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Digitalizing Cultural Heritage: Preserving the Legend of Lake Toba Through Storybird

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Abstract

Elementary students' engagement with local folklore has declined due to conventional instructional methods and foreign media influences. This study aimed to evaluate the effectiveness of the digital platform *Storybird* in enhancing students' folklore writing skills and cultural literacy regarding the Legend of Lake Toba. Employing a quantitative pre-experimental one-group pretest-posttest design, the research was conducted during the even semester of the 2024/2025 academic year at SDN 060809 in Medan, involving 36 elementary students selected via purposive sampling. The research procedure comprised a pretest session without digital tools, an interactive *Storybird* treatment session, and a posttest session. Data were collected using validated folklore writing performance tests assessing characterization, plot, and theme. Data analysis utilized descriptive metrics, Lilliefors normality tests, F-homogeneity tests, and paired-sample t-tests. Results showed a statistically significant score gain of 24.10 points, with mean performance rising from $M = 57.17$ (Adequate) to $M = 81.27$ (Good), supported by t-score $= 8.092 > t$-table $= 1.697$ ($\alpha = 0.05, df = 34$). In conclusion, *Storybird* effectively scaffolds creative narrative performance while revitalizing local cultural heritage. It is recommended that educators and curriculum designers integrate interactive digital storytelling tools into elementary language arts instruction to sustainably align modern technological literacy with indigenous cultural preservation.

Keywords: Storybird, Folklore Writing, Local Culture Preservation, Legend of Lake Toba, Digital Learning Media

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1. INTRODUCTION

Local culture represents the ideas, social values, activities, and creative products of a community within a social space that continuously grows and serves as a guide for living together (Ansya, Salsabilla, et al., 2024; Purba et al., 2026). These cultural values develop through a long learning process passed down across generations through experience, social interaction, and daily practices. Local culture encompasses not only traditions and arts but also local wisdom (*kearifan lokal*) that governs moral norms and community worldviews (Murhaini & Achmadi, 2021; Syam et al., 2024). In formal education, local culture plays a strategic pedagogical function because it contains ethical foundations, character building, and national identity that need to be cultivated continuously among young learners (Ariani et al., 2022; Sakti et al., 2024; Zhanbayev et al., 2023). Therefore, elementary educational institutions hold a crucial role in ensuring that local culture is not merely learned cognitively, but also deeply valued, appreciated, and preserved by students from an early school age.

Despite its essential role, elementary school students' interest in local culture has declined significantly in recent years. This phenomenon is driven primarily by conventional and monotonous instructional methods that lack contextualization with the world of 21st-century children (Ansya, Ardhita, et al., 2024; Ansya & Salsabilla, 2025b). Students often struggle to perceive the relevance of local cultural values in their daily lives, particularly as globalization offers diverse, visually captivating digital entertainment. The rapid influx of foreign culture through gadgets and social media frequently displaces indigenous human values (Anindhita et al., 2024; Haryono et al., 2025; Hossain, 2024). Cultural synchronization theory explains that culture can shift its meaning and appeal when it is no longer communicated through media aligned with contemporary trends (Aririguzoh, 2022; Jordheim & Ytreberg, 2021). This condition is exacerbated by a lack of public awareness and inadequate filtering of foreign influences, leading to the gradual erosion of local identity among the younger generation (Irsyadillah et al., 2025; Suhardiyanto et al., 2025).

One of the cultural assets most affected by this shift is folklore. Folklore, which should serve as a bridge for imparting life values and cultural identity, is increasingly neglected (Flood et al., 2021; Liaqat et al., 2022). In many families, the tradition of oral storytelling (*oral transmission*) has largely disappeared, while in schools, teachers tend to rely heavily on factual textbook texts without utilizing the pedagogical potential of folklore. In fact, folk tales such as the Legend of Lake Toba (*Asal-Usul Danau Toba*) are rich in moral lessons, including hard work, honesty, loyalty, and environmental stewardship

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(Lumbanbatu, 2025; Purwoko et al., 2021; Syach Bustami Harahap et al., 2025). Beyond its ethical value, writing and appreciating folklore plays a critical role in developing students' cognitive abilities, imaginative thinking, and language competence. Unfortunately, the disruption of folklore transmission renders students increasingly disconnected from their cultural roots amidst modernization.

On the other hand, the rapid development of digital technology in education offers promising new opportunities for revitalizing local culture preservation. Today's young learners possess a strong affinity for visual media, creative platforms, and interactive content (Nicolaou, 2021; Peters et al., 2022; Saputra, 2024). When utilized appropriately, technology can effectively bridge cultural heritage with modern learning needs. Creative digital platforms such as *Storybird* provide space for students to compose creative narratives enriched with high-quality visual illustrations (Navas, 2024; Peña-Acuña & Navarro-Martínez, 2023; Sujiatmoko & Puspita, 2024). The *Storybird* platform has proven effective in enhancing narrative writing skills, boosting learning motivation, and fostering student engagement through its user-friendly and visually stimulating interface (Grammatikopoulou & Grammalidis, 2023; Pellas, 2023; Velu et al., 2025; Widiyanti & Nuroh, 2025). Integrating *Storybird* into writing instruction serves not only as a literacy tool but also as a transformative medium to creatively revive local wisdom.

Integrating digital technology into cultural literacy development offers strategic dual benefits for elementary students. Utilizing *Storybird* as a medium for writing folklore enhances students' creative writing skills and linguistic expression while simultaneously strengthening cultural preservation by reinterpreting traditional folklore into a communicative digital format (Agus et al., 2021; Mteti et al., 2025). Through artistic illustrations and visual narrative flows that spark imagination, *Storybird* delivers a vivid writing experience that helps students comprehend story structures and the cultural heritage of the Batak Toba community. Building cultural awareness at the elementary school level is essential so that indigenous wisdom remains resilient and sustainable across generations (Semwal, 2024; Shih, 2022). Thus, digital-based folklore writing functions as an effective bridge aligning 21st-century literacy demands with local cultural preservation efforts (Ansya et al., 2025; Ansya & Salsabilla, 2025a).

Despite the immense potential of digital media, real-world classroom observations reveal significant challenges in language and cultural instruction at the elementary school level, specifically at SDN 060809. Based on initial observations and interviews with teachers at SDN 060809, narrative writing instruction remains dominated by conventional teacher-

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centered approaches relying heavily on standard textbooks and printed worksheets. Educators at SDN 060809 have not integrated interactive digital learning media into Indonesian language classes, particularly when presenting folklore materials. Consequently, students' ability to compose folklore at SDN 060809 remains low; learners encounter substantial difficulties in developing plot structures, characterization, and themes in a coherent and imaginative manner. Furthermore, low student engagement and enthusiasm have led to a diminishing appreciation for Batak Toba local culture. These fundamental issues at SDN 060809 highlight the urgent need for innovative learning media capable of overcoming learning monotony while significantly enhancing students' folklore writing skills.

Previous empirical studies have examined the effectiveness of digital media and digital storytelling platforms in educational settings. A study by Castillo-Cuesta et al. (2021) demonstrated that using *Storybird* significantly improves narrative writing skills and learning motivation. Similarly, Peña-Acuña and Navarro-Martínez (2023) confirmed that *Storybird* effectively enhances student engagement and productivity in creative writing through multimodal features. Furthermore, Chang (2024) revealed that digital storytelling via *Storybird* is a highly effective tool for stimulating creative writing interest among language learners. In terms of cultural preservation, research by Fang et al. (2024) and Zort et al. (2023) showed that digitalizing folklore extends the lifespan of local heritage while broadening cultural accessibility for younger generations. However, most prior studies focused primarily on English as a Foreign Language (EFL) or general literacy, leaving a research gap regarding the application of *Storybird* in integrating indigenous Indonesian folklore—specifically the Legend of Lake Toba—within elementary school education.

To address the gaps identified in previous literature and overcome the practical problems at SDN 060809, this study aims to examine and evaluate the effectiveness of utilizing the digital platform *Storybird* in enhancing elementary students' skill in writing the folklore Legend of Lake Toba and strengthening their cultural literacy at SDN 060809. This research is designed to offer a concrete solution to low narrative writing performance and declining cultural appreciation in elementary classrooms. The novelty of this study lies in combining digital storytelling technology via *Storybird* with Batak Toba local folklore as an innovative, contextual learning model. The findings are expected to contribute theoretically to the development of digital-based Indonesian language learning media and practically to teachers at SDN 060809 and other elementary schools in creating interactive, creative, and culture-preserving instructional environments.

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2. METHOD

This study employed a quantitative approach with a pre-experimental design (*one-group pretest-posttest design*). The quantitative method was selected because it is oriented toward objective measurements of the investigated variables and satisfies scientific principles—namely, empirical, measurable, objective, rational, and systematic elements (Auliya et al., 2020; Creswell & Creswell, 2017; Sugiyono, 2022). Adnan and Latief (2020) state that quantitative research emphasizes numerical data processing throughout the entire procedure, thereby allowing researchers to measure the impact of a treatment precisely. In the context of this study, the quantitative method was applied to objectively and systematically evaluate the extent to which the digital platform *Storybird* influenced elementary school students' folklore writing skills regarding the Legend of Lake Toba (*Legenda Danau Toba*) by comparing pretest and posttest performance results.

The participants in this study consisted of elementary school students enrolled in a folklore writing class within the Indonesian Language subject at SDN 060809. The research sample comprised 36 students; thus, the degrees of freedom (df) for statistical prerequisite testing were calculated based on that sample size ($df = 35$). Participant selection was conducted using purposive sampling (*purposive sampling*), taking into account classroom availability as well as age and cognitive development characteristics suitable for basic creative writing instruction. Prior to receiving the treatment, students had received basic introductions to narrative texts, but they had never utilized digital storytelling platforms such as *Storybird* for writing activities. This homogenous baseline experience made the participants ideal for measuring the effectiveness of *Storybird* as a digital instructional innovation.

This research was conducted at Sekolah Dasar Negeri (SDN) 060809, located in Medan, North Sumatra Province. The selection of this site was grounded in contextual considerations and empirical issues observed in the field—specifically, the limited integration of interactive digital media in Indonesian language instruction and the declining appreciation among students for Batak Toba local folklore. The implementation took place during the even semester of the 2024/2025 academic year. The entire learning sequence was structured into two primary face-to-face sessions to ensure that the experimental process was executed smoothly without disrupting the school's regular curriculum schedule.

The research procedure (*research procedure*) was carried out through several systematic stages to guarantee data accuracy and consistency. The first session commenced with the pre-treatment stage (*pretest*), during which the teacher presented general concepts

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regarding the definition, narrative structure, and intrinsic elements of folklore. Following the instruction, students were asked to write a folk tale centered on the theme of the Origin of Lake Toba without the aid of digital tools, allowing their baseline writing competence to be objectively established. The second session comprised the treatment stage (*treatment*), wherein the teacher introduced and demonstrated the mechanics of the *Storybird* platform, presented interactive digital stories in animated format, and facilitated a question-and-answer session regarding plot development and moral values. The final stage concluded with the administration of the *posttest*, in which students rewrote the Legend of Lake Toba utilizing visual illustrations and story prompts provided by *Storybird*.

Data collection was conducted using a performance test (*performance test*) for folklore writing administered during both the pretest and posttest phases. To ensure measurement accuracy, the test instrument underwent content validation (*content validity*) based on the evaluation framework established by Rourke and Anderson (2004), which incorporates three key indicators of creative narrative writing: (1) character development (*character development*), (2) plot structure (*plot*), and (3) thematic coherence (*theme*). Additionally, the instrument was consulted with classroom teachers to ensure its alignment with the language proficiency level of elementary school learners. Through this procedure, the collected data originated from a consistent, valid, and standardized assessment process aligned with the research objectives.

Data analysis was conducted using two statistical approaches: descriptive statistics (*descriptive statistics*) and inferential statistics (*inferential statistics*). Descriptive analysis was used to calculate mean scores (*mean*), construct frequency distribution tables, and classify student writing mastery levels before and after the treatment using a standardized scoring scale. Prior to hypothesis testing, prerequisite statistical tests were performed, including a normality test (*normality test*) using the Lilliefors test by comparing the L_0 value against L_{table} at a significance level of $\alpha = 0.05$ (Creswell & Creswell, 2017) and a homogeneity test (*homogeneity test*) by comparing variance ratios using the F-distribution (Johnson & Christensen, 2024). Once the statistical prerequisites were met, hypothesis testing was conducted using a paired-sample t-test (*paired-sample t-test*) to determine the statistical significance of *Storybird*'s effect on students' folklore writing performance.

3. RESULTS AND DISCUSSION

The primary empirical data for this study were collected from a total sample of 35 elementary school students at SDN 060809 ($N = 35$), evaluated across three primary core

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indicators of folklore writing proficiency: character development (*character development*), plot structure (*plot*), and thematic coherence (*theme*). Descriptive statistical processing of the post-intervention performance data revealed that student mastery levels across these three combined writing indicators ranged from a minimum recorded score of 66.67% to a maximum achieved score of 88.89%. Prior to the implementation of the instructional intervention utilizing digital media, the student performance scores were widely dispersed across lower competence tiers, whereas the post-assessment data demonstrated a marked and concentrated shift toward higher mastery thresholds across all evaluated dimensions.

Following the instructional intervention using *Storybird* media, the individual mastery levels of the elementary school students across the three writing indicators were classified into three distinct mastery categories based on their percentage scores. Specifically, a group of 6 students, accounting for 17.14% of the total research sample ($N = 35$), achieved a mastery percentage of 66.67%. A second cohort consisting of 12 students, representing 34.28% of the sample, attained a mastery percentage of 77.78%. The third and largest group comprised 17 students, representing 48.57% of the total participants, who achieved the highest observed mastery percentage of 88.89%.

The statistical aggregation of student scores across the three writing indicators following the use of *Storybird* media is organized and presented in Table 1. The data calculation incorporates the score values (X), the observed frequency of students (F), and the cumulative score products (FX) for each score level. Summing the product values ($\sum F\,X$) across the sample yielded a cumulative total of 2,844.51 points. Dividing this sum by the total sample size ($N = 35$) produced an overall post-intervention sample mean score (M) of 81.26 on a 100-point scale, which corresponds to an average score of 8.13 when converted to a standardized 10-point evaluation scale.

Table 1. Frequency Distribution of Folktale Writing Proficiency Utilizing Storybird-Based Media in Elementary School Students for the Three Indicators

X	F	FX
66.67	6	400.02
77.78	12	933.36
88.89	17	1511.13
$N = 35$		$\sum F\,X = 2844.51$

Source: Data Processing by Researchers

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When evaluated against standard qualitative performance qualification categories on a 10-point scale, the posttest scores reflected a clear re-distribution across performance tiers. Based on the calculated overall mean score of 81.26, the aggregate writing proficiency of the student sample was categorized within the Good qualification range (76%–85%). Categorizing individual student performance across the qualification categories revealed that 6 students (17.14%) achieved the More Than Adequate qualification, 12 students (34.28%) attained the Good qualification, and 17 students (48.57%) reached the Very Good qualification. Notably, zero students remained within the Adequate, Insufficient, Poor, or Very Poor categories following the implementation of the *Storybird* intervention.

A comparative evaluation of student writing proficiency recorded prior to the instructional intervention revealed a substantial contrast in performance distribution across the ten qualification scales. During the baseline *pretest* assessment, 2 students (5.71%) fell into the Very Poor qualification (scale 1, 0–15%), 0 students were in Poor (scale 2, 16–25%), 2 students (5.71%) were in Very Insufficient (scale 3, 26–35%), 8 students (22.86%) were in Insufficient (scale 4, 36–45%), 10 students (28.57%) were in Adequate (scale 5, 46–55%), 0 students were in Almost Adequate (scale 6, 56–65%), 8 students (22.86%) reached More Than Adequate (scale 7, 66–75%), 2 students (5.71%) reached Good (scale 8, 76–85%), 3 students (8.57%) reached Very Good (scale 9, 86–95%), and 0 students reached Excellent (scale 10, 96–100%). The overall baseline *pretest* mean score was calculated at 57.17.

Table 2. Frequency Distribution of Folktale Writing Proficiency Utilizing Storybird-Based Media in Elementary School Students for the Three Indicators (Pretest and Posttest Comparison)

No.	Qualification	Proficiency Level	Scale	Pretest	Posttest
1	Excellent	96–100%	10	0	0
2	Very Good	86–95%	9	3	17
3	Good	76–85%	8	2	12
4	More Than Adequate	66–75%	7	8	2
5	Adequate	56–65%	6	10	4
6	Almost Adequate	46–55%	5	0	0
7	Insufficient	36–45%	4	8	0
8	Very Insufficient	26–35%	3	2	0
9	Poor	16–25%	2	0	0
10	Very Poor	0–15%	1	2	0
Total				**35**	**35**

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Source: Data Processing by Researchers

Table 2 details the comparative frequency distribution of student proficiency across all ten qualification levels between the *pretest* and *posttest* conditions. In the *pretest* phase, a combined total of 22 out of 35 students (62.86%) performed at or below scale 5 (Adequate), with 12 of those students failing to achieve the minimum passing standard (scales 1 through 4). Conversely, the *posttest* data demonstrated a complete elimination of student scores within scales 1 through 4. In the post-intervention distribution, 4 students (11.43%) scored at scale 6 (Adequate), 2 students (5.71%) scored at scale 7 (More Than Adequate), 12 students (34.28%) scored at scale 8 (Good), and 17 students (48.57%) reached scale 9 (Very Good), while scale 10 recorded 0 students.

To determine the distributional characteristics of the dataset, a data normality test was conducted using the *Lilliefors* test method at a significance level of $\alpha = 0.05$ with a sample size of $N = 35$. As documented in Table 3, the empirical L_0 value calculated for the *pretest* dataset was 0.1683, compared against a critical table value (L_t) of 0.0360. For the *posttest* dataset, the calculated L_0 value was 0.1841 against the same critical threshold of $L_t = 0.0360$. Because the empirical L_0 values exceeded the critical L_t values in both assessment conditions ($0.1683 > 0.0360$ for *pretest* and $0.1841 > 0.0360$ for *posttest*), the student learning outcome data across both groups were determined to be not normally distributed.

Table 3. Normality Test Results

No	Group	Sample Size (N)	Significance Level	L0	Lt	Description
1	Pretest	35	0.05	0.1683	0.0360	Not normally distributed
2	Posttest	35	0.05	0.1841	0.0360	Not normally distributed

Source: Data Processing by Researchers

Sample variance homogeneity between the *pretest* and *posttest* groups was analyzed using an F-test distribution. As displayed in Table 4, the statistical ratio of variances produced an empirical F-score of 3.3934. At a significance level of $\alpha = 0.05$ and with degrees of freedom for the numerator and denominator established at $df = n - k = 35 - 1 = 34$, the critical F-table value was 2.30. Because the empirical F-score exceeded the critical table value ($3.3934 > 2.30$), the score variances between the *pretest* and *posttest* sample conditions were determined to be not homogeneous.

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Table 4. Homogeneity Test Results

No	Group	Sample Size (N)	Significance Level	F-score	F-table	Homogeneity Status
1	Pretest	35	0.05	3.3934	2.30	Not Homogeneous
2	Posttest	35	0.05			

Source: Data Processing by Researchers

Hypothesis testing was executed to determine the statistical significance of the difference between *pretest* and *posttest* folklore writing scores under conditions where the data were not normally distributed and variances were not homogeneous. The test procedure involved calculating the combined standard deviation (S^2) and executing a paired t-test. The statistical computation produced an empirical t-score of 8.092. Referencing the standard t-table at a 95% confidence level ($\alpha = 0.05$) and $df = 34$, the critical threshold value was 1.697. Because the empirical t-score significantly exceeded the critical table value ($8.092 > 1.697$), the null hypothesis (H_0) was rejected and the alternative hypothesis (H_1) was accepted.

Table 5. Summary Data Requirement Tests

No	Parameter	Treatment (Posttest)	Treatment (Pretest)	Description
1	Mean Score	81.27	57.17	Posttest > Pretest
2	Normality Test	$L_0 = 0.1841$; $L_t = 0.0360$	$L_0 = 0.1683$; $L_t = 0.0360$	$L_0 > L_t$ (not normally distributed)
3	Homogeneity Test	F-table = 2.30; F-score = 3.3934	F-table = 2.30; F-score = 3.3934	F-score > F-table (3.3934 > 2.30); thus, samples were not homogeneous
4	Hypothesis Test	T-table = 1.697; T-score = 8.092	T-table = 1.697; T-score = 8.092	T-score > T-table (8.092 > 1.697); thus, H_1 was accepted

Source: Data Processing by Researchers

A comprehensive summary of all statistical prerequisite tests and hypothesis testing parameters is presented in Table 5. The primary metrics record a mean score gain of 24.10 points, moving from $M = 57.17$ in the *pretest* to $M = 81.27$ in the *posttest*. The statistical decision parameters confirm that despite the non-normal distribution of the data ($L_0 > L_t$) and the non-homogeneous sample variances (F-score > F-table), the inferential t-test

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yielded a calculated t-score exceeding the critical t-table threshold ($8.092 > 1.697$), statistically confirming the acceptance of the research hypothesis (H_1).

DISCUSSION

The empirical findings of this study demonstrate a significant enhancement in elementary school students' folklore writing proficiency following the pedagogical implementation of *Storybird* digital media. The quantitative shift from a baseline *pretest* mean score of $M = 57.17$ to a post-intervention *posttest* mean score of $M = 81.27$ reflects a substantial average score gain of 24.10 points. Inferential statistical testing verified the significance of this gain, with an empirical t-score of 8.092 markedly surpassing the critical t-table threshold of 1.697 ($\alpha = 0.05, df = 34$). Prior to the intervention, 62.86% of the student sample ($n = 22$) performed at or below the Adequate threshold (scale 5), with 12 students failing to meet basic passing standards. Following the integration of *Storybird*, zero students remained in the failing qualification tiers, while 82.85% of the class achieved Good (34.28%, $n = 12$) or Very Good (48.57%, $n = 17$) qualifications. This dramatic re-distribution across performance categories indicates that interactive digital platforms can remediate foundational literacy deficits in elementary writing instruction. These results strongly align with prior empirical research by Castillo-Cuesta et al. (2021), who reported that *Storybird* significantly improves narrative writing skills and learning motivation, as well as Widiyanti and Nuroh (2025), who confirmed the positive efficacy of digital storytelling platforms in expanding elementary learners' literacy competencies.

A critical analysis of specific writing dimensions—character development (*character development*), plot structure (*plot*), and thematic coherence (*theme*)—reveals that the quantitative score gain was driven by the visual and structural scaffolding built into *Storybird*'s digital interface. In conventional instructional settings, elementary students often encounter cognitive overload when attempting to construct abstract narrative plots and detailed character profiles using only static textbooks and printed worksheets. *Storybird* alleviates these cognitive barriers by providing artwork and visual layouts that function as immediate creative triggers. The post-intervention data showed that 17 students (48.57%) reached the highest mastery tier (88.89% indicator mastery, scale 9), demonstrating an enhanced capability to synthesize coherent plot lines and articulate character motivations for the Legend of Lake Toba (*Legenda Danau Toba*). This outcome corroborates the findings of Peña-Acuña and Navarro-Martínez (2023), who demonstrated that multimodal storytelling applications stimulate original thought, increase writing productivity, and heighten student engagement during narrative tasks. Furthermore, as argued by Navas (2024), Pellas (2023), and Velu et al. (2025), user-friendly digital tools reduce extraneous

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cognitive processing, allowing young learners to focus on high-level narrative synthesis, thematic depth, and creative expression.

Beyond language arts achievement, the observed statistical gain ($M = 81.27$) provides empirical support for using interactive technology to revitalize local culture (*kearifan lokal*) among primary school learners. Folklore such as the Legend of Lake Toba embodies essential Batak Toba cultural capital, moral ethics, and environmental values (Lumbanbatu, 2025; Purwoko et al., 2021; Syach Bustami Harahap et al., 2025). However, traditional oral transmission (*oral transmission*) has gradually weakened due to the overwhelming presence of global digital entertainment. According to cultural synchronization theory (*cultural synchronization theory*), indigenous traditions risk cultural erosion unless communicated through media formats that align with modern societal habits (Aririguzoh, 2022; Jordheim & Ytreberg, 2021). By embedding regional folklore within *Storybird*'s digital canvas, this study successfully bridged traditional heritage with 21st-century digital learning. This aligns with findings by Chang (2024), who highlighted digital storytelling as an effective tool for rekindling creative writing interest, and reinforces research by Fang et al. (2024) and Zort et al. (2023), who concluded that digital packaging of cultural heritage extends the longevity of local folklore and broadens cultural accessibility for younger generations.

The sharp contrast between baseline *pretest* performance (where 22 students were clustered in low-achievement tiers) and *posttest* performance (where 29 out of 35 students reached Good or Very Good tiers) underscores an important pedagogical insight: elementary students are not inherently indifferent to local folklore, but are disengaged by traditional delivery methods. In an era where global media content threatens national cultural identity (Anindhita et al., 2024; Haryono et al., 2025; Irsyadillah et al., 2025; Suhardiyanto et al., 2025), culturally responsive digital instruction serves as a protective educational mechanism. Instilling cultural awareness during early childhood and primary education ensures that indigenous wisdom remains resilient across generations (Semwal, 2024; Shih, 2022). By re-interpreting local folklore through interactive visual tools, students at SDN 060809 did not merely complete a writing assignment; they actively participated in cultural preservation (*cultural preservation*) by re-imagining Batak Toba heritage. This dual benefit—simultaneously advancing technological literacy and cultural identity—supports the assertions of Agus et al. (2021) and Mteti et al. (2025) regarding the revitalization of traditional culture through innovative educational models.

An evaluation of the statistical prerequisite tests indicates that both *pretest* ($L_0 = 0.1683$) and *posttest* ($L_0 = 0.1841$) datasets deviated from normal distribution assumptions ($L_0 > L_t = 0.0360$), while sample variances were non-homogeneous (F-score $= 3.3934 >$

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F-table = 2.30). Such statistical departures are common in *in situ* educational field research involving intact elementary school classrooms ($N = 35$), where baseline student language abilities and prior technology exposure naturally vary (Creswell & Creswell, 2017; Sugiyono, 2022). Despite these distributional variances, the robust magnitude of the calculated t-score ($8.092 > 1.697$) confirms that the observed performance improvement was driven by the pedagogical intervention rather than sampling error. As emphasized by Adnan and Latief (2020), quantitative educational research relies on numerical procedures to objectively evaluate treatment impacts in real-world classroom settings. The empirical success recorded at SDN 060809 confirms that integrating platforms like *Storybird* offers a practical and scalable model for elementary school educators (Sujiatmoko & Puspita, 2024), effectively balancing modern technological demands with the preservation of indigenous cultural heritage.

CONCLUSION

This study concludes that the implementation of the digital platform *Storybird* exerts a statistically significant positive effect on the folklore writing proficiency and cultural literacy of elementary school students at SDN 060809 ($N = 35$). The instructional intervention produced a substantial mean score gain of 24.10 points, elevating student performance from a baseline *pretest* mean score of $M = 57.17$ (Adequate category) to a *posttest* mean score of $M = 81.27$ (Good category). Paired-sample t-test testing confirmed the statistical significance of this improvement, yielding a calculated t-score = 8.092 that markedly exceeded the critical t-table = 1.697 threshold ($\alpha = 0.05, df = 34$), leading to the acceptance of H_1. Post-intervention results showed that 82.85% of participants ($n = 29$) reached Good or Very Good qualification tiers, with zero students remaining in failing categories. Ultimately, *Storybird* serves as an effective multimodal tool for improving elementary writing skills across characterization, plot, and theme, while offering an innovative medium for preserving Batak Toba cultural heritage.

Conflict of Interest Statement

The authors declare no conflict of interest.

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