



Educational comics for improving elementary students' reading comprehension: a classroom action study

Fitri Wahyuni Ningsih¹, Septia Sugarsih¹, and Dewi Puji Rahayu²

¹Faculty of Education, Universitas Negeri Yogyakarta, Indonesia

²Faculty of Teacher Training and Education, Universitas Musamus, Indonesia

Corresponding Author. e-mail: fitriwahyuni.2025@student.uny.ac.id

Abstract

Despite growing evidence that comics and other multimodal texts can support literacy learning, Indonesian research has largely emphasized media development or end-point effectiveness, leaving less evidence on how teachers iteratively refine printed comics while monitoring both classroom participation and comprehension. This study examined how a teacher-led comic intervention improved the learning process and reading comprehension of 15 fourth-grade students at a public elementary school in Central Kalimantan, Indonesia. A collaborative classroom action research design based on two Kemmis-McTaggart cycles was used. Data were obtained from reading-comprehension tests, classroom observations, and structured interviews. Individual score records were recalculated before analysis. Mean comprehension scores increased from 54.33 at pre-cycle to 72.67 in Cycle I and 92.00 in Cycle II, while mastery at the ≥ 70 criterion rose from 26.67% to 66.67% and 86.67%. Observed classroom activity increased from 71.33% in Cycle I to 88.00% in Cycle II. The study contributes process-oriented evidence that low-tech printed comics can become more instructionally productive when visual-verbal texts are paired with progressively demanding questions, peer-supported reading, and reflective cycle-by-cycle adjustment.

Keywords: educational comics; reading comprehension; classroom action research; multimodal literacy; elementary education.

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INTRODUCTION

Reading comprehension is a central component of elementary literacy because students must move beyond accurate word recognition toward constructing, monitoring, and evaluating meaning. Empirical elementary-school studies show that comprehension improves when instruction deliberately elicits questioning, retrieval, inference, and collaborative processing rather than treating fluent oral reading as an endpoint (Ariawan & Winoto, 2021; Mulyani & Supartinah, 2025). This challenge is especially relevant in Indonesia, where PISA 2022 documented continuing weakness in reading performance and lower average outcomes than in 2018 (OECD, 2023). Although PISA assesses 15-year-olds rather than elementary pupils, the pattern strengthens the rationale for early instructional work that helps children derive explicit



and implicit meaning, connect ideas, and evaluate information before reading difficulties become entrenched.

At the classroom level, reading comprehension can be constrained not only by students' linguistic knowledge but also by the way texts and tasks are presented. A long, verbally dense passage can require learners to hold multiple propositions in working memory while simultaneously inferring relationships among events, characters, and ideas. Carefully designed visual support may reduce some of this burden by distributing relevant information across verbal and pictorial representations. Multimedia learning research emphasizes that words and pictures can support learning when they are meaningfully coordinated rather than merely placed together (Mayer, 2024). This qualification matters because visual material is not automatically transparent. Sequential-image comprehension depends on readers' ability to interpret visual conventions, narrative sequencing, and relations between panels (Coh). Experimental evidence further indicates that the way pictures and words are integrated changes how readers process visual narratives (Yum et al., 2021).

Comics are therefore pedagogically interesting not simply because they are attractive, but because they organize meaning through a coordinated visual-verbal sequence. Speech balloons, facial expressions, spatial relations, panel transitions, and written narration can provide mutually constraining cues for inference. Research with children has shown associations between understanding comic conventions and comprehension of both graphic narratives and passages (Yum et al., 2021). Studies in language learning also report that comics can stimulate communication and multimodal meaning-making (Calafato & Gudim, 2022) while recent classroom work has examined comics as multimodal input for vocabulary development (Rizcallah & Parlak, 2025). These findings suggest a plausible mechanism: when the image is semantically aligned with the text, students can use visual information to construct situation models, confirm interpretations, and recover meaning when verbal information alone is insufficient.

The motivational dimension is equally important. Reading engagement includes behavioral, cognitive, affective, and social components, and those dimensions can interact with comprehension opportunities. Research on children's reading experiences has shown that visually enriched or digitally augmented books can alter attention, strategy use, enjoyment, and social interaction during reading (Alhamad et al., 2024). In Indonesian primary classrooms, visually rich language media have also produced gains in language literacy and reading outcomes when paired with structured learning tasks (Alhadi et al., 2023; Sumarwati et al., 2024). More broadly, sustained fiction reading is positively associated with comprehension development (Pfof & Heyne, 2023). For classroom practice, these findings imply that a visual medium should be evaluated not only by final test scores but also by whether it changes the conditions under which students attend to, discuss, and reason about text.

State of the Art and Research Gap

In the Indonesian elementary-education literature, visual and multimodal media have received substantial attention. Cakrawala Pendidikan studies have reported positive learning potential for pop-up books in grade-two reading (Sunarti et al., 2023) and for the Android-based Pancalis application in early reading (Mustadi et al., 2022). Within Jurnal Penelitian Ilmu Pendidikan (JPIP), (Arifa & Herwin, 2024) developed a digital audio storybook for early reading, tested a hybrid I-book for language literacy, (Mulyani & Supartinah, 2025) compared cooperative models for fourth-grade reading comprehension, and (Dewi et al., 2024) examined elementary viewing comprehension. Most directly, (Pratiwi et al., 2025) reviewed 27 studies on digital comics in primary education and concluded that comics have been used to support reading literacy, motivation, and contextual learning. Empirical comic studies have likewise reported benefits for elementary reading comprehension, reading literacy, creativity, or contextual learning (Istiq'faroh et al., 2020; Murniviyanti & Marini, 2021; Puteri et al., 2022; Sari et al., 2023; Sumarwati et al., 2021, 2024). Taken together, the state of the art no longer supports a novelty claim that comics themselves are new instructional media.

The more defensible gap concerns how comics are adapted as part of an iterative teaching process. Much of the existing literature evaluates a finished media product or compares a treatment with a control condition. Such designs are valuable for estimating feasibility or effects, but they provide less fine-grained evidence about what a classroom teacher changes after observing students struggle with inference, participation, peer discussion, or time allocation. This process question is particularly relevant for schools that can implement printed materials without depending on devices, connectivity, or a dedicated application. Experimental evidence also cautions against assuming that comics automatically produce deeper comprehension: skilled readers may process comics faster without achieving higher comprehension than with traditional text, while explicit visual-literacy instruction can improve children's comic comprehension (Golding & Verrier, 2021; Rasamimanana et al., 2025).

Accordingly, the novelty of this study lies not in introducing comics as a medium, but in documenting a teacher-led, cycle-by-cycle refinement of printed educational comics and accompanying reading tasks while simultaneously tracking process and outcome indicators. The action moved from an initial small-group comic-reading format toward more structured peer-supported reading, more demanding inferential and evaluative questions, and fuller opportunities to present and respond to interpretations. The study asks two questions: (1) How did the classroom learning process change across cycles when printed comics were integrated into reading-comprehension instruction? and (2) How did students' reading-comprehension scores and mastery change from pre-cycle through Cycle II? By answering both questions, the study positions comics as one component of a reflective instructional system rather than as a stand-alone motivational object.

METHODS

Research Design and Context

The study used collaborative classroom action research to improve a specific instructional problem in an authentic class. The cyclical logic followed Kemmis and McTaggart's action-research sequence of planning, acting, observing, and reflecting, with reflection in one cycle informing modification of the next (Kemmis & McTaggart, 1988). The research was conducted during the second semester of the 2025/2026 academic year at SD Negeri 2 Buntok, Dusun Selatan District, South Barito Regency, Central Kalimantan, Indonesia. The action phase was implemented in May 2026 after preliminary planning and diagnostic work.

The design integrated quantitative and qualitative classroom evidence without treating the study as a formal experimental mixed-methods trial. Quantitative evidence consisted of reading-comprehension scores and mastery percentages. Qualitative evidence was drawn from structured classroom observations and student interviews and was used primarily to describe participation, difficulties, and reflections that informed the next action cycle. Because there was no control group, randomization, or inferential test, the study is interpreted as evidence of within-class improvement rather than as a causal estimate of the isolated effect of comics.

Participants

Participants were all 15 fourth-grade students in the class, comprising seven boys and eight girls. The classroom teacher served as the action researcher and implemented the planned instruction. The small, intact-class sample was appropriate to the local improvement purpose of classroom action research, but it does not provide a basis for population-level generalization. Student names are not reported in this article.

Intervention and Learning Materials

The intervention used teacher-prepared printed color comics aligned with the Indonesian-language curriculum and reading objectives. Cycle I consisted of two meetings of 2 x 35 minutes. Students read the comic titled "Ayo, Budayakan Membaca Buku," discussed its

content in small groups, completed a worksheet, and answered questions designed to elicit literal, inferential, critical, and creative comprehension. Classroom reflection after Cycle I identified four principal problems: some students still struggled with implicit information, group discussion was uneven, several students remained passive, and time management limited opportunities for presentation.

Cycle II also consisted of two meetings of 2 × 35 minutes and used a more varied comic with more complex narration, including the text “Asal-usulku.” The planned refinement introduced more structured peer-supported reading, including paired-reading arrangements, deeper inferential and evaluative questioning, closer teacher guidance, and better time allocation for presentation and peer responses. The implementation record also refers to small-group work during Cycle II, so the refinement is best understood as tighter peer-supported reading rather than a pure paired-reading intervention. Table 1 summarizes the instructional changes across phases, while Figure 1 illustrates examples of the printed comic format used in the study.

Table 1. Iterative refinement of the comic-based reading intervention

Phase	Comic and peer structure	Comprehension focus	Reflection / adjustment
Pre-cycle	Conventional text-based reading; no comic action	Identify baseline problems in main idea, explicit/implicit information, and summary	Low interest, low focus, and limited discussion established the need for action
Cycle I	Printed color comic; small-group reading and worksheet discussion	Literal and inferential comprehension, followed by critical/creative prompts	Implicit information remained difficult; participation was uneven; presentation time was limited
Cycle II	More varied comic with more complex narration; tighter peer-supported reading and fuller group presentation	Greater emphasis on inference, evaluation, causal reasoning, and text-image information	Closer scaffolding and improved time allocation; all groups received presentation opportunities

Source: classroom action plan and cycle-reflection records.



Figure 1. Examples of the printed educational comic panels used in the classroom action.

Instruments and Evidence Quality

Three sources of evidence were used: a reading-comprehension test, a classroom-activity observation sheet, and a structured interview guide. The reading test combined multiple-choice and short constructed-response items. Its blueprint mapped tasks to reading-comprehension indicators adapted from (Tarigan, 2008), including identifying main ideas, interpreting words or phrases in context, locating explicit information, inferring conclusions and cause-effect relations, evaluating character behavior, and identifying moral messages. The observation sheet recorded attention, active reading, peer cooperation, willingness to ask or answer questions, and evidence of understanding during classroom work. Interviews were used to examine reading habits, perceived difficulty, experiences with comics, and changes in interest or motivation.

The source thesis documents an instrument-validation appendix and demonstrates content alignment through test and observation blueprints, but it does not report a numerical reliability coefficient for the reading test or observation scale. The article therefore does not invent reliability statistics. Evidence quality was strengthened pragmatically through convergence among tests, observation, and interviews, but the absence of reported psychometric reliability remains a limitation when interpreting the precision of the scores.

Procedure and Data Collection

A pre-cycle diagnostic test established the baseline. In each action cycle, the teacher prepared the comic-based lesson, implemented two meetings, observed classroom activity,

administered the comprehension assessment at the end of the cycle, and reflected on difficulties before the next plan was finalized. The success criteria established in the thesis were a class mean of at least 70, at least 80% of students scoring 70 or above, and classroom activity of at least 80%. Cycle I results were used diagnostically rather than as a terminal evaluation, and the action continued because classical mastery and activity had not yet reached the specified thresholds.

Data Analysis

Quantitative analysis was descriptive. Individual test scores were converted to a 0-100 scale, then summarized using the class mean, the number of students meeting the ≥ 70 criterion, and the mastery percentage. Observation results were converted to activity percentages. Before preparing this article, the individual score records were recalculated to ensure arithmetic consistency. This audit confirmed the Cycle I summary but identified an inconsistency in the Cycle II summary table in the thesis. The 15 recorded Cycle II scores sum to 1,380, giving a mean of 92.00; 13 students scored at least 70, giving 86.67% mastery. These recomputed values are used throughout this article. Qualitative notes were organized around attention, participation, collaboration, confidence, comprehension difficulties, and the instructional adjustments they prompted.

Ethical Considerations

The source thesis does not report an institutional ethics-approval number or a detailed consent procedure; consequently, this article does not claim an approval number that cannot be verified. To minimize privacy risk, student-level identifiers are omitted, individual names from the thesis tables are not reproduced, and results are reported only in aggregated form.

RESULTS AND DISCUSSION

Results

The pre-cycle diagnostic indicated a clear instructional problem. The class mean was 54.33, only 4 of 15 students (26.67%) met the ≥ 70 criterion, and 11 students remained below mastery. Classroom observation described low concentration during text-only reading, rapid boredom, off-task talk, and limited participation in discussion. Students could generally read aloud, but many had difficulty identifying main ideas, interpreting implicit information, and summarizing the text. This pattern is important because the target problem was not basic decoding alone; it concerned making meaning from connected text.

After the first depend on explicit sentences and experienced difficulty with implied information. Presentation time was also insufficient, so only some groups could explain their work. The reflection comic-based cycle, the mean increased to 72.67 and 10 of 15 students (66.67%) reached mastery. Classroom activity was 71.33%, categorized as good in the thesis but still below the predetermined 80% process criterion. Observation notes showed greater focus on the reading material and more active group discussion, yet participation remained unequal. Several students continued to therefore treated Cycle I as partial improvement rather than as completion of the action.

Cycle II incorporated the reflective adjustments. The comic narration became more complex, the teacher provided closer scaffolding for reading text and images, peer-supported reading was tightened, questions placed more emphasis on inference and evaluation, and classroom time was managed so that all groups had opportunities to present. Observations described greater willingness to answer questions, more reciprocal discussion, peer explanation, and stronger confidence during presentation. Activity reached 88.00%, thereby exceeding the 80% process criterion.

The corrected Cycle II score summary also met the outcome criterion. The 15 individual scores produced a mean of 92.00. Thirteen students scored 70 or above, equivalent to 86.67% mastery; two students scored 60. Thus, from pre-cycle to Cycle II, the mean increased by 37.67

points and mastery increased by 60.00 percentage points. Table 2 presents the phase-level outcomes, and Figure 2 visualizes the progression in mean score and mastery.

Table 2. Reading-comprehension and classroom-activity outcomes across phases

Phase	Mean score	Mastery, n/15	Mastery (%)	Activity (%)
Pre-cycle	54.33	4/15	26.67	Not quantified
Cycle I	72.67	10/15	66.67	71.33
Cycle II	92.00	13/15	86.67	88.00

Mastery criterion = score ≥ 70 . Cycle II values were recomputed from the 15 individual score records before article preparation. Note.

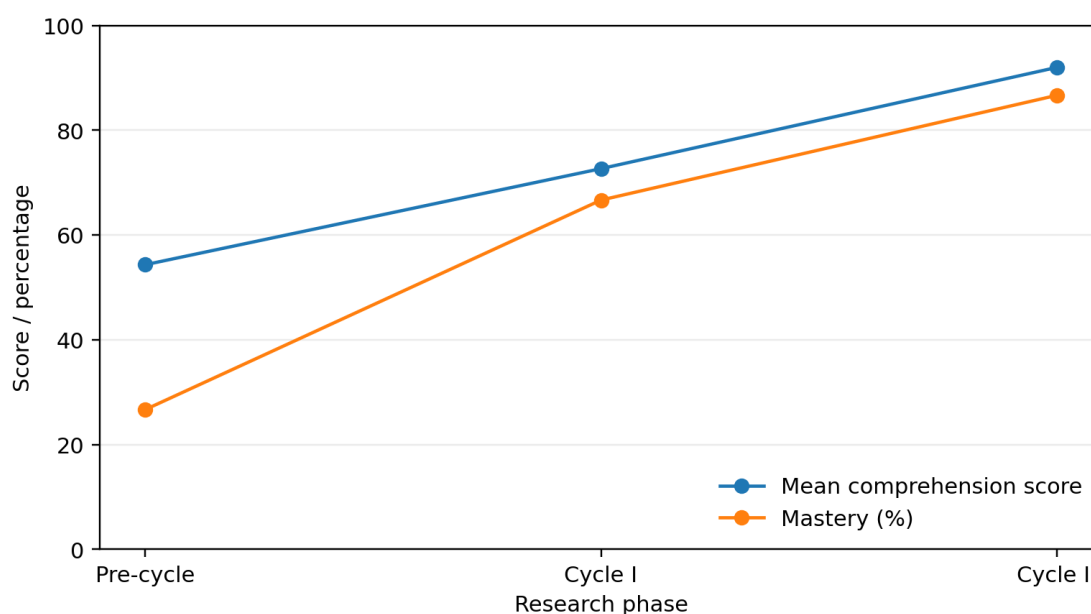


Figure 2. Progression of mean reading-comprehension score and mastery percentage

Discussion

From Visual Attraction to Meaning-Making Support

The pattern of improvement is consistent with the argument that comics can function as structured multimodal texts rather than as decoration. In Cycle I, the principal pedagogical change was the introduction of a visual-verbal narrative that made characters, actions, settings, and event relations visible while still requiring students to read written language. Such coordination can provide multiple cues for constructing meaning. (Mayer, 2024) emphasizes that multimedia learning depends on selecting, organizing, and integrating verbal and visual information. likewise showed that picture-word integration changes processing of visual narratives. The present classroom data cannot test those cognitive mechanisms directly, but the observed shift from text avoidance toward sustained attention and discussion is compatible with a design in which pictures helped students maintain a coherent representation of what they were reading.

At the same time, the Cycle I difficulties demonstrate why comics should not be treated as self-explanatory. Students still struggled with implicit information even after visual material was introduced. (Cohn, 2020) argues that visual narrative comprehension involves learned conventions and sequential structure, while (Wong et al., 2023) found that knowledge of comic conventions was related to graphic-narrative and passage comprehension. Eye-tracking evidence further shows that stronger comprehension is associated with purposeful rereading of relevant text and graphical information in science comics (Wong et al., 2023). The implication for teaching is that students may need explicit prompts to connect panels, identify causal relations, interpret facial and contextual cues, and reconcile those cues with written narration. This interpretation is reinforced by (Golding & Verrier, 2021), who found that visual-literacy

instruction improved primary-school children's comprehension and inferential understanding of educational comics. This study's Cycle II refinement did exactly that at a practical level by increasing inferential and evaluative questioning rather than simply providing a more colorful comic.

This distinction strengthens the study's contribution. The results do not support a simplistic claim that pictures automatically produce comprehension. The strongest gain occurred after the teacher coupled visual material with more deliberate peer interaction, more demanding questions, closer guidance, and improved time allocation. The medium and the pedagogy therefore operated as a package. This is also why causal attribution to the comic alone would be methodologically inappropriate.

Reading-Comprehension Demands Across the Cycles

The comprehension framework used in the study is also important for interpreting what changed. The assessment blueprint was organized around literal, inferential, critical, and creative comprehension demands derived from (Tarigan, 2008). Literal tasks ask students to locate or restate information that is directly available, whereas inferential tasks require relationships to be constructed across propositions, events, or contextual clues. Critical and creative tasks extend this process by asking students to evaluate behavior or information, justify interpretations, and derive or develop meanings that are not reproduced verbatim from the text. In the pre-cycle observation, students were described as technically able to read but frequently unable to move from visible sentences toward main ideas, implicit information, and conclusions. This mismatch is pedagogically consequential because fluent oral reading can mask weak meaning construction.

The action-cycle records suggest that the central difficulty after Cycle I remained inferential rather than purely literal. Students often searched for a sentence that could be copied directly and became uncertain when answers required them to connect textual and visual cues. Cycle II therefore increased the depth of questions and teacher guidance. This adjustment is consistent with elementary reading studies in which structured questioning and cooperative processing improved comprehension outcomes (Ariawan & Winoto, 2021; Mulyani & Supartinah, 2025). It is also compatible with evidence from graphic-narrative research showing that successful readers must integrate information across panels and interpret conventions rather than process each image or sentence independently (Cohn, 2020; Wong et al., 2023) used as evidence for reasoning, not merely as a more attractive carrier of the same factual questions.

A limitation of the available data is that the thesis reports total test scores rather than separate subscale scores for literal, inferential, critical, and creative comprehension. Consequently, this article cannot claim that any one comprehension level improved by a specific amount. The qualitative records support the conclusion that inferential and discussion-based performance became more visible in Cycle II, but a future study should score each comprehension dimension separately. Such reporting would permit analysis of whether visual-verbal support disproportionately benefits literal retrieval, inference generation, evaluation, or creative response, and would make the theoretical contribution more precise. It would also help distinguish a general test-score increase from a shift toward higher-order comprehension.

Data Transparency and the Logic of Classroom Action Research

A further methodological contribution is the explicit recalculation of the outcome summaries from individual score records. Classroom action research is often judged primarily by whether a practical success criterion has been achieved, but numerical transparency remains essential because an arithmetic error can change the apparent level of mastery. In the source thesis, the Cycle II narrative reported a total of 1,400, a mean of 93.33, and 14 students meeting mastery. Recalculation of the 15 listed scores gives a total of 1,380, a mean of 92.00, and 13 students meeting the ≥ 70 criterion. Importantly, the corrected mastery rate of 86.67% still exceeds the prespecified 80% criterion, so the substantive conclusion that the classroom

action reached its target is retained even though the descriptive statistics are lower than originally summarized.

This correction also illustrates the value of treating action research as disciplined inquiry rather than as advocacy for a preferred intervention. Reflection should apply not only to teaching decisions but also to data handling and interpretation. The corrected figures prevent an avoidable credibility problem in journal review and strengthen the argument because the success conclusion no longer depends on an inconsistent summary. At the same time, the analysis deliberately stops short of inferential significance testing. With a single intact class, no control group, and repeated teacher-led action, a p-value would not solve the more fundamental attribution problem. The appropriate claim is therefore that the class showed a large descriptive improvement across the action sequence, while stronger causal designs are required to isolate the contribution of the comic format itself.

Engagement as an Instructional Mechanism

A second finding concerns the learning process. Classroom activity rose from 71.33% in Cycle I to 88.00% in Cycle II, and observational notes described broader participation, more peer explanation, and greater willingness to present interpretations. Reading engagement research provides a useful framework for understanding this change. (Alhamad et al., 2024) distinguish behavioral, cognitive, affective, and social dimensions of engagement and show that enriched book experiences can influence all four. Although their study concerned augmented-reality books, the dimensions are relevant to printed comics because students in the present study had to attend behaviorally, interpret text and images cognitively, respond with interest affectively, and negotiate meaning socially.

The social component became especially visible in Cycle II. Students who understood the text more quickly helped peers, all groups presented, and listeners began to challenge or supplement the presenters' interpretations. These behaviors convert reading from an individual answer-finding exercise into a discursive comprehension activity. (Calafato & Gudim, 2022) similarly found that comics can support multimodal communication in language classrooms. The present study extends that logic to first-language elementary reading by showing how peer talk can be attached to a concrete comic text. The improvement therefore appears to involve not only greater willingness to look at the page but also more opportunities to externalize, compare, and revise interpretations.

Engagement should nevertheless be interpreted as a facilitating condition rather than proof of comprehension. A student may enjoy a comic without understanding the text deeply. For this reason, the convergence between process and outcome data is more informative than either measure alone. Activity exceeded the criterion in Cycle II at the same time that the recomputed mean reached 92.00 and mastery reached 86.67%. This convergence is compatible with research linking reading engagement to reading development (Pfof & Heyne, 2023), but the short study duration prevents claims about a long-term reciprocal relationship.

Positioning the Findings in Indonesian Elementary Literacy Research

The findings align with a broader Indonesian movement toward visual, multimodal, and technology-supported literacy instruction, while adding a different methodological emphasis. (Sunarti et al., 2023) reported that pop-up-book media improved second-grade reading skills in a quasi-experimental design. (Mustadi et al., 2022) developed Pancalis as an Android-based early-reading medium, (Arifa & Herwin, 2024) developed a digital audio storybook for early reading, and reported stronger language-literacy gains with a hybrid I-book than with the comparison condition. (Dewi et al., 2024) further treated viewing comprehension as a measurable elementary language competence. These studies demonstrate that reading and viewing instruction can benefit from media that organize information beyond plain text. However, their design logic primarily asks whether a developed medium is feasible, associated with an outcome, or effective. The present action study instead foregrounds what a teacher changes after one implementation does not yet meet the process and mastery criteria.

(Dewi et al., 2024) reported gains in elementary poetry reading through the SAVI method, (Elitasari et al., 2026) examined critical reading through a technology-assisted WRITE model, and Mulyani and Supartinah (2025) showed that cooperative models can improve fourth-grade reading comprehension and collaboration. (Elitasari et al., 2026), in their review of digital comics in primary education, mapped evidence that comics can support reading literacy and motivation. The present study complements these contributions by providing a low-tech, printable alternative and by tracing an improvement sequence at the classroom level. This matters because digital solutions are not always necessary for multimodal teaching; printed comics can still combine visual sequencing, dialogue, contextual cues, and collaborative tasks.

Other Indonesian comic studies reach similar outcome conclusions. (Murniviyanti & Marini, 2021) developed comic media for fifth-grade historical-text comprehension; (Puteri et al., 2022) developed proclamation-themed comic media for elementary reading comprehension; and (Sari et al., 2023) developed local-wisdom comics for elementary social studies. Quasi-experimental evidence from rural primary schools also indicates that educational comics grounded in local stories can strengthen reading literacy (Sumarwati et al., 2024), while other Indonesian experiments have reported gains in traditional ecological knowledge literacy and in creativity and writing through comic-based instruction (Istiq'faroh et al., 2020; Sumarwati et al., 2021). Based research of (Kusmaryono & Maharani, 2025) further showed that digital comics can shape motivation, emotional reactions, attention, and learning in mathematics. Although these studies differ in subject, age, and design, they converge on the pedagogical importance of coordinating content with visual narrative. The current evidence adds that a teacher should not stop after selecting the medium. Reflection on who participates, where comprehension breaks down, and how questions are sequenced is central to turning a comic into an instructional tool.

Why a Printed Comic Remains Educationally Relevant

The choice of printed rather than digital comics is not a methodological weakness by itself. The more defensible issue is whether the medium supports the targeted comprehension activity. (Rasamimanana et al., 2025) found that skilled adults processed comics faster than traditional text but did not achieve higher comprehension, showing that format alone does not guarantee a comprehension advantage. In contrast, primary-school experiments demonstrate that educational comics can outperform conventional text when the visual narrative, content, and instructional tasks are deliberately coordinated (Golding & Verrier, 2021; Sumarwati et al., 2024). These findings support a functional question: does the selected medium help students attend to relevant information, integrate representations, and discuss meaning within the available classroom ecology?

For SD Negeri 2 Buntok, printed comics offered immediate usability without requiring one device per child, stable connectivity, software maintenance, or navigation skills. More importantly, the print format made it easy for students to point to the same panel, reread speech balloons, compare clues, and discuss a shared physical text. This interpretation does not imply that print is better than digital comics. Recent studies of digital and augmented formats show meaningful opportunities for engagement and adaptive learning (Alhamad et al., 2024; Kusmaryono & Maharani, 2025). Rather, the contribution is to show that multimodality can be implemented with relatively modest technological requirements when instructional design is the priority.

Novelty, Practical Implications, and Boundary Conditions

The study's novelty is therefore process-oriented and contextual. First, it documents how a comic-based lesson was revised after direct evidence of incomplete mastery, instead of evaluating a fixed media product only once. Second, it links changes in classroom activity with changes in comprehension outcomes. Third, it operationalizes comprehension across literal, inferential, critical, and creative demands rather than reducing reading to factual recall. Fourth, it demonstrates a printable model for a regional Indonesian elementary classroom. None of

these points establishes that comics are universally superior to other media, but together they provide a replicable logic for classroom improvement.

For teachers, the most transferable principle is the sequencing of scaffolds. A comic should be selected or designed so that its images contribute information relevant to the written text. Initial questions can secure literal understanding, but subsequent prompts should require students to explain causal relations, infer unstated information, justify evaluations of characters, and derive messages from the text. Peer-supported reading should have an explicit purpose, such as comparing interpretations or locating visual-textual evidence, rather than merely dividing students into groups. Presentation and response time also matters because the Cycle I reflection showed that insufficient time restricted reciprocal discussion.

The results should be applied within clear boundary conditions. The sample involved only 15 students in one intact class, there was no comparison group, and the intervention lasted only two cycles. The teacher was also the action researcher, which may introduce expectancy and observation bias. The comic topic and narrative complexity changed across cycles, and peer structure, questioning, guidance, and time management were also revised. Consequently, the improvement cannot be attributed to one isolated component. In addition, the source thesis does not report reliability coefficients for the assessment or observation instruments, and no delayed test was used to examine retention. Future research should replicate the instructional sequence with larger samples, independent observers, validated measures, and quasi-experimental or multiple-baseline designs. Comparisons among printed, digital, and interactive comics would be particularly useful if content and instructional scaffolding are held as constant as possible.

CONCLUSION

This classroom action study shows a substantial within-class improvement in fourth-grade reading comprehension after printed educational comics were integrated with reflective instructional refinement. The class mean increased from 54.33 at pre-cycle to 72.67 in Cycle I and 92.00 in Cycle II. Mastery at the ≥ 70 criterion rose from 26.67% to 66.67% and then 86.67%, while classroom activity increased from 71.33% in Cycle I to 88.00% in Cycle II. The most defensible interpretation is not that comics alone caused the improvement, but that visual-verbal texts became more productive when the teacher used reflection to strengthen peer-supported reading, inference-focused questioning, guidance, and opportunities for discussion. The study therefore contributes a process-oriented, low-tech model for multimodal elementary literacy instruction. Replication with stronger measurement, independent comparison conditions, and longer follow-up is needed before broader causal claims can be made.

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