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Digital Storytelling with Scratch as a Pedagogical Tool to Enhance Reading Comprehension

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Abstract. Reading comprehension is a foundational skill underpinning students' success in language learning, critical thinking, and academic achievement. However, many EFL learners experience difficulties engaging with extended and complex texts when reading instruction lacks creative and multimodal elements. This classroom-based study explores undergraduate English Literature students' perceptions of using Scratch-based digital storytelling in a reading course at the English Literature Department of the Faculty of Law and Language, Universitas STIKUBANK. Grounded in constructivist learning and multimodal literacy theories, the study examines how the integration of technology, creativity, and narrative production is perceived to support students' engagement with literary texts. Thirty-five students participated in a six-week digital storytelling project in which they digitally retold literary stories using Scratch. Data were collected through a validated 10-item questionnaire (Cronbach's $\alpha = .94$) and open-ended student reflections. The findings indicate that students perceived Scratch as an engaging platform that supported their understanding of story structure, character motivation, and thematic meaning. Students also reported increased collaboration, confidence, and enjoyment during reading activities. While the findings are perception-based, the study suggests that Scratch-based digital storytelling holds pedagogical potential for supporting students' engagement with literary texts, interpretive processes, and digital literacy in EFL literature classrooms, thereby contributing to Sustainable Development Goal 4 (Quality Education).

Keywords: digital storytelling, reading comprehension, Scratch, multimodal literacy, EFL, SDG

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Introduction

In EFL contexts, reading comprehension, particularly at the level of interpretation and meaning construction, remains a fundamental and persistent challenge, particularly in expanding-circle countries such as Indonesia.

University students often struggle to extract meaning, identify themes, and interpret literary techniques when engaging with authentic English texts.

Research on second language reading has long established that comprehension involves complex interactions between textual input and readers' prior knowledge, culminating in the construction of a situation model (Grabe & Fredricka, 2019). However, these theoretical insights have not always been reflected in classroom practices, where reading instruction frequently remains teacher-centered and text-bound.

As a result, reading is often perceived by students as an academic requirement rather than an active process of exploration and meaning-making. Contemporary literacy perspectives challenge this view by emphasizing reading as an action-oriented and socially situated practice. (Cope & Kalantzis, 2016) argue that learning should focus not merely on cognitive knowledge but on the action learners perform to construct meaning. From this perspective, effective reading pedagogy should engage learners in interpretive, creative, and collaborative activities that position them as active meaning-makers rather than passive recipients of textual information.

The increasing integration of digital technologies in education has opened new possibilities for addressing these pedagogical challenges. One approach that has gained attention is digital storytelling (DST), which combines narrative construction with multimodal resources such as images, audio, animation, and text. In literacy education, DST has been reported to enhance learner engagement, narrative competence, and analytical skills by encouraging students to reinterpret texts and express understanding through multiple modes (Robin, 2016). As a result, digital storytelling has become a widely adopted pedagogical practice across educational contexts to support language learning, social interaction, and digital literacy (Moradi, 2019).

Among digital tools used for storytelling, Scratch, a block-based programming platform developed by the MIT Media Lab, offers distinctive affordances for educational use. Scratch enables learners to create interactive stories and animations through visual coding, supporting learning through design, experimentation, and play (Resnick et al., 2009). In reading instruction, Scratch allows students to transform textual narratives into animated and interactive representations, requiring them to interpret characters, plot, and setting while actively constructing meaning. Previous research has highlighted the broader educational value of computer technology in supporting inquiry-based learning and knowledge construction (Wecker et al., 2007).

However, existing research on Scratch and digital storytelling has predominantly focused on programming education, STEM learning, game design, or primary and secondary school contexts (Kafai & Burke, 2015). Studies that examine Scratch-based activities in higher education EFL settings have largely emphasized creativity, motivation, or computational thinking, rather than reading comprehension, particularly in literature-oriented courses. Consequently, how Scratch-based digital storytelling supports university EFL students' engagement with literary texts, interpretive processes, and collaborative meaning-making remains insufficiently examined.

Addressing this gap, the present study examines the use of digital storytelling with Scratch as a pedagogical tool to enhance reading comprehension, as perceived by university EFL students. Specifically, the study investigates how Scratch-based digital storytelling supports learners' engagement with literary texts, interpretive processes, and collaborative meaning-making in an EFL reading course. By foregrounding students' perspectives, this study

contributes to the literature on digital storytelling and Scratch by extending their application to EFL reading instruction in higher education contexts.

Literature Review

Reading Comprehension and Digital Pedagogy

Reading comprehension is a complex process that involves decoding, interpreting, and actively constructing meaning from texts (Grabe & Fredricka, 2019). Rather than functioning as isolated skills, reading strategies operate dynamically depending on readers' awareness, intention, and the specific reading context (Paris, 2005; Ribeiro, 2016; Y. Yang, 2007) Effective reading instruction, therefore, requires not only cognitive strategies, such as decoding and inference, but also metacognitive regulation that enables learners to monitor understanding and engage critically with texts.

However, traditional reading instruction in EFL contexts often emphasizes surface-level comprehension through questions or summaries, separating linguistic decoding from broader interpretive and contextual meaning-making. Such approaches may limit students' ability to connect textual elements such as theme, characterization, and narrative structure with personal and cultural interpretations. In response to these limitations, digital pedagogy has gained attention for its potential to support more interactive and meaning-oriented reading practices.

Digital pedagogy extends literacy instruction beyond print-based texts by integrating multimodal resources, including visual, auditory, and interactive elements (Cope et al., 2021). From this perspective, reading is no longer understood as a linear decoding activity but as a participatory process in which learners actively engage with and reinterpret texts across modes. Research suggests that digital environments can facilitate deeper comprehension by encouraging students to visualize narratives, make interpretive decisions, and externalize understanding through creative production.

Within this framework, digital storytelling offers a pedagogical bridge between reading comprehension and knowledge construction. By transforming written texts into multimodal narratives, learners are required to interpret plot, characters, and themes while making deliberate representational choices. Such processes align digital pedagogy with core comprehension skills, positioning students not only as readers of texts but also as meaning-makers who actively reconstruct literary understanding.

Digital Storytelling and Language Learning

Digital storytelling (DST) refers to the integration of narrative with multimodal digital resources such as text, images, audio, and video to construct meaning in creative and reflective ways (Robin, 2016). In language education, DST has been widely explored as a pedagogical approach that links linguistic development to meaning-making processes through multimodal representations.

Previous studies indicate that DST contributes to language learning by engaging learners in both verbal and visual processing modes. Yang and Wu (Y. T. C. Yang & Wu, 2012) demonstrated that DST enhances motivation and critical thinking by enabling learners to integrate textual information with visual and auditory elements. From a cognitive perspective, this dual-channel processing supports deeper comprehension because learners must interpret, transform, and reorganize textual meanings into narrative structures. Similarly, (Isaacs & Tondeur, 2020) reported that DST encourages learners to connect language use with personal experience, which facilitates internalization of meaning and promotes reflective learning.

However, much of the existing literature tends to emphasize engagement and creativity rather than examining how DST directly supports reading comprehension. While studies such as Modi et al. (2024) and (Y. Yang, 2007) (Y. Yang, 2007) Highlighting the immersive and intercultural dimensions of digital narratives, fewer investigations explicitly address how multimodal storytelling reshapes learners' interpretive strategies, such as inference-making,

thematic analysis, and contextual understanding. This suggests that DST's pedagogical value lies not only in increasing student participation but also in transforming how learners construct meaning from texts.

In EFL contexts, DST has been shown to facilitate comprehension by requiring learners to reinterpret written texts into multimodal narratives. This process involves identifying key ideas, organizing narrative elements, and negotiating meaning collaboratively, thereby strengthening higher-order reading skills. By translating textual content into digital narratives, learners move beyond surface-level decoding toward deeper interpretive engagement with literary texts. Consequently, DST can be understood as a form of digital pedagogy that aligns language learning with multimodal literacy, positioning students as active meaning-makers rather than passive recipients of textual information.

Nevertheless, despite growing evidence of DST's potential, empirical research remains limited in explaining how specific digital tools mediate reading comprehension processes in classroom settings. This gap underscores the need for classroom-based studies that examine how digital storytelling practices, particularly those using programmable platforms such as Scratch, support students' comprehension, interpretation, and collaborative meaning-making in reading instruction.

Scratch as a Pedagogical Tool

Scratch is a block-based digital platform originally developed to support creative learning through the construction of interactive artifacts (Resnick et al., 2009). While it has been widely adopted in introductory programming and K–12 education, recent scholarship highlights its pedagogical value beyond coding, particularly as a medium for representation, interpretation, and meaning-making. In higher education contexts, Scratch can function as a digital storytelling environment that enables learners to translate abstract textual meanings into concrete, multimodal narratives.

Grounded in constructionist learning theory (*Papert_Mindstorms.Pdf*, n.d.)Scratch emphasizes learning through the active creation of artifacts that reflect learners' understanding. This principle aligns with constructivist views of reading comprehension, which conceptualize meaning as something readers actively construct through interaction with text rather than passively receive (Vygotski, 1929). When applied to literary instruction, Scratch allows university students to reinterpret characters, plot development, and thematic elements by designing interactive story representations. Through this process, learners externalize their interpretive decisions, making comprehension visible and open to reflection and discussion.

From a pedagogical perspective, Scratch supports what Resnick et al. (2009) describe as "creative learning spirals," involving cycles of imagining, creating, sharing, and reflecting. These cycles parallel key reading comprehension processes, such as predicting narrative outcomes, evaluating character motivations, and revising interpretations based on textual evidence. By engaging in digital storytelling tasks, students move beyond surface-level comprehension toward deeper literary analysis, as they must decide which textual elements to foreground and how to represent meaning multimodally.

Although Scratch has often been associated with children's learning and computational thinking, its affordances are equally relevant for humanities education at the university level. Studies have shown that using Scratch for narrative construction enhances students' awareness of narrative structure and supports collaborative meaning-making (Kafai, 2012; Kafai & Burke, 2015). In EFL literature classrooms, Scratch-based storytelling can scaffold reading comprehension by encouraging students to reinterpret texts creatively while negotiating meaning with peers.

Thus, Scratch can be reconceptualized not merely as a programming tool, but as a digital pedagogical medium that bridges textual and digital literacies. When integrated into reading

instruction, it supports literary interpretation, engagement with complex texts, and reflective comprehension practices among university EFL learners.

Theoretical Framework

This study is grounded in constructivist learning theory (Vygotski, 1929) and multimodal literacy theory (Cope et al., 2021) to explain how Scratch-based digital storytelling supports reading comprehension in EFL literature classrooms. Both frameworks emphasize learning as an active, meaning-making process shaped by interaction, representation, and reflection.

From a constructivist perspective, reading comprehension is not viewed as an automatic cognitive skill but as a socially mediated process that develops through guided interaction with texts, peers, and learning tools (Grabe & Fredricka, 2019). Vygotsky's concept of learning as culturally and socially constructed suggests that comprehension emerges when learners actively interpret texts and negotiate meaning within a supportive environment. In this study, constructivism is operationalized through collaborative Scratch-based storytelling tasks in which students work together to reconstruct literary texts. By planning narratives, selecting key scenes, and representing characters' motivations, learners externalize their understanding and refine it through peer discussion and instructor scaffolding.

Multimodal literacy theory complements this perspective by emphasizing that meaning is constructed through multiple semiotic modes, including text, image, sound, and movement (Cope et al., 2021). In traditional reading instruction, comprehension is often limited to verbal decoding and written responses. In contrast, Scratch-based storytelling allows students to transform written literary texts into multimodal representations. This process requires learners to interpret narrative structure, identify central themes, and make inferential decisions about how meaning should be expressed visually and audibly. As a result, comprehension becomes a recursive process of interpretation, representation, and reflection rather than a linear decoding activity.

Within Scratch tasks, these two frameworks intersect. Constructivism explains how learners actively construct meaning through collaboration and artifact creation, while multimodal literacy explains how digital modes mediate and deepen that meaning-making process. By engaging students in designing digital narratives, Scratch supports higher-order reading comprehension skills such as inference-making, thematic analysis, and evaluative interpretation. The integration of these frameworks thus provides a coherent theoretical foundation for understanding how Scratch functions as a pedagogical tool for enhancing reading comprehension and digital literacy in university-level EFL literature instruction.

Research Gap

Although prior studies have demonstrated the pedagogical potential of digital storytelling and Scratch in education, empirical research examining their combined application for reading comprehension in university-level EFL contexts remains limited. Existing Scratch-based digital storytelling studies have predominantly focused on programming skills, creativity, or learner engagement, particularly in K–12 or STEM-oriented settings, with less attention to higher education language and literature classrooms.

More importantly, previous research has not sufficiently explored how Scratch-based digital storytelling supports specific cognitive and interpretive reading skills. Key processes such as inference-making, thematic interpretation, narrative structure analysis, and collaborative meaning negotiation remain underexamined in the context of EFL literary reading. As a result, it is still unclear how transforming literary texts into interactive, multimodal narratives influences students' deeper comprehension beyond surface-level understanding.

Addressing these gaps, the present study investigates how Scratch-based digital storytelling supports university EFL students' reading comprehension by focusing on their

perceptions of engagement with literary texts, interpretive processes, and collaborative meaning-making. By situating the study within an Indonesian higher education context, this research extends existing literature by offering insights into underrepresented educational settings while foregrounding the cognitive dimensions of reading in digital storytelling practices.

Method

Research Design

This study employed a classroom-based research (CBR) approach to examine the pedagogical use of Scratch-based digital storytelling in an EFL reading classroom. CBR is particularly suited to investigating teaching and learning processes within authentic instructional contexts, as it allows researchers to explore pedagogical innovations as they are implemented in real classrooms rather than under controlled experimental conditions. The focus of this study is therefore not on measuring causal effects, but on understanding how students experience and perceive the use of digital storytelling in relation to their reading comprehension.

Ellis (2012) distinguishes between learner-focused and teacher-focused classroom-based research. This study aligns primarily with learner-focused CBR, as it examines students' perceptions of how Scratch-based digital storytelling supports their engagement with texts, interpretive processes, and collaborative meaning-making. At the same time, it reflects a pedagogical orientation by documenting how a digital storytelling approach can be integrated into reading instruction. As noted by Mackey (2017), both strands of CBR share common methodological features, including context-specific inquiry, systematic data collection, and an emphasis on improving second language pedagogy (Playsted & Beaulieu, 2024).

CBR was chosen over experimental or quasi-experimental designs because the primary aim of the study was exploratory rather than confirmatory. Rather than testing the effectiveness of Scratch-based digital storytelling through pre- and post-intervention comparisons, the study sought to capture students' subjective experiences and perceived learning processes within a natural classroom setting. This approach allows for a nuanced understanding of how reading comprehension, particularly at the level of interpretation and meaning construction, is supported through multimodal and collaborative activities.

It is acknowledged that the use of a classroom-based, perception-oriented design limits the generalizability of the findings and does not permit claims of direct improvement in reading comprehension. Instead, the findings should be interpreted as indicative of pedagogical potential, offering insights into how Scratch-based digital storytelling may support students' engagement with literary texts and their interpretive reading practices. These insights are intended to inform future research employing experimental or mixed-methods designs to examine learning outcomes further

Participants

The participants of this study were 35 undergraduate students enrolled in the Reading course in the English Literature Department, Faculty of Law and Language, Universitas Stikubank (UNISBANK). The participants were selected through convenience sampling, as the researcher was the lecturer and implemented Scratch-based digital storytelling as part of regular classroom instruction. All students enrolled in the course during the semester were invited to participate in the study.

Prior to the intervention, the majority of participants had limited or no experience with Scratch or coding-based digital storytelling. While some students reported basic familiarity with digital media tools, none had previously used Scratch for academic reading or literary analysis. This ensured that students' responses reflected their initial engagement with Scratch-based digital storytelling rather than prior expertise with the platform.

Ethical considerations were carefully addressed throughout the study. Participation in the research was voluntary, and students were informed of the study's purpose and procedures at the beginning of the course. Informed consent was obtained from all participants, and they were assured that their responses would remain anonymous and would not affect their course grades. To protect confidentiality, all data were collected and reported in an aggregated form.

Instruments

The primary data collection instrument was a 10-item Likert-scale questionnaire assessing students' perceptions of *Scratch*-based storytelling in terms of creativity, engagement, comprehension, and usability. The scale ranged from 1 (strongly agree) to 4 (strongly disagree). The instrument was adapted from prior DST studies (Yang & Wu, 2012) and validated through expert review. The reliability coefficient (Cronbach's $\alpha = .94$) indicated excellent internal consistency.

Procedure

The instructional procedure was implemented over a six-week classroom-based project and followed three main stages: pre-task, task, and post-task. Each stage was designed to support students' reading comprehension through guided interpretation, collaborative meaning construction, and multimodal expression using Scratch.

Pre-task stage:

During the pre-task stage, students were assigned selected literary texts and guided to analyze key narrative elements, including setting, characters, conflict, and theme. Teacher scaffolding was provided through guided reading questions, short lectures, and modeling of interpretive strategies to support students' understanding of implicit meanings and textual interpretation. Class discussions were used to clarify difficult passages and encourage students to articulate their interpretations collaboratively.

Task stage:

In the task stage, students worked in small groups to transform the literary texts into digital stories using Scratch. The teacher facilitated the process by providing step-by-step guidance on storyboarding, scripting, and basic Scratch programming functions. Instructional scaffolding included sample projects, checklists, and periodic monitoring to ensure alignment between the original text and students' digital representations. Students were encouraged to negotiate meaning within their groups, particularly when deciding how narrative themes and character motivations would be visually and verbally represented.

Post-task stage:

In the post-task stage, students presented their Scratch-based digital stories to the class. Assessment focused on interpretive accuracy, coherence of narrative structure, creativity, and collaboration rather than technical coding proficiency. Feedback was delivered through structured peer feedback sessions and teacher comments, emphasizing strengths in interpretation and areas for improvement in meaning construction and storytelling clarity. Students were also guided to reflect on their learning process through brief self-assessment discussions.

Data Analysis

Data analysis employed a mixed approach combining descriptive quantitative analysis and systematic qualitative interpretation to align with the exploratory nature of classroom-based research.

Quantitative data analysis:

Students' questionnaire responses were analyzed using descriptive statistics, including mean scores and standard deviations, to summarize overall trends in students' perceptions of Scratch-based digital storytelling. In addition to reporting aggregate results, item-level analysis was conducted to examine specific aspects of students' perceived reading comprehension, interpretive engagement, collaboration, and motivation. This approach allowed for a more

nuanced interpretation of which dimensions of reading comprehension were most strongly supported by the Scratch-based activities. Inferential statistical tests were not applied due to the limited sample size and the perception-focused design of the study.

Qualitative data analysis:

Qualitative data from students' written feedback and reflections were analyzed using thematic coding. Responses were first read repeatedly to gain familiarity with the data. Initial codes were then generated to identify recurring patterns related to interpretive reading, meaning construction, engagement, and collaborative learning. These codes were subsequently grouped into broader themes that complemented the quantitative findings. Representative excerpts were selected to illustrate how students articulated their experiences with Scratch-based digital storytelling and its impact on their reading comprehension.

By integrating descriptive statistics with systematic qualitative analysis, the study provides a comprehensive and contextualized understanding of students' perceptions while remaining consistent with the classroom-based and exploratory nature of the research.

Findings and Discussion

Quantitative Findings

The descriptive analysis revealed consistently positive student perceptions toward *Scratch* as a digital storytelling platform. The mean scores for each questionnaire item ranged from 1.54 to 2.37, indicating general agreement or strong agreement with the positive statements about *Scratch*. The reliability ($\alpha = .94$) confirmed that the instrument effectively captured students' attitudes toward digital storytelling.

Table 1. *Students' Perceptions toward Scratch-Based Digital Storytelling*

No	Statement	Mean
1	My ability to create a story improved after using Scratch.	2.23
2	Scratch made the storytelling process more engaging.	1.86
3	I was able to express my ideas clearly through my Scratch project	2.14
4	Scratch helped me understand the structure of a good story.	1.86
5	Using Scratch motivated me to be more creative in storytelling.	1.83
6	I found it easy to use Scratch to create my story.	2.37
7	Scratch helped me organize my story elements (characters, plot, etc.).	2.20
8	I enjoyed the process of making a story with Scratch.	2.06
9	I learned new storytelling techniques by using Scratch.	1.83
10	I would recommend using Scratch for storytelling to other students.	1.54

Note. N = 35; 4-point Likert scale (1 = strongly agree – 4 = strongly disagree); Cronbach's $\alpha = .94$.

The mean scores, which ranged from 1.54 to 2.37, indicate that students generally held positive perceptions of Scratch-based digital storytelling. Lower mean values on items related to engagement ($M = 1.86$) and motivation ($M = 1.83$) suggest that Scratch successfully captured students' interest and encouraged active participation in the storytelling process. Students also reported perceived improvements in their storytelling ability ($M = 2.23$) and their understanding of narrative structure ($M = 1.86$), indicating that the platform supported both creative expression and narrative comprehension. Although the item concerning recommending Scratch to other students obtained the lowest mean score ($M = 1.54$), this finding may reflect students' limited familiarity with digital storytelling in formal instructional settings rather than resistance to the tool itself. Taken together, these results suggest that Scratch-based storytelling is perceived as an engaging and pedagogically supportive approach,

particularly when learners are given sufficient time to adapt to the digital storytelling environment.

Qualitative Findings

Qualitative data were obtained from students' oral feedback during peer-review sessions and question-and-answer discussions following the presentation of their Scratch-based digital storytelling projects. The data were analyzed using thematic coding, through which recurring patterns in students' responses were identified and grouped into key themes. This approach was employed to enhance the transparency and credibility of the qualitative findings. Three dominant themes emerged from the analysis: (1) active meaning-making, (2) enhanced peer interaction, and (3) increased narrative awareness.

The first theme, *active meaning-making*, reflects students' perceptions of their shift from passive readers to active creators of stories. Several students reported that producing digital stories encouraged them to interpret texts more deeply in order to retell them meaningfully. One student stated, *"When I made the story in Scratch, I had to really understand the story first, not just read it."* This finding supports the view that digital storytelling promotes learner agency and aligns with constructivist perspectives on learning.

The second theme, *enhanced peer interaction*, emerged from students' reflections on the oral review and question-and-answer sessions. Students noted that discussing their projects with peers helped them recognize alternative interpretations of the same story. As one participant explained, *"The questions from my friends made me think differently about my story and how others understand it."* This indicates that digital storytelling facilitated dialogic learning, where meaning is co-constructed through interaction.

The third theme, *increased narrative awareness*, relates to students' improved understanding of narrative elements such as plot, character development, and sequencing. Students frequently referred to how organizing visual and textual elements in Scratch helped them structure their stories more clearly. One student commented, *"I became more aware of the story structure because Scratch made me arrange the scenes step by step."* This suggests that the digital storytelling process functioned as a scaffold for narrative comprehension.

Overall, these qualitative findings support the notion that digital storytelling transforms learners from passive consumers of text into active producers of meaning. When used as a pedagogical tool that brings students and viewers into dialogue about representation and meaning, digital storytelling can foster deeper engagement and understanding (Robin, 2016).

Discussion

The findings of this study suggest that Scratch-based digital storytelling supports students' engagement and perceived reading comprehension; however, these outcomes warrant a more critical interpretation. While students reported high levels of motivation, engagement, and narrative understanding, such perceptions may not solely reflect improvements in reading competence but also the novelty effect of working with a visual and interactive platform. For learners with limited prior exposure to digital storytelling, the initial enthusiasm toward Scratch may have amplified positive responses, particularly in affective dimensions such as enjoyment and motivation.

This aligns with Vygotsky's social constructivism, as students' comprehension is mediated by interaction, collaboration, and shared meaning-making. Moreover, the multimodal nature of *Scratch* supports the multiliteracies framework (Cope & Kalantzis, 2016; Sutrisno et al., 2023), where reading involves interpreting visual, spatial, and auditory elements alongside text.

The results relate to previous research demonstrating that digital storytelling increases engagement and motivation, particularly when students see tangible outcomes of their creative work. By connecting narrative comprehension with coding, *Scratch* promotes transdisciplinary

learning, where language, art, and technology intersect to support holistic literacy development. Combining graphics, animations, images, music, and sound is a comparable task in *Scratch* programming, since Scratch is designed to be highly interactive. Therefore, it prioritized two design goals when creating Scratch: personalization and diversity (Resnick et al., 2009).

Pedagogical Implications

The findings of this study suggest several pedagogical possibilities for language educators, curriculum designers, and institutions seeking to integrate digital tools into literacy instruction. Rather than presenting definitive instructional outcomes, these implications highlight how Scratch-based digital storytelling *may* be used to support reading-related learning when implemented thoughtfully and with appropriate instructional support.

Transforming Reading Instruction

The findings suggest that Scratch-based digital storytelling has the potential to reposition reading instruction from a primarily receptive activity to a more productive and reflective process. Rather than responding to predetermined comprehension questions, students engaged in interpreting texts through visualization, scripting, and animation, which required them to externalize their understanding of narrative content. This process appears to support metacognitive engagement, as students were required to plan story sequences, monitor coherence during production, and evaluate the alignment between the original text and their digital representations. As a result, reading functioned as an active meaning-making practice that may contribute to the development of higher-order thinking skills, including analysis, synthesis, and evaluation.

Supporting Inclusive and Collaborative Learning

The findings suggest that Scratch-based digital storytelling has the potential to reposition reading instruction from a primarily receptive activity to a more productive and reflective process. Rather than responding to predetermined comprehension questions, students engaged in interpreting texts through visualization, scripting, and animation, which required them to externalize their understanding of narrative content. This process appears to support metacognitive engagement, as students were required to plan story sequences, monitor coherence during production, and evaluate the alignment between the original text and their digital representations. As a result, reading functioned as an active meaning-making practice that may contribute to the development of higher-order thinking skills, including analysis, synthesis, and evaluation.

Fostering 21st-Century Skills

Through the integration of coding and storytelling, students develop a broad range of 21st-century skills: creativity, communication, collaboration, and digital fluency. The iterative process of planning, designing, debugging, and presenting their stories mirrors authentic digital-age problem-solving. These experiences help bridge the gap between humanities and technology, demonstrating that digital competence is now an essential component of language literacy.

Teacher Professional Development

The findings of this study suggest that the effective implementation of Scratch-based digital storytelling depends in part on teachers' pedagogical readiness and confidence in using creative technologies. Professional development initiatives should therefore move beyond technical training to focus on how digital storytelling can be meaningfully aligned with curricular objectives, including reading comprehension, critical thinking, and intercultural awareness. Institutional support such as targeted workshops, shared instructional resources, and peer mentoring may play an important role in helping teachers integrate Scratch into their teaching practices in a sustainable manner.

Conclusion

This classroom-based research demonstrates that *Scratch*-based digital storytelling is an effective, inclusive, and engaging approach to enhancing reading comprehension among English Literature undergraduates. Quantitative results confirmed strong reliability ($\alpha = .94$) and positive perceptions of engagement, creativity, and comprehension. Qualitative reflections further revealed that students developed a sense of ownership, collaboration, and enjoyment in reading activities.

This study explored undergraduate students' perceptions of Scratch-based digital storytelling in a reading course and suggests that the integration of creative technologies can offer meaningful pedagogical possibilities for literature instruction. The findings indicate that Scratch-based activities may encourage learners to move beyond passive reading toward more interactive forms of literary exploration, in which narrative structures are interpreted and represented through digital design. While these perceptions point to potential benefits for narrative understanding and learner engagement, they do not constitute direct evidence of measurable gains in reading proficiency.

Students' responses further suggest that participation in digital storytelling activities can support the development of transferable skills, including creativity, collaboration, and basic digital literacy, which resonate with the broader aims of Sustainable Development Goal 4 (Quality Education). However, these outcomes were inferred from self-reported data and classroom observations rather than assessed through standardized measures, and should therefore be interpreted with caution.

Several limitations of the study must be acknowledged. The research was conducted within a single institutional context with a relatively small sample size and relied primarily on perception-based questionnaire data and qualitative feedback. In addition, the short duration of the intervention limits conclusions about the sustainability of students' engagement or long-term effects on reading comprehension and digital competence.

Future research could address these limitations by employing experimental or longitudinal designs to examine the impact of digital storytelling on reading outcomes over time, or by comparing Scratch with other digital storytelling platforms such as Canva, Storyboard That, or Twine. Further cross-disciplinary investigations may also explore how digital storytelling contributes to intercultural awareness, empathy, or critical literacy within literature education.

In conclusion, this study suggests that storytelling, when supported by digital tools such as Scratch, can serve as a pedagogical approach that invites learners to engage with texts in more creative and participatory ways. Rather than positioning digital storytelling as a universal solution, the findings highlight its potential as a context-dependent strategy that, when thoughtfully implemented, may enrich reading instruction in higher education settings.

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