

**Integrating digital storytelling in inclusive classrooms:
Perspectives of receiving teachers in public school**

Leonida C. Masin

Canduman National High School
Binaliw 1, Binaliw, Cebu City, Philippines
Email: leonidamasin2009@gmail.com

ABSTRACT

This study investigated the integration of Digital Storytelling (DST) in inclusive classrooms at Basak National High School, Mandaue City, Cebu, Philippines, from the perspective of non-SPED teachers. Utilizing a quantitative-descriptive correlational design, data were collected from 20 teachers via a validated questionnaire. Findings revealed a constrained use of DST tools, with a heavy reliance on familiar platforms like PowerPoint and Canva, while numerous other tools remained largely unused. Teachers reported a high extent of inclusive teaching practices and perceived digital storytelling as very effective in improving key learning outcomes, including student engagement, comprehension, motivation, and critical thinking. However, correlation analyses indicated no statistically significant relationship between the frequency of digital storytelling tool use and its perceived effectiveness, nor between the extent of inclusive teaching practices and digital storytelling outcomes. Major implementation challenges identified were limited access to technology, a pronounced lack of technical skills and knowledge, and insufficient collaborative support. The study concludes that while teachers value DST's potential, significant barriers impede its effective application, preventing the full realization of its benefits for diverse learners. To address these gaps, a needs-based Learning Enhancement Plan was developed, focusing on targeted professional development, improved resource provision, and strengthened collaborative mechanisms to empower teachers in leveraging DST for transformative inclusive education.

Keywords: Special education, digital storytelling tools, teaching strategy practices, quantitative descriptive-correlational design, learners

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INTRODUCTION

Inclusive education in the Philippines is governed by mandates and laws that emphasize the critical role of qualified teachers to ensure quality education for all learners. The Department of Education (DepEd) Order No. 73, s. 2020, reiterates the necessity for teacher competence and continuous professional development as fundamental for effective inclusive education delivery (DepEd, 2020). Legal instruments insist on equipping teachers with the appropriate skills and knowledge to create responsive learning environments for diverse learners (Republic Act No. 11713, 2022).

The Philippines has committed to inclusive education as a social imperative, promoting equal access and participation for learners with disabilities. However, the success of inclusive education largely depends on teacher competence, as the ability to modify teaching methods and materials in respect to learners' needs determines the effectiveness of implementation (Santos & Cruz, 2023; Reyes et al., 2021). Professional preparation and ongoing training for non-special education teachers (non-SPED) remain central challenges (Lopez et al., 2024).

The Inclusive Education Act (RA 10533 and RA 11713) mandates the establishment of learning centers equipped to cater to diverse learners and recognizes the vital social role of all learners as contributors to community development (Philippine Congress, 2020; Mendez, 2023). Such laws emphasize an integrated approach that bridges educational access with socio-emotional and developmental support for all students.

Despite legal frameworks, multiple challenges persist, such as insufficient educational resources, inadequately trained teachers, policy implementation gaps, and marginalized children remaining underserved (Delos Santos & Villanueva, 2022; Garcia et al., 2024). These barriers impede the realization of fully inclusive classrooms and hinder optimal learner outcomes, especially in resource-limited settings.

Digital storytelling, recognized as a dynamic, multimodal pedagogy, aligns with Universal Design for Learning (UDL) principles by promoting engagement, representation, and expression for diverse learners (Smith & Fernandez, 2023; Tan & Morales, 2022). As an instructional tool, it fosters creativity, inclusivity, and learner-centered approaches, making it a promising strategy to support inclusive education.

However, gaps in research remain on the practical use and effectiveness of digital storytelling in inclusive classrooms with limited resources, particularly within Philippine public schools (Alviar & Santiago, 2024). Existing studies highlight the need for localized evidence on how such digital interventions can be adapted and scaled.

Non-SPED teachers frequently lack adequate training in differentiating instruction and assessing diverse learners' needs within inclusive classrooms (Bautista et al., 2023; Fernandez & Santos, 2025). Their instructional competence in digital tools use remains insufficient, limiting their capacity to apply innovative methods like digital storytelling effectively.

In Cebu, particularly in schools like Basak National High School, there is a pressing need to explore the specific challenges faced by non-SPED teachers in inclusive settings. Contextualized professional development programs grounded in local realities are crucial for equipping these teachers with relevant skills (Cebu Education Office, 2024; Ramirez & Villanueva, 2025).

This study aims to fill this gap by investigating digital storytelling as a tool for inclusive teaching and using findings to create a needs-based training program tailored to non-SPED

teachers. The intended intervention will support instructional improvement and learner outcomes in inclusive classrooms within Cebu's public secondary schools.

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 Basak 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 the use of digital storytelling tools and their effectiveness in improving learning outcomes, and 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 Basak 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 Basak 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 Basak 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 analyze 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 Basak National High School for the school year 2025-2026. This includes 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 Basak 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	2	10
	Female	18	90

Age	21 – 30	2	10
	31 – 40	3	15
	41 – 50	9	45
	51 and above	6	30
Years of Teaching	1 – 3	2	10
	4 – 6	1	5
	7 – 9	1	5
	10 and above	16	80

In terms of gender, the majority of the respondents were female ($n = 18$, 90%), while a smaller proportion were male ($n = 2$, 10%). With respect to age, most respondents belonged to the 41–50 age group ($n = 9$, 45%), followed by those aged 51 and above ($n = 6$, 30%). Respondents aged 31–40 accounted for 15% ($n = 3$), while the youngest age group, 21–30, comprised 10% ($n = 2$) of the sample. In terms of years of teaching experience, a large majority of the respondents had 10 years and above of teaching experience ($n = 16$, 80%). The remaining respondents reported 1–3 years ($n = 2$, 10%), 4–6 years ($n = 1$, 5%), and 7–9 years ($n = 1$, 5%) of teaching experience. Overall, the data indicate that the respondents were predominantly female, mostly within the middle to older age groups, and highly experienced in terms of years of teaching.

This veteran female-dominated profile characterized the maturation of the Philippine teaching force, where extensive experience equipped educators with inclusive pedagogy depth but potentially hindered rapid digital storytelling uptake due to habitual traditionalism prevalent among senior cohorts.

Targeted interventions at Basak National High School should emphasize digital literacy workshops for experienced female teachers, paired with reverse mentoring from the few juniors, to harness their classroom mastery while bridging technology divides for effective inclusive storytelling implementation.

Recent scholarship validated these patterns in Philippine inclusive education contexts. Delos Reyes et al. (2025) identified 86.67% female secondary teachers, associating seniority with competency yet underscoring digital training needs. Raguindin (2025) connected mid-to-late career profiles to strong inclusion skills amid tech adoption challenges. Salvan (2020) affirmed high female percentages (67%) enhancing outcomes via veteran relational expertise.

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	11.98%	100%	1.5	4.9	Always
2	Storybird	6	3.59%	30%	13	1.55	Never
3	VoiceThread	8	4.79%	40%	7.5	1.75	Never
4	PicLits	7	4.19%	35%	9.5	1.65	Never
5	Canva	20	11.98%	100%	1.5	4.2	Often
6	StoryJumper	7	4.19%	35%	9.5	1.5	Never
7	Toontastic	6	3.59%	30%	13	1.35	Never
8	Animaker	9	5.39%	45%	5.5	1.75	Never
9	Powtoon	9	5.39%	45%	5.5	1.9	Rarely
10	Microsoft Sway	5	2.99%	25%	16.5	1.35	Never
11	Book Creator	6	3.59%	30%	13	1.45	Never
12	Pixton	6	3.59%	30%	13	1.5	Never
13	Visme	6	3.59%	30%	13	1.35	Never
14	Animoto	4	2.40%	20%	18.5	1.25	Never
15	WeVideo	4	2.40%	20%	18.5	1.45	Never
16	Adobe Express	11	6.59%	55%	4	1.9	Rarely
17	Adobe Slate	5	2.99%	25%	16.5	1.4	Never
18	Google Slides	17	10.18%	85%	3	3.15	Sometimes
19	Piktochart	8	4.79%	40%	7.5	1.7	Never
20	MapSkip	3	1.80%	15%	20	1.15	Never
	Total	167	100%	-----		1.91	Rarely

Table 3 presented the usage frequency and ranking of digital storytelling tools among the respondents. The data showed that PowerPoint and Canva were the most frequently used tools,

each reported by all respondents ($f = 20$), accounting for 11.98% of total responses per tool. PowerPoint obtained the highest weighted mean of 4.90 and was verbally interpreted as “Always,” while Canva was rated as “Often,” indicating consistent and regular use. Google Slides also showed relatively high usage compared to other tools. In contrast, Storybird, VoiceThread, StoryJumper, and Toontastic registered low frequencies and weighted means ranging from 1.15 to 1.75, reflecting “Rarely” to “Never” usage. Animaker and Powtoon showed slightly higher frequencies but remained within the “Rarely” category, while Adobe Express and WeVideo demonstrated moderate levels of use among respondents.

The results indicated that respondents strongly favored widely accessible and familiar digital storytelling tools. The dominance of PowerPoint and Canva suggested that teachers preferred platforms that were easy to use, readily available, and already integrated into common teaching practices. The limited use of more specialized tools implied that respondents may have lacked familiarity, training, or confidence in using these platforms, or that such tools were less accessible within their institutional contexts. Overall, the pattern of responses reflected a tendency to rely on a small set of established tools rather than exploring a broader range of digital storytelling applications.

These findings implied that while teachers were actively using digital storytelling, their practices were concentrated on a narrow selection of tools. This highlighted the need for targeted professional development and hands-on training to increase teachers’ awareness and competence in using diverse digital storytelling platforms. Improving access to various tools and providing institutional support could encourage experimentation with alternative platforms, thereby enriching instructional strategies and enhancing learning experiences in inclusive classroom settings.

Supporting scholarly findings highlight that digital storytelling tools significantly enhance student engagement, learning outcomes, and motivation, especially in inclusive settings. For instance, studies consistently show that popular and accessible tools like PowerPoint facilitate multimodal learning, which benefits diverse learners including those with learning disabilities (Robin, 2020; Sadik, 2021). Additionally, the effective use of digital storytelling requires teachers to have sufficient skills and confidence to integrate these tools into pedagogy, which aligns with the observed trend that teachers prefer tools they feel more competent using (Mwapwele et al., 2021). Barriers to using specialized tools involve limited teacher readiness and lack of institutional support, which may explain the infrequent use of less common platforms.

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
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1	I differentiate learning activities according to learners' abilities.	4.44	Always
2	I use visual aids and hands-on materials to support learning.	4.70	Always
3	I collaborate with SPED teachers and parents to address learners' needs.	2.90	Sometimes
4	I adapt assessments to match diverse learners' abilities.	3.90	Often
5	I create an inclusive classroom environment where all students feel accepted.	4.40	Always
6	I explain lessons clearly to ensure understanding for all learners.	4.70	Always
7	I explain lessons clearly to ensure understanding for all learners.	4.45	Always
8	I encourage learners to respect and assist one another when using digital storytelling tools.	4.45	Always
9	I use pictures, videos, or stories to support diverse learners' understanding and engagement.	4.75	Always
10	I ensure that all learners feel accepted, participate actively, and are included in classroom activities.	4.85	Always
	Aggregated Weighted Mean	4.35	Always

Table 4 showed the extent of teaching practices in inclusive classrooms as perceived by the respondents. The data indicated generally high weighted means across most indicators, reflecting frequent implementation of inclusive strategies. The highest weighted mean was recorded for ensuring that all learners felt accepted, actively participated, and were included in classroom activities (WM = 4.85, "Always"), followed by the use of pictures, videos, or stories to support diverse learners' understanding and engagement (WM = 4.75, "Always"). Teachers also consistently reported using visual aids and hands-on materials (WM = 4.70, "Always") and clearly explaining lessons to promote understanding for all learners (WM = 4.70 and 4.45, "Always"). Differentiating activities based on learners' abilities (WM = 4.44, "Always") and creating an inclusive classroom environment (WM = 4.40, "Always") likewise showed high levels of implementation. Lower means were observed for collaboration with SPED teachers and parents (WM = 2.90, "Sometimes") and adapting assessments to match diverse abilities (WM = 3.90, "Often"). The aggregated weighted mean of 4.35, verbally interpreted as "Always," confirmed the overall high extent of inclusive practices.

The findings suggested that teachers strongly emphasized classroom-based inclusive practices that directly affected daily instruction, such as fostering acceptance, using visual and multimedia supports, and ensuring clarity of lessons. These practices reflected a deliberate effort to address diverse learning needs within the classroom setting. However, the relatively lower ratings for collaboration with SPED teachers and parents and for assessment adaptation indicated that inclusive practices were more consistently applied in instructional delivery than in external collaboration and evaluation processes. This pattern implied that while teachers were committed to inclusion in teaching, systemic or logistical factors may have limited broader collaborative and assessment-related practices.

The results implied that inclusive education was largely embedded in teachers' instructional routines, particularly in promoting participation, engagement, and understanding among diverse learners. Nevertheless, the less consistent implementation of assessment adaptation and collaboration with SPED professionals and parents highlighted areas requiring further support. Strengthening professional development focused on differentiated assessment strategies and enhancing structures for school–home–SPED collaboration could help teachers achieve a more comprehensive and balanced approach to inclusive teaching practices.

This aligns with current research showing that effective inclusive teaching involves differentiated teaching strategies, multimodal lesson delivery, and fostering social inclusion to address diverse learner needs (Florian & Spratt, 2020). The use of visual supports and active engagement techniques is identified as beneficial in increasing understanding and participation among learners with diverse needs (Edyburn, 2021). Furthermore, collaboration between general and special education teachers is recognized as essential but often underdeveloped due to systemic and time constraints (Miller, 2022). This highlights the need for ongoing professional development and systemic support to enhance collaborative and assessment-related practices in inclusive classrooms.

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.	4.50	Very Effective
2	Digital storytelling is effective in developing learners' listening skills.	4.35	Very Effective
3	Digital storytelling is effective in enhancing learners' vocabulary development.	4.10	Effective
4	Digital storytelling is effective in increasing learners' engagement and motivation.	4.35	Very Effective
5	Digital storytelling is effective in strengthening learners' critical thinking and creativity.	4.40	Very Effective
6	Digital storytelling is effective in improving learners' understanding of lessons.	4.55	Very Effective
7	Digital storytelling is effective in helping learners maintain focus and attention during class.	4.55	Very Effective

	Digital storytelling is effective in increasing learners' enjoyment and motivation to learn.		
8	Digital storytelling is effective in developing learners' digital literacy skills.	4.65	Very Effective
9	Digital storytelling is effective in enhancing learners' creative self-expression and ability to share unique perspectives.	4.35	Very Effective
10	Aggregated Weighted Mean	4.25	Very Effective
		4.405	Very Effective

Table 5 showed the level of effectiveness of digital storytelling in improving learning outcomes as perceived by the respondents. The aggregated weighted mean of 4.405, verbally interpreted as “Very Effective,” indicated that respondents consistently rated digital storytelling highly across multiple learning domains. The highest weighted means were observed in increasing learners' enjoyment and motivation to learn (WM = 4.65), improving learners' understanding of lessons (WM = 4.55), and helping learners maintain focus and attention during class (WM = 4.55), all described as “Very Effective.” Other indicators, including strengthening critical thinking and creativity (WM = 4.40), improving reading comprehension (WM = 4.50), and enhancing creative self-expression (WM = 4.25), also fell within the “Very Effective” range. Slightly lower means were noted for developing listening skills (WM = 4.35, “Very Effective”) and enhancing vocabulary development (WM = 4.10, “Effective”), though these still reflected favorable outcomes.

The results suggested that respondents perceived digital storytelling as particularly effective in motivating learners, sustaining attention, and enhancing comprehension, which are critical components of successful learning. The consistently high ratings across cognitive, affective, and creative indicators implied that digital storytelling supported both academic understanding and learner engagement. The slightly lower rating for vocabulary development indicated that while digital storytelling contributed positively, its impact on specific language skills may have been more moderate compared to its effects on motivation, focus, and overall understanding.

The findings implied that digital storytelling served as a powerful instructional strategy capable of enhancing engagement, comprehension, and creative thinking in inclusive classroom settings. Its strong perceived effectiveness suggested that teachers could confidently integrate digital storytelling into regular instruction to improve learning outcomes. However, the relatively lower impact on vocabulary development indicated a need for more intentional integration of language-focused activities within digital storytelling tasks to maximize its benefits across all learning domains.

The perceived high effectiveness of digital storytelling in improving learning outcomes in inclusive classrooms is supported by recent research emphasizing its benefits in fostering engagement, comprehension, motivation, and skill development among diverse learners. Studies illustrate that digital storytelling significantly enhances learners' focus, enjoyment, and understanding of lessons, as well as supports critical thinking, creativity, and digital literacy skills. For example, empirical evidence shows that digital storytelling elevates post-test learning

outcomes and student satisfaction by integrating visual, auditory, and narrative elements that simplify complex content and promote active cognitive engagement (Noorshadi, 2025).

Moreover, digital storytelling offers multimodal opportunities for learners with diverse needs to express themselves creatively and share unique perspectives, thereby fostering inclusive participation and motivation in educational settings (Ginting, 2024). The intrinsic engagement and motivation stimulated by storytelling also support skill development in areas such as vocabulary, reading comprehension, listening, and critical thinking, vital for inclusive education success. These benefits have been echoed across various disciplines, affirming digital storytelling as a valuable instructional approach that transcends traditional teaching methods (Erdogan, 2021).

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 Basak 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 Storytelling Tools	Student Learning Outcomes
Spearman's rho	Use of Digital Storytelling Tools	Correlation Coefficient		1.000	0.136
		Sig. (2-tailed)			0.567
		N		20	20
	Student Learning Outcomes	Correlation Coefficient		0.136	1.000
		Sig. (2-tailed)		0.567	
		N		20	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 tools and their effectiveness in improving learning outcomes. The computed correlation coefficient ($\rho = 0.136$) indicated a very weak positive relationship between the two variables. The associated p-value ($p = 0.567$, two-tailed) exceeded the 0.05 level of significance, showing that the relationship was not statistically significant. These results demonstrated that variations in the extent of digital storytelling tool usage were not strongly linked to differences in perceived learning outcomes among the respondents.

The findings suggested that increased use of digital storytelling tools did not necessarily translate into higher perceived effectiveness in improving student learning outcomes. Although the positive correlation implied a slight tendency for more frequent use to be associated with better outcomes, the weakness and non-significance of the relationship indicated that this association was minimal. This implied that factors other than the frequency of tool usage—such as instructional design, teacher competence, and the manner in which digital storytelling was integrated into lessons—likely played a more substantial role in influencing learning outcomes.

The results implied that simply increasing the use of digital storytelling tools was insufficient to ensure meaningful improvements in learning outcomes. Effective integration strategies, pedagogical alignment, and teacher proficiency appeared to be more critical than tool usage alone. Therefore, professional development efforts should have focused not only on encouraging the use of digital storytelling tools but also on strengthening teachers’ skills in purposeful integration to maximize their instructional impact.

Recent studies corroborate this interpretation, noting that correlations between digital storytelling frequency and learning gains often appear weak or non-significant when not mediated by pedagogical expertise or contextual support, emphasizing effectiveness over volume of use (Noorshadi, 2025). Similarly, research highlights that while digital storytelling boosts engagement and satisfaction, its impact on outcomes requires structured integration rather than sporadic application, aligning with the non-significant results observed here (Bayram & Bıyık, 2024). These insights suggest implications for professional development focused on quality implementation to strengthen relationships between tool use and educational gains (Grant, 2020)

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	1.000	0.269
		Sig. (2-tailed)		0.254
		N	20	20
	Student Learning Outcomes	Correlation Coefficient	0.269	1.000
		Sig. (2-tailed)	0.254	
		N	20	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 effectiveness of digital storytelling in improving learning outcomes. The computed correlation coefficient ($\rho = 0.269$) indicated a weak positive relationship between the two variables. However, the corresponding p-value ($p = 0.254$, two-tailed) was greater than the 0.05 level of significance, showing that the relationship was not statistically significant. This result demonstrated that variations in the extent of inclusive teaching practices were not strongly associated with differences in the perceived effectiveness of digital storytelling.

The findings suggested that although teachers who reported higher levels of inclusive teaching practices tended to perceive digital storytelling as slightly more effective, this association

was weak and not statistically reliable. This implied that inclusive practices alone did not sufficiently explain improvements in learning outcomes attributed to digital storytelling. Other factors, such as teachers' pedagogical approaches, level of technological competence, student engagement, and the quality of digital storytelling integration, may have exerted a stronger influence on learning effectiveness.

The results implied that strengthening inclusive teaching practices by themselves may not have been enough to significantly enhance the effectiveness of digital storytelling in improving learning outcomes. For digital storytelling to have a greater impact, inclusive practices likely needed to be complemented by effective instructional design, appropriate tool selection, and targeted teacher training. These findings highlighted the importance of a holistic approach that combined inclusive pedagogy with purposeful and skillful integration of digital storytelling strategies.

Recent research supports this interpretation, showing that weak or non-significant correlations between inclusive teaching extents and digital tool effectiveness often stem from inconsistent implementation quality rather than practice frequency, highlighting the role of teacher preparedness in mediating outcomes (Hafid & Anshori, 2023). Similarly, studies note that positive associations exist but require supportive ecosystems, as standalone inclusive strategies yield limited gains without aligned digital pedagogies tailored to diverse learners (Kalogeropoulos et al., 2021). These insights underscore implications for professional development programs that target synergistic integration to amplify effectiveness in inclusive classrooms (Yilmaz & Goktas, 2022)

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	% Responses	of Cases	Rank
1 Limited access to computers or internet connection	17	20.73%	85%	1.5
2 Lack of technical knowledge or ICT skills	10	12.20%	50%	5
3 Time constraints in preparing	17	20.73%	85%	1.5

4	Difficulty engaging learners with diverse abilities	7	8.54%	35%	6.5
5	Inadequate school or administrative support	11	13.41%	55%	4
6	Technical issues (e.g., software glitches, device)	13	15.85%	65%	3
7	Insufficient motivation among students	7	8.54%	35%	6.5
Total		82	100.00%		

The table revealed that receiving teachers in public inclusive classrooms encountered significant challenges with digital storytelling tools, as limited access to computers or internet connection and time constraints in preparation each garnered 17 frequencies (20.73% of responses, 85% of cases), tying for the top rank. Technical issues ranked third with 13 frequencies (15.85% of responses, 65% of cases), followed by inadequate school support at 11 frequencies (13.41%, 55%). Lack of technical knowledge, difficulty engaging diverse learners, and insufficient student motivation each registered lower but notable incidences, totaling 82 responses across seven challenges.

These findings indicated that resource and infrastructural barriers dominated, tying equally with temporal pressures, which suggested systemic deficiencies in public schools exacerbated vulnerabilities in inclusive settings where diverse learner needs demanded adaptive tools. The prevalence of technical issues and skill gaps underscored a broader digital divide, while lower-ranked engagement and motivation challenges pointed to pedagogical hurdles secondary to logistical ones.

The data implied that without targeted interventions like enhanced ICT infrastructure, professional development, and administrative backing, digital storytelling's potential for inclusive education remained curtailed, potentially widening achievement gaps for students with diverse abilities. Schools needed policy-driven resource allocation and training to mitigate top-ranked obstacles, fostering equitable technology integration.

Supporting these insights, researchers such as Yang et al. (2024) highlighted technical skill deficits and resource scarcity as primary barriers to digital storytelling in diverse classrooms, mirroring the table's top challenges; similarly, Rohloff (2021) documented K-12 teachers' struggles with access and glitches in inclusive tech use; and Kopcha (2024) emphasized time constraints alongside inadequate support, advocating training to overcome them, thus validating the data's patterns in recent literature.

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	% Responses	of %	of Cases	Rank
1 Hands-on training on DST tools	17	18.68%		85%	1.5

2	Seminars/workshops on DST integration	17	18.68%	85%	1.5
3	Peer mentoring and best practice sharing	8	8.79%	40%	7
4	Provision of ICT facilities and digital materials	14	15.38%	70%	3
5	Technical assistance from IT/media specialists	13	14.29%	65%	4
6	Supportive policies from school administrators	12	13.19%	60%	5
7	Administrative support for inclusive digital teaching	10	10.99%	50%	6
	Total	91	100.00%		

Teachers identified hands-on training on digital storytelling (DST) tools and seminars/workshops on DST integration as the top needs, each with 17 frequencies (18.68% of responses, 85% of cases), tying for first rank. Provision of ICT facilities and digital materials ranked third at 14 frequencies (15.38%, 70%), followed closely by technical assistance from IT specialists at 13 (14.29%, 65%) and administrative policy support at 12 (13.19%, 60%). Peer mentoring, administrative support for inclusive teaching ranked lower, totaling 91 responses across seven categories.

These results reflected a strong demand for practical skill-building and infrastructural enhancements, indicating that teachers recognized their skill gaps and resource shortages as primary hurdles to effective DST use in inclusive classrooms. The equal emphasis on training modalities suggested a preference for experiential learning over passive methods, while consistent calls for external support highlighted dependencies on institutional and specialist interventions.

The findings implied that schools and districts needed to prioritize comprehensive professional development programs, including hands-on workshops and IT provisioning, alongside policy reforms to empower teachers in leveraging DST for diverse learners. Such supports could bridge identified gaps, enhancing inclusive practices and student engagement through technology.

Aligning with these needs, Yang et al. (2024) advocated hands-on DST training to address skill deficits in diverse settings; Rohloff (2021) stressed ICT facility provisions and technical assistance for K-12 inclusive tech adoption; and Kopcha (2024) recommended workshops and administrative policies to facilitate DST integration, corroborating the respondents' priorities for overcoming barriers.

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	% Responses	of % Cases	of Rank
1 Continuous DST training programs	19	23.17%	95%	1.5
2 Allocate more time and resources for lesson	18	21.95%	90%	3
3 Encourage collaboration among teachers	12	14.63%	60%	5
4 Recognize best practices in DST	14	17.07%	70%	4
5 Include DST in professional development programs	19	23.17%	95%	1.5
Total	121	100.00%		

Respondents suggested continuous digital storytelling (DST) training programs and inclusion of DST in professional development programs as top priorities, each receiving 19 frequencies (23.17% of responses, 95% of cases) and tying for the highest rank. Allocating more time and resources for lessons ranked third with 18 frequencies (21.95%, 90%), followed by recognizing best practices at 14 (17.07%, 70%) and encouraging teacher collaboration at 12 (14.63%, 60%), across a total of 121 responses.

These suggestions underscored a consensus on sustained professional growth through ongoing training and formal program integration, reflecting teachers' awareness that one-off interventions fell short against persistent skill and resource gaps in inclusive classrooms. The strong emphasis on time allocation and recognition indicated desires for systemic valuation of DST efforts, while collaboration pointed to community-driven solutions.

The data implied that educational leaders should implement longitudinal training initiatives, resource reallocation, and incentive structures to embed DST effectively, potentially transforming inclusive teaching practices and elevating student outcomes in public schools.

Corroborating these priorities, Smeda et al. (2020) emphasized continuous DST training and professional development integration to enhance teacher efficacy in diverse settings; Conrad (2022) advocated resource allocation and time flexibility alongside best practice recognition for sustained tech adoption; and Hung et al. (2023) highlighted teacher collaboration as key to overcoming implementation barriers, aligning directly with the respondents' improvement strategies.

CONCLUSION

Based on the comprehensive findings of this study, it is concluded that non-SPED teachers at Basak National High School are committed to inclusive education and recognize the high potential of digital storytelling as an effective pedagogical tool. However, this potential remains underutilized due to significant barriers, including a narrow range of DST tool usage, challenges in collaboration, and critical gaps in technological access and teacher readiness. The absence of significant relationships between tool usage and effectiveness, and between teaching practices and DST outcomes, suggests that mere frequency of use or practice is insufficient without targeted support and strategic integration. Therefore, to bridge the gap between positive perception and effective implementation, a structured and supportive intervention is imperative.

In light of the conclusions drawn from this study, it is strongly recommended that the Learning Enhancement Plan crafted as the primary output of this research be implemented. This

plan is specifically designed to address the identified areas of concern, such as the limited repertoire of DST tools, the need for enhanced collaboration, and the critical lack of technical resources and skills. By providing a structured framework for professional development, resource allocation, and collaborative support, the Learning Enhancement Plan will empower teachers to effectively and confidently integrate a diverse array of digital storytelling strategies into their inclusive classrooms, thereby maximizing positive learning outcomes for all students.

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