

Enhancing English Proficiency and Digital Literacy through Digital Storytelling in Vocational Health Students

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Abstract

Teaching English to healthcare students presents multifaceted challenges, particularly for non-native speakers who must concurrently navigate the complexities of medical concepts and the acquisition of language proficiency. Addressing these dual demands necessitates pedagogical innovations that integrate linguistic development with digital literacy to meet the dynamic requirements of contemporary healthcare. This quasi-experimental study explored the efficacy of digital storytelling as a transformative educational tool for enhancing English fluency and multimedia communication skills among vocational health students. Seventy-eight participants were allocated into an experimental group, which engaged in structured weekly digital storytelling activities, and a control group, which adhered to traditional grammar-based instruction. Over a 16-week intervention, data collected via the Test of English Proficiency Speaking and the Multimedia Communication Comfort Scale revealed significant outcomes, with the experimental group exhibiting substantial improvements (T-value = -23.91, $p < 0.001$) compared to the negligible gains of the control group (T-value = -11.12, $p > 0.05$). Furthermore, a robust positive correlation ($r = 0.60$) between initial lower proficiency and more significant improvement underscores the inclusivity and adaptability of digital storytelling for diverse learner profiles. By merging authentic language use with practical engagement in digital tools, digital storytelling equips vocational health students with critical competencies essential for effective communication in increasingly digitalized healthcare environments, demonstrating its potential as a cornerstone of 21st-century vocational education.

Keywords: Digital storytelling, English proficiency, Health vocational students, media literacy.

INTRODUCTION

English has become the global language of medicine, pivotal in academic studies, professional communication, and access to international medical advancements. Proficiency in English is especially crucial for healthcare students, particularly those in vocational schools, where they are trained to enter the workforce as healthcare professionals.

Mastering English equips these students to access advanced resources, participate in international collaborations, and communicate effectively with diverse patient populations, making language proficiency vital for fostering trust and ensuring clear, effective communication between healthcare staff, patients, and their families (Chan et al., 2022; Tomak & Pavelić, 2017). The choice of words, tone, and clarity of expression are critical to avoiding misunderstandings, reassuring patients, and comforting concerned family members. As highlighted by Moross et al. (2017), developing these language skills is a professional necessity and a key element in delivering empathetic, patient-centered care in increasingly multilingual and multicultural healthcare environments. Consequently, English proficiency is indispensable for healthcare students' academic success and professional development (Alhamami & Almelhi, 2021).

However, teaching English to healthcare students presents unique challenges, particularly for non-native English speakers, as it requires balancing language acquisition with mastering complex medical concepts. As Kaliyadan et al. (2015) noted, medical students often face a dual learning burden: understanding intricate medical content while improving their English proficiency. Additionally, many foundational resources, such as textbooks and journals, are available exclusively in English, posing significant comprehension barriers for students with limited language skills. Oducado et al. (2020) demonstrated significant correlations between proficiency in the language of instruction and academic performance, underscoring the essential role of language skills in academic success. Beyond academics, inadequate English proficiency hampers students' ability to develop critical communication skills needed for patient interactions, case discussions, and teamwork in clinical environments (McLean et al., 2012). These challenges underscore the urgent need for innovative teaching strategies that bridge the gap between linguistic demands and medical education, empowering students to excel academically and professionally.

At the same time, healthcare education is increasingly integrating digital technologies and addressing diverse communication needs, highlighting the limitations of traditional pedagogical methods. Innovative approaches such as digital storytelling offer a promising solution by enhancing student engagement, knowledge retention, and skill development (Smeda et al., 2014; Shorey et al., 2021). A study by Fan (2022) demonstrated that digital storytelling not only makes complex medical concepts more accessible and memorable but also fosters critical thinking and digital literacy—skills essential for modern healthcare professionals, as it bridges theoretical knowledge with practical application, helping students navigate digital healthcare tools and communicate effectively with diverse patient demographics, thus preparing them for the demands of contemporary healthcare environments. Together, these innovations address the dual challenges of language acquisition and digital competency, equipping healthcare students to meet the dynamic needs of contemporary healthcare environments.

Digital storytelling integrates multimedia elements such as graphics, audio, video, and text to create dynamic narratives (Barber, 2016). The process follows an iterative cycle, beginning with brainstorming and scripting, then recording and incorporating multimedia elements such as images or background music. Students then present their stories to peers, fostering interactive learning. Teachers play a crucial role by facilitating discussions and providing feedback on language and storytelling elements, ensuring continuous improvement. In practice, digital storytelling addresses various aspects of language learning.

Writing skills are developed through drafting and revising story scripts, while speaking skills are enhanced during voice recording sessions, focusing on pronunciation, intonation, and pacing. Listening comprehension improves as students review peer projects or incorporate external audio elements and reading skills are strengthened by analyzing sample stories or researching content. The multimodal nature of digital storytelling ensures that these skills are practiced in an integrated and meaningful way, making it a highly effective tool for language education (Hava, 2019). Implementing digital storytelling in the classroom requires a structured yet flexible approach, allowing learners to develop language and technical skills. Activities may include crafting personal narratives, retelling stories, or narrating events using tools like PowerPoint, voice recording software, or advanced programs such as Movie Maker. According to Chen et al. (2022), these projects often involve collaborative components like group discussions, peer editing, and class presentations, which foster teamwork and critical thinking. Furthermore, digital storytelling supports advocacy and critical inquiry, enabling students to create documentaries, public campaigns, or cultural explorations (Greene et al., 2018).

Recent research highlights digital storytelling (DST) as a versatile educational tool, effectively enhancing language proficiency and digital literacy across diverse fields. In EFL classrooms, Razmi et al. (2014) found that DST improved oral production by actively engaging students, fostering motivation, and promoting responsibility in learning. Similarly, Nami and Asadnia (2023) demonstrated its impact on vocabulary acquisition, where students creating collaborative digital stories outperformed their peers, contextualizing vocabulary in multimodal narratives and personalizing the learning process. Çetin (2020) further highlighted the role of DST in teacher education, reporting significant improvements in pre-service teachers' digital literacy and offering insights into the challenges and benefits of creating digital stories. DST has shown promise in healthcare education for language and professional skill development. Moreau et al. (2018) revealed that co-creating digital stories with patients or health professionals enhances health professions education (HPE) learning outcomes, particularly in nursing contexts. Purba et al. (2022) demonstrated its effectiveness in improving nurses' English communication skills, including grammatical, strategic, and sociolinguistic competencies, while boosting confidence in medical English. Abdel-Aziz et al. (2022) explored DST as a video-based approach for designing health education programs, emphasizing its potential for culturally relevant public health advocacy and calling for further research on its broader impact on professional education.

Despite the recognized potential of digital storytelling (DST) in healthcare education, limited research addresses its simultaneous application for enhancing English proficiency and digital literacy, particularly among vocational health students. Existing studies have predominantly focused on specific competencies, such as communication skills or advocacy, without exploring the integration of these critical skills into a cohesive learning strategy tailored for vocational contexts. Furthermore, the unique challenges vocational health students face—who must develop practical language and digital competencies to meet the demands of a multilingual, technology-driven healthcare environment—remain underexplored. This research seeks to address these gaps by investigating the dual role of DST in improving English proficiency and digital literacy among vocational health students. By focusing on the intersection of linguistic and technological skill development, the study

aims to provide innovative insights into how DST can bridge critical competency gaps, equipping vocational health students for success in contemporary healthcare environments.

METHOD

This study utilized a quasi-experimental design with pre-tests and post-tests to evaluate the effectiveness of digital storytelling on English-speaking proficiency and multimedia communication skills among vocational health students. The quasi-experimental approach was chosen for its ability to compare a treatment group and a control group in real-world educational settings while maintaining a degree of experimental rigor (Gopalan et al., 2020). In this study, the experimental group participated in a digital storytelling intervention. In contrast, the control group received traditional grammar-based instruction, making the design well-suited for assessing the impact of innovative teaching. Spanning sixteen weeks (one academic semester), the study aligns with research emphasizing the need for long-term interventions to achieve meaningful educational outcomes. This extended period allowed participants to engage deeply with the content, leading to sustainable improvements in English proficiency and multimedia literacy.

Seventy-eight vocational health students from a vocational school in Indonesia participated in this study, with 39 randomly assigned to the experimental group and 39 to the control group. Random assignment was employed to minimize selection bias and ensure that both groups had comparable characteristics at the start of the intervention (Handley et al., 2018). All participants were enrolled in an English course specifically designed for vocational health students, focusing on occupational health-related topics. This ensured that students shared a similar content knowledge and language proficiency baseline. Participants were selected based on their enrollment in this course to maintain homogeneity in their educational background. Informed consent was obtained from all participants, who were assured of their confidentiality and right to voluntary participation throughout the study.

Two primary instruments were used to evaluate the impact of the digital storytelling intervention: The Test of English Proficiency Speaking and the Multimedia Communication Comfort Scale. The Test of English Proficiency Speaking assessed key aspects of communicative competence, including pronunciation, grammar, vocabulary, and fluency. This standardized test was administered to all participants before and after the intervention to measure changes in their speaking abilities. The Multimedia Communication Comfort Scale measured students' comfort with using digital tools, creating multimedia content, and their perceptions of digital storytelling as a learning method. This scale incorporated items designed to assess digital literacy and communication skills, reflecting the increasing importance of digital tools in modern education. Like the English proficiency test, the multimedia scale was administered pre- and post-intervention to evaluate improvements in students' digital communication abilities. These two instruments enabled the study to comprehensively assess the intervention's dual impact on language proficiency and digital literacy. This approach aligns with current educational priorities, emphasizing integrating linguistic and digital skills to prepare students for contemporary challenges in learning and professional environments (Haleem et al., 2022; Núñez-Canal et al., 2021).

Data were collected at two points during the study: before the intervention (pre-test) and after the intervention (post-test). The experimental group participated in weekly digital storytelling sessions, creating multimedia stories on health-related topics such as nutrition,

physical activity, and mental health. Students were introduced to new digital tools and storytelling techniques each week. They presented their stories to peers for feedback, a process designed to improve communicative fluency and digital literacy through collaborative learning. In contrast, the control group received traditional English instruction that focused on grammar drills, vocabulary exercises, and oral presentations without incorporating digital storytelling. Both groups completed the pre-tests and post-tests for English proficiency and multimedia communication skills to measure progress over time. Using pre-test and post-test data collection allowed for a clear comparison of changes between the two groups (Little et al., 2019), providing valuable insights into the effectiveness of the digital storytelling intervention.

Furthermore, quantitative data were analyzed using SPSS software, and independent t-tests were performed to compare the post-test scores of the experimental and control groups on both the English Proficiency Speaking Test and the Multimedia Communication Comfort Scale. Paired t-tests were also used to examine pre-test and post-test differences within each group (Xu et al., 2017), providing insights into the effectiveness of the digital storytelling intervention. Pearson correlation analysis was conducted to explore potential relationships between gains in English proficiency and improvements in digital communication comfort.

FINDINGS

The study demonstrated a positive impact of digital storytelling on the English fluency and multimedia communication skills of vocational health students in the experimental group. As shown in the t-test results, the experimental group's mean score increased notably from 15.77 in the pre-test to 20.72 in the post-test, with a T-value of -23.91 and a p-value of $2.2e-16$. This statistically significant result indicates that the digital storytelling intervention effectively enhanced the students' performance. In contrast, the control group, which followed traditional instruction, showed only a slight improvement in mean scores from 15.60 to 15.76. The T-value of 11.12 and a p-value of 0.08 suggest that this change was not statistically significant. These findings highlight the efficacy of digital storytelling in promoting language and communication skills, outperforming traditional teaching methods, which had minimal impact. The results underscore the potential of integrating digital storytelling as an innovative pedagogical approach to improve English proficiency and multimedia literacy among vocational health students.

Table 1. Summary of t-test results for experimental and control groups

Group	Means score		T-Value	P-Value
	Pre-Test	Post-test		
Experimental	15.77	20.72	-23.91	$2.2e-16$ ($p < 0.05$, reject H_0)
Control	15.60	15.76	11.12	0.08 ($p > 0.05$, fail to reject H_0)

The Pearson correlation analysis further highlighted the effectiveness of the digital storytelling intervention. In the experimental group, a moderate positive correlation ($r = 0.60$) was observed between students' initial lower pre-test scores and subsequent improvement, indicating that students with lower starting proficiency experienced the most significant benefits from the intervention. Conversely, the control group showed no significant correlation between pre-test scores and improvement ($r = 0.05$), suggesting that

traditional teaching methods were less effective, particularly for students with lower initial proficiency.

Additionally, the change in skewness of the score distribution in the experimental group, from -0.25 to -0.66, further underscores the broader improvements in language proficiency. This shift indicates that digital storytelling enabled more students to progress significantly, unlike the control group, where the skewness change was minimal. These findings demonstrate that the digital storytelling intervention enhanced overall performance and impacted students who initially faced more significant challenges, making it a powerful tool for addressing disparities in learning outcomes.

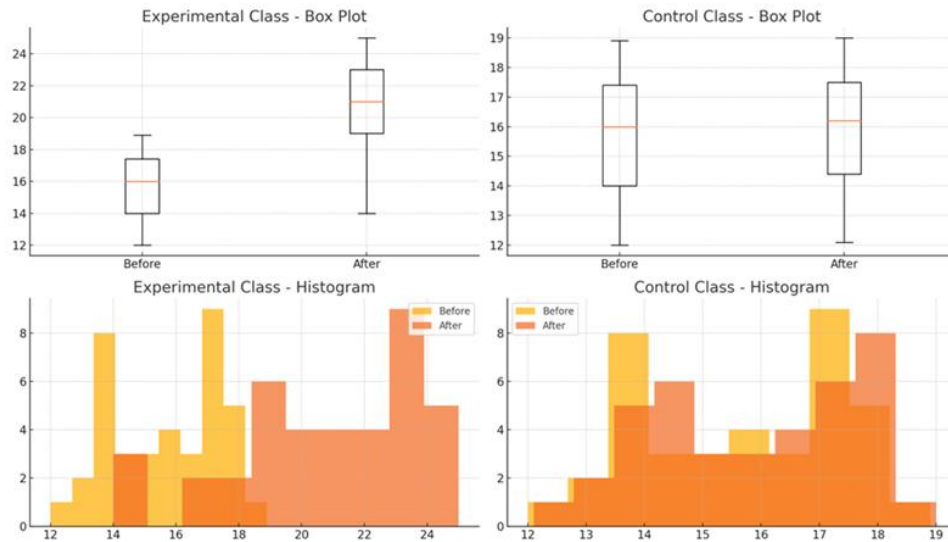


Figure 1. Histogram of pre-test and post-test score distributions

Further analysis using scatter plots revealed a strong positive relationship between students' perceived benefits of the digital storytelling intervention and their improvement in English fluency. The scatter plot showed an r -value of 0.85, indicating a strong correlation between students who rated the digital storytelling experience positively and those who achieved significant gains in speaking fluency. Pearson correlation tests confirmed this relationship was statistically significant ($p < 0.001$). Additionally, histograms and box plots of questionnaire scores indicated that most students in the experimental group rated the intervention favorably, with the majority of values falling between -0.15 and -0.25, reflecting moderate to significant improvements. These results suggest that students recognized the benefits of the digital storytelling method and considered it an effective tool for enhancing their language and communication skills. The strong correlation between questionnaire scores and speaking test results further highlights that students who showed the most improvement found digital storytelling to be highly engaging and impactful in supporting their learning.

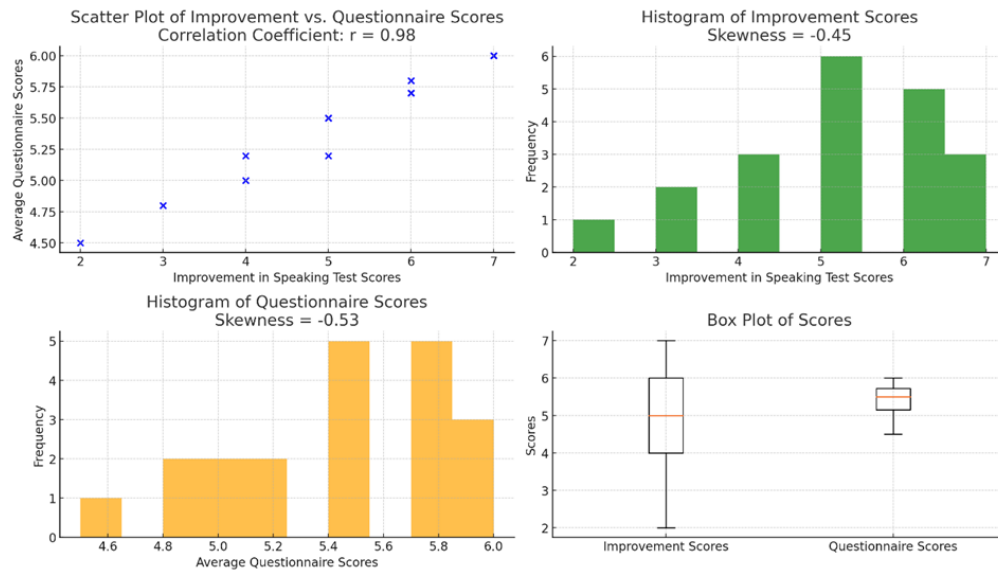


Figure 2. Summary of questionnaire results and correlations with speaking fluency

Regarding multimedia communication skills, students in the experimental group showed notable improvements in confidence and comfort when using digital tools, as reflected in the positive feedback from the Multimedia Communication Comfort Scale. Many students reported greater ease in creating multimedia content and integrating digital tools into their storytelling, demonstrating the intervention's dual benefit in fostering language proficiency and digital literacy. Graphical data further supported these findings, significantly increasing students' comfort levels from pre-test to post-test. Additionally, the strong correlation between perceived ease of multimedia use and improvements in speaking fluency ($r = 0.70$) highlights the integrative nature of digital storytelling. This suggests that students who gained confidence with digital tools also improved their English fluency, emphasizing the synergy between digital skills and language development in this educational approach.

DISCUSSION

The findings of this study demonstrate the effectiveness of digital storytelling in enhancing English proficiency and multimedia communication skills among vocational health students. Unlike traditional grammar-based instruction, digital storytelling immerses students in authentic and meaningful contexts, fostering active engagement and deeper language acquisition. This aligns with [Yang and Wu \(2012\)](#), who emphasize the role of digital storytelling in promoting active learning through creative and collaborative activities, leading to improved linguistic and digital competencies. Furthermore, the inclusive nature of this approach is underscored by the positive correlation between lower initial proficiency and more significant improvement, echoing the results of [Sadik \(2008\)](#) and [Kasami \(2021\)](#), who observed that narrative-based learning significantly benefits students with low confidence and proficiency by enhancing motivation and participation.

In addition to language skills, digital storytelling fosters essential digital literacy. The strong correlation between multimedia communication and speaking fluency improvements supports [Buckingham's \(2015\)](#) argument that digital storytelling integrates technical,

cognitive, and communicative skills, which are vital in contemporary education. Similarly, [Challinor et al. \(2017\)](#) highlight how digital storytelling develops digital competence by engaging students in creating and sharing multimedia content, preparing them for the technological demands of professional settings. Using real-world healthcare scenarios in digital storytelling further aligns with findings by [Onu et al. \(2023\)](#), who emphasize the importance of incorporating technology in healthcare education to make learning interactive and relatable.

The application of digital storytelling extends beyond educational settings into clinical practice, serving as a tool for self-expression, patient education, and peer support ([Lal et al., 2014](#)). Its adaptability allows it to be used in diverse healthcare environments, including community health initiatives, rehabilitation centers, and hospitals, as [Cueva et al. \(2013\)](#) noted. By bridging theoretical learning with practical application, digital storytelling equips students with the skills to navigate the dual demands of language and technology in modern healthcare environments, as [Lucas and Rawlins \(2015\)](#) and [Hammond et al. \(2021\)](#) emphasize.

However, the findings must be interpreted with certain limitations in mind. While effective for observing short-term improvements, the sixteen-week intervention does not provide sufficient evidence for the long-term sustainability of these gains. [Alismail \(2015\)](#) and [Robin and McNeil \(2019\)](#) advocate for longitudinal studies to assess whether such interventions lead to enduring improvements as students transition into professional roles. Furthermore, the study's focus on vocational health students limits its generalizability. Future research should explore its applicability across other vocational fields, such as engineering or business, to evaluate its broader relevance ([Nicola et al., 2020](#); [Previte & Gurrieri, 2015](#)).

Moreover, while this study focused on enhancing English proficiency and digital literacy, digital storytelling can cultivate additional competencies, such as critical thinking, creativity, and cultural awareness. [Green \(2013\)](#), [Schmoelz \(2018\)](#), and [Yang and Wu \(2012\)](#) suggest that narrative-based approaches are highly effective in fostering these higher-order skills, which are increasingly essential in professional and vocational contexts. Future research could investigate how integrating these elements into digital storytelling interventions provides a more holistic and enriching learning experience.

This study highlights the transformative potential of digital storytelling in vocational health education. Simultaneously developing linguistic and digital skills addresses critical competencies required in a digitalized healthcare environment. The findings contribute to a growing body of evidence supporting innovative, technology-driven teaching strategies, with digital storytelling standing out as a versatile and impactful approach. Further exploration into its long-term effects and cross-disciplinary applications will strengthen its role as a key tool in modern education.

CONCLUSION

This study highlights the effectiveness of digital storytelling as a pedagogical tool for improving English proficiency and digital literacy among vocational health students. The experimental group, engaged in digital storytelling activities, achieved significantly more improvements in speaking fluency and multimedia communication skills than the control group, which followed traditional grammar-based instruction. The correlation between

lower initial proficiency and subsequent improvement emphasizes the inclusivity of this method, proving beneficial for students at varying skill levels. Digital storytelling effectively bridges the gap between traditional teaching methods and the evolving demands of the healthcare profession. It addresses the dual competencies required in modern healthcare environments by providing opportunities to communicate in authentic contexts and utilize digital tools. This approach fosters active learning, deeper engagement, and essential skills such as effectively presenting complex health information and navigating digital platforms. The findings underscore the transformative potential of digital storytelling in vocational health education, equipping students with the skills necessary for success in a digitally driven healthcare industry.

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