

**Exploring the use of digital storytelling and practices of  
teaching strategies among teachers in inclusive education**

**Charles Janine M. Achapero**

Alegria National High School

Gabi, Cordova, Cebu, Philippines

Email: charlesjaninemiano@gmail.com

**ABSTRACT**

This study investigated the use of Digital Storytelling (DST) and teaching strategies among non-SPED teachers in inclusive classrooms at Tingub National High School, Mandaue City. Employing a quantitative-descriptive correlational design, data were gathered from 20 teachers using a validated questionnaire. Findings revealed a constrained use of digital storytelling tools, with heavy reliance on PowerPoint, while numerous other platforms remained largely unused. Despite this, teachers demonstrated a high extent of inclusive teaching practices, consistently fostering an accepting classroom environment. They perceived digital storytelling tools as highly effective in improving diverse learning outcomes, including comprehension, engagement, and critical thinking. However, correlation analysis showed no significant relationship between the frequency of digital storytelling tool use and its perceived effectiveness, nor between the extent of teaching practices and digital storytelling effectiveness. Major challenges identified were time constraints, limited access to technology, and insufficient technical skills. Consequently, teachers expressed a strong need for hands-on training, improved ICT resources, and collaborative support. The study concludes that while teachers are committed to inclusion and recognize digital storytelling tools value, significant barriers impede its optimal application. Therefore, a needs-based Learning Enhancement Plan was developed, focusing on capacity-building, resource provision, and institutional support to empower teachers in effectively leveraging digital storytelling for enhanced inclusive education.

**Keywords:** Special Education, digital storytelling tools, teaching strategy practices, quantitative descriptive-correlational design, learning enhancement plan, Mandaue City Cebu, Philippines

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## INTRODUCTION

Effective communication and collaboration between educational institutions and families are essential for the academic and social success of students with hearing impairments. These students face unique challenges in language acquisition, communication, and social integration that require targeted support both at school and at home (Jackson & Rivera, 2020). Special education programs underline the importance of fostering strong partnerships between teachers and parents to create an inclusive learning environment that meets these specific needs (Lai & Lee, 2018).

One of the notable institutions addressing these needs is the Cordova and Zapatera SPED Center in Cebu and Lapu-lapu City. As a Department of Education-recognized special education (SPED) center, it operates under the inclusive education framework mandated by DepEd Order No. 72, s. 2009, which promotes equitable learning opportunities for children with special needs, including hearing impairments. Despite the center's efforts in providing specialized interventions, a significant challenge lies in sustaining effective, consistent communication and partnership with families. Anecdotal evidence suggests communication gaps and limited parental engagement in decision-making, which hinder holistic educational support for these learners.

Local data highlight the relevance of this focus, the Philippine Statistics Authority (2020) estimates over 400,000 Filipinos have hearing disabilities, with around 8,000 enrolled in public SPED programs as per the 2023 DepEd SPED enrollment report. Yet, the strategies to actively involve families remain underdeveloped. Research underscores parental involvement as a critical factor influencing language development, literacy, academic achievement, and emotional well-being in students with hearing impairments (Gallaudet University, 2019; Smith & Douglas, 2021). These findings reinforce the need for school-family partnerships tailored to local cultural and socioeconomic contexts.

Furthermore, challenges specific to the Philippine setting include limited awareness about hearing disabilities, cultural stigma, and socioeconomic barriers that reduce parents' participation in educational processes (UNESCO, 2015; Kern & Hodge, 2021). In Cordova and Zapatera SPED Center, these factors manifest in variable family engagement and unclear communication pathways between educators and parents. There is an evident lack of empirical research that evaluates the effectiveness of current communication practices and identifies actionable strategies to enhance family-school collaboration in this locality.

Studying Cordova and Zapatera SPED Center were therefore crucial. It provides a concrete opportunity to assess real barriers and develop context-sensitive solutions for improving communication, strengthening collaboration, and ultimately enhancing educational outcomes for children with hearing impairments. By focusing on this center, the study aims to fill a research gap in the Philippine SPED context, contributing data-driven insights that can inform policies and practices not only locally but also in similar special education settings nationwide.

### Statement of the problem

This study aimed to determine the extent of use of digital storytelling tools, their effectiveness in improving learning outcomes, the teaching strategy practices employed, and the challenges and support needs in inclusive education classrooms among non-SPED teachers in Tingub National High School, Mandaue City, Cebu as the basis for a proposed needs-based and

inclusive Learning Enhancement Plan. Specifically, the study sought to answer the following questions:

1. What is the demographic profile of the respondents according to age, gender, and number of years in teaching?
2. To what extent is the use of digital storytelling tools frequent among the respondents in inclusive education classrooms?
3. As perceived by the respondents, what is the extent of their teaching strategy practices in inclusive classrooms?
4. As perceived by the respondents, what is the level of effectiveness of storytelling in improving the learning outcomes?
5. Is there a significant relationship between:
  - 5.1 the use of digital storytelling tools and their effectiveness in improving learning outcomes, and
  - 5.2 the extent of teaching strategy practices in inclusive classrooms and the effectiveness of storytelling in improving the learning outcomes?
6. What challenges and corresponding support needs do the respondents identify in their use of digital storytelling?
7. Based on the findings of the study, what Learning Enhancement Plan can be crafted?

## METHODOLOGY

This study employed a quantitative-descriptive correlational research design to determine the extent to which digital storytelling tools were used, their perceived effectiveness in improving learning outcomes, the inclusive teaching strategy practices implemented, as well as the challenges and support needs experienced by non-SPED teachers in the inclusive education classrooms of Tingub National High School, Mandaue City, Cebu. The design allowed the researcher to gather numerical data, describe trends, and examine relationships among variables relevant to the use of digital storytelling in inclusive teaching.

The descriptive component of the design focused on determining the frequency of use of digital storytelling tools, the extent of teaching strategy practices, and the level of effectiveness of digital storytelling in improving learning outcomes, as perceived by the respondents. The correlational component examined whether significant relationships existed between (1) the use of digital storytelling tools and their perceived effectiveness in improving learning outcomes, and (2) the extent of teaching strategy practices in inclusive classrooms and the perceived effectiveness of digital storytelling.

The respondents of this study were teachers from Tingub National High School who were conveniently available and willing to participate during the data collection period. Convenience sampling was employed, wherein teachers were selected based on their accessibility, proximity, and readiness to respond to the survey. This non-probability sampling method allowed for efficient and practical data gathering within the constraints of time, resources, and accessibility, especially in a school setting where the researcher had direct contact with the teaching staff.

**Preliminary Stage.** The research procedure began with the preparation and writing of the transmittal letter addressed to the school principal and school head of Tingub National High School, which implemented inclusive education for learners with diverse needs. The letter requested approval to conduct the study among the identified non-SPED teachers and learners with

diverse needs. Once the transmittal letter was signed and approved, the researchers proceeded with the administration of the survey questionnaires to the non-SPED teachers. To ensure confidentiality, formal consent was obtained from the school principal and the participating non-SPED or inclusive education teachers. The respondents were assured that all information gathered would be kept confidential and used solely for research purposes.

**Gathering Stage.** During the data collection period, the researchers distributed the survey questionnaires to the respondents and ensured that each participant understood the purpose and instructions of the instrument. After retrieval, the researchers individually checked each questionnaire for completeness and accuracy of entries. Once verified, the responses were encoded into a Data Matrix file provided by the statistician. Data hygiene procedures followed, ensuring that all entries were consistent, accurate, and complete before statistical processing.

**Post-Data Gathering Stage.** After the data were encoded and cleaned, the researcher used statistical software and Microsoft Excel to tabulate and analyse the responses. The processed data were interpreted, and the results formed the basis for the findings, conclusions, and the proposed needs-based Learning Enhancement Plan. Throughout this stage, the confidentiality of all respondent information was maintained, and all collected data were utilized solely for the purposes of the study.

## RESULTS AND DISCUSSION

This chapter presented the data gathered from Tingub National High School for the school year 2025-2026. This includes demographic profile of the respondents, the extent of use of digital storytelling tools, their effectiveness in improving learning outcomes, the teaching strategy practices employed, and the challenges and support needs in inclusive education classrooms among non-SPED teachers.

### Profile of the respondents

This section presents the demographic characteristics of the 20 non-specialized education (non-SPED) teachers from Tingub National High School who participated in the study during the 2025-2026 school year. Understanding their gender, age, and years of teaching experience is essential for contextualizing the integration of digital storytelling tools in inclusive classrooms.

Table 2  
Demographic Profile of the Respondents

| Characteristics | Category | f | % |
|-----------------|----------|---|---|
|-----------------|----------|---|---|

|                   |              |    |    |
|-------------------|--------------|----|----|
| Gender            | Male         | 4  | 20 |
|                   | Female       | 16 | 80 |
| Age               | 21 – 30      | 4  | 20 |
|                   | 31 – 40      | 9  | 45 |
|                   | 41 – 50      | 5  | 25 |
| Years of Teaching | 51 and above | 2  | 10 |
|                   | 1 – 3        | 4  | 20 |
|                   | 4 – 6        | 6  | 30 |
|                   | 7 – 9        | 6  | 30 |
|                   | 10 and above | 4  | 20 |

Table 2 presented the demographic characteristics of the respondents in terms of gender, age, and years of teaching experience. With regard to gender, the majority of the respondents were female (80%), while males comprised 20% of the total sample. This indicates a predominantly female representation among the respondents.

In terms of age, most respondents belonged to the 31–40 age group (45%), followed by those aged 41–50 (25%) and 21–30 (20%). A smaller proportion of respondents were aged 51 and above (10%). This distribution suggests that the respondents were largely within their early to mid-career stages.

Regarding years of teaching experience, the largest groups were teachers with 4–6 years and 7–9 years of experience, each accounting for 30% of the respondents. Teachers with 1–3 years and those with 10 years or more of experience each comprised 20% of the sample. This indicates a balanced mix of relatively new and experienced teachers, providing varied perspectives on teaching practices and the use of digital storytelling in inclusive classrooms.

Overall, the demographic profile reflects a diverse group of respondents in terms of age and teaching experience, which supports the reliability of the findings by capturing insights from teachers at different career stages.

This profile mirrored the feminization of teaching in the Philippines, where female educators often excelled in relational inclusive practices, complemented by a balanced experience mix that fostered diverse insights into digital storytelling adoption. The mid-career dominance suggested technological adaptability without the rigidity of long tenure or inexperience of beginners.

These characteristics implied that professional development at Tingub National High School should target mid-career females with tech-enhanced inclusion training and cross-experience mentoring to optimize digital storytelling, enhancing equitable outcomes for diverse learners amid this balanced workforce.

Recent research supported these demographic patterns in Philippine inclusive education. Delos Reyes et al. (2025) found 86.67% female secondary teachers, attributing inclusive readiness to training amid such profiles. Raguindin (2025) emphasized mid-career teachers' competencies for inclusion, matching the 31-40 age peak. Salvan (2020) similarly noted 67% female teachers influencing learner performance through empathetic demographics.

#### Usage frequency and ranking of digital storytelling tools among the respondents

Digital storytelling has become an increasingly valuable approach in inclusive education, providing diverse learners with engaging and personalized learning experiences. This section presents the frequency and ranking of various digital storytelling tools utilized by non-SPED teachers.

The table below illustrates the extent to which respondents incorporate different digital storytelling platforms in their teaching practices, showing which tools are most commonly employed and how frequently they are used to enhance instruction in inclusive classrooms.

Understanding the usage patterns of these tools helps identify teacher preferences and potential gaps in digital resource adoption, which can inform future professional development and support strategies for effective inclusive teaching.

Table 3  
Usage Frequency and Ranking of Digital Storytelling Tools Among the Respondents

| No. | Digital Storytelling Tools | (f) | Percent of Responses | Percent of Cases (Respondents) | Rank | Weighted Mean | Verbal Description |
|-----|----------------------------|-----|----------------------|--------------------------------|------|---------------|--------------------|
| 1   | PowerPoint                 | 20  | 16.95%               | 100%                           | 1    | 4.6           | Always             |
| 2   | Storybird                  | 3   | 2.54%                | 15%                            | 14   | 0.8           | Never              |
| 3   | VoiceThread                | 5   | 4.24%                | 25%                            | 6.5  | 1.4           | Never              |
| 4   | PicLits                    | 3   | 2.54%                | 15%                            | 14   | 1.3           | Never              |
| 5   | Canva                      | 18  | 15.25%               | 90%                            | 2    | 3.8           | Often              |
| 6   | StoryJumper                | 3   | 2.54%                | 15%                            | 14   | 0.75          | Never              |
| 7   | Toontastic                 | 3   | 2.54%                | 15%                            | 14   | 1.2           | Never              |
| 8   | Animaker                   | 5   | 4.24%                | 25%                            | 6.5  | 1.4           | Never              |
| 9   | Powtoon                    | 8   | 6.78%                | 40%                            | 4.5  | 1.85          | Never              |
| 10  | Microsoft Sway             | 3   | 2.54%                | 15%                            | 14   | 1.25          | Never              |
| 11  | Book Creator               | 3   | 2.54%                | 15%                            | 14   | 1.2           | Never              |
| 12  | Pixton                     | 2   | 1.69%                | 10%                            | 18.5 | 1.1           | Never              |
| 13  | Visme                      | 3   | 2.54%                | 15%                            | 14   | 1.15          | Never              |
| 14  | Animoto                    | 2   | 1.69%                | 10%                            | 18.5 | 1.15          | Never              |
| 15  | WeVideo                    | 4   | 2.56%                | 20%                            | 9    | 1.4           | Never              |

|    |               |     |        |       |     |      |           |
|----|---------------|-----|--------|-------|-----|------|-----------|
| 16 | Adobe Express | 8   | 6.78%  | 40%   | 4.5 | 1.7  | Never     |
| 17 | Adobe Slate   | 4   | 3.39%  | 20%   | 9   | 1.4  | Never     |
| 18 | Google Slides | 16  | 14.10% | 80%   | 3   | 2.9  | Sometimes |
| 19 | Piktochart    | 4   | 3.39%  | 20%   | 9   | 1.4  | Never     |
| 20 | MapSkip       | 1   | 0.85%  | 5%    | 20  | 1.05 | Never     |
|    | Total         | 118 | 100%   | ----- |     | 1.64 | Never     |

Table 3 presented a comprehensive summary of the frequency of use, percentage distribution, ranking, weighted mean, and verbal interpretation of various digital storytelling tools used by the respondents in inclusive classrooms. The results showed an uneven pattern of utilization across tools. PowerPoint obtained the highest frequency and rank, with a weighted mean of 4.60, which was interpreted as “Always.” Google Slides and Adobe Express demonstrated moderate levels of use, with weighted means ranging from 2.90 to 3.00 and verbal descriptions from “Sometimes” to “Often.” In contrast, most other digital storytelling tools, including Storybird, VoiceThread, PicLits, StoryJumper, Book Creator, Pixton, Animaker, Powtoon, Visme, Animoto, Microsoft Sway, and MapSkip, recorded low weighted means ranging from 0.80 to 1.85, corresponding to “Never” to “Rarely.”

The findings indicated that respondents relied heavily on a limited number of familiar and accessible tools, particularly PowerPoint, for digital storytelling integration. Moderate use of Google Slides and Adobe Express suggested emerging interest in platforms that supported visual design and creative content development. However, the minimal use of specialized digital storytelling tools implied limited familiarity, accessibility issues, or perceived complexity in using these platforms within inclusive classroom settings. Overall, teachers appeared to favor tools that were easy to use and readily available over more advanced or specialized applications.

These results implied a need to expand teachers’ exposure to and competence in using a wider range of digital storytelling tools. Targeted professional development programs, hands-on training, and improved access to digital resources could help teachers diversify their instructional strategies. Strengthening institutional support and providing opportunities to explore specialized DST platforms could enhance teachers’ ability to design more engaging, inclusive, and learner-centered digital storytelling activities.

Kamranian (2024) highlights that digital storytelling fosters inclusivity and cultural competency in diverse classrooms, aligning with your finding that DST tools empower diverse learners through multimedia engagement and creativity, despite varied tool usage frequency. This study emphasizes that teacher readiness and exposure to diverse DST platforms are critical for maximizing its benefits. A study by Mwapwele et al. (2020) shows that teachers’ beliefs, skills, and attitudes strongly influence the integration of digital storytelling tools in curriculum delivery, which explains the uneven usage patterns and limited adoption of many DST platforms in your data. It advocates for professional development to enhance teachers’ technological skills and positive attitudes toward digital tools. Papadakis (2022) provides empirical evidence that DST is most effective when implemented within collaborative and inclusive frameworks, reinforcing your

implication that broadening DST practices with support and training can improve learning outcomes for learners with diverse needs.

#### Extent of teaching practices in inclusive classrooms as perceived by the respondents

Digital storytelling enhances inclusive teaching by enabling educators to implement differentiated and multimodal strategies that address diverse learner needs in inclusive classrooms. This section examines non-SPED teachers' perceptions of their inclusive teaching practices focusing on key indicators such as activity differentiation and collaboration.

Table 4  
Extent of Teaching Practices in Inclusive Classrooms as Perceived by the Respondents

| S/N | Indicators                                                                                                | Weighted Mean | Verbal Description |
|-----|-----------------------------------------------------------------------------------------------------------|---------------|--------------------|
| 1   | I differentiate learning activities according to learners' abilities.                                     | 4.15          | Often              |
| 2   | I use visual aids and hands-on materials to support learning.                                             | 4.50          | Always             |
| 3   | I collaborate with SPED teachers and parents to address learners' needs.                                  | 2.85          | Sometimes          |
| 4   | I adapt assessments to match diverse learners' abilities.                                                 | 4.55          | Always             |
| 5   | I create an inclusive classroom environment where all students feel accepted.                             | 4.85          | Always             |
| 6   | I explain lessons clearly to ensure understanding for all learners.                                       | 4.85          | Always             |
| 7   | I explain lessons clearly to ensure understanding for all learners.                                       | 4.95          | Always             |
| 8   | I encourage learners to respect and assist one another when using digital storytelling tools.             | 4.80          | Always             |
| 9   | I use pictures, videos, or stories to support diverse learners' understanding and engagement.             | 4.60          | Always             |
| 10  | I ensure that all learners feel accepted, participate actively, and are included in classroom activities. | 4.80          | Always             |
|     | Aggregated Weighted Mean                                                                                  | 4.43          | Always             |

Table 4 presented the extent of inclusive teaching practices as perceived by the respondents using weighted means and corresponding verbal interpretations. The results showed that most indicators obtained high weighted means and were interpreted as "Always," including creating an



inclusive classroom environment (WM = 4.85), explaining lessons clearly for all learners (WM = 4.95), encouraging mutual respect and assistance among learners (WM = 4.80), and ensuring active participation of all students (WM = 4.80). The use of visual aids and hands-on materials (WM = 4.50) and collaboration with SPED teachers and parents (WM = 4.55) also reflected consistent implementation of inclusive practices. However, adapting assessments to match learners' abilities recorded a lower weighted mean (WM = 2.85), which was interpreted as "Sometimes." The overall aggregated weighted mean was 4.43, corresponding to "Always."

The findings indicated that respondents consistently implemented inclusive teaching strategies in their classrooms, demonstrating strong commitment to fostering acceptance, participation, and understanding among learners with diverse needs. High ratings for instructional clarity and inclusive classroom climate suggested that teachers prioritized equitable learning opportunities. The lower rating for assessment adaptation indicated that, while teachers valued inclusivity, differentiated assessment practices were not applied as consistently as other strategies, possibly due to limited training, time constraints, or lack of assessment tools.

These results implied that inclusive teaching practices were well established among the respondents, providing a strong foundation for inclusive education. However, the inconsistency in adapting assessments highlighted the need for targeted professional development focused on differentiated and flexible assessment strategies. Providing teachers with practical training, assessment templates, and institutional support could strengthen their ability to meet diverse learner needs more effectively and enhance overall inclusive instructional practices.

Xu, et. al., (2023) emphasized that inclusive practices such as differentiated instruction, collaboration with special education professionals and parents, and creating supportive environments enhance both academic performance and social skills for all learners. Their findings support the high ratings teachers gave to activity differentiation, collaboration, and fostering inclusive classroom environments in your study. Lindner et al. (2023) discussed that effective teacher training programs that cultivate positive attitudes, pedagogical knowledge, and adaptation skills lead to improved teaching efficacy in inclusive settings. This aligns with your respondents' frequent use of strategies such as clear lesson explanations and encouraging mutual respect. A study by Papadakis (2025) found that inclusive teaching practices that combine instructional and emotional support foster minority students' academic engagement and well-being. This supports your data showing strong teacher commitment to inclusive classroom participation and acceptance, while also highlighting the importance of continuous professional development to further strengthen assessment adaptations.

Level of effectiveness of digital storytelling in improving learning outcomes as perceived by the respondents

Digital storytelling significantly enhances learning outcomes in inclusive classrooms by fostering engagement, comprehension, and skill development among diverse learners. This section details non-SPED teachers' perceptions on the effectiveness of digital storytelling tools measured across key indicators like reading, listening, and critical thinking.

Table 5  
Level of Effectiveness of Digital Storytelling in Improving Learning Outcomes as Perceived by the Respondents

| S/N | Indicators                                                                                                                  | Weighted Mean | Verbal Description |
|-----|-----------------------------------------------------------------------------------------------------------------------------|---------------|--------------------|
| 1   | Digital storytelling is effective in improving learners' reading comprehension.                                             | 4.70          | Very Effective     |
| 2   | Digital storytelling is effective in developing learners' listening skills.                                                 | 4.65          | Very Effective     |
| 3   | Digital storytelling is effective in enhancing learners' vocabulary development.                                            | 4.55          | Very Effective     |
| 4   | Digital storytelling is effective in increasing learners' engagement and motivation.                                        | 4.70          | Very Effective     |
| 5   | Digital storytelling is effective in strengthening learners' critical thinking and creativity.                              | 4.80          | Very Effective     |
| 6   | Digital storytelling is effective in improving learners' understanding of lessons.                                          | 4.90          | Very Effective     |
| 7   | Digital storytelling is effective in helping learners maintain focus and attention during class.                            | 4.65          | Very Effective     |
| 8   | Digital storytelling is effective in increasing learners' enjoyment and motivation to learn.                                | 4.60          | Very Effective     |
| 9   | Digital storytelling is effective in developing learners' digital literacy skills.                                          | 4.60          | Very Effective     |
| 10  | Digital storytelling is effective in enhancing learners' creative self-expression and ability to share unique perspectives. | 4.60          | Very Effective     |
|     | Aggregated Weighted Mean                                                                                                    | 4.68          | Very Effective     |
|     |                                                                                                                             |               | Very Effective     |
|     |                                                                                                                             |               | Very Effective     |
|     |                                                                                                                             |               | Very Effective     |

Table 5 presented the respondents' perceptions of the level of effectiveness of digital storytelling (DST) in improving learning outcomes, using weighted means and verbal interpretations. The results showed that most indicators obtained high weighted means and were interpreted as "Very Effective." Improving learners' understanding of lessons received the highest rating (WM = 4.90), followed by strengthening critical thinking and creativity (WM = 4.80), enhancing reading comprehension (WM = 4.70), and increasing engagement and motivation (WM = 4.70). Other indicators, including developing listening skills, vocabulary, digital literacy, focus, and creative self-expression, obtained weighted means ranging from 4.55 to 4.65. The overall aggregated weighted mean was 4.68, corresponding to "Very Effective."

The findings indicated that respondents perceived DST as a highly effective instructional strategy that positively influenced multiple aspects of student learning. High ratings across cognitive, motivational, and skill-based domains suggested that DST facilitated deeper understanding of lesson content, promoted critical thinking and creativity, and enhanced engagement and motivation among learners. The consistent perception of effectiveness across various learning outcomes demonstrated that DST was valued as a versatile tool capable of supporting both academic skills and digital competencies in inclusive classroom settings.

These results implied that integrating DST into instructional practices could significantly enhance learning outcomes and student engagement. Teachers could leverage DST not only to improve comprehension and literacy skills but also to foster creativity, critical thinking, and digital literacy. The high perceived effectiveness highlighted the importance of providing teachers with training, resources, and institutional support to maximize the potential of DST in inclusive education. Strengthening teachers' competence in DST integration could lead to more engaging, learner-centered, and effective teaching strategies.

Noorshadi et al. (2025) demonstrated through experimental comparison that DST significantly improved post-test learning scores (mean 75.21 vs. 54.97 in traditional methods) and student satisfaction, particularly in comprehension, engagement, and knowledge retention, aligning with your high ratings for reading comprehension, motivation, and lesson understanding. Nasir et al. (2024) identified DST as a facilitator of multiple learning outcomes including critical thinking, creativity, and digital literacy, with factors like teacher support enhancing its impact, which corroborates your aggregated weighted mean of 4.68 ("Very Effective") across similar indicators. Winnaandhini (2025) conducted a systematic review confirming DST's role in boosting innovative learning strategies, engagement, and skill development such as vocabulary and self-expression, reinforcing the perceived benefits for diverse learners in the study.

### Significant relationships

This section examines the statistical relationships between key variables in the study, specifically testing for significant associations between the use of digital storytelling tools, the extent of inclusive teaching practices, and their perceived effectiveness in improving learning outcomes among non-SPED teachers at Tingub National High School. The analysis addresses whether higher frequency of digital tool usage correlates with greater effectiveness ratings, providing evidence on practical integration impacts. It also investigates links between robust inclusive strategies and digital storytelling outcomes, highlighting potential synergies for diverse

learners. These relationships offer insights into how tool adoption and pedagogical approaches mutually reinforce student achievement in inclusive settings.

Table 6  
Spearman Rank-Order Correlation Between the Use of Digital Storytelling Tools and Their Effectiveness in Improving Learning Outcomes

|                   |                                      | Use of Digital<br>Storytelling Tools | Student<br>Learning<br>Outcomes |
|-------------------|--------------------------------------|--------------------------------------|---------------------------------|
| Spearman's<br>rho | Use of Digital<br>Storytelling Tools | Correlation<br>Coefficient           | 1.000                           |
|                   |                                      |                                      | 0.389                           |
|                   |                                      | Sig. (2-tailed)                      | 0.090                           |
|                   |                                      | N                                    | 20                              |
|                   | Student Learning<br>Outcomes         | Correlation<br>Coefficient           | 0.389                           |
|                   |                                      |                                      | 1.000                           |
|                   |                                      | Sig. (2-tailed)                      | 0.090                           |
|                   |                                      | N                                    | 20                              |

\*Correlation is significant at the 0.05 level (2-tailed)

Table 6 presented the Spearman rank-order correlation between the use of digital storytelling (DST) tools and their perceived effectiveness in improving learning outcomes. The analysis yielded a positive correlation coefficient of 0.389, indicating a moderate positive association between the extent of DST tool usage and student learning outcomes. However, the significance value ( $p = 0.090$ ) exceeded the 0.05 level, showing that the correlation was not statistically significant.

The findings suggested that increased use of DST tools tended to be associated with higher perceived effectiveness in improving learning outcomes. The moderate positive direction of the correlation indicated a potential benefit of using DST tools; however, the lack of statistical significance implied that tool usage alone was not a strong predictor of learning outcomes. Other factors, such as teacher expertise, proficiency with specific DST tools, classroom implementation strategies, and student engagement, likely influenced the effectiveness of DST integration.

These results implied that simply increasing the frequency of DST tool usage may not guarantee improved learning outcomes. To maximize the benefits of DST, teachers needed to focus on effective integration strategies, align tools with learning objectives, and develop digital competencies. Additionally, further research with larger sample sizes or more controlled study designs was warranted to confirm the relationship between DST usage and learning effectiveness, ensuring evidence-based recommendations for instructional practice.

Gita et al. (2025) found a positive association between DST implementation and students' cognitive, motivational, and emotional regulation skills, though the strength varied by contextual factors like teacher training, suggesting that non-significant correlations may reflect mediating influences rather than absence of benefit. Nasir et al. (2024) reported moderate correlations between DST frequency and outcomes such as critical thinking and engagement in their systematic

review, attributing weaker statistical significance to sample limitations and implementation variability, mirroring your findings on potential influences like teacher expertise. Noorshadi et al. (2025) observed positive trends in DST effectiveness for comprehension and retention but noted that correlations often fell short of significance ( $p > 0.05$ ) in smaller samples, emphasizing the need for larger studies to confirm relationships, as implied in your data.

Table 7  
Spearman Rank-Order Correlation Between the Extent of Teaching Practices in Inclusive Classrooms and Effectiveness of Digital Storytelling in Improving Learning Outcomes

|                |                           | Teaching Practices      | Student Learning Outcomes |
|----------------|---------------------------|-------------------------|---------------------------|
| Spearman's rho | Teaching Practices        | Correlation Coefficient | 0.354                     |
|                |                           | Sig. (2-tailed)         | 0.129                     |
|                |                           | N                       | 20                        |
|                |                           |                         |                           |
|                | Student Learning Outcomes | Correlation Coefficient | 1.000                     |
|                |                           | Sig. (2-tailed)         | 0.129                     |
|                |                           | N                       | 20                        |
|                |                           |                         |                           |

\*Correlation is significant at the 0.05 level (2-tailed)

Table 7 presented the Spearman rank-order correlation between the extent of teaching practices in inclusive classrooms and the perceived effectiveness of digital storytelling (DST) in improving learning outcomes. The analysis yielded a positive correlation coefficient of 0.354, indicating a moderate positive association between teachers' inclusive practices and student learning outcomes. However, the significance value ( $p = 0.129$ ) exceeded the 0.05 level, showing that the correlation was not statistically significant.

The findings suggested that teachers who reported higher implementation of inclusive teaching practices tended to perceive DST as slightly more effective in improving learning outcomes. The positive trend indicated that inclusive strategies might enhance the impact of DST; however, the lack of statistical significance implied that the extent of inclusive practices alone did not strongly predict perceived DST effectiveness. Other factors, such as teacher proficiency with DST tools, student engagement, and classroom context, likely influenced the effectiveness of digital storytelling in inclusive settings.

These results implied that integrating inclusive teaching practices with DST has the potential to improve learning outcomes, but effective implementation requires attention to additional factors. Professional development focusing on combining inclusive strategies with DST integration, along with support in using digital tools and engaging diverse learners, could strengthen the effectiveness of digital storytelling. Further research with larger samples or

controlled designs was recommended to confirm the relationship between inclusive teaching practices and DST effectiveness.

Gita et al. (2023) identified positive relationships between diverse learning opportunities, a proxy for inclusive practices and DST implementation, with mediation effects on literacy outcomes, though moderated by contextual factors like teacher skills, explaining non-significant direct correlations in smaller samples. Lazzari and Cortesano (2021) reported trends linking inclusive pedagogical strategies with enhanced DST impacts on engagement and self-efficacy, attributing weaker statistical significance to variability in classroom implementation and teacher familiarity. Ofem (2024) found moderate associations between instructional practices in inclusive settings and digital tool effectiveness for assessment, emphasizing that external influences such as training levels often prevent statistical significance at  $p < 0.05$ .

Challenges encountered, support needs and suggestions for improvement identified by respondents in using digital storytelling tools

Digital storytelling implementation in inclusive classrooms often encounters practical barriers that influence adoption and efficacy among non-SPED teachers. This section outlines challenges, support needs, and improvement suggestions identified by respondents.

#### Challenges Encountered Identified by Respondents in Using Digital Storytelling Tools

Teachers in inclusive education, particularly non-SPED educators, face unique hurdles when adopting digital storytelling tools to support diverse learners. These challenges often stem from limited technical proficiency, resource constraints, and integration difficulties within mixed-ability classrooms.

Table 8  
Challenges Encountered Identified by Respondents in Using Digital Storytelling Tools

| Challenges Experienced                                | f  | % of Responses | % of Cases | Rank |
|-------------------------------------------------------|----|----------------|------------|------|
| 1 Limited access to computers or internet connection  | 18 | 20.45%         | 90%        | 2    |
| 2 Lack of technical knowledge or ICT skills           | 12 | 13.64%         | 60%        | 4    |
| 3 Time constraints in preparing                       | 19 | 21.59%         | 95%        | 1    |
| 4 Difficulty engaging learners with diverse abilities | 9  | 10.23%         | 45%        | 5    |
| 5 Inadequate school or administrative support         | 7  | 7.95%          | 35%        | 6.5  |
| 6 Technical issues (e.g., software glitches, device)  | 16 | 18.18%         | 80%        | 3    |
| 7 Insufficient motivation among students              | 7  | 7.95%          | 35%        | 6.5  |
| Total                                                 | 88 | 100.00%        |            |      |

The data from Table 8 indicated that respondents encountered multiple challenges in using digital storytelling tools within inclusive classrooms, with a total of 88 frequency mentions across seven categories. Time constraints in preparing lessons ranked first ( $f=19$ , 21.59% of responses, 95% of cases), followed closely by limited access to computers or internet ( $f=18$ , 20.45%, 90%)

and technical issues ( $f=16$ , 18.18%, 80%). Lower-ranked challenges included lack of technical knowledge ( $f=12$ , 13.64%, 60%), difficulty engaging diverse learners ( $f=9$ , 10.23%, 45%), and insufficient school support or student motivation (both  $f=7$ , 7.95%, 35%).

These findings suggested that resource and infrastructural limitations, alongside time pressures, posed the most pervasive barriers for non-SPED teachers implementing digital storytelling in inclusive settings. The high prevalence of access and technical issues highlighted systemic inequities in technology availability, while preparation time constraints reflected the added workload of adapting tools for diverse abilities. Engagement and motivation challenges pointed to pedagogical mismatches between digital storytelling and students' varying needs in inclusive environments.

Addressing these challenges required targeted interventions, such as enhanced professional development in ICT skills, improved school infrastructure for reliable internet and devices, and streamlined administrative support to reduce preparation burdens. Schools could prioritize flexible scheduling and ready-made digital storytelling templates to boost adoption among non-SPED teachers. Ultimately, overcoming these barriers promised greater efficacy of digital storytelling in fostering inclusive education outcomes.

Rohloff (2021) examined obstacles K-12 teachers faced with digital storytelling, identifying similar issues like limited resources and technical difficulties. Özer and Şad (2022) analyzed barriers in adult education digital storytelling, emphasizing lack of time, training, and support as key factors. Yang and Wu (2025) explored pre-service teachers' experiences, noting difficulties in technical proficiency and material curation that aligned with the reported challenges.

#### Support or Training Needed Identified by Respondents in Using Digital Storytelling Tools

Teachers in inclusive education often require specialized support to effectively integrate digital storytelling tools, especially non-SPED educators navigating diverse learner needs. Respondents emphasized gaps in training and resources that hindered tool adoption and classroom efficacy.

Table 9  
Support or Training Needed Identified by Respondents in Using Digital Storytelling Tools

| Support or Training Needed                          | f  | % of Responses | % of Cases | Rank |
|-----------------------------------------------------|----|----------------|------------|------|
| 1 Hands-on training on DST tools                    | 18 | 17.65%         | 90%        | 2    |
| 2 Seminars/workshops on DST integration             | 19 | 18.63%         | 95%        | 1    |
| 3 Peer mentoring and best practice sharing          | 14 | 13.73%         | 70%        | 5    |
| 4 Provision of ICT facilities and digital materials | 16 | 15.69%         | 80%        | 3.5  |
| 5 Technical assistance from IT/media specialists    | 16 | 15.69%         | 80%        | 3.5  |
| 6 Supportive policies from school administrators    | 8  | 7.84%          | 40%        | 7    |

|   |                                                       |     |         |     |   |
|---|-------------------------------------------------------|-----|---------|-----|---|
| 7 | Administrative support for inclusive digital teaching | 11  | 10.78%  | 55% | 6 |
|   | Total                                                 | 148 | 100.00% |     |   |

The data from Table 9 revealed that respondents identified a total of 148 needs across seven categories for support and training in using digital storytelling tools. Seminars and workshops on DST integration ranked highest ( $f=19$ , 18.63% of responses, 95% of cases), followed by hands-on training on DST tools ( $f=18$ , 17.65%, 90%), with provision of ICT facilities and digital materials, technical assistance from IT specialists, and supportive administrative policies tying at  $f=16$  each (15.69%, 80%). Peer mentoring ranked lower ( $f=14$ , 13.73%, 70%), while administrative support for inclusive digital teaching ( $f=11$ , 10.78%, 55%) and supportive policies ( $f=8$ , 7.84%, 40%) received the least mentions.

These results indicated that non-SPED teachers prioritized practical, hands-on professional development and infrastructural enhancements to overcome barriers in inclusive classrooms. The emphasis on seminars and training underscored a lack of prior expertise in DST integration, while demands for ICT facilities and technical assistance highlighted ongoing resource gaps. Peer mentoring and policy support suggested a need for collaborative and systemic backing to sustain DST implementation.

Schools and administrators needed to implement comprehensive training programs, including regular workshops and hands-on sessions, alongside investing in reliable ICT infrastructure and dedicated IT support. Establishing peer mentoring networks and inclusive policies could foster long-term adoption of DST, ultimately enhancing engagement and outcomes for diverse learners. Such measures promised to bridge skill gaps and boost teacher confidence in inclusive settings.

Rohloff (2021) identified the need for targeted professional development and technical support as essential for K-12 teachers using digital storytelling. Özer and Şad (2022) recommended hands-on workshops and resource provision to address barriers in digital storytelling applications. Yang and Wu (2025) advocated for seminars, peer sharing, and administrative policies to support pre-service teachers' DST integration in diverse contexts.

#### Suggestions for Improvement Identified by Respondents in Using Digital Storytelling Tools

Respondents offered practical suggestions to enhance digital storytelling implementation in inclusive classrooms, focusing on overcoming identified barriers. These recommendations emphasized professional development, resource allocation, and policy adjustments to support non-SPED teachers. Such improvements aimed to boost tool efficacy and learner engagement.

Table 10  
Suggestions for Improvement Identified by Respondents in Using Digital Storytelling Tools

| Suggestions for Improvement                   | f  | % of Responses | % of Cases | Rank |
|-----------------------------------------------|----|----------------|------------|------|
| 1 Continuous DST training programs            | 18 | 22.22%         | 90%        | 2    |
| 2 Allocate more time and resources for lesson | 19 | 23.46%         | 95%        | 1    |
| Encourage collaboration among teachers        | 17 | 20.99%         | 85%        | 3    |
| 3 Recognize best practices in DST             | 18 | 18.52%         | 60%        | 5    |



|   |                                                  |     |         |     |   |
|---|--------------------------------------------------|-----|---------|-----|---|
| 4 | Include DST in professional development programs | 25  | 18.52%  | 75% | 4 |
| 5 | Total                                            | 121 | 100.00% |     |   |

The data from Table 10 showed that respondents provided a total of 121 suggestions across five categories for improving digital storytelling tool use in inclusive classrooms. Allocating more time and resources for lesson preparation ranked highest ( $f=19$ , 23.46% of responses, 95% of cases), followed by continuous DST training programs ( $f=18$ , 22.22%, 90%), encouraging collaboration among teachers ( $f=17$ , 20.99%, 85%), recognizing best practices in DST ( $f=18$ , 18.52%, 60%), and including DST in professional development programs ( $f=25$ , 18.52%, 75%).

These suggestions reflected teachers' recognition that sustained training, resource support, and collaborative structures were essential to mitigate time pressures and skill gaps in inclusive settings. The top emphasis on time allocation underscored the intensive preparation demands of DST for diverse learners, while calls for collaboration and recognition highlighted a desire for community-driven refinement over isolated efforts.

Educational leaders could implement ongoing training initiatives, flexible scheduling for preparation, and formal recognition systems to encourage DST adoption among non-SPED teachers. Fostering teacher collaboration through shared platforms would accelerate best practice dissemination, ultimately enhancing inclusive classroom dynamics and student outcomes via digital storytelling.

Panchenko, (2021) advocated for continuous professional development and resource allocation to overcome DST barriers in K-12 inclusive education. McKnight and O'Malley (2022) emphasized teacher collaboration and recognition programs to improve digital tool integration in diverse classrooms. Haleem et al. (2023) recommended embedding DST in structured training to address preparation challenges effectively.

## CONCLUSION

Based on the comprehensive findings of this study, it is concluded that while non-SPED teachers at Tingub National High School are strongly committed to inclusive education evidenced by their high level of inclusive teaching practices and their very positive perception of digital storytelling's effectiveness—the full potential of DST is not yet realized. The implementation is hampered by a limited repertoire of used tools, significant practical challenges related to time and resources, and a need for more robust training and support. Therefore, to effectively leverage digital storytelling as a tool for enhancing learning outcomes in inclusive classrooms, a structured and supportive intervention in the form of a Learning Enhancement Plan is essential.

In light of the conclusions drawn from this study, it is strongly recommended that the Learning Enhancement Plan crafted as the output of this research be implemented. This plan is designed to directly address the identified challenges of limited tool usage, the need for assessment adaptation skills, and the critical lack of training and resources. By providing a structured framework for professional development, resource provision, and collaborative support, the Learning Enhancement Plan will empower non-SPED teachers to effectively integrate a wider range of digital storytelling tools into their inclusive teaching practices, ultimately leading to enhanced learning experiences and outcomes for all students, particularly those with diverse needs.

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