Exploring the Impact of EPUB-Based Digital Storytelling on Year 4 Students' Narrative Writing in a Malaysian Primary Classroom: A Qualitative Single-Case Study

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ABSTRACT

This qualitative single-case study investigates how EPUB-based digital storytelling influences the development of narrative writing skills among Year 4 students in a Malaysian primary school. The study responds to Malaysia's pedagogical shift toward multimodal digital literacy under the CEFR-aligned English curriculum and 21st Century Learning (PAK-21) initiatives. Twenty students participated in a six-week intervention using Book Creator to produce interactive digital stories integrating multimedia elements such as visuals, sound, and animated page transitions. Writing development was tracked through pre- and post-intervention writing samples, assessed using a 20-point rubric measuring creativity, vocabulary richness, structural coherence, and narrative progression. Descriptive analysis indicated consistent gains across all dimensions, with the most notable improvements in creativity and story coherence. Inter-rater reliability for rubric scoring was substantial (Cohen's κ = 0.84). Thematic analysis of classroom observations and teacher interviews revealed enhanced student engagement, peer collaboration, and ownership of learning during the composition process. Nonetheless, technical challenges and time constraints emerged as implementation barriers. While findings are not generalizable, they offer valuable insight into how EPUB-based storytelling may serve as a viable digital writing pedagogy in early primary education, meriting further exploration in varied instructional contexts.

Keywords: narrative writing, digital storytelling, EPUB, primary education, multimodal literacy, Malaysia

BACKGROUND OF THE STUDY

The integration of digital tools into literacy instruction has become an increasingly urgent priority in primary education, particularly in light of Malaysia's push toward 21st-century learning (*Pembelajaran Abad Ke-21*, PAK-21) and the widespread implementation of the *Kurikulum Standard Sekolah Rendah* (KSSR). These policy initiatives emphasize the importance of digital literacy, student-centered learning, and multimodal communication as foundational competencies for young learners (Ministry of Education Malaysia [MOE], 2020).

In line with these curricular demands, educators are seeking innovative methods to engage students in writing beyond the confines of traditional pen-and-paper tasks. One such method that has gained global attention is digital storytelling—an instructional approach that combines narrative development with multimedia elements such as images, voiceovers, animations, and hyperlinks. Studies in both Western and Asian contexts have reported that digital storytelling can enhance students' motivation, creativity, and writing confidence (Miller & Davis, 2023; Yunus & Hashim, 2021). However, most existing research focuses on secondary or tertiary learners, leaving a notable gap in understanding how digital storytelling can be implemented effectively at the primary level.

Among the range of digital storytelling platforms, EPUB (Electronic Publication) books offer distinct

advantages, especially for novice writers in middle childhood. EPUBs are interactive digital texts that allow students to compose stories with embedded sound effects, image galleries, and page-turning animations. Compared to static tools like PowerPoint or printed booklets, EPUB authoring tools—such as Book Creator—enable learners to manipulate layout, integrate multimodal content, and control navigation design, thereby transforming the writing process into an exploratory, expressive, and interactive task (Evans, 2022; Nguyen, 2021). For Year 4 students (typically aged 10), who are still developing foundational narrative structures and vocabulary, these features serve as developmentally appropriate scaffolds. They offer visual cues, sensory feedback, and intuitive interfaces that support sentence construction, plot sequencing, and descriptive language use.

Despite these affordances, the integration of EPUB-based digital storytelling into Malaysian primary schools remains limited. Many classrooms, particularly in semi-rural areas, face challenges such as limited infrastructure, insufficient teacher training, and a lack of tested instructional frameworks for digital composition (Yunus, 2019). Moreover, while Malaysia's CEFR-aligned English curriculum places emphasis on narrative and creative writing, few empirical studies have investigated how digital storytelling platforms can align with or enhance these curricular goals.

This study addresses these gaps by investigating how EPUB-based digital storytelling influences narrative writing development among Year 4 students in a Malaysian public school. It explores how features such as interactive media, layout customization, and peer collaboration contribute to students' creativity, vocabulary use, structural coherence, and writing engagement. By situating the intervention within a real-world classroom and aligning it with local syllabus content, the study seeks to offer practical, scalable insights into the pedagogical value—and limitations—of digital storytelling in early primary education.

Problem Statement

Despite growing global interest in integrating digital tools into literacy instruction, empirical studies exploring how these technologies affect primary-level writing development remain limited. Existing research on digital storytelling has predominantly focused on adolescents and tertiary-level learners, where students already possess baseline narrative and digital literacy skills (Yang & Wu, 2012; Robin, 2008). In contrast, studies involving younger learners—especially those in the middle primary years—are sparse and often descriptive, lacking rigorous design or measurable outcomes (Yunus & Salehi, 2021). This presents a critical gap in understanding how digital storytelling can be developmentally adapted to support emergent writers in lower primary classrooms.

Year 4 (typically 10-year-old) students represent a pivotal stage in writing development. At this point, learners transition from composing basic, sentence-level stories to attempting more complex narrative forms that require plot structure, character development, and coherence. However, many Year 4 students struggle with vocabulary limitations, sequencing ideas, and sustaining engagement in writing tasks (Ng & Ng, 2022). This is particularly relevant in Malaysian classrooms, where the English language curriculum emphasizes narrative writing under the CEFR-aligned framework but provides few guidelines on integrating digital or multimodal strategies.

In parallel, while digital tools like PowerPoint, PDFs, or slideshow-based formats are occasionally used in Malaysian primary schools, these tools are limited in interactivity and do not fully support writing as a process. In contrast, EPUB-based storytelling platforms, such as Book Creator, allow for embedded audio, image layering, page transitions, and customizable layouts—features that scaffold novice writers by offering visual prompts, sound feedback, and interactive navigation. These features make EPUBs a unique medium for promoting narrative development, as they align with both multimodal literacy and student-centered digital pedagogy (Mayer, 2020; Evans, 2022).

Yet, EPUB's potential remains largely unexplored in Malaysian primary classrooms, particularly in semi-rural schools, where both digital access and teacher training are uneven (Yunus, 2019). Teachers often rely on traditional composition exercises, and students experience writing as a linear, solitary task—detached from creativity, collaboration, or digital engagement. This disconnect highlights an urgent need for research that not only explores innovative tools like EPUB but also evaluates their pedagogical relevance, practicality, and impact

within real classroom environments.

Moreover, under-engagement in writing can have emotional and long-term academic consequences for young learners, affecting confidence, expressive fluency, and motivation. A growing body of work suggests that when students are given opportunities to compose in multimedia environments, they are more likely to take ownership of their writing and experience authentic joy in the creative process (Hafner & Ho, 2020). Thus, the current study seeks to address both a research gap and a classroom need—to determine whether EPUB-based digital storytelling can enhance narrative writing skills among Year 4 students in a way that is meaningful, measurable, and aligned with national educational goals.

Purpose of the Study

The primary aim of this study is to investigate how EPUB-based digital storytelling affects the narrative writing development of Year 4 students in a Malaysian public primary school. Specifically, the research seeks to examine whether the use of interactive, multimedia-rich storytelling tools—such as Book Creator, which supports embedded sound effects, visual layout customization, page transitions, and drag-and-drop design—can enhance students' performance in three key areas of writing: creativity (originality and idea elaboration), vocabulary use (lexical diversity and contextual accuracy), and structural organization (coherence, sequencing, and paragraphing).

To determine effectiveness, the study uses a pre- and post-intervention design incorporating both quantitative and qualitative data. Quantitative improvement is measured through a 20-point rubric-based assessment, aligned with CEFR descriptors and the narrative writing outcomes outlined in Malaysia's Kurikulum Standard Sekolah Rendah (KSSR) English syllabus. The rubric evaluates students' writing samples across multiple dimensions, and scores are cross-validated through inter-rater reliability procedures. In addition, classroom observations and semi-structured teacher interviews provide qualitative insight into student engagement, motivation, and learning behaviours during the EPUB storytelling process.

By focusing on Year 4 learners—an age group that often struggles to move from sentence-level writing to structured narratives—this study aims to provide both empirical and practical contributions. It not only fills a research gap in the use of EPUB tools for early writing instruction but also addresses real classroom needs in Malaysian schools, where teachers are seeking innovative, student-centered approaches to nurture writing confidence and 21st-century digital literacy.

Ultimately, this study aligns with the Malaysia Education Blueprint 2013–2025, which calls for increased integration of ICT into core subject areas and encourages the development of higher-order thinking skills, creativity, and multimodal communication from the primary level. By investigating a technology-supported narrative writing approach within a real classroom context, this research hopes to inform future curriculum planning, teacher training, and digital tool adoption in early literacy education.

Significance of the Study

This study contributes substantively to the evolving field of early literacy instruction by providing empirical and classroom-based evidence on the pedagogical potential of EPUB-based digital storytelling for enhancing narrative writing skills among Year 4 students in a Malaysian primary school. While digital storytelling has been explored extensively in secondary and post-secondary contexts, particularly within Western education systems, its application within the early primary school sector—especially in Southeast Asian settings—remains significantly under-researched. This study addresses that gap by situating the intervention within Malaysia's national curriculum framework and responding to the country's educational emphasis on 21st Century Learning (PAK-21) and CEFR-aligned instruction.

Importantly, the significance of this research extends across theoretical, methodological, curricular, and policy dimensions. At the theoretical level, the study offers a novel synthesis of Mayer's Cognitive Theory of Multimedia Learning and Vygotsky's Sociocultural Theory, demonstrating how EPUB tools mediate both cognitive engagement and social construction of meaning. By framing student authorship as a multimodal

process involving visual planning, auditory feedback, and textual composition, the study contributes to ongoing discourse on the intersection between digital composition and early literacy development.

From a practical standpoint, the findings are directly relevant to primary school educators, who frequently grapple with challenges in fostering creativity, structural coherence, and language richness in student writing. The study offers classroom-tested strategies that can be readily integrated into instructional design, such as using image-based storyboarding within EPUB layouts, applying audio-recorded feedback to support iterative revisions, and adapting the 20-point analytic rubric as a formative assessment tool aligned with CEFR writing descriptors. These approaches collectively reposition writing not as a rigid assessment task, but as an exploratory, student-centered creative process.

In relation to curriculum designers and syllabus developers, the study provides contextualised evidence to support the integration of EPUB-based storytelling into the Kurikulum Standard Sekolah Rendah (KSSR) English syllabus. The findings show how digital authoring platforms can help young learners meet A2-level descriptors, such as producing structured narratives, employing paragraphing, and expanding vocabulary use in descriptive writing. These insights have implications for future revisions of national modules that integrate ICT, particularly in embedding scaffolded multimodal composition as part of literacy instruction.

The study also bears relevance for policymakers and digital learning advocates. By demonstrating the viability of low-cost, open-access EPUB platforms in supporting writing instruction, it offers a scalable model for digital pedagogy in public education. However, the study also identifies critical implementation conditions—notably teacher digital literacy, availability of devices, classroom scheduling, and technical support. These factors are especially salient for under-resourced or rural schools where digital infrastructure and teacher preparedness may be limited. Thus, while the intervention is low-barrier in design, its impact is dependent on broader systemic readiness and equitable resourcing.

From a methodological perspective, this study also contributes to the academic field of educational research by employing a robust qualitative single-case design involving pre- and post-assessment of student work, triangulated with classroom observations and teacher interviews. The choice to focus on a Year 4 cohort addresses a frequently overlooked demographic in studies of digital writing and multimodal composition, which often prioritise secondary or tertiary learners. The study thus expands the empirical base supporting the use of AI-augmented or multimedia-based writing strategies among early learners.

In sum, the study provides promising, actionable insights into how EPUB-based storytelling can serve as a curriculum-aligned, pedagogically sound, and student-centered approach to developing narrative writing in Malaysian primary education. It contributes to both policy advocacy and practice refinement, while remaining critically aware of the challenges that may hinder widespread adoption. Ultimately, the significance of this study lies not only in what it affirms—the potential of digital storytelling—but in what it urges: further research, contextual adaptation, and a commitment to equity in the digital transformation of early literacy instruction.

LITERATURE REVIEW

Digital Storytelling in Literacy Pedagogy

Digital storytelling has gained prominence as a strategy to integrate narrative writing with multimedia elements such as audio, images, and animation. It is often positioned within constructivist and sociocultural frameworks, where students are seen as co-constructors of meaning, and learning is mediated through tools, collaboration, and interaction (Vygotsky, 1978; Robin, 2008). While these theoretical alignments are conceptually sound, their practical application—particularly in early primary classrooms—warrants closer scrutiny. Most of the empirical support for digital storytelling emerges from secondary or tertiary education contexts (Yang & Wu, 2012; Sadik, 2008), where learners already possess foundational narrative and digital fluency. In contrast, young learners, especially those aged 9–10, may struggle with cognitive load in managing both narrative composition and digital design (Sweller et al., 2019). Moreover, disparities in teacher digital competency and inconsistent ICT access may limit the feasibility of sustained digital storytelling in Malaysian public schools (Yunus & Embi, 2013). Notably, few studies interrogate the pedagogical tensions inherent in giving novice writers high levels of

authorship autonomy through multimodal tools. While student agency is a hallmark of 21st-century learning, research is needed to understand how early learners can be scaffolded to compose not just "interactive stories," but meaningful and structurally sound narratives.

EPUB-Based Storytelling: Pedagogical Affordances and Gaps

EPUB (Electronic Publication) is a digital book format that allows for multimodal content integration, including embedded audio, interactive navigation, and customizable page design. Tools like *Book Creator* have made EPUB authoring accessible in classroom settings, particularly with the rise of tablet-based learning environments (Evans, 2022; Nguyen, 2021). However, existing literature often emphasizes technical affordances rather than pedagogical outcomes. Statements such as "EPUB supports student creativity" are common but lack empirical grounding on how such features translate into improved narrative coherence, vocabulary richness, or writing fluency—key constructs in writing development. In many cases, improvements are inferred from increased engagement or length of student output, rather than qualitative improvements in writing structure (Al-Awidi & Ismail, 2014). Moreover, most EPUB-related studies focus on reading comprehension (Kim et al., 2018), not writing production. This leaves open questions: Can visual and auditory interactivity support better idea sequencing? Do layout controls encourage narrative planning? Without clearer research on these connections—especially in early writing classrooms—EPUB remains under-theorized as a tool for structured writing instruction.

Writing Development in Digital and Multimodal Contexts

Writing is increasingly understood as a multimodal process, where learners engage not only with text but also with design elements, layout logic, and audience navigation (Kress, 2003; Hafner & Ho, 2020). While this has been widely explored among adolescents, its transferability to Year 4 students remains theoretically and practically underexplored. Recent studies have shown that digital platforms can enhance lexical richness (Ng & Ng, 2022) and promote idea generation through visual stimuli (Sadik, 2008). However, for younger learners, such gains may depend heavily on teacher scaffolding, digital literacy exposure at home, and explicit instruction in story grammar and planning. Research on developmental readiness (Tomlinson, 2014) warns against assuming that multimodal capabilities directly translate into narrative depth without targeted support. There is also limited investigation into how students manage the balance between content and form. The excitement of drag-and-drop elements or sound effects may overshadow core writing mechanics such as paragraphing, coherence, or descriptive language use. These possible trade-offs are rarely problematized in the current literature, presenting a critical blind spot for instructional design.

Regional and Policy Context in Malaysia

In the Malaysian education system, writing remains a central component of the Kurikulum Standard Sekolah Rendah (KSSR) and is assessed based on CEFR-aligned criteria such as story flow, clarity of ideas, and grammatical control (MOE, 2020). However, most writing instruction continues to emphasize rote formats—guided composition, formulaic essay templates, and textbook-based exercises—leaving little room for multimodal or digital composition (Yunus & Salehi, 2021). While PAK-21 (Pembelajaran Abad Ke-21) promotes student-centered, digitally-enabled learning, implementation gaps persist, especially in rural schools where device access, infrastructure, and teacher training are uneven (Yunus & Hashim, 2020). Current scholarship on digital writing in Malaysia is often technology-centric, evaluating student satisfaction or engagement levels, without critically examining learning gains or writing quality in empirical terms. This study addresses these gaps by focusing not only on what tools are used, but how they mediate writing development in a specific classroom with curriculum-aligned writing outcomes. It offers a localized contribution by working within the structural constraints of a Malaysian national school and aligning with CEFR-level descriptors used by teachers.

Conceptual Rationale and Research Gap

To date, few studies have rigorously examined EPUB-based digital storytelling as an instructional strategy for structured narrative writing in lower primary education. Much of the existing literature is either theoretical or

descriptive, with limited quasi-experimental research designs involving younger learners. This study attempts to fill this methodological and contextual gap by evaluating EPUB's writing-specific affordances, not merely as engagement tools, but as scaffolds for planning, structuring, and elaborating narratives. By combining pre/post assessments, rubric-based analysis, and classroom observation, the research aims to move beyond the usual claims of "increased engagement" and offer insights into the actual writing gains attributable to EPUB storytelling.

METHODOLOGY

Research Design

This study employed a qualitative single-case study design (Yin, 2018) to explore how EPUB-based digital storytelling impacted the narrative writing development of a group of Year 4 students in a Malaysian national primary school. The case was bounded by one intact classroom, with a focus on real-world learning processes, authentic writing artifacts, and classroom interactions over a six-week instructional cycle. While descriptive writing performance scores were used to observe learning patterns, no control group, random assignment, or experimental manipulation was involved. The case study approach allowed for in-depth, contextualized understanding of student writing behaviour, creativity, and multimodal composition within an ICT-integrated classroom setting.

Participants and Context

Participants consisted of 20 Year 4 students (aged 10) from a national school in semi-urban Johor, Malaysia. The class was purposively selected due to the teacher's willingness to adopt digital tools and the school's access to basic ICT facilities, including Chromebooks and internet connectivity. The students represented mixed English proficiency levels, ranging from CEFR A1 to low A2. The classroom teacher had 10 years of teaching experience and basic ICT competency. Prior to the intervention, students had minimal experience with multimedia writing tools, and none had previously used EPUB-authoring platforms such as Book Creator.

Instructional Procedure

The digital storytelling intervention was implemented over a six-week period, with two structured writing sessions conducted weekly, each lasting 90 minutes. The instructional framework was carefully aligned with the narrative writing outcomes outlined in the CEFR-aligned Kurikulum Standard Sekolah Rendah (KSSR) English syllabus. The instructional design emphasized scaffolded writing development through multimodal composition using EPUB tools, specifically Book Creator.

The intervention was structured across six thematic weeks. During Week 1, students were introduced to the core narrative elements—character, setting, conflict, and resolution—alongside a hands-on demonstration of the EPUB creation tool. In Week 2, learners engaged in storyboarding and idea planning using graphic organizers and peer brainstorming techniques to develop coherent storylines. Weeks 3 and 4 focused on drafting and digital composition. During this phase, students created their digital stories by integrating multimedia elements such as visuals, sound effects, and custom layouts, supported by vocabulary scaffolds. Week 5 centered on peer review and guided revision, where students exchanged feedback and refined their stories with reference to the provided analytic rubric. The final week involved polishing the narratives, exporting the digital books into EPUB or PDF formats, and presenting them to the class in a culminating publishing showcase.

Throughout the intervention, differentiated scaffolding strategies were employed to support learners of varying proficiency levels. These included vocabulary banks for students with limited lexical range, sentence starters and visual prompts to aid idea elaboration, and the use of audio recording features within Book Creator for drafting support. In addition, peer support structures—particularly during the revision and publishing phases—were implemented to foster collaborative learning and mutual feedback.

Week	Focus	Tools / Activities
1	Introduction to narrative elements & EPUB	Group story analysis, tool demo

2	Storyboarding & idea planning	Graphic organizers, peer brainstorming
3–4	Drafting & multimodal composition	Book Creator, vocabulary scaffolds
5	Peer review and guided revision	Partner feedback, rubric reference
6	Finalization and EPUB story publishing	Export to PDF/EPUB, class presentation

Data Collection Methods

To ensure methodological rigor and triangulation, data were collected from three primary sources: student writing artifacts, classroom observations, and a teacher interview.

a. Writing Artifacts

Students' narrative compositions, including early drafts and final EPUBs, were collected both before and after the intervention. These writing samples were evaluated using a 20-point analytic rubric adapted from Jacobs et al. (1981), encompassing four key domains: creativity and originality (5 points), vocabulary use (5 points), structural coherence (5 points), and narrative development (5 points). The rubric was carefully revised to suit the developmental stage of Year 4 learners and piloted for clarity and usability. Two trained raters independently scored the writing samples, and inter-rater reliability was established using Cohen's kappa ($\kappa = 0.84$), indicating substantial agreement.

b. Classroom Observations

Structured non-participant observations were conducted during all twelve instructional sessions. An observation checklist was designed to capture a range of classroom dynamics, including student engagement behaviours, the application of digital tools, peer interactions, and on-task versus off-task behaviour. Detailed field notes were recorded throughout each session, capturing spontaneous expressions of insight, observed moments of struggle, and instructional adaptations. These observational data served to contextualize the students' writing development and offered insights into the real-time affordances and challenges of using EPUB-based storytelling in classroom instruction.

c. Teacher Interview

At the conclusion of the intervention, a semi-structured interview was conducted with the participating classroom teacher to elicit reflective insights. The interview explored the perceived feasibility of the instructional approach, observations regarding student progress and engagement, changes in motivation and writing behaviour, and the practical challenges encountered during implementation. The interview was audio-recorded, transcribed verbatim, and included as part of the qualitative dataset to complement the observational and artifact-based data.

Data Analysis

The data were analysed using both descriptive and qualitative techniques to ensure a holistic understanding of student outcomes and instructional impact.

Descriptive Analysis of Writing Scores

Although inferential statistical testing was not performed due to the single-case study design, descriptive statistics were used to examine changes in student writing performance. Mean rubric scores from the pre- and post-intervention writing artifacts were calculated and compared to observe patterns of growth across the four rubric dimensions. These descriptive trends offered insight into the effectiveness of the EPUB-based intervention in enhancing creativity, vocabulary use, structural coherence, and narrative progression.

Thematic Analysis of Qualitative Data

All qualitative data—including classroom observation notes, selected excerpts from student writing, and the

teacher interview transcript—were analysed using inductive thematic coding within NVivo 12. The analysis followed a systematic procedure beginning with open coding by two independent researchers to identify initial patterns. This was followed by axial coding, in which codes were grouped into broader subthemes related to creativity, multimodal behaviour, learner engagement, and instructional challenges. To ensure trustworthiness, themes were validated through peer debriefing sessions and intercoder reliability checks, which resulted in an agreement rate of 89%. This rigorous analytical process allowed the research team to triangulate findings across multiple data sources and to surface nuanced insights into how EPUB storytelling influenced student writing experiences and behaviours.

Ethical Considerations

Ethical approval was granted by the Institutional Research Ethics Committee and Malaysia's Ministry of Education. Parental consent and student assent were obtained. Students were given fictional, non-personal prompts to avoid sensitive disclosures during story creation. All EPUB stories were anonymized and stored securely. No recordings or images were published outside of research documentation.

FINDINGS

This section presents findings from a case study exploring the impact of EPUB-based digital storytelling on Year 4 students' narrative writing in a Malaysian public school. The data were drawn from students' writing artifacts (pre- and post-intervention), classroom observations, and a post-intervention teacher interview.

Descriptive Gains in Writing Development

Analysis of student writing artifacts before and after the EPUB-based storytelling intervention revealed consistent positive trends in narrative writing performance. A 20-point analytic rubric adapted from Jacobs et al. (1981) was employed to evaluate four domains: creativity, vocabulary use, structural coherence, and narrative development. Although no inferential statistical testing was conducted due to the qualitative nature of the case study, descriptive comparisons between pre- and post-intervention mean scores provided insight into students' developmental trajectories.

On average, students demonstrated measurable gains across all rubric domains. Creativity scores increased from a mean of 2.8 to 4.3 out of 5, suggesting notable enhancement in imaginative expression and originality. Vocabulary use showed a rise from 2.6 to 3.8, indicating improved lexical richness and word choice precision. Similarly, structural coherence improved from 2.7 to 4.1, and narrative development from 2.7 to 4.0. Overall, the mean total score increased from 10.8 to 16.2 out of 20—reflecting a 5.4-point gain over the six-week period. Inter-rater reliability for rubric scoring was confirmed at Cohen's $\kappa = 0.84$, suggesting substantial agreement and consistency in assessment.

To illustrate these improvements, the case of Student A is representative. The student's initial writing read, "I went to a forest. I saw a dragon. I ran away," which scored low in creativity due to minimal elaboration and narrative logic. In contrast, the post-intervention submission stated: "Under the starry sky, the dragon's eyes sparkled with ancient magic. I hid behind the enchanted tree, holding my breath…"—a vivid transformation demonstrating improved narrative sequencing, descriptive detail, and tone.

These descriptive results affirm that the EPUB-based digital storytelling format, when aligned with scaffolded instruction and peer feedback, supported substantial writing development in creativity, vocabulary, and structural sophistication, particularly among mid- and high-proficiency learners.

Rubric Domain	Pre-Intervention Mean	Post-Intervention Mean	Observed Change
Creativity	2.8 / 5	4.3 / 5	+1.5
Vocabulary Use	2.6 / 5	3.8 / 5	+1.2

Structural Coherence	2.7 / 5	4.1 / 5	+1.4
Narrative Development	2.7 / 5	4.0 / 5	+1.3
Total Score (20 max)	10.8 / 20	16.2 / 20	+5.4

Thematic Analysis of Learning Behaviours and Teacher Reflections

Thematic analysis of qualitative data—including classroom observations, writing excerpts, and teacher interviews—yielded four emergent themes that elucidate the instructional, affective, and behavioural dynamics that shaped students' experiences during the intervention.

Theme 1: Creativity through Multimodal Expression

Students demonstrated heightened creativity through the integration of multimodal elements such as images, sound effects, and animated transitions within their EPUB stories. The visual and auditory affordances of the platform encouraged learners to think beyond linear text and design narrative environments. The teacher remarked, "They didn't just write anymore—they started designing their story," underscoring the shift from text-only composition to multimodal authorship.

An example includes a student who paired eerie background music with a dim forest scene to build suspense. However, challenges also emerged. Three students appeared overly preoccupied with visuals, producing stories with minimal textual content—one submission included seven animated slides but contained only 36 words. This highlights the risk of modality imbalance, particularly among learners with lower literacy levels, and reinforces the need for balanced scaffolding between visual and verbal expression.

Theme 2: Increased Motivation and Ownership

High levels of student engagement were observed, particularly during the drafting and revision phases. Learners demonstrated increased autonomy and peer collaboration, frequently requesting additional time to refine their narratives and actively participating in feedback exchanges. For instance, during a peer review session, one student asked, "Do you think this ending is surprising enough?"—an indication of emerging audience awareness and narrative intentionality.

These shifts suggest a transition from compliance-driven writing to authentic engagement. Nevertheless, two students expressed frustration with the EPUB interface, particularly in managing media uploads. These learners required individualized support, revealing that digital fluency varied considerably within the class.

Theme 3: Improved Narrative Structure and Planning

The EPUB tool's page-by-page layout provided a visual and conceptual scaffold that facilitated logical story progression. Students began using temporal connectors such as "Suddenly," "Later," and "Finally" to sequence events more coherently. Improved paragraphing and event organization were evident in revised drafts.

For example, Student B's initial submission consisted of disjointed actions: "One day I go to school. I eat. I play. I go home." The revised version was more developed: "After breakfast, I rushed to school. Then, during recess, something strange happened: a spaceship landed!" However, several students continued to rely on overused openings like "Once upon a time" and formulaic closings such as "The end," suggesting a reliance on narrative templates among lower-proficiency writers.

Theme 4: Technical and Time Constraints

While the intervention was pedagogically promising, technical and logistical constraints posed significant challenges. The teacher reported difficulties in providing individualized support due to limited instructional time and the cognitive demands of managing digital workflows. "If I had an assistant, I could have helped each group more effectively," the teacher reflected.

Device sharing further exacerbated these constraints. With a 2:1 student-to-device ratio, some students experienced delays in accessing the platform, and two participants were unable to complete their final EPUB stories within the allocated timeframe. These limitations underscore the infrastructural conditions necessary for successful implementation of digital storytelling pedagogy.

Summary of Case Study Patterns

The findings reveal a nuanced picture of both pedagogical affordances and implementation challenges. Table 4.1 summarizes the thematic outcomes, categorizing them into observed benefits and emerging tensions. These patterns suggest that while EPUB-based digital storytelling offers substantial pedagogical value, its successful integration requires thoughtful planning, differentiated support, and adequate technological resources. The intervention's impact was shaped not only by the digital tool but also by the broader classroom ecology in which it was enacted.

Theme	Observed Benefits	Emerging Tensions or Challenges
Multimodal Creativity	Story depth, genre variation, use of imagery & sound	Over-reliance on visuals, limited textual development
Motivation & Ownership	Higher participation, peer-driven feedback loops	Tool-related frustration among low-literacy students
Narrative Structure Gains	Better sequencing, time connectives, paragraphing	Formulaic phrases in weaker writers
Implementation Constraints	Basic tool mastery, excitement around publishing	Time shortage, device-sharing, teacher workload strain

DISCUSSION

This study examined how EPUB-based digital storytelling influenced narrative writing development among a group of Year 4 students in a Malaysian national school. Through the analysis of writing artifacts, classroom observations, and teacher reflections, several key patterns emerged, notably in students' creativity, vocabulary use, structural coherence, and writing motivation. This discussion contextualizes these findings within relevant learning theories and pedagogical debates, while also considering challenges and limitations observed during the study.

Interpreting Findings through Theoretical Lenses

The observed improvements in narrative coherence, expressive vocabulary, and student engagement can be understood through the lens of Vygotsky's sociocultural theory. The EPUB platform provided a mediating tool that allowed students to interact with texts, peers, and the teacher in more dynamic ways. Writing became a social and scaffolded activity, particularly during peer review sessions where students gave each other feedback on plot ideas, page order, and descriptive choices. These interactions reflect Vygotsky's (1978) concept of the Zone of Proximal Development (ZPD), where learning was extended through guided collaboration.

Additionally, Mayer's Cognitive Theory of Multimedia Learning (2005) offers a useful framework to understand how students used visual, auditory, and textual modes to reinforce narrative construction. The segmentation of stories into discrete EPUB pages, combined with the inclusion of background images and sound effects, allowed students to externalize abstract narrative elements into more concrete, expressive forms. This aligns with Mayer's dual-channel and modality principles, as students processed information through both visual and verbal pathways.

However, the limits of these theories in the context of 10-year-old learners must be acknowledged. For some students, the introduction of multimedia tools created cognitive overload. While higher-proficiency learners

thrived in this environment, a few students appeared to focus heavily on visuals at the expense of content, resulting in minimal text or incoherent plotlines. This suggests that while multimodal tools enhance creativity, they also require developmentally appropriate scaffolding, particularly for learners with lower language proficiency or limited digital literacy.

Tensions and Counterpoints in the Literature

Although much of the existing research supports the value of digital storytelling in improving writing (Robin, 2008; Yang & Wu, 2012), other scholars caution against its uncritical adoption. Studies by Heo (2009) and Nguyen (2020) argue that surface-level engagement and visual distraction are common risks in multimodal composition. In this study, such risks were evident in students who spent more time experimenting with animations and transitions than developing plotlines. While this behavior was often framed as "engagement," it did not always translate into stronger writing output. Moreover, the teacher's digital fluency and pedagogical adaptability were key enablers of success. Had the teacher been less confident or supportive, the intervention may have faltered. As such, digital storytelling cannot be viewed as a plug-and-play solution—it requires informed, responsive teaching. This aligns with findings by Yunus & Hashim (2020), who emphasize the teacher's central role in mediating digital pedagogy in Malaysian classrooms.

Pedagogical and Contextual Implications

The study provides compelling evidence that EPUB storytelling can serve as an effective catalyst for narrative writing, but only under certain conditions. Among these are:

1. Access to basic devices (e.g., Chromebooks or tablets)

2. Teacher training on EPUB tools

3. Curriculum space for creative expression and project-based work

4. Time for iterative drafting and feedback

In the Malaysian context, these conditions are not universally met, particularly in rural or underfunded schools where device-to-student ratios may be low and internet stability inconsistent. Additionally, some teachers may lack confidence in integrating technology into writing lessons. Therefore, policymakers and curriculum designers should consider tiered implementation models, with differentiated support based on school readiness.

Student Perspective and Classroom Realities

While this study draws heavily on teacher observation and writing artifacts, the lack of direct student interviews limits the depth of learner perspective. However, students' actions and comments during the intervention offer indirect insights. Statements such as "I want my story to be like a movie" or "I don't know how to choose the background" illustrate both excitement and uncertainty. These mixed reactions reinforce the importance of guided autonomy—where students have creative freedom, but within a structured framework.
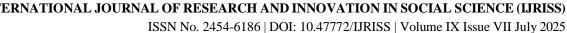
Sample excerpts further illustrate how students internalized narrative conventions:

"The cave was dark and silent. Suddenly, a glowing map appeared on the wall." (Student E, post-intervention)

Such expressive language was largely absent in pre-intervention samples, indicating real gains in both language richness and story sophistication—especially when writing was framed as authorship, not assignment.

Limitations and Reflexivity

This study, while methodologically robust for a case study, is limited by its small, single-class sample, which restricts generalizability. As an in-depth exploration rather than a controlled trial, the findings offer transferable insights, not universal claims. Several other limitations are worth noting:

1. The researcher also served as the observer, which may introduce bias in field notes and interpretations. Triangulation and peer debriefing were used to reduce this risk, but not eliminate it.

2. No formal measurement of students' digital literacy levels was conducted prior to the intervention, which might have influenced outcomes.

3. The duration of six weeks, while sufficient to observe short-term shifts, may not reveal longer-term writing development patterns.

Future studies could address these gaps by including student interviews, longitudinal follow-up, and comparative case analysis across multiple classrooms or school types.

CONCLUSION AND IMPLICATIONS FOR FUTURE PRACTICE

This case study contributes to the growing body of research on digital storytelling by showing how EPUB tools, when thoughtfully integrated into writing instruction, can support young learners' narrative development, creativity, and motivation. The format offers not only a multimodal writing space, but a new identity frame for students—as authors, not just learners. However, the success of such interventions depends on teachers' pedagogical agency, infrastructure readiness, and curricular flexibility. Rather than promoting EPUB as a universal solution, this study recommends context-sensitive implementation, informed by ongoing professional development and student feedback.

As education systems strive to meet 21st-century literacy demands, tools like EPUB storytelling offer a promising, though not uncomplicated, path forward.

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