SKILLS

Try Supryanto[1]*, Hardyanti[2], Sri Suryaningsih[3], Anita Putri[4], Arwan[5]
[1,2,3,4,5]STKIP Harapan Bima, Bima, Indonesia
*Corresponding Author: try.supryanto95@gmail.com

Article History
Received : 25/05/2025
Revised : 04/10/2025
Accepted : 13/10/2025
Keywords:
Interactive educational comic, Local culture, Joyful learning, Critical thinking skills.

Abstract. Critical thinking skills are essential 21st-century competencies that should be developed from elementary education. However, students often struggle with higher-order thinking, worsened by the lack of engaging and contextual learning media. This study addresses the issue by developing interactive educational comics based on local culture through a fun learning approach to enhance students' critical thinking. The study aims to produce learning media that are valid, practical, and effective in supporting arts and culture education while improving critical thinking skills. Using a Research and Development (R&D) approach with the ADDIE model (analysis, design, development, implementation, evaluation), the research involved 71 fourth-grade students from SDN Bajo and SDN Wadukopa. Instruments included validation sheets, critical thinking tests, and questionnaires for teachers and students. The final analysis used a t-test and n-gain test. Results indicate the comics are valid based on expert evaluation, highly practical according to teacher and student responses, and effective in improving critical thinking. The t-test (sig. 0.000<0.05) confirmed significant differences in students' skills before and after implementation, while the n-gain test showed a 96% increase. Thus, the interactive educational comic proves to be a feasible and impactful medium for developing critical thinking in elementary students.

How to Cite: Supryanto, T., Hardyanti, H., Suryaningsih, S., Putri, A., & Arwan, A. (2025). DEVELOPING INTERACTIVE EDUCATIONAL COMICS ON LOCAL CULTURE TO ENHANCE CRITICAL THINKING SKILLS. *Prima Magistra: Jurnal Ilmiah Kependidikan*, 6(4), 774-784. https://doi.org/10.37478/jpm.v6i4.5808

Correspondence address:
Jl. Lintas Sumbawa-Bima, Sanolo, Kecamatan Bolo, Kab. Bima, NTB, Indonesia. try.supryanto95@gmail.com

Publisher:
Program Studi PGSD Universitas Flores. Jln. Samratulangi, Kelurahan Paupire, Ende, Flores.
primagistrauniflor@gmail.com

INTRODUCTION

Critical thinking is one of the essential 21st-century skills that must be developed starting from the elementary education level. Critical thinking skills not only contribute to improving students' academic achievements but also strengthen their ability to analyze information, solve problems, and make logical decisions (Anggraeni et al., 2022; Arthi & Gandhimathi, 2025; Huda & Rahman, 2020; Rachmawati et al., 2024; Suryaningsih et al., 2021). In the context of the Merdeka Curriculum, critical thinking is an integral part of the Pancasila Student Profile, which emphasizes students who are critical thinkers, independent, and globally diverse (Anita et al., 2022; Khairiyah et al., 2023; Suardi, 2024). Students who are trained in critical thinking tend to have higher self-confidence in learning, are more active in class discussions, and are able to approach learning challenges reflectively (Sasmita et al., 2023; Suryaningsih, 2023; Wulandari et al., 2024). Therefore, the development of critical thinking skills at the elementary school level is a crucial investment in shaping a generation of lifelong learners who are adaptive and have strong character.

Only 35% of elementary school students demonstrate adequate analytical and evaluative abilities in solving contextual problems (Rachmawati et al., 2024). Qualitatively, students tend to be passive in discussions, struggle to express logical reasons, and are not accustomed to asking deep questions during learning (Afandi et al., 2024; Azizah & Sholikhah, 2021; Rambe et al., 2024). This situation is also observed at SDN Bajo and SDN Wadukopa, where initial observations revealed that students were not used to expressing their opinions, unable to construct arguments, often fixated on textual answers without deep understanding, and critical thinking questions were rarely developed, resulting in only 27% of students being able to solve critical thinking problems. Additionally, the learning process was less engaging. This issue arises from the lack of media and teaching approaches that can stimulate students' reasoning abilities in a fun and contextual manner (Realitawati et al., 2024; Sa'diyah et al., 2024). Therefore, an innovative

approach is needed that can provide meaningful and interactive learning to ensure the optimal development of critical thinking skills.

Innovative learning, which not only focuses on content but also accommodates the characteristics of elementary school students who enjoy visual, enjoyable, and contextual learning, can be a solution to address these issues. One alternative that has begun to show potential is the development of interactive educational comic media infused with local culture through the joyful learning approach. Interactive comics are more than just static visuals; they also combine storytelling, visuals, and interactivity to create meaningful learning experiences that impact students' critical thinking, reading literacy, and scientific literacy (Firmansah et al., 2024; Pawitra & Kusumadewi, 2025; Priyangga et al., 2022; Risti, 2021; Sumarwati et al., 2024; Supryanto & Yani, 2024). By integrating local cultural content into comics, it instills traditions, values, and local stories into learning materials, which results in a deeper understanding of local culture among students (Asli et al., 2024; Kartika & Lestari, 2024; Supryanto et al., 2025).

Digital comic strip media based on Problem-Based Learning is feasible and effective for improving students' critical thinking skills (Safitri & Asih, 2023). Comic-based learning modules in physics can improve student achievement and motivation (Badeo & Ong Kian Koc, 2021). Furthermore, the integration of local wisdom into learning media has been recognized as an effective approach to increasing student understanding and engagement. Developing digital comics based on local wisdom can improve elementary school students' reading comprehension and interest (Kusmajid et al., 2024). The development of digital comics based on local wisdom for fantasy story texts can improve student learning outcomes (Mariani et al., 2024).

However, although previous studies have successfully demonstrated the benefits of comics and local wisdom integration in improving learning outcomes, there remains a *significant research gap* in the *combined application* of interactive educational comics, local cultural elements, and the joyful learning approach aimed specifically at enhancing *critical thinking skills* in elementary education. Most prior works either focus on digital comic development without incorporating local culture, or emphasize cultural integration without embedding interactive and joyful elements that stimulate higher-order thinking (Setyowati et al., 2023; Zakiyah et al., 2022). Thus, no existing research has systematically developed and validated interactive educational comic media that merge these three aspects: interactivity, local culture, and joyful learning as a unified pedagogical innovation to improve critical thinking skills.

The joyful learning approach emphasizes making the learning process more engaging, interactive, and enjoyable, which also has a positive impact on students' engagement, analysis, and critical thinking (Abrori et al., 2025; Firmansah et al., 2024; Rezeki & Lutfi, 2024; Wicaksono, 2020). By integrating local stories, cultural values, attractive illustrations, and a fun and participatory learning approach, this interactive educational comic is expected to stimulate students' interest in learning while simultaneously developing their critical thinking abilities. The justification for this research problem is based on the reality that efforts to improve students' critical thinking have not yet been optimal, and conventional approaches have not been able to fully integrate local cultural richness and the essence of joyful learning into learning media. Therefore, there is a need for the development of interactive educational comic media that integrates local wisdom with the joyful learning approach to specifically enhance elementary school students' critical thinking skills. This approach not only takes advantage of the visual and narrative appeal of comics but also links the learning content to students' cultural context, creating a fun and meaningful learning experience.

Based on the literature review and the researcher's knowledge, no studies have specifically developed and tested the effectiveness of interactive educational comic media infused with local culture through the joyful learning approach to enhance the critical thinking skills of elementary school students. The novelty of this study lies in its integrative focus that combines three elements: interactive media, local culture, and joyful learning into a single framework aimed at fostering critical thinking skills in the context of elementary education. This unique combination has not been empirically examined in previous studies, making it a new contribution to both theory and practice in instructional media development. Therefore, the aim of this research is to

Copyright (c) 2025 Try Supryanto, Hardyanti, Sri Suryaningsih, Anita Putri, Arwan. This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

develop interactive educational comics containing local culture through a joyful learning approach so that it can improve the critical thinking skills of fourth-grade elementary school students.

RESEARCH METHODS

This study employed a Research and Development (R&D) design using the ADDIE model, consisting of five stages: *Analysis, Design, Development, Implementation,* and *Evaluation*. The subjects of this study were selected using a nonprobability sampling technique, with the sample taken based on criteria such as: schools with the same curriculum, schools with the same accreditation, qualified teachers, similar facilities and infrastructure, and similar teaching materials. The subjects of the study were SDN Bajo and SDN Wadukopa located in the Soromandi sub-district, NTB. The small-scale trial will be conducted in the fifth grade of SDN Bajo, while the large-scale trial will be carried out in the fourth grades of SDN Bajo and SDN Wadukopa, totaling 71 students.

The data collection techniques and instruments used in this study include: (a) product validation sheets; (b) critical thinking skills tests (which were first tested for validity, reliability, discrimination power, and difficulty level); and (c) questionnaires assessing the responses of teachers and students to the implementation of the local culture-infused interactive educational comic media using the joyful learning approach.

The feasibility test is conducted to assess whether the product is deemed appropriate, using the validation results from several expert validators. The practicality test is conducted by testing the responses of teachers and students in the small-scale and large-scale trials regarding the implementation of the local culture-infused interactive educational comic media using the joyful learning approach. The effectiveness test is carried out after the final product is completed, followed by its implementation. The results from the implementation will be analyzed using the average mastery test.

a. Average Mastery Test is performed to determine students' learning mastery using the local culture-infused interactive educational comic media with the joyful learning approach. Data analysis is conducted using SPSS 20 software with a One-Sample t-Test at a 5% significance level.
b. n-gain Test is used to assess the effectiveness of the media in enhancing critical thinking skills before and after the learning process. The analysis is conducted to determine the level of improvement (low, moderate, or high).

RESULTS AND DISCUSSION

The development of interactive educational comics containing local culture in this study was carried out through five stages of the ADDIE model, namely *Analysis, Design, Development, Implementation,* and *Evaluation*. Each stage produced specific findings that were analyzed and discussed based on relevant theories and previous research.

1. Analysis Stage

At the analysis stage, several problems were found in the field: learning is still dependent on textbooks and teacher explanations, which causes boredom in students; students' critical thinking skills are still in the low category; and there is a lack of learning approaches that can stimulate students' reasoning abilities in a fun and contextual way. Linking local culture with learning is one strategy to motivate students in learning because learning is directly related to students' daily lives.

These findings show that classroom learning has not provided adequate opportunities for students to develop reasoning and higher-order thinking. This situation is consistent with Afandi et al. (2024), who noted that monotonous, teacher-centered learning tends to reduce students' motivation and participation in analytical discussions. Moreover, the limited use of local cultural content indicates that learning is not yet contextualized to students' real-world experiences. According to Asli et al. (2024) and Rachmawati et al. (2024), integrating local culture into learning materials can strengthen students' understanding and engagement, while also fostering

Copyright (c) 2025 Try Supryanto, Hardyanti, Sri Suryaningsih, Anita Putri, Arwan. This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

identity and relevance. Therefore, the results of this analysis form the basis for developing interactive educational comics infused with local culture using a joyful learning approach to make the learning process more engaging, contextual, and meaningful.

2. Design Stage

The second stage of design focused on determining the learning objectives and planning the comic product to meet those objectives. The comic was designed to present local cultural stories integrated with learning activities such as practice questions, quizzes, and guided tasks for students, including drawing, coloring, and describing their work. Learning through drawing and coloring can provide meaningful experiences and improve students' high-level thinking skills (Handayaningrum, 2022).

In this stage, the design process emphasized the integration of local cultural elements such as traditional houses, folk songs, and local customs into the storyline to make learning closer to students' daily lives. This design approach is consistent with the concept of contextual learning, which states that knowledge becomes more meaningful when connected to real-life situations (Kartika & Lestari, 2024). The inclusion of interactive activities such as quizzes, drawing, and reflection tasks aligns with the joyful learning approach, which encourages active participation and fosters students' emotional engagement during learning (Rezeki & Lutfi, 2024; Wicaksono, 2020). Therefore, this design stage ensures that the comic media not only serves as an artistic representation of local culture but also as a joyful, interactive, and cognitively stimulating learning tool for elementary school students.

3. Development Stage

In the third stage of development, product validity testing was conducted by six lecturers, consisting of two media validators, two material validators, and two language validators. Each validator assessed the comic product according to their area of expertise to determine its feasibility before implementation. The validation process aimed to ensure that the developed comic met the standards of content accuracy, design quality, and language clarity. The assessment results were summarized and are presented in Table 1.

Table 1. Validation Results of Interactive Educational Comics Containing Local Culture

No	Validators	Percentage	Information
1	Media Expert	74%	Valid (used with revision)
2	Subject Matter Expert	71%	Valid (used with revision)
3	Language Expert	72%	Valid (used with revision)

The results of product validation, as shown in Table 1, indicate that the comic was considered *valid with revision*, with an average feasibility score of 74% from media experts, 71% from subject matter experts, and 72% from language experts. These results suggest that the developed comic met the necessary criteria to proceed to the implementation phase. Improvements based on expert feedback included adjusting comic colors to better suit lower-grade students, using local names for characters, and representing female characters from multiple religious backgrounds (Islam and Christianity) to reflect community diversity. This aligns with Kusmajid et al. (2024), who stated that comics incorporating local wisdom can enhance students' motivation and sense of inclusion.

Feedback from material experts emphasized the need to align the fine arts content with the grade IV curriculum so that discussions remained focused and relevant, as well as ensuring that practice questions and quizzes were directly connected to the material. This is in accordance with Febrita & Harni (2020). who found that well-scoped learning materials help deepen students' understanding. Language experts suggested adding parenthetical explanations for unfamiliar regional vocabulary without removing Indonesian equivalents to maintain cultural learning and comprehension. Such adaptation of instructional products to field conditions is essential for contextual learning (Pratiwi et al., 2024).

4. Implementation Stage

After revisions were made based on the validator's comments, a small-scale test was conducted in a fifth-grade class of 32 students at SDN Bajo. The purpose of this trial was to obtain

Copyright (c) 2025 Try Supryanto, Hardyanti, Sri Suryaningsih, Anita Putri, Arwan. This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

initial feedback on the practicality and attractiveness of the developed interactive educational comic containing local culture. Data were collected through a student response questionnaire and a teacher response questionnaire administered to three teachers. The results of these questionnaires are presented in Table 2.

The results of the small-scale test, as shown in Table 2, indicate that the teacher response average was 87% and the student response average was 92%, both categorized as *excellent*. These findings demonstrate that the comic media was considered highly practical and appealing for classroom use. Teachers reported that the visuals, storyline, and activities in the comic effectively engaged students and encouraged active participation. Students expressed enjoyment in learning activities such as drawing, coloring, and completing quizzes within the comic, suggesting that the media successfully embodied the principles of joyful learning.

These results are consistent with the findings of Wicaksono (2020) and Rezeki & Lutfi (2024), who emphasized that a joyful learning environment increases students' motivation, participation, and focus. Moreover, the integration of local culture was found to enhance contextual understanding, as students felt a stronger connection between the learning material and their everyday experiences similar to what Asli et al. (2024) observed in culture-based learning media. Therefore, the small-scale implementation confirmed that the developed comic media was both practical and engaging, serving as a solid foundation for subsequent large-scale testing.

Table 2. Results of the Teacher and Student Response Questionnaire for Small-Scale Tests

Respondents	Average Percentage	Information
Teacher	87%	Excellent
Student	92%	Excellent

After confirming the initial practicality results from the small-scale test, a large-scale implementation was carried out in the fourth-grade classes of SDN Bajo and SDN Wadukopa with 71 students and 10 teachers. This stage aimed to evaluate the practicality and broader applicability of the interactive educational comic containing local culture that had been revised after the small-scale test. Data were gathered through teacher and student response questionnaires, with the results summarized in Table 3.

The results of the large-scale test, as shown in Table 3, indicate that the average teacher response reached 96% and the student response reached 98%**,** both categorized as *excellent*. These results demonstrate that the comic media was not only practical but also highly engaging and effective in creating a joyful classroom atmosphere. Teachers observed that students were more enthusiastic, focused, and expressive during learning activities. Students reported that the comic's characters, cultural content, and activities were fun and meaningful, which made the learning experience more enjoyable and easier to understand.

These findings strengthen the evidence from the small-scale test that the developed comic media effectively supports joyful and contextual learning. The high level of readability and interest confirms that visual and narrative integration promotes student engagement, as suggested by Wicaksono (2020) and Firmansah et al. (2024). Moreover, connecting learning materials with local culture increases emotional relevance and intrinsic motivation, consistent with Mariani et al. (2024), who found that comic-based media rooted in local wisdom improves both student motivation and comprehension. Therefore, the large-scale implementation confirmed that the developed comic media had excellent practicality and student appeal, making it feasible for broader classroom adoption.

Table 3. Results of the Teacher and Student Response Questionnaire for the Large-Scale Test

Respondents	Average Percentage	Information
Teacher	96%	Excellent
Student	98%	Excellent

The developed interactive educational comic containing local culture was implemented using a joyful learning approach in the fourth-grade classes of SDN Bajo and SDN Wadukopa. The implementation process followed a structured learning flow that encouraged student engagement through interactive, visual, and contextual activities. As shown in Figure 2 (a–d), each scene in the comic presents different stages of learning designed to enhance critical thinking,

Copyright (c) 2025 Try Supryanto, Hardyanti, Sri Suryaningsih, Anita Putri, Arwan. This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

creativity, and cultural understanding.

At the beginning of the learning session, students were prepared to receive the material by singing Bima folk songs together and answering quick quizzes through a *question stick* game. Providing initial motivation for students can increase learning readiness and build a positive emotional atmosphere in the classroom (Suryaningsih et al., 2024). The next activity directed students to observe peers simulating the comic scenes (Figure 2b–c), which fostered collaboration and communication. Students then followed the instructions in the comic, drawing, coloring, and explaining the structure of a stilt house to connect learning content with cultural context. Learning media functions as an effective bridge between concepts and student experience (Safitri & Asih, 2023).

The final section of the comic (Figure 2d) presented a quiz and short reflection task under the "Ayo, Uji Pengetahuanmu!" panel. Through these questions, students were encouraged to analyze and apply what they had learned about traditional Bima stilt houses and their cultural values. This activity is consistent with Suryaningsih et al. (2024), who state that regular exposure to higher-order thinking exercises enhances interaction, problem-solving, and creative reasoning. The combination of visual storytelling, local culture integration, and joyful learning activities proved effective in cultivating an engaging and reflective learning environment for elementary students.



a) Cover Comic



b) Learning Activity



c) Cultural Explanation



d) Knowledge Quiz

Figure 2. Interactive Educational Comics with Local Cultural Content

5. Evaluation Stage

In the fifth stage, evaluation was conducted to determine the effectiveness of the developed interactive educational comic containing local culture. The effectiveness test was based on the results obtained during the implementation stage, using a one-sample t-test and an N-gain test to measure improvement in students' critical thinking skills between the pre-test and post-test. The results of the t-test are summarized in Table 4.

The results of Table 4 show that the *Sig. (2-tailed)* value of **0**.000 < 0.05, which means that

Copyright (c) 2025 Try Supryanto, Hardyanti, Sri Suryaningsih, Anita Putri, Arwan. This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

the students' post-test scores significantly exceeded the established Basic Target Achievement (BTA) score of 38. This indicates that the use of interactive educational comics containing local culture and the joyful learning approach was statistically effective in enhancing students' critical thinking skills. The findings also demonstrate that students felt more comfortable, motivated, and engaged during the learning process. The effectiveness of the comic media aligns with the findings of Firmansah et al. (2024), who reported that interactive learning tools based on joyful learning principles foster a positive emotional climate and improve students' learning motivation.

These results further confirm that the integration of local culture contributes significantly to learning effectiveness. The incorporation of cultural elements, such as Bima stilt houses and traditional customs, not only increased student enthusiasm but also strengthened contextual understanding and reasoning ability. This is consistent with Priyangga et al. (2022) and Kartika & Lestari (2024), who found that embedding cultural content in learning materials can enhance analytical thinking and identity development. Therefore, the one-sample t-test results validate that the developed comic media effectively supports both cognitive improvement and learning engagement in the context of elementary education.

Tabel 4. Results of One Sample t-Test of Students' Critical Thinking Skills

BTA	Sig. 2-tailed	Sig.
38	0,000	0,05

Furthermore, the effectiveness test was carried out using the n-gain test, namely to see the increase in students' critical thinking skills during the pre-test and post-test. This test provides insight into how much learning progress occurred after the implementation of the interactive educational comic containing local culture with the joyful learning approach.

As shown in Table 5, 96% of students experienced an increase in their critical thinking skills after using the developed comic media. Specifically, 17% of students showed high improvement**,** 54% demonstrated moderate improvement, and 25% exhibited low improvement, while 4% showed no measurable progress. These findings indicate that the developed comic media was not only engaging but also effective in stimulating students' higher-order cognitive processes such as analyzing, evaluating, and reasoning logically. The use of contextual visual storytelling combined with interactive activities allowed students to connect concepts with real-life experiences, which enhanced both comprehension and reflection.

The integration of local culture into the comic provided culturally meaningful learning experiences, making the materials more relatable and personally significant to students. According to Kartika & Lestari (2024) and Priyangga et al. (2022), culturally based learning fosters stronger identity formation and supports the development of analytical thinking. This aligns with the principles of culturally responsive pedagogy, which emphasizes that cultural relevance in instructional design enhances students' engagement and conceptual understanding (Asli et al., 2024).

In addition, the joyful learning approach embedded within the comic created a fun, colorful, and interactive environment that encouraged student participation and motivation. Activities such as collaborative drawing, reflective quizzes, and storytelling dialogues provided opportunities for students to express ideas and engage emotionally with the material. This finding supports Wicaksono (2020) and Rezeki & Lutfi (2024), who argue that joyful learning environments enhance emotional engagement and foster critical and creative thinking through exploratory tasks.

Although the majority of students demonstrated moderate to high improvement, 25% still showed low improvement and 4% no improvement. This may be due to students' limited initial ability and challenges in interpreting visual information (Khotimah & Nandang, 2024). To address this, further scaffolding strategies, such as peer discussion, guided questioning, and simplification of comic narratives, are recommended to help students with lower proficiency levels fully develop their critical thinking skills.

Table 5. Results of the Pre-Post N-gain Test of Critical Thinking Skills

N-gain Level of Critical Thinking Skills			
Tall	**Moderate**	**Low**	**Not**
12	38	18	3

Copyright (c) 2025 Try Supryanto, Hardyanti, Sri Suryaningsih, Anita Putri, Arwan. This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

Overall, the development process through the ADDIE model successfully produced an interactive educational comic integrating local culture and the joyful learning approach, proven to be valid, practical, and effective in enhancing students' critical thinking skills. Each stage from identifying classroom problems to validating and implementing the product, contributed to creating learning media that are engaging, culturally meaningful, and pedagogically sound. The results affirm that incorporating cultural context and joyful, interactive learning experiences not only improves students' analytical and reflective thinking but also supports the realization of the Independent Curriculum, which emphasizes Pancasila-based student profiles and meaningful, student-centered learning.

CONCLUSIONS AND SUGGESTIONS

Based on the research findings and development process through the ADDIE model, it can be concluded that the interactive educational comic containing local culture developed in this study is valid, practical, and effective in improving the critical thinking skills of elementary school students. The integration of local cultural elements with the joyful learning approach successfully created meaningful, engaging, and contextual learning experiences that fostered students' motivation, creativity, and reflective thinking. The product not only met expert validation standards but also demonstrated strong student and teacher acceptance during classroom implementation. Overall, this research confirms that culturally responsive learning media designed within a joyful learning framework can significantly contribute to developing students' higher-order thinking skills in accordance with the goals of the Independent Curriculum.

Future studies are encouraged to develop this comic media in digital and interactive formats equipped with multimedia features that allow for wider student participation both in and beyond the classroom. In addition, the implementation of similar culturally grounded and joyful learning media can be expanded to other subjects to strengthen students' character and critical competencies holistically.

ACKNOWLEDGMENT

To DPPM Diktisaintek who has funded 100% of the research for the 2025 budget year with the Penelitian Dosen Pemula (PDP) scheme with the main contract number 129/C3/DT.05.00/PL/2025 and derivative contract number 2166/LL8/AL.04/2025, 016/I/STKIP-HABI/VI/2025. To the principals of SDN Bajo, dan SDN Wadukopa who have permitted research to be conducted at the schools they head. All parties involved in the ongoing research so that it can be completed properly.

REFERENCES

Abrori, F., Lutfiana, A. F., Islam, P. A., Ekonomi, P., Padang, U. N., Pendidikan, M., & Yogyakarta, U. N. (2025). Penerapan Pendekatan Joyfull Learning untuk Meningkatkan Keterlibatan SiswA. *Journal of Educational Research and Community Service (JERCS)*, *1*(1), 31–37. https://journal.nabaedukasi.com/index.php/jercs/article/view/5

Afandi, M., Ismiyanti, Y., Yustiana, S., & Apriliya, B. F. (2024). The Influence of The Monopoly-Assisted PAKEM Model on Students' Critical Thinking Skill in Elementary School. *JIP: Jurnal Ilmiah PGMI*, *10*(1), 37–50. https://doi.org/10.19109/jip.v10i1.22626 37

Anggraeni, N., Rustini, T., & Wahyuningsih, Y. (2022). Keterampilan Berpikir Kritis Siswa Sekolah Dasar Pada Mata Pelajaran IPS di Kelas Tinggi. *Jurnal Review Pendidikan Dasar : Jurnal Kajian Pendidikan Dan Hasil Penelitian*, *8*(1), 84–90. https://doi.org/10.26740/jrpd.v8n1.p84-90

Anita, Y., Waldi, A., Akmal, A. U., Kenedi, A. K., Hamimah, H., Arwin, A., & Masniladevi, M. (2022). Pengembangan Bahan Ajar Elektronik Berbasis Social and Emotional Learning untuk Meningkatkan Nilai Profil Pelajar Pancasila Siswa Sekolah Dasar. *Jurnal Basicedu*, *6*(4), 7087–7095. https://doi.org/10.31004/basicedu.v6i4.3280

Arthi, M. P., & Gandhimathi, S. N. S. (2025). Research trends and network approach of critical thinking skills in English Language Teaching – A bibliometric analysis implementing R

Copyright (c) 2025 Try Supryanto, Hardyanti, Sri Suryaningsih, Anita Putri, Arwan. This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

studio. *Heliyon*, *11*(2), 1–16. https://doi.org/10.1016/j.heliyon.2025.e42080

Asli, A., Roslan, R., Shahrill, M., & Kabara, A. H. (2024). The Utilisation of Islamic Integrated Science Comics to Teach Primary School Students About Reuse and Recycling. *Journal of Innovation in Educational and Cultural Research*, *5*(3), 453–463. https://doi.org/10.46843/jiecr.v5i3.1478

Azizah, M., & Sholikhah, I. R. (2021). Penggunaan Media Montase Untuk Meningkatkan Kemampuan Berpikir Kritis Siswa pada Mata Pelajaran IPA. *Jurnal Pendidikan Dan Pengajaran Guru Sekolah Dasar*, *04*(1), 65–69. https://doi.org/10.55215/jppguseda.v4i1.3279

Badeo, J. M. O., & Ong Kian Koc, B. C. U. (2021). Use of Comic-based Learning Module in Physics in Enhancing Students' Achievement and Motivation. *Science Education International*, *32*(2), 131–136. https://doi.org/10.33828/sei.v32.i2.6

Febrita, I., & Harni. (2020). Model Problem Based Learning dalam Pembelajaran Tematik Terpadu terhadap Berfikir Kritis Siswa di Kelas IV SD. *Jurnal Pendidikan Tambusai*, *4*(2), 1619–1633. https://jptam.org/index.php/jptam/article/view/627

Firmansah, F., Supryanto, T., Thusa'diah, H., & Muhadi, M. (2024). Pengaruh Media Komik dalam Pembelajaran IPA Terhadap Penguasaan Konsep Siswa SMP Negeri 15 Bolo. *Jurnal Pendidikan Dan Kebudayaan*, *1*(1), 18–21. https://jurnal.habi.ac.id/index.php/JPK/article/view/214

Firmansah, G., Raharjo, & Abdillah, F. (2024). Pengaruh Penggunaan Lembar Kerja Peserta Didik Interaktif Berbasis Joyful Learning terhadap Keterampilan Analisis Siswa. *NUSA: Journal of Science Studies*, *1*(1), 20–29. https://aisthesis.my.id/index.php/nusa/article/view/8

Handayaningrum, J. J. M. M. W. (2022). E-Book Interaktif Menggambar Untuk Melatih Kemampuan Berpikir Tingkat Tinggi (HOTS). *Pedagogi: Jurnal Anak Usia Dini Dan Pendidikan Anak Usia Dini*, *8*(2), 202–212. https://doi.org/10.30651/pedagogi.v8i2.14669

Huda, M. M., & Rahman, L. (2020). Hubungan Keterampilan Berpikir Kritis Dengan Hasil Belajar Siswa Sekolah Dasar. *Jurnal Pena Karakter*, *2*(2), 42–47. https://e-journal.hikmahuniversity.ac.id/index.php/jpk/article/view/277

Kartika, I. A., & Lestari, N. (2024). Development of Comics Based on The Local Wisdom of North Sumatra Culture In The Mathematics Subject Geometry Material In Elementary School. *Journal of Education and Teaching Learning (JETL)*, *6*(1), 1–12. https://doi.org/10.51178/jetl.v6i1.1733

Khairiyah, U., Gusmaniarti, Asmara, B., Suryanti, Wiryanto, & Sulistiyono. (2023). Fenomena Penerapan Kurikulum Merdeka dalam Pembentukan Karakter Profil Pelajar Pancasila Siswa Sekolah Dasar. *ELSE (Elementary School Education Journal)*, *7*(2), 172–178. http://dx.doi.org/10.30 651/else.v7i2.196924

Khotimah, H., & Nandang, N. (2024). Digital comic-based learning: Opportunities and Challenges in Elementary Education. *Journal of Educational Media and Technology*, *12*(2), 101–115. https://doi.org/10.1080/edmedia.2024.12.2.10

Kusmajid, Silohati, N., & Zulaikha, S. (2024). Digital Comics Based on Local Wisdom : An Innovative Approach to Enhancing Elementary School Students ' Reading Comprehension. *Jurnal Pedagogi Dan Pembelajaran*, *7*(3), 504–510. https://doi.org/10.23887/jp2.v7i3.90760

Mariani, R., Novita, R., & Sari, S. M. (2024). Developing Digital Comics Based On Local Wisdom for Fantasy Story Text to Enhance Student Learning Outcomes. *Jurnal Komunikasi Pendidikan*, *8*(1), 1–10. https://doi.org/10.32585/jurnalkomdik.v8i1.5406

Pawitra, L. S., & Kusumadewi, R. F. (2025). Pengembangan Media Komik Digital Edukatif Untuk Pemahaman Konsep Matematika. *Jurnal Pendidikan Islam*, *3*(2), 91–98. https://doi.org/10.61104/ihsan.v3i2.880

Pratiwi, S. E., Jufri, A. W., & Gunawan. (2024). Pengembangan Bahan Ajar IPAS Berbantuan Wordwall Game Menggunakan Model PJBL untuk Meningkatkan Kemampuan Literasi dan Numerasi pada Siswa Sekolah Dasar. *Indonesian Journal of Elementary and*

Copyright (c) 2025 Try Supryanto, Hardyanti, Sri Suryaningsih, Anita Putri, Arwan. This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

Ahildhood Education, *5*(1), 14–24. https://journal.publication-center.com/index.php/ijece/article/view/1615

Priyangga, B., Sarwi, S., Widiyatmoko, A., Herlina, E., Marwoto, P., & Sumarni, W. (2022). Development of E-comic Based on Local Wisdom to Improve Scientific Literacy. *Ta'dib*, *25*(2), 140. https://doi.org/10.31958/jt.v25i2.5902

Rachmawati, N. H., Muhroji, M., Misyanto, M., & Yusrin, Y. (2024). Cultivating Critical Thinkers: Independent Curriculum Strategies to Enhance Critical Thinking Skills in Elementary Students. *Jurnal Ilmiah Kampus Mengajar*, *4*, 99–114. https://doi.org/10.56972/jikm.v4i1.169

Rambe, Y., Khaeruddin, K., & Ma'ruf, M. (2024). Pengaruh Model Problem Based Learning Terhadap Kemampuan Berpikir Kritis Dan Hasil Belajar IPA Pada Siswa Sekolah Dasar. *Jurnal Riset Dan Inovasi Pembelajaran*, *4*(1), 341–355. https://doi.org/10.51574/jrip.v4i1.1372

Realitawati, R., Ikrom, F. D., Herawan, E., & Kadarsah, D. (2024). Penerapan 4c skills dalam pembelajaran abad 21 di sekolah dasar. *Muallimuna: Jurnal Madrasah Ibtidaiyah*, *10*(1), 22-32. https://pdfs.semanticscholar.org/154b/8607546.pdf

Rezeki, J. S., & Lutfi, S. (2024). Joyful Learning Metdhod : A Teacher ' s Effort In Developing Critical Thinking Skills. *Jurnal Pendidikan Agama Islam*, *10*(1), 594–603. https://jurnal.radenfatah.ac.id/index.php/Tadrib/article/view/24155

Risti, D. (2021). Pengembangan Komik Interaktif Soal Cerita Matematika Berbasis Tpack Untuk Meningkatkan Keterampilan Berpikir Kritis Siswa Kelas Iv Sd. *Symmetry: Pasundan Journal of Research in Mathematics Learning and Education*, *6*(2), 204–220. https://doi.org/10.23969/symmetry.v6i2.4788

Sa'diyah, H., Umalihayati, U., Hidayah, R., Salimi, M., & Widi Fajari. (2024). The Effect of Problem Based Learning Model on Critical Thinking Skills in Elementary School: A Meta-Analysis Study. *Jurnal Iqra': Kajian Ilmu Pendidikan*, *9*(1), 135–160. https://journal.iaimnumetrolampung.ac.id/index.php/ji/article/view/4456

Safitri, Y. E., & Asih, S. S. (2023). Pengembangan Media Komik Strip Digital Berbasis Problem Based Learning Untuk Meningkatkan Kemampuan Berpikir Kritis Ipa. *Joyful Learning Journal*, *12*(2), 92–98. https://doi.org/10.15294/jlj.v12i2.73776

Sasmita, R., Sapriya, S., & Maryani, E. (2023). Critical Thinking on Social Studies Learning for Elementary School Students. *Nazhruna: Jurnal Pendidikan Islam*, *5*(3), 1377-1387. https://doi.org/10.31538/nzh.v5i3.2355

Setyowati, R. R., Rochmat, S., & Aman. (2023). The Effect of Digital Learning of Historical Comics on Students' Critical Thinking Skills. *International Journal of Information and Education Technology*, *13*(5), 818–824. https://doi.org/10.18178/ijiet.2023.13.5.1873

Suardi. (2024). Inovasi Pembelajaran Kombinasi Model Project Based Learing Dan Project Penguatan Profil Pelajar Pancasila Berbasis Devotion Untuk. *Jurnal Riset Dan Inovasi Pembelajaran*, *4*(1), 12–27. https://www.etdci.org/journal/jrip/article/view/1106

Sumarwati, S., Hadiyah, H., Muftihah, N., & Menjamin, S. (2024). Educational Comics Based on Local Folktales and Its Effects on Reading Literacy of Rural Primary School Students. *Anatolian Journal of Education*, *9*(2), 127–138. https://eric.ed.gov/?id=EJ1442911

Supryanto, T., & Yani, M. (2024). The Influence of Comic Media in Learning Dudaya Arts for Students at SMA Negeri 1 Soromandi. *Jurnal Ilmiah Mandala Education (JIME)*, *10*(3), 676–680. https://doi.org/10.58258/jime.v9i1.7348

Supryanto, T., Yuningsih, Y., Muhadi, M., & Fitriani, A. (2025). Kajian Bentuk, Nilai, dan Makna Simbolik Sampari Pusaka Peninggalan Raja-raja Bima di Museum Asi Mbojo Nusa Tenggara Barat. *Jurnal Pendidikan Dan Kebudayaan*, *2*(1), 66–72. https://jurnal.habi.ac.id/index.php/JPK/article/view/470

Suryaningsih, S. (2023). Perbedaan Self Confidence Siswa Melalui Model Problem Based Learning Berbantuan Talking Stick. *Jurnal Ilmiah Mandala Edication (JIME)*, *9*(1), 862–869. https://doi.org/10.58258/jime.v9i1.4626

Suryaningsih, S., Arwan, & Rahma, N. (2024). Development of Teaching Materials Based on

Copyright (c) 2025 Try Supryanto, Hardyanti, Sri Suryaningsih, Anita Putri, Arwan. This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

Strenghthening the Pancasila Profile of Scinence and Science Subject to Improve Critical-Creative. *Jurnal Cakrawala Pendas*, *10*(4), 928–940. http://dx.doi.org/10.31949/jcp.v10i4.11309

Suryaningsih, S., Ngabekti, S., & Yusuf, A. (2021). Kemampuan Berpikir Kritis Siswa Melalui Model Problem Based Learning Berbantuan Talking Stick. *JIKAP PGSD: Jurnal Ilmiah*, *5*(3), 484–495. http://103.76.50.195/JIKAP/article/view/22836

Suryaningsih, S., Nurwalidainismawati, & Nurlailatun Ramdani. (2024). Students' Creative Thinking Ability Through the Project Based Learning (PjBL) Model Assisted by Talking Sticks. *Jurnal Elementaria Edukasia*, *7*(1), 2381–2391. https://doi.org/10.31949/jee.v7i1.8376

Wicaksono, S. R. (2020). Joyful Learning in Elementary School. *International Journal of Theory and Application in Elementary and Secondary School Education*, *2*(2), 80–90. https://doi.org/10.31098/ijtaese.v2i2.232

Wulandari, M. A., Senen, A., Susilawati, Mukarromah, A., Nurdiansah, T. H., & Pratama, D. F. (2024). *Critical Thinking Skill: Primary School Teachers' Knowledge and Its Learning Strategy* (Issue Ictlt). Atlantis Press SARL. https://doi.org/10.2991/978-2-38476-206-4_3

Zakiyah, Z., Arisandi, M., Oktora, S. D., Hidayat, A., Karlimah, K., & Saputra, E. R. (2022). Pengembangan Buku Teks Bahasa Indonesia Berbasis Media Komik Digital Bermuatan Keterampilan Berpikir Kritis. *Jurnal Basicedu*, *6*(5), 8431–8440. https://doi.org/10.31004/basicedu.v6i5.3869

Copyright (c) 2025 Try Supryanto, Hardyanti, Sri Suryaningsih, Anita Putri, Arwan. This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.