

# THE EFFECT OF INTERACTIVE DIGITAL STORYTELLING THROUGH PICTURE SERIES ON STUDENTS' SPEAKING SKILLS

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Received: April 2026; Revised: May 2026; Accepted: June 2026

## ABSTRACT

Oral communication is a fundamental part of learning English because it allows students to convey ideas effectively. Nevertheless, many students struggle to improve their speaking skills due to limited vocabulary, low self-confidence, fear of speaking, and insufficient opportunities for interaction. This study examined the impact of interactive digital storytelling through picture series on students' English as a Foreign Language (EFL) speaking ability. A quasi-experimental design involving 60 eighth-grade students was employed. Two classes were selected through cluster sampling and assigned to the experimental group ( $n = 30$ ) and the control group ( $n = 30$ ). Data were collected through speaking pre-tests and post-tests assessed using a rubric covering fluency, pronunciation, vocabulary, and grammatical accuracy. An independent-samples t-test was used to analyze the data. The results revealed a significant difference between the groups ( $p < .001$ ). The experimental group achieved a higher mean score ( $M = 73.77$ ,  $SD = 2.94$ ) than the control group ( $M = 61.97$ ,  $SD = 3.32$ ). Although the effect size (Cohen's  $d = 3.76$ ) indicated a difference, it should be interpreted cautiously due to the limited sample and single-school context. Overall, interactive digital storytelling appears to be a promising instructional approach for supporting speaking development in EFL classrooms.

**Keywords:** digital storytelling; EFL learners; picture series; speaking skills; technology-enhanced learning

## ABSTRAK

Kemampuan berkomunikasi lisan merupakan bagian penting dalam pembelajaran bahasa Inggris karena memungkinkan siswa menyampaikan gagasan dalam berbagai situasi. Namun, banyak siswa sekolah menengah pertama mengalami kesulitan mengembangkan keterampilan berbicara akibat keterbatasan kosakata, rendahnya rasa percaya diri, ketakutan berbicara, serta kurangnya kesempatan berinteraksi secara bermakna. Penelitian ini bertujuan mengkaji pengaruh interactive digital storytelling melalui rangkaian gambar terhadap kemampuan berbicara siswa English as a Foreign Language (EFL). Penelitian menggunakan desain kuasi-eksperimen yang melibatkan 60 siswa kelas VIII dari sebuah sekolah menengah pertama di Jawa Timur, Indonesia. Dua kelas dipilih melalui cluster sampling dan ditetapkan sebagai kelompok eksperimen ( $n = 30$ ) dan kelompok kontrol ( $n = 30$ ). Data dikumpulkan melalui tes berbicara sebelum dan sesudah perlakuan yang dinilai menggunakan rubrik mencakup kefasihan, pelafalan, kosakata, dan ketepatan tata bahasa. Uji independent-samples t-test menunjukkan perbedaan signifikan antara kedua kelompok ( $p < 0,001$ ). Kelompok eksperimen memperoleh nilai rata-rata lebih tinggi ( $M = 73,77$ ;  $SD = 2,94$ ) dibandingkan kelompok kontrol ( $M = 61,97$ ;  $SD = 3,32$ ). Meskipun ukuran efek (Cohen's  $d = 3,76$ ) menunjukkan perbedaan besar, hasil tersebut perlu ditafsirkan hati-hati mengingat keterbatasan sampel dan konteks penelitian satu sekolah. Secara keseluruhan, interactive digital storytelling melalui rangkaian gambar berpotensi menjadi pendekatan pembelajaran mendukung keterampilan berbicara dalam kelas EFL.

**Kata Kunci:** keterampilan berbicara; pembelajaran berbantuan teknologi; pembelajaran EFL; seri gambar; storytelling digital interaktif

## How to Cite:

Imelia, G. R., & Suryanto, B. T. (2026). The Effect of Interactive Digital Storytelling Through Picture Series on Students' Speaking Skills. *IJEE (Indonesian Journal of English Education)*, 13(1), 119-128. <https://doi.org/10.15408/ijee.v13i1.50672>

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IJEE (Indonesian Journal of English Education), 13 (1), 2026

P-ISSN: 2356-1777, E-ISSN: 2443-0390 | DOI: <https://doi.org/10.15408/ijee.v13i1.50672>

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## INTRODUCTION

In 21st-century education, students are expected to develop essential competencies including communication, collaboration, creativity, critical thinking, and digital literacy. The rapid advancement of technology has changed how students learn, access information, and communicate, making technology-enhanced learning a fundamental part of modern education. As digital tools become more integrated into classroom practices, educators have increasingly explored teaching approaches that foster both language development and digital competence (OECD, 2021; UNESCO, 2021). Consequently, educational institutions must provide learning experiences that prepare students to participate actively in a technology-driven society (Chen, 2024; Liang & Hwang, 2023).

Among the competencies required in the 21st Century, communication abilities are vital for students' academic and social growth. Regarding EFL (English as a Foreign Language) settings, speaking is regarded as among the most significant language abilities since it allows students to communicate thoughts, share information, and engage in meaningful interactions. Effective speaking proficiency involves several interconnected elements, including fluency, pronunciation, vocabulary, grammatical accuracy, and content organization (Brown & Lee, 2015). Mastery of these elements allows learners to communicate meaningfully and confidently in diverse social and academic contexts.

Nevertheless, numerous EFL learners encounter difficulties in developing speaking proficiency. Restricted vocabulary, fear of errors, speaking anxiety, and limited opportunities for authentic communication often impede learners' oral performance (Chen, 2024). These challenges are particularly apparent in Indonesian junior high school classrooms, where speaking activities are often dominated by teacher-centered instruction, written exercises, and rote memorization. As a result, students frequently adopt passive roles in the process of learning instead of actively participating in communicative interactions.

To deal with these issues, educators have grown more explored teaching approaches that encourage the use of active language and meaningful communication. The principles of Communicative Language Teaching (CLT) emphasize authentic interaction and learner participation in language learning (Brown & Lee, 2015). Aligned with these principles, storytelling has emerged as a pedagogical strategy that encourages learners to organize ideas, construct coherent narratives, and express meaning through spoken language. Prior research has demonstrated that storytelling-based instruction can support the development of speaking fluency and oral communication skills (Widodo & Savova, 2020).

Digital storytelling has gained recognition as a potentially effective teaching strategy for promoting language learning, learner engagement, and multimodal communication in EFL classrooms (Kohnke et al., 2023; Chen, 2024). Nevertheless, previous studies have also identified several challenges, including technological constraints, limited digital literacy, and the substantial time required for preparation and implementation. In addition, some research has reported mixed findings, suggesting that the effectiveness of digital storytelling may vary depending on learner characteristics, instructional design, and classroom context. Therefore, although digital storytelling shows considerable promise, its implementation requires careful planning and adequate support. Beyond storytelling, visual support has been widely recognized as an effective tool for facilitating language production. Picture series provide structured visual guidance that helps learners organize ideas, maintain coherence, and sequence events logically during speaking activities (Yang & Wu, 2012; Putri & Sari, 2022). By presenting information in a sequential format, picture series assist students in generating content and constructing narratives more effectively, thereby reducing difficulties in organizing ideas during oral communication tasks.

The integration of digital technology has further expanded the potential of storytelling as a language-learning strategy. Interactive digital storytelling enhances traditional digital storytelling methods by integrating active participant engagement during the entire narrative creation

process. In contrast to conventional digital storytelling, where students typically produce and deliver digital narratives on their own, interactive digital storytelling necessitates participants to engage in collective deliberation, consensus building, reciprocal critique, and audience engagement throughout the narrative's development and delivery. In this paradigm, students not only generate digital narratives but also share perspectives, address inquiries, and improve their stories through social exchanges. The interactive element holds considerable theoretical importance as it fosters substantive communication, cooperative knowledge building, and supported language acquisition, all of which are foundational tenets of socio-constructivist theory. Contemporary research has underscored that immersive narrative settings foster student engagement in linguistic activities, collaborative meaning-making, and an increased proclivity for communication in a foreign language (Shen et al., 2024). Consequently, interactive digital narratives combine the formulation of stories, diverse media assets, and learner involvement within a technologically augmented setting conducive to both language output and interpersonal engagement. Through the integration of images, text, audio, and digital platforms, students engage in multimodal learning experiences that support language development and creative expression (Chen, 2024; Widodo & Savova, 2020). Previous studies have reported that technology-enhanced storytelling can promote learner participation and create meaningful opportunities for communication practice.

The effectiveness of interactive digital storytelling through picture series can be explained through several theoretical perspectives. From the perspective According to the theory of cognitive load, educational resources should be created to minimize needless cognitive demands and facilitate information processing (Sweller et al., 2019). Picture series function as visual scaffolds that support learners in organizing ideas and planning narratives, thereby reducing extraneous cognitive load and allowing greater cognitive resources to be allocated to language production (Sweller et al., 2019; Yang & Wu, 2012). Consequently, students may focus more effectively on speaking performance rather than on generating content from scratch.

This explanation is also supported by Dual Coding Theory, It implies that students use complementary cognitive processes to comprehend verbal and visual information systems, thereby facilitating comprehension and language production (Mayer, 2021). From a socio-constructivist perspective, learning occurs through interaction, collaboration, and the active construction of meaning. Interactive digital storytelling provides chances for students to interact with visual stimuli, digital tools, and narrative structures while developing oral communication skills. Through guided participation and scaffolded support, learners can construct meaning, negotiate ideas, and refine their speaking abilities within their Zone of Proximal Development.

Furthermore, multimodal learning environments that combine verbal, visual, and technological resources have been shown to support language learning, creativity, and digital literacy development (Liang & Hwang, 2023); Widodo & Savova, 2020; Hafner & Miller, 2021). Additionally, Technology-supported language learning contributes to the development of communication skills and digital literacy that are essential for students in contemporary educational settings (Pratama & Fitriani, 2022).

Despite the growing body of research on storytelling, picture-based instruction, and technology-enhanced language learning, relatively few studies have examined the integration of interactive digital storytelling and picture series within a quasi-experimental framework in Indonesian junior high school EFL contexts. Previous studies have generally investigated storytelling, visual media, or digital tools separately, leaving limited empirical evidence regarding the effectiveness of their integration in speaking instruction. This gap highlights the need for further investigation into how interactive digital storytelling through picture series may influence students' speaking performance.

Consequently, this research endeavors to examine the impact of interactive digital storytelling, utilizing a sequence of images, on the oral proficiency of junior high school students within English as a Foreign Language (EFL) setting. Acknowledging the scarcity of empirical data concerning the

incorporation of interactive digital storytelling and image sequences into speaking instruction, this investigation seeks to answer the subsequent research question:

Does interactive digital storytelling through picture series significantly improve junior high school students' speaking skills compared with conventional instruction?

METHODS

Research design

This study employed a quasi-experimental pre-test-post-test control group design (Creswell & Creswell, 2018). This design was selected because of the limitations of randomly assigning participants to different study groups in an educational setting. Consequently, existing classroom units were assigned to the control group or the intervention group. This method allowed for assessment of the impact of interactive digital storytelling using sequential images while maintaining the integrity of a typical classroom environment.

This research was conducted at SMP Negeri X, East Java, Indonesia. This school was purposefully selected because it has adequate technological resources to facilitate digital learning practices. A total of 60 eighth-grade Students took part in the research. The individuals involved, aged 13 to 14, were both male and female. Analysis of school records and classroom observations indicated that students were classified as having low to intermediate English proficiency levels. Two complete eighth-grade classes were selected from the entire school student body using a cluster sampling method.

Participants must be officially enrolled in eighth grade, take regular English classes, and complete a preliminary exam and a final exam. Individuals who did not take one of these tests were excluded from further data analysis. Two intact classes were assigned to the control group (n = 30) and the experimental group (n = 30). Before the research, a preliminary oral assessment was carried out to determine the English language skills of both groups. The average score attained by the experimental group was 57.00 (standard deviation = 4.79), while the average score for the control team was 58.74 (standard deviation = 4.46). An independent-samples t-test was performed using these preliminary assessment scores to confirm group comparability at the start of the study, which revealed no statistically significant differences ( $p > 0.05$ ) across the groups, suggesting comparable language abilities before intervention.

Table 1. The descriptive statistics of the pre-test scores

| Group        | N  | Mean  | SD   | Minimum | Maximum |
|--------------|----|-------|------|---------|---------|
| Experimental | 30 | 57.00 | 4.79 | 49      | 63      |
| Control      | 30 | 58.74 | 4.46 | 46      | 65      |

Data collection and analysis

This educational program consisted of six teaching periods spread over three weeks. Each session lasted approximately 80 minutes. The primary examiner acted as facilitator throughout the intervention, moderating all learning exercises in collaboration with the designated classroom teacher.

Participants in the experimental group engaged in collaborative digital story-making, using sequential images and digital presentation software, including Canva and Microsoft PowerPoint. The pedagogical approach included four distinct phases: (1) examining and deconstructing the image sequence, (2) conceptualizing and elaborating on the narrative structure, (3) developing the digital narrative using a variety of multimedia resources, and (4) sharing the narrative verbally, supplemented by constructive feedback from classmates and the facilitator.

**Table 2.** An overview of the treatment sessions

| Session | Learning Activities                                                                          |
|---------|----------------------------------------------------------------------------------------------|
| 1       | Introduction to digital storytelling, explanation of picture series activities, and pre-test |
| 2       | Observation of picture series and vocabulary development                                     |
| 3       | Story planning and narrative organization                                                    |
| 4       | Digital story creation using multimedia tools                                                |
| 5       | Oral storytelling practice and peer feedback                                                 |
| 6       | Story presentation, reflection, and post-test                                                |

Conversely, the control group was given standard speaking instruction based on the academic curriculum. This instruction included teacher-led explanations, vocabulary exercises, conversation practice, interactive question-and-answer sessions, and individual speaking assignments. Unlike the control group, students in the experimental group participated in digital storytelling activities and picture-series-based instruction.

Students' oral English proficiency was assessed using a language test requiring demonstrable achievement. These assessments were administered both before and after the intervention. For each assessment, participants were asked to produce an oral narrative supported by a series of visual cues. Students were expected to articulate the depicted events, organize them into a coherent description, and deliver this narrative in spoken English for approximately three to five minutes. To mitigate potential bias from repeated exposure, different sets of images were used for the initial and final assessments.

Oral outcomes were assessed using an analytical scoring guide adapted from the work of (Brown & Lee, 2015). This guide focused on four components: fluency, clarity of articulation, appropriate vocabulary, and grammatical accuracy. Every one of these components was evaluated using a five-point rating system, with a rating of 1 representing "very poor" performance and a rating of 5 representing "very good" performance, resulting in a total rating range of 4 to 20. For subsequent statistical analysis, these ratings were recalibrated to a scale of 0 to 100.

**Table 3.** Speaking Assessment Rubric Used in the Study

| Dimension            | Score 5<br>(Excellent)                         | Score 4<br>(Good)                             | Score 3<br>(Fair)                                                 | Score 2<br>(Poor)                              | Score 1<br>(Very Poor)                                             |
|----------------------|------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------|
| Fluency              | Speaks effortlessly and with little hesitation | With sporadic pauses, generally fluent        | A little reluctance affects communication                         | Frequent pauses and reluctance                 | Incapable of speaking continuously                                 |
| Pronunciation        | Pronunciation is clear and easily understood   | Minor pronunciation errors                    | Sometimes pronunciation mistakes make it difficult to understand. | Frequent pronunciation errors                  | Pronunciation severely impedes understanding                       |
| Vocabulary           | properly employs a broad vocabulary            | Adequate vocabulary with a few small mistakes | restricted vocabulary but meaning generally conveyed              | Very limited vocabulary                        | Vocabulary insufficient for communication                          |
| Grammatical Accuracy | Consistently accurate grammatical structures   | Minor grammatical errors                      | Obvious grammar mistakes                                          | Regular grammatical mistakes affecting meaning | Grammatical errors that persist preventing effective communication |

A standardized evaluation procedure was used, in which two experienced judges scored each vocal performance individually. A preparatory calibration session was conducted to establish a

uniform interpretation of the evaluation grid among the judges. The level of consensus between the judges was measured Cohen's kappa coefficient and yielded a value of 0.87. This coefficient indicates a high level of agreement and meets the criteria for near-perfect agreement described by (Landis & Koch, 1977).

**Content validity**

Content validity was confirmed through expert review. An expert in English language pedagogy assessed the instrument for appropriateness, comprehensibility, and alignment with the research objectives and educational standards. Next, the instrument was tested in a student-led pilot study who were not part of the main study group. This resulted in minor adjustments to improve the clarity of instructions and comprehension of the tasks.

**Ethical considerations**

Before data collection began, formal approval for the research project was obtained through a formal authorization letter from the university, which was then confirmed by the school's administrative authorities. Selected participants, along with their parents or guardians, received comprehensive information about the research objectives, methodology, and the voluntary nature of their participation before the study began. Explicit consent was obtained from the student participants and their respective parents or guardians.

All participant data was treated with the utmost care and used exclusively for research purposes. To maintain and protect individual privacy, all collected information was anonymized during the detailed review and dissemination of the results.

**Data analysis**

Quantitative information was analyzed using descriptive statistical measures, specifically the mean, standard deviation, and the lowest and highest recorded values. To ascertain baseline equivalency and investigate post-test changes between the groups, an independent-samples t-test was use between the treatment and control groups. The statistical significance threshold was set at 0.05.

Before proceeding with the hypothesis testing, an assessment of normality and homogeneity of variance assumptions was conducted, which were found to be satisfactory. Additionally, Cohen's d was calculated to quantify the magnitude of the intervention effect. Where necessary, 95% confidence intervals were provided to provide additional details regarding the reliability of the estimates of variation between groups.

**Assumption Testing**

Prior to conducting the independent-samples t-test, the assumptions of normality and homogeneity of variance were examined. The Shapiro-Wilk test indicated that the post-test scores of both the experimental group ( $W = 0.972$ ,  $p = .562$ ) and the control group ( $W = 0.968$ ,  $p = .441$ ) were normally distributed because the significance values exceeded the threshold of .05. Furthermore, Levene's Test of Equality of Variances showed that the assumption of homogeneity was satisfied ( $F = 0.387$ ,  $p = .536$ ). These results indicate that the data met the assumptions required for conducting the independent-samples t-test.

**Table 4.** Results of Normality and Homogeneity Tests

| Test                                   | Statistic | p-value | Interpretation |
|----------------------------------------|-----------|---------|----------------|
| Shapiro-Wilk (Experimental Group)      | 0.972     | .562    | Normal         |
| Shapiro-Wilk (Control Group)           | 0.968     | .441    | Normal         |
| Levene's Test of Equality of Variances | 0.387     | .536    | Homogeneous    |

# FINDINGS AND DISCUSSION

## Findings

Descriptive statistical analysis showed that participants' speaking abilities were comparable prior to the commencement of the study in both the experimental and control groups. In particular, prior to the test, the experimental group's mean score was 57.00 (standard deviation = 4.79), but the control group's mean score was 58.74 (standard deviation = 4.46). Both groups showed improvements following the implementation of the intervention. On the post-intervention test, however, the experimental group outperformed the control group in terms of mean score.

Table 5. Descriptive Statistics of Pre-test and Post-test Scores

| Group        | N  | Pre-test Mean | Pre-test SD | Post-test Mean | Post-test SD | Gain Score |
|--------------|----|---------------|-------------|----------------|--------------|------------|
| Experimental | 30 | 57.00         | 4.79        | 73.77          | 2.94         | 16.77      |
| Control      | 30 | 58.74         | 4.46        | 61.97          | 3.32         | 3.23       |

Based on the data presented in Table 2, Compared to the control group, the experimental group showed noticeably more progress, with a score of 16.77, while the control group achieved a score of 3.23. This metric serves to illustrate the magnitude of improvement observed during the intervention period. However, it is important to note that no statistical analysis was performed on these improvement scores. Therefore, any conclusions regarding statistically significant differences must be based on a comparison of post-test results.

An independent samples t-test was conducted to determine whether the difference in post-test performance between the two groups was statistically significant. The results of this analysis are presented in Table 3.

Table 4. Independent-Samples t-Test Results

| Variable  | <i>t</i> | <i>df</i> | <i>P</i> |
|-----------|----------|-----------|----------|
| Post-test | 14.57    | 58        | < .001   |

Statistical analysis revealed a clear and significant difference between the intervention and control groups on the post-test results, as evidenced by the t-test value  $t(58) = 14.57$  with a *p-value* less than 0.001. This result leads to the rejection of the null hypothesis. Furthermore, the effect size (Cohen's *d*) was 3.76, indicating a very large effect. However, caution is needed in interpreting this effect size, as the characteristics of the participants in this study and in studies conducted in the same academic setting are similar.

## Discussion

The results of this study indicate that the use of interactive digital storytelling through a series of images can be a promising educational approach to improve secondary school students' oral communication skills. This conclusion is consistent with (Sadik, 2008) claim that digital storytelling promotes in-depth learning by encouraging students to actively develop, articulate, and disseminate knowledge acquired through multimedia-enriched activities. Consistent with the study's objectives, students engaged with digital storytelling demonstrated significantly better speaking performance compared to students engaged with traditional teaching methods. Consequently, these results suggest that the integration of narratives, visual aids, and digital tools can create a conducive educational environment for further development of oral language skills in teaching English as a Foreign Language (EFL) (Dewi et al., 2023).

A potential reason for this progress is associated with the narrative structure inherent in storytelling exercises. Engaging in storytelling necessitates that learners arrange their thoughts in

a logical order and develop unified accounts, which may enhance both the ease and consistency of spoken discourse. Investigations conducted recently indicate that digital storytelling tasks offer valuable avenues for students to organize concepts, practice language application, and participate in genuine communication scenarios that foster the enhancement of oral expression (Kohnke et al., 2023; Shen et al., 2024). Additionally, the visual sequences provide prompts that aid learners in idea generation, ensuring coherent development, and enhancing the planning of their stories during oral presentations (Putri & Sari, 2022). Consequently, learners might encounter less challenges in constructing and articulating narratives when compared to scenarios lacking such visual aids. Nevertheless, elements like decreased hesitancy, augmented self-assurance, or elevated involvement were not explicitly quantified in this research and should consequently be viewed as potential contributing factors rather than substantiated outcomes.

An alternative hypothesis suggests that visual aids can reduce the cognitive load associated with oral delivery. Cognitive Load Theory advocates designing educational resources that do not detract from essential cognitive processing and facilitate comprehension (Sweller et al., 2019). In this study, the image sequences helped participants organize their ideas before speaking, freeing up more mental capacity for speech production. This view is supported by the significant improvement observed in the experimental group compared to the control group during the follow-up assessment.

The digital aspect of narrative creation may also have played a role in the observed improvements. Working with interactive digital narratives combines visual, written, and technological elements into a cohesive educational task, allowing participants to engage in multimodal language practices. Previous research has shown that technology-enabled narratives offer valuable communication scenarios and can facilitate the practice of multiple language modes (Robin, 2016). However, the exact influence of elements such as student enthusiasm, engagement, contribution, and confidence on the observed improvements remains unclear, as these factors were not explicitly assessed in the current study (Hung et al., 2012). Rather, these improvements can be attributed to the structured visual support provided by sequential images, the systematic organization of storytelling activities, and the integration of digital resources that assist students in composing and delivering oral narratives. Contemporary research also suggests that technology-enhanced educational environments for storytelling can foster meaningful language use and diverse learning experiences for beginning students (Reinders & Benson, 2022). Consequently, the improved post-test results in the experimental group can be attributed to the coherent implementation of visual aids, narrative construction, and technological tools as part of the educational approach used in this study.

The relatively small improvements observed in the control group suggest that conventional speaking instruction may offer limited opportunities for learners to organize their ideas visually and develop lengthy oral narratives. In contrast, learners in the experimental group were actively engaged in creating stories, constructing sequences, and expressing perspectives through a combination of visual media and technology. These activities may have led to more purposeful language use by allowing learners to connect concepts within a coherent narrative context. This likely provided students with more opportunities to practice speaking, potentially resulting in greater progress in their speaking abilities.

These results are generally consistent with previous research and underscore the constructive contribution of narratives, visual supports, and technology-supported learning to improving speaking skills (Liang & Hwang, 2023; Robin, 2016). These findings support the perspective that targeted storytelling efforts, integrated with appropriate visual and technological supports, can facilitate learners' oral language development. However, this research adds to existing knowledge by investigating the integration of interactive digital storytelling and image sequences through a quasi-experimental framework in lower secondary education. The combination of narrative construction, visual support, and digital media appears to have created a more engaging and structured learning context, enabling learners to organize their thoughts more effectively and articulate them with

more confidence. As a result, participants in the experimental group achieved higher results after the test compared to those who followed traditional learning.

The very high effect size (Cohen's  $d = 3.76$ ) indicates that the intervention had a strong practical impact on learners' verbal performance. These results suggest that interactive digital storytelling using picture sequences can be a highly effective method for enhancing language development in English language teaching. However, the effect size requires careful interpretation. Its high value may be influenced by several factors, including the relatively homogeneous participant group, the isolated institutional context of the study, and the significant difference in post-test results between the experimental and control groups. Therefore, although the results are promising, further research with larger and more heterogeneous participant groups from different educational contexts is essential to confirm the consistency and generalizability of these findings.

However, several limitations should be acknowledged. First, the intervention consisted of only six lessons, which may not adequately capture the long-term effects of interactive digital storytelling on students' language development. Second, this study involved participants from a single school with relatively similar characteristics, which may limit the generalizability of the findings to other educational contexts. Furthermore, this study prioritized speaking performance and did not directly examine affective variables such as students' self-confidence, motivation, active participation, or language anxiety. Therefore, any conclusions about the influence of these variables remain speculative and should be treated with caution.

Future research is encouraged to involve a larger and more diverse group of participants, implement the intervention over a longer period, and investigate its effectiveness across different educational settings. Integrating qualitative techniques, including classroom observations, interviews, and student reflections, could also provide greater insight into how interactive digital storytelling supports language development and influences students' experiences throughout the learning process.

Overall, the results of this study indicate that interactive digital storytelling through image sequences has promising potential as a teaching method for improving speaking skills in secondary school EFL classrooms. By combining visual support, storytelling elements, and digital technology, this approach can provide meaningful opportunities for learners to express their perspectives and develop their oral communication skills. However, these results must be evaluated within the limitations of this study. Further research in diverse settings, with larger participant samples, and over a longer implementation period is essential to allow a more comprehensive assessment of the effectiveness of this teaching method.

## CONCLUSIONS AND SUGGESTIONS

This study examined the use of interactive digital storytelling with picture sequences to support secondary school students' language development in an English as a Foreign Language (EFL) learning environment. Results showed that students who participated in the interactive digital storytelling activities achieved significantly higher post-test scores compared to the control group. These findings suggest that integrating storytelling, visual supports, and digital technology can be a valuable teaching approach to support students' speaking skills. The use of picture sequences and digital storytelling activities can help students develop ideas, organize information, and construct oral narratives more effectively. However, these results should be interpreted with caution, as the study involved a relatively small sample from a single school and was conducted over a limited intervention period. Therefore, the findings may not be fully generalizable to other educational contexts.

This study further provides practical implications for English language teaching. Teachers can use interactive digital storytelling and picture sequences as an engaging alternative to traditional speaking activities, offering meaningful opportunities for students to practice oral communication in a structured and creative way. Furthermore, schools can effectively support the implementation

of these activities by providing access to digital learning tools and professional development initiatives for educators. For future research, it is recommended to involve a larger and more diverse group of participants, extend the duration of the intervention, and conduct research in a variety of educational contexts. Further investigation could also focus on how interactive digital storytelling affects specific components of speaking skills, including fluency, pronunciation, vocabulary development, grammatical accuracy, and students' verbal confidence.

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