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Beyond the blank page: padlet-enhanced narrative writing in a rural bilingual elementary classroom

Ainul Yaqin*, Agus Wijaksono, Hermanto
Universitas Bakti Indonesia, Banyuwangi, Jawa Timur, Indonesia
*Correspondence author: hermanto@ubibanyuwangi.ac.id
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ABSTRACT

Purpose: to examine the effect of Padlet-enhanced narrative writing instruction on grade V students' writing performance after controlling for initial ability and to compare normalized learning gains between students receiving Padlet-enhanced and conventional instruction

Method: this quasi-experimental study involved 34 grade V students in experimental and control groups. Data were collected through narrative writing tests and analyzed using ANCOVA and N-Gain comparisons.

Findings: Padlet-enhanced instruction significantly improved students' narrative writing performance after controlling for initial ability ($F(1, 31) = 471.980$, $p < 0.001$, partial $\eta^2 = 0.938$). The experimental group achieved a higher adjusted posttest mean than the control group, with a difference of 15.042 points. Furthermore, the experimental group demonstrated a higher normalized gain (0.6503; medium category) than the control group (0.2713; low category), with a statistically significant difference ($t(32) = 20.870$, $p < 0.001$).

Implications: Padlet's potential to enhance narrative writing instruction through visual scaffolding, collaborative learning, and interactive feedback, particularly in rural bilingual elementary classrooms.

Originality: this study offers a novel examination of Padlet across the entire narrative writing process in a rural Madurese–Indonesian bilingual elementary classroom, combining ANCOVA, N-Gain analysis, and inter-rater reliability assessment.

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Introduction

Writing is a fundamental productive language skill in elementary education because it lets students communicate ideas, share personal experiences, and construct

meaning through organized, purposeful writing (Khudaverdiyeva, 2025; Tarigan, 2021; Zainurrahman, 2023). Beyond its communicative function, writing supports literacy development, critical thinking, and the ability to organize information coherently, particularly in upper elementary grades, where students are expected to produce increasingly structured texts (Nichols et al., 2025). Narrative writing matters because it requires students to sequence events, connect ideas, develop characters and settings, and communicate a coherent storyline (Siahaan et al., 2026). Narrative quality therefore depends not only on content but also on the organization of ideas, vocabulary choice, sentence construction, and mechanical accuracy, including capitalization and punctuation (Enayat, 2025; Junining & Zainuddin, 2026; Nurgiyantoro, 2022). These interrelated demands make narrative writing a complex learning task that requires systematic instruction, appropriate learning resources, and opportunities for continuous feedback (Safari & Ahmadi, 2025).

Despite its importance, developing narrative writing skills remains challenging for elementary school students, especially in learning environments with limited linguistic and technological resources. Preliminary observations at UPTD SD Negeri Mano'an 1 in Kokop District, Bangkalan Regency, East Java, Indonesia, indicated that grade V students had not yet demonstrated satisfactory narrative writing performance. Observed difficulties included writer's block, disorganized storylines, limited and repetitive vocabulary, and frequent capitalization and punctuation errors. These problems were compounded by the students' bilingual context, in which Madurese served as their mother tongue while Indonesian was the target language for formal writing. Differences between the two languages may have contributed to grammatical interference, limited vocabulary use, and difficulty expressing ideas in standard written Indonesian. Such challenges suggest that students' writing difficulties cannot be addressed solely through additional writing assignments; they require instructional approaches that help learners generate ideas, organize narratives, develop linguistic resources, and refine their texts through structured guidance.

The instructional practices observed at the research site further highlighted the need for pedagogical improvement. Writing lessons relied primarily on teacher explanations, board-based instruction, and individual assignments in exercise books, with limited visual stimulation, opportunities for peer interaction, draft sharing, or immediate feedback. Under these conditions, students had few opportunities to explore narrative ideas collaboratively or to regard writing as a process that involves planning, composing, revising, editing, and publishing. Consequently, writing could be perceived as a burdensome task rather than a meaningful form of communication. This situation reflects a broader need to integrate digital technology into elementary literacy instruction in ways that strengthen, rather than merely replace, existing pedagogical practices (Abedi, 2024; Norman, 2023). However, technology integration must be responsive to the realities of rural schools, where internet connectivity, device availability, and students' digital literacy may constrain implementation (Mustafa et al., 2024). Therefore, an appropriate digital learning medium should provide accessible instructional support while facilitating active participation and meaningful engagement in the writing process.

One promising medium is Padlet, a web-based collaborative platform that lets teachers and students share text, images, videos, audio recordings, and links on a shared digital board (Agavekar et al., 2026). Its collaborative posting, commenting, and reaction features can support different stages of the writing process by providing spaces for brainstorming, drafting, exchanging feedback, revising, editing, and publishing narrative

texts. During prewriting, visual prompts and shared posts can help students generate story ideas and develop relevant vocabulary. During drafting, students can organize their ideas into written narratives, while teacher and peer comments can guide subsequent revisions. The platform can also provide a visible record of students' work, enabling teachers to monitor progress and identify recurring difficulties. In this respect, Padlet is not merely a digital display tool but a potential instructional environment for connecting individual writing activities with collaborative learning and formative assessment. However, its relevance to rural bilingual classrooms depends on how educators integrate its features into instruction and adapt them to local technological conditions.

The theoretical rationale for integrating Padlet into narrative writing instruction can be explained through the cognitive theory of multimedia learning and Vygotsky's (1978) sociocultural perspective. According to the cognitive theory of multimedia learning, learners process verbal and visual information through partially distinct channels, while working memory has limited capacity; therefore, carefully designed combinations of words and images can support meaningful learning by minimizing unnecessary cognitive demands (Mayer, 2020). In narrative writing, relevant pictures, visual sequences, and contextual prompts may help students develop story ideas and establish event sequences before translating them into written language. Nevertheless, multimedia resources must be selected and organized purposefully to avoid cognitive overload. Complementing this perspective, Vygotsky's (1978) sociocultural theory emphasizes that learning develops through social interaction and guidance within the zone of proximal development. Padlet's commenting and sharing features may support this by enabling teachers and peers to provide feedback, model effective language use, and help students improve their drafts. Together, these perspectives suggest that Padlet may support narrative writing through visual scaffolding, collaborative interaction, and guided revision.

Previous empirical studies provide preliminary support for Padlet's educational potential and that of other digital learning media. Ramadhani et al. (2023) reported using Padlet to facilitate the prewriting stage among elementary school students, while Parida et al. (2024) and Hamni & Perdina (2026) examined its effectiveness in teaching collaborative narrative writing. Rahmania & Fajar (2026) also investigated Padlet's role in Indonesian language learning motivation and achievement in the upper elementary grades. Furthermore, Maulidya & Jamilah (2026) developed a Padlet-based digital board for Indonesian language instruction in schools with limited educational resources. Research on broader categories of digital and interactive media has likewise indicated potential improvements in sentence construction, student participation, narrative content, spelling accuracy, and overall writing performance (Abdelhalim, 2025; Eak & Annamalai, 2025; Zhang & Hyland, 2025; Zulkarnain et al., 2025). In addition, interactive digital feedback has been associated with improvements in students' writing drafts (Saeed & Al Qunayeer, 2022), while technology-based learning media have been examined for their contribution to students' understanding of language concepts (Zheltukhina et al., 2023). Collectively, these studies provide a rationale for further investigating digital collaborative environments to strengthen elementary writing instruction.

Nevertheless, the existing literature leaves several methodological and contextual questions insufficiently addressed. Some studies have focused on specific stages of writing, particularly prewriting, rather than the full writing process (Ramadhani et al., 2023). Others have focused on media development and feasibility (Maulidya & Jamilah,

2026), synthesized previous research through literature reviews (Zulkarnain et al., 2025), or investigated interactive online learning without specifically examining Padlet's collaborative canvas as an integrated writing environment (Devi & Puspitasari, 2023). Although these studies offer useful insights, their findings do not fully establish whether Padlet improves narrative writing performance when students' initial writing abilities are statistically controlled. Furthermore, the effectiveness of Padlet throughout the writing cycle remains insufficiently documented in rural elementary classrooms characterized by Madurese–Indonesian bilingualism and potentially limited internet access. Further investigation is needed to determine the extent to which independent ratings of writing quality and complementary analyses of adjusted posttest performance and normalized gain can demonstrate improvements. These gaps provide the basis for a more comprehensive evaluation of Padlet in an authentic rural bilingual learning context.

To address these gaps, this study examines the effect of Padlet-enhanced narrative writing instruction among grade V students at UPTD SD Negeri Mano'an 1. The intervention integrates Padlet into the writing cycle, encompassing prewriting, drafting, revising, editing, and publishing, while conventional instruction serves as the comparison condition. The study has two specific objectives: first, to determine whether students receiving Padlet-enhanced instruction achieve significantly different narrative writing performance from students receiving conventional instruction after controlling for their initial writing ability; and second, to compare the normalized gains in narrative writing performance between the two groups. The first objective is examined using analysis of covariance (ANCOVA), which adjusts posttest comparisons for baseline performance. In contrast, the second uses normalized gain (N-Gain) to characterize improvement relative to the potential improvement remaining after the pretest. An analytical writing rubric and independent ratings by multiple raters are intended to strengthen the consistency of writing assessment. Together, these procedures provide a framework for evaluating both adjusted post-intervention performance and the extent of students' learning gains.

This study examines a technology-supported writing intervention under educational conditions that may differ from those commonly represented in digitally resourced learning environments. For bilingual students whose home language is Madurese, narrative writing in Indonesian requires not only organizing ideas but also developing appropriate vocabulary, constructing grammatically correct sentences, and applying formal written-language conventions. A collaborative digital board may help bridge these demands by combining visual prompts, shared examples, written practice, and formative feedback within a structured instructional sequence. At the same time, the study considers whether such an approach can be implemented meaningfully in a rural elementary school where technological constraints may affect classroom practice. Its potential contribution is both pedagogical and empirical: pedagogically, it may inform the design of more engaging, scaffolded narrative writing instruction; empirically, it may provide context-specific evidence on the relationship between Padlet integration and students' writing outcomes. The findings may also offer practical guidance for elementary teachers and school leaders seeking to integrate digital media into literacy instruction without overlooking students' linguistic backgrounds, initial abilities, and local learning conditions.

Based on the theoretical framework and the research gaps identified above, the study proposes two hypotheses. The first hypothesis is grounded in the expectation that Padlet's visual resources, collaborative posting features, and opportunities for formative

feedback can support idea generation, narrative organization, and textual revision, consistent with multimedia learning theory (Mayer, 2020) and sociocultural learning theory (Vygotsky, 1978). Accordingly, H1 predicts that, after controlling for pretest performance, students receiving Padlet-enhanced narrative writing instruction will achieve significantly higher posttest writing scores than students receiving conventional instruction. The second hypothesis concerns the extent of improvement during the instructional intervention. Because the integrated writing cycle provides repeated opportunities to develop, evaluate, and refine narrative texts, H2 predicts that students in the Padlet group will demonstrate higher normalized gains in narrative writing performance than students in the conventional group. Testing these hypotheses will clarify whether Padlet offers measurable benefits beyond conventional writing instruction and whether its potential extends to the rural, bilingual elementary classroom examined in this study.

Method

This study used a quantitative, quasi-experimental design with a nonequivalent control group design (Arikunto, 2021; Sugiyono, 2022). This design was selected because individual random assignment was not feasible without disrupting the existing classroom structure. Accordingly, intact classes were assigned to the experimental and control conditions, consistent with the practical considerations of educational research in natural classroom settings (Creswell & Creswell, 2023). The experimental group received narrative writing instruction enhanced by Padlet, whereas the control group received conventional instruction without Padlet. Both groups completed a pretest before the intervention and a posttest afterward to measure changes in narrative writing performance. The pretest scores assessed baseline comparability and served as a covariate in the subsequent analysis of covariance (ANCOVA).

The study was conducted at UPTD SD Negeri Mano'an 1, Kokop District, Bangkalan Regency, East Java, Indonesia, during the first semester of the 2026/2027 academic year, specifically in June–July 2026, as specified in the research schedule. The population consisted of all 34 grade V students distributed across two existing classes. Given the small and clearly defined population, total sampling was employed, whereby all eligible students were included in the study (Sugiyono, 2022). Class V-A, comprising 17 students, served as the experimental group, while Class V-B, also comprising 17 students, served as the control group. Because the groups were established according to existing classroom membership rather than individual randomization, baseline equivalence was examined empirically using pretest scores. Nevertheless, any initial differences between the classes were considered in interpreting the intervention effects.

The intervention comprised six face-to-face sessions, each lasting 2 × 35 minutes. The sessions included one pretest, four instructional sessions, and one posttest. The experimental group participated in a Padlet-enhanced narrative writing program organized around the stages of the writing process: prewriting, drafting, revising, editing, and publishing. In the second session, students learned narrative text structure and brainstormed using a Padlet prewriting board with sequential images and introductory videos. In the third session, students composed individual narrative drafts organized around orientation, complication, and resolution. During the fourth session, students revised their drafts through guided peer review and teacher feedback delivered through Padlet comments. In the fifth session, students edited capitalization, spelling, punctuation, and other writing conventions before publishing their completed narratives in a shared class gallery, where classmates could respond using star or

thumbs-up reactions. This sequence was intended to provide structured opportunities for idea generation, composition, feedback, revision, and publication.

The control group received instruction covering the same narrative writing content and learning objectives but without Padlet. Instruction was delivered through teacher explanations, individual writing assignments, and handwritten compositions in students' exercise books. This arrangement enabled the study to compare Padlet-enhanced instruction with the conventional instructional approach used in the participating school. Because the school's Wi-Fi connection was available only in the teachers' room, the experimental classroom used a portable 4G modem and tablets or Chromebooks to allow students to access Padlet simultaneously. The classroom teacher monitored instructional implementation using an observation checklist with 10 indicators rated on a four-point scale. The observation instrument was intended to document the extent to which the planned instructional activities were implemented; its results should be reported separately if they are used to substantiate intervention fidelity.

Narrative writing performance was measured using a performance-based writing test requiring students to produce a narrative of at least three paragraphs within 70 minutes. Two parallel writing prompts were used to reduce direct repetition of the same topic across the testing occasions. The pretest prompt asked students to describe a school holiday experience, whereas the posttest prompt focused on a memorable experience with family members or friends. Both tasks were designed to elicit narrative texts requiring students to organize events coherently and demonstrate appropriate vocabulary, sentence construction, and written language conventions. Two raters assessed the resulting texts independently: the researcher and the grade V classroom teacher.

Student writing was evaluated using an analytical rubric based on the writing assessment dimensions described by Nurgiyantoro (2022), with a total score ranging from 0 to 100. The rubric comprised five dimensions: content relevance and idea development (30%), composition organization (20%), vocabulary and diction (20%), grammar and sentence structure (25%), and mechanics, spelling, and punctuation (5%). These dimensions were intended to capture both the communicative quality and the linguistic accuracy of students' narratives. Using analytical rubrics aligns with previous work assessing elementary students' narrative writing performance (Carey et al., 2022; Yulianti et al., 2025). The final writing score for each student was calculated as the arithmetic mean of the two raters' scores. Before the main assessment, the writing prompts and scoring rubric were reviewed by two experts: a lecturer specializing in elementary Indonesian language education and a lecturer specializing in instructional media. Their reviews were intended to establish the content relevance, clarity, and suitability of the assessment materials for the research context.

The quality of the assessment instrument was examined through expert judgment and statistical analyses. The proposed procedure included Pearson product–moment correlation for item-level validity, using a reference critical value of $r = 0.3388$ for $N = 34$ at $\alpha = 0.05$, and Cronbach's alpha for internal consistency, with a criterion of at least 0.70. We assessed inter-rater agreement using the intraclass correlation coefficient (ICC) with a two-way mixed-effects model, following the reporting guidance of Koo & Li (2016). The ICC specification should distinguish between absolute agreement and consistency, as well as between single-rater and average-rater reliability, according to the intended interpretation of the scores. Because the final score was calculated by averaging two raters' ratings, the average-measures ICC is particularly

relevant if the reliability of the combined score is the primary concern. The validity and reliability coefficients should be reported as observed results rather than assumed from the selected procedures or reference thresholds.

Data were analyzed using IBM SPSS Statistics version 26, with the significance level set at $\alpha = 0.05$ (Ghozali, 2018). Descriptive statistics, including the mean, standard deviation, minimum, and maximum, were calculated for the pretest and posttest scores in each group. Learning improvement was also examined using the normalized gain (N-Gain) proposed by Hake (1999), calculated as follows:

$$g = \text{Posttest score} - \text{Pretest score} \,/\, 100 - \text{Pretest score}$$

Normalized gain was interpreted using three categories: high gain ($g \geq 0.70$), medium gain ($0.30 \leq g < 0.70$), and low gain ($g < 0.30$). The N-Gain calculation assumes a maximum possible score of 100 and is undefined when the pretest score is 100. Accordingly, cases with a pretest score of 100 require explicit handling and should not be assigned an arbitrary N-Gain value.

Before inferential analysis, the data were examined for relevant statistical assumptions. The Shapiro–Wilk test was used to assess normality, while Levene's test was used to examine homogeneity of variance. Baseline differences between the groups were evaluated using an independent-samples t-test on pretest scores. For ANCOVA, the linear relationship between pretest and posttest scores and the homogeneity of regression slopes were examined to determine whether the covariate operated comparably across groups. Because the study involved intact classes, the interpretation of these tests also considered the limitations associated with nonrandom group assignment.

The first hypothesis (H1) was tested using a one-way ANCOVA, with posttest writing score as the dependent variable, instructional group as the fixed factor, and pretest writing score as the covariate. The analysis was intended to determine whether the experimental and control groups differed in posttest performance after adjustment for baseline writing ability. The adjusted group effect was evaluated at the 0.05 significance level, and partial eta squared (η^2_p) was reported as a measure of effect size. The second hypothesis (H2) was examined by comparing students' N-Gain scores between the two groups using an independent-samples t-test when its assumptions were sufficiently satisfied. The Mann–Whitney U test was used as a supplementary or alternative analysis when the distributional characteristics of the data did not adequately support the parametric comparison. Cohen's *d* was calculated to characterize the standardized magnitude of the between-group difference when appropriate (Cohen, 1988). Statistical significance, effect sizes, and descriptive results were interpreted together to provide a more comprehensive assessment of the potential contribution of Padlet-enhanced narrative writing instruction.

Results and discussion

Instrument quality and inter-rater reliability

The quality of the writing assessment instrument was examined in terms of inter-rater reliability, item–total correlations, and internal consistency. As presented in Table 1, the average-measures intraclass correlation coefficient (ICC) was 0.983 for the pretest and 0.991 for the posttest. Both coefficients exceeded the 0.90 threshold commonly interpreted as excellent reliability (Koo & Li, 2016). The corresponding single-measure ICC values were also high, indicating strong agreement between the two raters when

assessing students' narrative writing performance. The Pearson correlations between raters were statistically significant for both assessments ($p < 0.001$).

The item–total correlations for the five rubric dimensions ranged from 0.405 to 0.939 for the pretest and from 0.577 to 0.940 for the posttest, exceeding the specified critical value of 0.3388. Cronbach's alpha coefficients were 0.841 and 0.858, respectively, surpassing the minimum criterion of 0.70. These findings indicate that the assessment instrument demonstrated strong inter-rater reliability and satisfactory internal consistency within the present sample. Consequently, the average scores assigned by the two raters were used in the subsequent analyses.

Table 1 Instrument quality and reliability results

Indicator	Pretest	Posttest	Criterion
ICC, single measures (95% CI)	0.967 (0.935–0.983)	0.982 (0.964–0.991)	> 0.90: excellent
ICC, average measures (95% CI)	0.983 (0.966–0.992)	0.991 (0.982–0.995)	> 0.90: excellent
Pearson inter-rater correlation (r)	0.967	0.982	$p < 0.001$
Cronbach's alpha (k = 5)	0.841	0.858	≥ 0.70
Item–total correlation range	0.405–0.939	0.577–0.940	r critical = 0.3388

Source: primary data, processed 2026.

Descriptive statistics of narrative writing performance

The descriptive statistics in Table 2 summarize students' narrative writing performance before and after the instructional intervention. The experimental and control groups had similar pretest means, indicating broadly comparable initial writing performance. After the intervention, both groups improved, although the magnitude of improvement differed substantially. The Padlet group exhibited a larger increase in mean writing scores and a higher normalized gain than the conventional group. The N-Gain results further indicated that the experimental group's improvement fell within the medium-gain category. In contrast, the control group's improvement fell within the low-gain category, based on Hake's (1999) classification. These findings are also reflected in Figure 1, which illustrates the differences between the groups' mean pretest and posttest scores.

Table 2 descriptive statistics of pretest, posttest, gain, and normalized gain scores

Group	Measure	n	M	SD	Min	Max
Experimental (Padlet)	Pretest	17	60.71	5.76	50	69
	Posttest	17	86.24	3.07	81	91
	Gain	17	25.53	4.12	19	32
	N-Gain	17	0.6503	0.0547	0.54	0.76
Control (conventional)	Pretest	17	59.65	5.06	50	68
	Posttest	17	70.71	3.29	64	77
	Gain	17	11.06	2.82	5	15
	N-Gain	17	0.2713	0.0511	0.15	0.35

Source: primary data, processed 2026.

The distribution of students across writing proficiency categories provides additional information about the pattern of improvement. As shown in Table 3, the experimental group shifted from a pretest distribution dominated by the adequate category to a posttest distribution dominated by the very good category. In contrast, the control group showed improvement primarily within the good category, with one student remaining in the adequate category. This distribution indicates that the groups' proficiency classifications also differed, rather than differences being limited to mean scores.

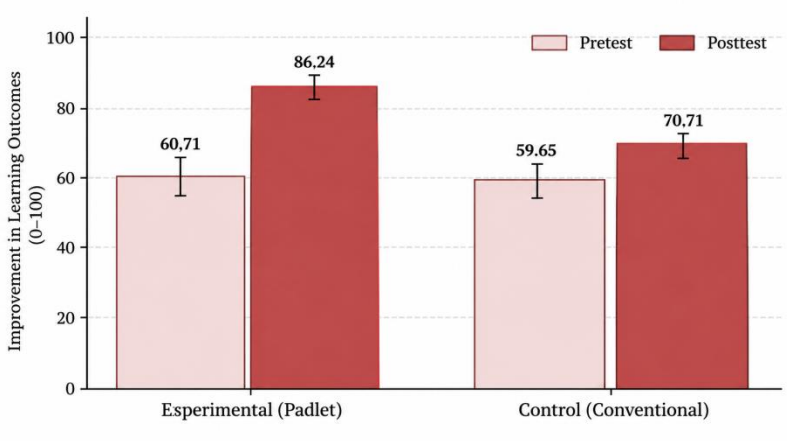


Figure 1 mean pretest and posttest narrative writing scores
Source: primary data, processed 2026.

Table 3 distribution of narrative writing proficiency categories, n (%)

Category	Score range	Experimental pretest	Experimental posttest	Control pretest	Control posttest
Very good	81–100	0 (0.0%)	17 (100.0%)	0 (0.0%)	0 (0.0%)
Good	66–80	4 (23.5%)	0 (0.0%)	2 (11.8%)	16 (94.1%)
Adequate	56–65	9 (52.9%)	0 (0.0%)	11 (64.7%)	1 (5.9%)
Poor	≤ 55	4 (23.5%)	0 (0.0%)	4 (23.5%)	0 (0.0%)

Source: primary data, processed 2026.

Preliminary assumption testing

Before conducting the inferential analyses, the relevant statistical assumptions were examined. As summarized in Table 4, the Shapiro–Wilk tests did not indicate significant departures from normality for the pretest, posttest, or N-Gain distributions in either group. Levene's tests also did not indicate significant differences in variance between the experimental and control groups for these measures. The independent-samples t-test showed no statistically significant difference in pretest scores between the groups. The relationship between pretest and posttest scores was statistically significant, supporting the presence of a linear covariate–outcome relationship. Furthermore, the group-by-pretest interaction was not statistically significant, providing no evidence of unequal regression slopes. These findings supported proceeding with ANCOVA, subject to the other assumptions and design limitations discussed below.

Table 4 preliminary statistical assumption tests

Test	Variable or relationship	Statistic	p	Interpretation
Shapiro–Wilk	Pretest: experimental / control	W = 0.939 / 0.968	0.312 / 0.784	No significant departure from normality
Shapiro–Wilk	Posttest: experimental / control	W = 0.955 / 0.971	0.544 / 0.843	No significant departure from normality
Shapiro–Wilk	N-Gain: experimental / control	W = 0.942 / 0.959	0.347 / 0.618	No significant departure from normality
Levene's test	Pretest	F = 0.625	0.435	Homogeneity not rejected
Levene's test	Posttest	F = 0.010	0.922	Homogeneity not rejected
Levene's test	N-Gain	F = 0.042	0.839	Homogeneity not rejected
Independent-	Baseline pretest	t(32) = 0.569; d	0.573	No significant baseline

Test	Variable or relationship	Statistic	p	Interpretation
samples t-test	scores	= 0.195		difference
Covariate relationship	Pretest predicting posttest	F(1, 31) = 49.464	< 0.001	Significant linear relationship
Homogeneity of regression slopes	Group × pretest	F(1, 30) = 1.712	0.201	No significant slope difference detected

Source: primary data, processed 2026.

Effect of padlet on narrative writing performance (H1)

The one-way ANCOVA results are presented in Table 5. After controlling for pretest scores, the effect of instructional group on posttest narrative writing performance was statistically significant, $F(1, 31) = 471.980$, $p < 0.001$, with a partial eta squared of 0.938. This indicates a substantial adjusted difference between the two instructional conditions in the present sample. The pretest covariate was also statistically significant, $F(1, 31) = 49.464$, $p < 0.001$, demonstrating that initial writing performance was associated with post-intervention scores.

Table 5 one-way ANCOVA results for posttest narrative writing performance

Source	Type III SS	df	MS	F	p	Partial η^2
Corrected model	2.249.419	2	1.124.709	278.812	< 0.001	0.947
Intercept	487.272	1	487.272	120.793	< 0.001	0.796
Pretest (covariate)	199.536	1	199.536	49.464	< 0.001	0.615
Instructional group	1.903.938	1	1.903.938	471.980	< 0.001	0.938
Error	125.052	31	4.034	-	-	-
Total	211.734.000	34	-	-	-	-
Corrected total	2.374.471	33	-	-	-	-

Source: primary data, processed 2026.

The adjusted means provide a clearer interpretation of the group effect. At the common pretest reference value of 60.18, the experimental group had an adjusted posttest mean of 85.992 (SE = 0.488, 95% CI [84.996, 86.988]), compared with 70.950 for the control group (SE = 0.488, 95% CI [69.954, 71.946]). The adjusted mean difference was 15.042 points (95% CI [13.630, 16.454]), $t = 21.725$, $p < 0.001$. Figure 2 illustrates the distinction between the observed posttest means and the means adjusted for baseline writing performance. The adjusted confidence intervals do not overlap, reinforcing the evidence of a substantial difference between the instructional conditions.

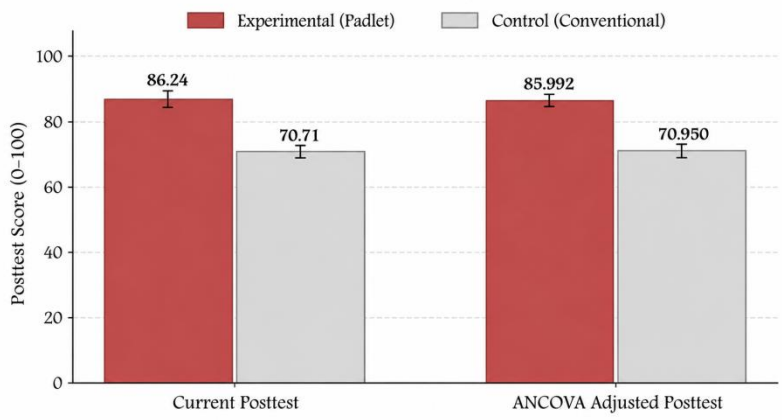


Figure 2 observed and ANCOVA-adjusted posttest narrative writing scores by instructional group
Source: primary data, processed 2026.

Taken together, the ANCOVA results support H1: the Padlet group achieved significantly higher adjusted posttest writing scores than the conventional group. Nevertheless, the magnitude of the estimated effect should be interpreted in the context of the quasi-experimental design, the small sample, and the use of one intact class per instructional condition.

Differences in normalized learning gains (H2)

The independent-samples t-test indicated a statistically significant difference in N-Gain between the experimental and control groups, $t(32) = 20.870$, $p < 0.001$. The mean difference was 0.379 (95% CI [0.342, 0.416]), with Cohen's d = 7.158. The Mann–Whitney U test produced a consistent conclusion, $U = 0.00$, $p < 0.001$. In the observed sample, every student in the experimental group had an N-Gain higher than the highest N-Gain in the control group.

Table 6 independent-samples t-test comparing normalized gains

Group	n	M	SD	N-Gain (%)	Hake category
Experimental (Padlet)	17	0.6503	0.0547	65.03	Medium
Control (conventional)	17	0.2713	0.0511	27.13	Low

Note. Between-group comparison: $t(32) = 20.870$, $p < 0.001$; mean difference = 0.379, 95% CI [0.342, 0.416]; Cohen's d = 7.158. The Mann–Whitney U test also indicated a statistically significant difference ($U = 0.00$, $p < 0.001$).
Source: primary data, processed 2026.

The results support H2, indicating that the experimental group demonstrated greater normalized improvement than the control group. The consistency between the parametric and nonparametric tests strengthens the evidence that the observed difference did not depend solely on the choice of comparison procedure. However, the unusually large standardized effect size warrants careful interpretation and verification against the original student-level data, scoring procedures, and statistical output.

Padlet as a scaffold for narrative writing development

The findings suggest that integrating Padlet into the narrative writing process led to substantially better writing outcomes than conventional instruction in the participating classroom. The adjusted posttest difference indicates that the measured differences in students' initial writing scores alone did not explain the observed advantage. This result aligns with Parida et al. (2024), who examined Padlet as a collaborative medium for elementary narrative writing, and Alyanabila et al. (2025), who reported benefits of interactive, media-based online writing instruction. It also extends Ramadhani et al. (2023) focus on facilitating the prewriting stage by examining an instructional sequence that incorporated drafting, revision, editing, and publication.

Padlet's potential contribution lies in integrating multiple forms of instructional support within a single learning environment. In conventional writing activities, students may be asked to produce a complete narrative before they have developed sufficient ideas or established an event sequence. For students who experience writer's block, this requirement can create a substantial barrier to beginning a composition. Padlet offers an alternative entry point by letting students engage with visual prompts, record preliminary ideas, and review shared contributions before composing a complete text. The instructional sequence therefore shifts writing from an isolated final-product task toward a process in which ideas can be generated, organized, reviewed, and refined.

This interpretation is particularly relevant to the participating students' bilingual context. For learners whose mother tongue is Madurese, composing narratives in formal Indonesian may require simultaneous idea generation, vocabulary retrieval, grammatical construction, and adherence to written conventions. Visual prompts and preliminary idea cards may reduce the burden of generating content from an empty page, leaving students more opportunity to formulate their ideas in Indonesian. However, the present findings do not independently establish that Madurese–Indonesian language transfer was reduced. Demonstrating that mechanism would require directly analyzing linguistic errors, vocabulary development, or students' writing processes. The bilingual context is therefore best understood as an important pedagogical consideration that may help explain the intervention's relevance, rather than as a separately tested causal mechanism.

Interpreting the findings through multimedia learning theory

The cognitive theory of multimedia learning offers one explanation for why Padlet's visual and verbal resources may have supported the development of narrative writing. Mayer (2020) argues that learners process verbal and pictorial information through partially distinct channels, while working memory is limited. Carefully designed multimedia instruction can facilitate meaningful learning when learners are supported in selecting, organizing, and integrating relevant information. In the present intervention, sequential images and introductory videos provided contextual information that students could translate into narrative ideas and event sequences.

For narrative composition, this support is pedagogically relevant because students must coordinate several interdependent processes: deciding what happens in a story, ordering events, developing characters and settings, and expressing relationships between events through language. A visual sequence can make temporal and causal relationships more concrete before students express them in writing. When these visual prompts are paired with structured writing spaces, learners can gradually transform an initial story representation into an organized verbal account.

The findings align with this theoretical explanation, but they do not show that multimedia learning mechanisms directly caused the observed improvement. The study did not independently manipulate visual support, verbal support, or cognitive load. Moreover, multimedia resources are not inherently beneficial; irrelevant images, excessive video content, or poorly organized instructions can increase rather than reduce cognitive demands. The more defensible interpretation is that the purposeful use of visual prompts within a structured writing sequence may have supported idea generation and organization. This interpretation aligns with broader evidence on digital visual media and elementary literacy reported by Muslimasari et al. (2025), as well as findings synthesized by Zulkarnain et al. (2025).

Collaborative feedback and sociocultural learning

A second explanation concerns writing's social organization. Vygotsky's (1978) sociocultural theory conceptualizes learning as a process mediated by interaction, language, and guidance. From this perspective, students can develop skills by participating in activities that extend beyond what they can accomplish independently, provided that appropriate support is available. Padlet's shared writing space and commenting features may create opportunities for such support by making drafts accessible for teacher guidance and peer response.

The distinction between the two instructional conditions is therefore not simply whether a digital device is present. It also concerns how students encounter feedback while composing. In the Padlet condition, comments and shared drafts were incorporated into the instructional sequence before publication. This arrangement may have allowed students to recognize weaknesses in their writing, compare alternative expressions, and revise while the task was still underway. By contrast, individual writing in exercise books offered fewer built-in opportunities for classmates to examine one another's work or for feedback to be exchanged through a shared platform.

This interpretation aligns with Saeed & Al Qunayeer (2022), who examined the role of interactive digital feedback in students' writing outcomes, and with Fauzia et al. (2023), whose work focused on collaborative narrative writing using Padlet. It also offers a plausible explanation for why Padlet may have supported more than initial idea generation: feedback was integrated into later stages of composition and revision. Nevertheless, the present study did not isolate peer feedback from teacher feedback, visual prompts, or digital publication. Therefore, the contribution of each feature cannot be quantified separately.

A key pedagogical implication is that a collaborative platform's educational value depends on the quality of interaction it supports. Comments that identify a missing event, suggest a more precise word, or ask a student to clarify a character's action are more instructionally useful than reactions that merely express approval. Teachers should consequently provide clear peer-review criteria, model constructive comments, and ensure that feedback addresses both meaning and linguistic accuracy. Such practices would make the proposed sociocultural mechanism more explicit and help prevent digital interaction from becoming a social or decorative activity primarily.

Interpreting changes across writing dimensions

The five-dimensional assessment rubric provides a useful framework for understanding the skills the intervention targets: content and idea development, composition organization, vocabulary and diction, grammar and sentence structure, and mechanics. The instructional activities were designed to address these dimensions at different stages of the writing process. Brainstorming and visual prompts targeted idea development; the orientation–complication–resolution framework supported organization; peer interaction created opportunities to encounter alternative vocabulary; and guided revision and editing directed attention to sentence construction and written conventions.

This process-based interpretation aligns with Nurgiyantoro's (2022) emphasis on multiple components of writing quality and with research on the analytical assessment of elementary students' narrative texts (Carey et al., 2022; Yulianti et al., 2025). It also aligns with studies examining improvements in sentence construction, content quality, and spelling through digital or interactive learning media (Goldman et al., 2024; Simbeck et al., 2024). Taken together, these perspectives suggest that writing instruction may be more effective when the demands of composition are divided into manageable stages rather than presented as a single undifferentiated task.

However, the overall writing scores reported in this study do not show that each of the five rubric dimensions improved independently or equally. Although the assessment instrument included all five dimensions, the results presented here do not provide separate pretest–posttest statistics for each dimension. The observation that students' narratives appeared more developed or better organized can inform the interpretation of the intervention, but claims about dimension-specific effects should be

supported by additional analyses of the corresponding rubric scores. Future reporting could compare adjusted outcomes for content, organization, vocabulary, grammar, and mechanics separately, provided the analysis accounts for multiple comparisons and the sample size limitations.

Understanding the difference in normalized gains

The difference in normalized gains complements the ANCOVA findings by examining improvement relative to the potential improvement remaining after the pretest. The experimental group's medium N-Gain category and the control group's low category suggest that the two instructional conditions were associated with different levels of progress during the intervention. This pattern is consistent with Hake's (1999) use of normalized gain to describe learning improvement. It supports the interpretation that the Padlet group made greater progress relative to its available improvement range.

The agreement between the N-Gain comparison and the ANCOVA result is informative because the two analyses address related but different questions. ANCOVA compares posttest performance after statistically adjusting for baseline scores, whereas N-Gain describes the proportion of possible score improvement each student achieves. Together, they provide complementary evidence of a group difference in the present sample. Nevertheless, N-Gain should not be interpreted as a direct measure of retention, long-term competence, or transfer to other writing genres. It also depends on the maximum possible score and can be sensitive to the distribution of pretest scores.

The exceptionally large Cohen's d of 7.158 further warrants scrutiny. Although the calculated value indicates an unusually large standardized difference in N-Gain, its magnitude should not be taken as definitive evidence that the intervention would produce a comparable effect in other classrooms. Standardized effect sizes can become very large when within-group variability is small. In addition, a small sample and a design involving only one class per condition can amplify the apparent contrast between instructional groups. The original student-level data, N-Gain calculations, pooled standard deviation, and statistical output should therefore be checked before this estimate is finalized for publication.

Reliability of assessment and confidence in the findings

The high ICC coefficients provide evidence that the two raters produced closely aligned scores under the assessment procedures used in this study. This is important because narrative writing assessment requires judgment across multiple dimensions, including content relevance, organization, diction, grammatical accuracy, and mechanics. Independent scoring by two raters reduces reliance on a single evaluator's judgment, while a clearly specified analytical rubric provides a shared basis for assessment. Using ICC is consistent with the reliability-reporting guidance Koo & Li (2016) discuss.

At the same time, strong inter-rater reliability should not be mistaken for full validity. Two raters can agree closely while sharing the same interpretation of a rubric or overlooking the same aspect of writing quality. Expert review, the alignment of prompts with learning objectives, and evidence that the rubric captures the intended dimensions of narrative writing remain important. The parallel prompts also warrant consideration: school holiday experiences and memorable experiences with family or friends may differ in familiarity, emotional salience, and the vocabulary they elicit. Consequently, high rater reliability alone cannot rule out differences in task difficulty.

The internal consistency coefficients reported in Table 1 also support this, but their interpretation depends on how the five rubric dimensions are operationalized and combined. Because writing quality is multidimensional, a high alpha coefficient alone does not show that the dimensions measure a single underlying construct. Reliability and validity should therefore be presented as complementary aspects of instrument quality rather than interchangeable indicators. This distinction strengthens the methodological interpretation of the results and avoids overstating what the reported coefficients demonstrate.

Practical implications for rural bilingual elementary classrooms

The findings have practical implications for teachers seeking to improve narrative writing in rural elementary schools. First, writing instruction can be organized around a sequence of manageable tasks rather than relying primarily on explanations followed by independent composition. Second, visual prompts and shared idea boards can give students who struggle to generate content an accessible starting point. Third, structured peer review and timely teacher feedback can help students refine their narratives before publication. These practices align with instructional possibilities identified in prior research on Padlet, interactive media, and digital feedback (Fauzia et al., 2023; Rahmania & Fajar, 2026; Saeed & Al Qunayeer, 2022).

In bilingual classrooms, teachers can strengthen this approach by explicitly supporting the transition from oral ideas in students' familiar language to written Indonesian. For example, students can begin by discussing an event, identifying key vocabulary, organizing the sequence of events, and then, with teacher guidance, drafting sentences in Indonesian. This approach recognizes students' linguistic resources while maintaining clear expectations for formal writing. However, it should not assume that all writing difficulties stem from bilingualism; instructional experience, vocabulary knowledge, reading exposure, and individual differences may also contribute.

The implementation also illustrates the importance of matching technology to local infrastructure. A portable modem and shared digital devices provided an alternative to dependence on fixed school Wi-Fi. Nevertheless, the feasibility of this arrangement will depend on network stability, device availability, data costs, technical support, and the teacher's ability to manage collaborative digital activities. Schools with limited access may need to use rotating device access, offline prompt preparation, or other low-bandwidth approaches. The central implication is not that digital technology is universally necessary, but that it can be a useful instructional resource when its functions align with learning objectives and implementation conditions.

Limitations and directions for future research

Several limitations should be considered when interpreting the findings. First, the study involved 34 students from two intact classes in a single rural elementary school. Because each instructional condition corresponded to only one class, the intervention effect cannot be fully separated from class-specific characteristics, including classroom dynamics, peer relationships, or unmeasured differences in instruction. Although pretest adjustment helps account for measured baseline writing performance, it cannot eliminate all potential confounding. Moreover, the absence of individual randomization limits the strength of causal claims and the generalizability of the findings.

Second, the intervention combined several elements, including visual prompts, collaborative drafting, teacher feedback, peer review, digital editing, and publication.

The study therefore evaluates the Padlet-enhanced instructional package rather than the isolated effect of a single platform feature. Future research could use a larger sample across multiple schools and classes, with more than one class in each condition, to better separate instructional effects from class-level differences. Where feasible, cluster-level randomization or statistical methods that account for classroom clustering would strengthen the design.

Third, the study assessed writing performance immediately after a relatively short intervention. It did not establish whether improvements persisted over time or transferred to other genres, such as descriptive, explanatory, or expository writing. Subsequent studies could incorporate delayed posttests, qualitative analyses of successive drafts, student interviews, and separate assessments of the five writing dimensions. These additions would help explain not only whether Padlet-enhanced instruction is associated with better performance, but also how students develop their writing skills and which instructional components contribute most to that development.

The results show that Padlet-enhanced narrative writing instruction was associated with higher adjusted posttest scores and greater normalized gains than conventional instruction among participating grade V students. The findings are consistent with multimedia learning theory and sociocultural perspectives on guided, collaborative learning, while also extending previous work on digital writing support to a rural Madurese–Indonesian bilingual classroom. The study's principal contribution lies in examining Padlet as part of an integrated writing process rather than as a tool restricted to idea generation or digital presentation. However, the exceptionally large estimated effects, the limited number of classes, and the absence of component-specific analyses call for cautious interpretation and replication in broader educational settings.

Conclusions

This study shows that Padlet-enhanced narrative writing instruction was associated with significantly better writing performance than conventional instruction among grade V students at UPTD SD Negeri Mano'an 1. After controlling for initial writing ability, the experimental group achieved a significantly higher adjusted posttest mean, with a difference of 15.042 points ($p < 0.001$; partial $\eta^2 = 0.938$). The experimental group also showed a higher normalized gain (0.6503) than the control group (0.2713), indicating medium and low improvement, respectively. These findings support both research hypotheses and suggest that integrating Padlet into the complete writing process, from prewriting and drafting to revision, editing, and publication, can provide meaningful support for narrative writing development in a rural bilingual elementary classroom.

The findings contribute to the theoretical and practical understanding of technology-enhanced literacy instruction by illustrating how visual scaffolding, collaborative interaction, and formative feedback can be integrated into a structured writing process. The results align with the cognitive theory of multimedia learning while extending previous Padlet research beyond prewriting to a more comprehensive narrative writing intervention. Practically, the study offers an instructional framework that elementary teachers may adapt to support idea generation, text organization, and revision, including in bilingual learning environments with limited technological infrastructure. Nevertheless, the findings should be interpreted cautiously because the study involved only 34 students from two intact classes in one school, with each instructional condition represented by a single class. The quasi-experimental design also limits causal inference, while the short intervention period and absence of delayed

assessments prevent conclusions about long-term retention. Furthermore, the unusually large estimated effect sizes warrant verification against the original statistical output.

Future research should use larger, more diverse samples across multiple rural and urban schools, with several classes in each instructional condition, to improve the robustness and generalizability of the findings. Where feasible, cluster randomization and analytical methods that account for classroom-level differences should be considered to strengthen causal inference. Further studies should also examine the individual contributions of visual prompts, peer feedback, teacher scaffolding, and digital publication to determine which components most effectively support writing development. In addition, separate analyses of content, organization, vocabulary, grammar, and writing mechanics, together with delayed posttests and qualitative analyses of students' drafts, could clarify how Padlet influences different aspects of narrative competence and whether the improvements persist over time. Such research would provide a more comprehensive evidence base for developing inclusive, context-sensitive, and sustainable digital literacy practices in elementary education.

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