
| RESEARCH ARTICLE

Technology Integration and Utilization in Teaching Learners with Different Exceptionalities

John Romel Uy

Division of Cebu City, Philippines

Corresponding Author: John Romel Uy, **E-mail:** jhnromel@gmail.com

| ABSTRACT

Effective teachers optimize the potential of technology to develop students' understanding, stimulate their interest, and increase their proficiency in Special Education (SPED). Hence, this study aimed to determine the level of effectiveness of technology integration and the extent of utilization of technology in the delivery of SPED Programs in the New Normal in identified SPED Centers in the Division of Cebu City during the school year 2022 – 2023. The descriptive research method was used, and tools such as frequency count, percentage, mean, standard deviation, and Pearson's product-moment correlation coefficient were used. A survey questionnaire, approved transmittal letters, and consent were part of the instrument used to gather data. Findings on the demographic profile of the respondents, the majority were females aged 26 to 50 years old, and the majority were married. Most respondents have units in a master's degree program, with SPED as their specialization. They have five years or less of teaching experience, rendering 26 to 31 hours per week. The majority of the students are "Learners with Hearing Impairment." The smartphone is the most used mobile device. Computers, laptops, and tablet devices are the most common information and communication technology (ICT) tools found in the classroom. Few teacher-respondents attended training and seminars in ICT. On the extent of teachers' technological confidence and training, particularly on Basic Computer Skills, Internet/Distance Learning Skills, Software Productivity Skills, and Training, all were found to A Little Extent. On the level of effectiveness of technology integration in teaching learners with different exceptionalities, the teacher-respondents Strongly Agree that technology integration brings a great extent of usefulness or helpfulness to the teachers' teaching and learning process. On the extent of utilization of technology-based activities in teaching learners with different exceptionalities, the teacher-respondents said Often Used. On the teachers' perceptions of the use of technology in their teaching, respondents said they Agree that technology integration brings considerable usefulness or helpfulness to the teachers' teaching and learning process. On the teacher-respondents' level of perception on the degree of usefulness of the educational technologies currently or would be in their teaching (regardless of whether or not they have used each technology in the past), it was found to be Very Useful. The following terms emerged as challenges met by teachers: lack of instructional resources, lack of preparation time, lack of technical support, and lack of confidence in using educational technologies. The formulated technology-integration instruction enhancement plan is highly recommended for implementation.

| KEYWORDS

Technology Integration, Special Education, SPED Teachers, Learners with Special Educational Needs, LSENs, Digital Competence, Technological Confidence

| ARTICLE INFORMATION

ACCEPTED: 09 May 2026

PUBLISHED: 05 16June 2026

DOI: 10.32996/jlds.2026.6.8.2

Introduction

The New Normal has made technology integration a central concern in special education because LSENs, or learners with special educational needs, require instruction that is accessible, individualized, and responsive to varied sensory, cognitive, behavioral,

and communication needs. During and after pandemic disruptions, studies showed that digital learning could widen participation when tools were matched with learners' needs, but it could also deepen exclusion when access, teacher readiness, and family support were weak (Sakarneh, 2023). Research on online learning for learners with special educational needs in the Philippines emphasizes that home support and teacher-parent coordination became crucial in sustaining participation (Andrada & Barrot, 2025). At the same time, digital competence among special education teachers has been identified as a professional requirement rather than an optional skill (Montenegro-Rueda et al., 2022). In Philippine schools, digital literacy initiatives for LSEs point to the need for systematic integration, not occasional use (Gabumpa-Apas, 2025), while wider ICT studies warn that infrastructure and policy conditions still shape classroom adoption (Espinosa et al., 2025).

Teacher technological confidence is important because special education teachers do not merely operate devices; they decide whether a tool can improve access, engagement, assessment, behavior support, and communication. Confidence in basic computer skills, internet search and distance learning skills, and productivity software can influence whether teachers prepare accessible materials, communicate with parents, organize digital records, and adapt lessons for LSEs. Studies during the COVID-19 period found that teachers' computer attitudes and self-efficacy were related to their willingness to teach with technology (Proedrou et al., 2023). Special education teachers' technology-integration self-efficacy has likewise been examined as a factor in effective classroom use (Vosough Matin, 2023). Digital competence studies highlight continuing needs in pedagogical selection, assistive technology, and inclusive design (Montenegro-Rueda et al., 2022). Video-based training has shown promise for improving support teachers' digital competence and computer self-efficacy (Benigno et al., 2023), while post-pandemic professional development research stresses that training must connect technology, pedagogy, and inclusion (Shi et al., 2025).

The effectiveness of technology integration in teaching LSEs depends on whether technology helps teachers remove learning barriers, not simply whether devices are present. Assistive and educational technologies can support alternative presentation of content, repeated practice, visual cues, communication support, and individualized pacing; however, the benefit depends on teacher judgment and learner fit. Research on trainee special education teachers found that intention to integrate assistive technology is shaped by self-efficacy and attitudes toward technology use (Opoku et al., 2023). Work on artificial intelligence in special education similarly connects digital literacy, perceived usefulness, and teacher self-efficacy with future adoption (Yao & Wang, 2024). Teachers of students with intellectual disabilities also report that professional competency and positive attitudes affect technology-integrated teaching (Alshehri, 2025). Local Philippine evidence from Cebu suggests that technology integration can contribute to improved learning outcomes in special needs education programs (Lustica et al., 2025). For LSEs, digital literacy integration must therefore be evaluated in terms of access, participation, skill development, and meaningful learning (Gabumpa-Apas, 2025).

Utilization of technology-based activities should be examined beyond frequency counts because the usefulness of a tool may differ depending on disability category, learning goal, available support, and classroom modality. In teaching LSEs, technology-based activities may include multimedia lessons, online searches, learning management systems, digital worksheets, video demonstrations, communication applications, productivity software, and assistive tools. Philippine research on parental involvement during online learning shows that LSEN participation often depends on the alignment of teacher instruction, home routines, and accessible digital tasks (Andrada & Barrot, 2025). Broader Philippine ICT analysis indicates that digital divide factors continue to affect the consistency of ICT integration in schools (Espinosa et al., 2025). National discussions on in-service training and teacher professional development further suggest that access to training opportunities influences teachers' ability to sustain new practices (Rivera et al., 2025). Studies on AI-based mobile applications in special education also underline the role of technology self-efficacy and perceived usefulness in adoption (Ajlouni et al., 2025). Recent work on interactive online learning for special education teachers reinforces that training design can affect knowledge, self-efficacy, and classroom readiness (Sađirođlu et al., 2025).

Despite the growing literature, a localized research gap remains for the Division of Cebu City. Existing Philippine studies address LSEN digital literacy (Gabumpa-Apas, 2025), parental involvement in online learning (Andrada & Barrot, 2025), national teacher training participation (Rivera et al., 2025), and contextual barriers to ICT integration in Philippine schools (Espinosa et al., 2025). A Cebu-based study also reported positive learning outcomes through technology integration in a special needs education program, but its focus was on students in an elementary school setting rather than a division-wide profile of special education teachers' confidence, training, perceived effectiveness, utilization, usefulness, and challenges (Lustica et al., 2025). Thus, the specific conditions of Special Education teachers in the Division of Cebu City remain insufficiently documented, particularly in relation to basic computer skills, internet and distance learning skills, software productivity skills, professional training, and the statistical relationship between perceived effectiveness and actual utilization. This gap matters because division-level evidence can guide targeted training, resource allocation, and technical support for LSEN instruction.

This study is therefore directed toward producing evidence that can inform a responsive technology-integration plan for Special Education teachers in the Division of Cebu City. It may examine teachers' technological confidence and training, describe their perceived effectiveness of technology integration, measure the extent of technology-based activities used with LSEs, and determine whether perceived effectiveness is significantly related to utilization. The research direction is supported by studies showing that self-efficacy predicts technology integration in special education (Vosough Matin, 2023), that assistive technology intentions are influenced by teacher beliefs and perceived usefulness (Opoku et al., 2023), and that professional development should connect digital competence with inclusive pedagogy (Utami & Ghufuron, 2025). Findings may also identify barriers such as connectivity, lack of devices, limited assistive tools, insufficient training, time constraints, and learner-specific accessibility needs, which are emphasized across recent inclusive-technology literature (Shi et al., 2025). Ultimately, the study can provide a basis for training modules, mentoring systems, and school-level support mechanisms aligned with LSEN needs in the New Normal (Alshehri, 2025; Yao & Wang, 2024).

Literature Review

Recent literature emphasizes that technology integration in special education depends strongly on teachers' digital competence, technological self-efficacy, and access to appropriate training. Special education teachers are expected to select tools that respond to learners' specific needs, including accessibility, communication, behavioral support, and differentiated instruction; therefore, competence must go beyond basic device operation (Montenegro-Rueda & Fernández-Batanero, 2025). Studies show that teachers with higher digital self-efficacy are more likely to adopt technology confidently and persistently in inclusive classrooms (Hu et al., 2025). Professional development also plays a significant role, as TPACK-based digital pedagogy training can improve teachers' competence, self-efficacy, and work engagement in inclusive education (Shi, Sin, & Wang, 2025). Likewise, assistive technology preparation improves teachers' readiness to design inquiry-based and accessible learning experiences for students with disabilities (Du & Lyublinskaya, 2022). In special education teacher preparation, emerging technologies are also viewed as essential for developing digital competency and instructional adaptability (Howorth et al., 2024).

Studies on assistive and educational technologies further suggest that teachers' perceived usefulness of technology influences actual classroom utilization. Opoku et al. (2023) found that trainee special education teachers' intention to integrate assistive technology was shaped by computer self-efficacy, perceived usefulness, and access to technology. Similarly, Yao and Wang (2024) reported that digital literacy, teacher self-efficacy, perceived ease of use, and perceived usefulness influenced pre-service special education teachers' intention to use artificial intelligence in education. Research on assistive technology acceptance also indicates that self-efficacy and positive attitudes affect teacher candidates' willingness to use tools for learners with special needs (Şahin, Kızılaslan, & Şimşek, 2024). In the context of learners with disabilities, systematic review evidence shows that assistive technologies can improve learning outcomes when paired with teacher competence and appropriate training (Hamid et al., 2025). However, studies also caution that technology integration is limited by insufficient training, uneven access, and lack of institutional support (Alshehri, 2025; Liu et al., 2025).

Methodology

This study used a quantitative descriptive-correlational research design to determine the technological confidence, training, perceived effectiveness, utilization, usefulness, and challenges encountered by Special Education teachers in integrating technology in teaching learners with special educational needs (LSEs). The study followed the systems approach using the input-process-output model. The input included the profile of the teacher-respondents, their technological confidence and training, the level of effectiveness of technology integration, and the extent of technology-based activities used in teaching LSEs. The process involved gathering, organizing, and statistically analyzing the data. The output served as the basis for a proposed action plan to improve technology integration in Special Education programs. The study was conducted in the fifteen (15) Special Education Centers under the Cebu City Schools Division, Department of Education Region VII, during the school year 2022–2023. The respondents were Special Education teachers assigned to the identified SPED Centers. A survey questionnaire was used as the main data-gathering instrument. It was adapted and modified from previous studies on technology integration and utilization in education and was revised to fit the present study's focus on Special Education teachers and LSEN instruction. The questionnaire included sections on respondents' demographic profile, technological confidence and training, perceived effectiveness of technology integration, utilization of technology-based activities, usage and usefulness of technology tools, and challenges encountered in technology-integrated teaching. The instrument underwent expert validation by specialists in technology and Special Education and was pilot-tested among SPED teachers outside the actual research locale. Reliability was determined using appropriate reliability measures for the questionnaire items. The gathered data were analyzed using frequency,

percentage, weighted mean, standard deviation, and correlation analysis to determine the significant relationship between effectiveness and utilization of technology integration.

Results

Table 1. Basic Computer Skills

No.	A. Basic Computer Skills	\bar{x}	SD	Verbal Description
1	I know how to save/open documents to/from a hard disk or other removable storage devices.	2.44	1.60	Little Extent
2	I am comfortable with things like installing software and changing configuration settings on my computer.	2.44	1.52	Little Extent
3	I know how to resolve common hardware or software problems, or I can access technical support in case I encounter a problem.	2.43	1.68	Little Extent
	Overall Weighted Mean	2.44		Little Extent
	Overall Standard Deviation		1.60	
	Overall, Verbal Description			Little Extent

Table 1 shows that SPED teachers demonstrated basic computer skills only to a little extent, with an overall weighted mean of 2.44 and standard deviation of 1.60. All indicators obtained closely similar low ratings, indicating limited confidence in saving and opening files, installing software, changing computer settings, and resolving basic technical problems. These results suggest that teachers need structured hands-on training to strengthen essential computer operations, improve technical independence, and support more effective technology integration in teaching learners with special needs.

Table 2 reveals that SPED teachers practiced internet and distance learning skills only to a little extent, as reflected by the overall weighted mean of 2.46 and standard deviation of 1.64. The highest ratings were on using web browsers and resolving common internet errors, both with a mean of 2.49, while the lowest was on using asynchronous tools at 2.42.

Table 2. Internet/Distance Learning Skills

No.	B. Internet/Distance Learning Skills	\bar{x}	SD	Verbal Description
1	I have an email address, and I can open/send file attachments.	2.48	1.73	Little Extent
2	I am familiar with distance learning etiquette.	2.46	1.55	Little Extent
3	I know how to surf the internet and navigate web pages, go to next or previous page.	2.45	1.47	Little Extent
4	I can use web browsers, e.g., Internet Explorer, Google Chrome, Mozilla Firefox, confidently.	2.49	1.56	Little Extent
5	I know how to resolve common errors while surfing the internet such as “page not found” or “connection timed out.”	2.49	1.72	Little Extent
6	I am comfortable with things like doing searches, setting bookmarks, and downloading files.	2.44	1.72	Little Extent
7	I know how to access a distance learning library and other resource databases.	2.48	1.71	Little Extent
8	I know how to use asynchronous tools, e.g., discussion boards and chat tools, effectively.	2.42	1.63	Little Extent
	Overall Weighted Mean	2.46		Little Extent
	Overall Standard Deviation		1.64	
	Overall, Verbal Description			Little Extent

These results indicate limited readiness in online learning tasks and suggest the need for further training in distance learning platforms.

Table 3. Software Productivity Skills

No. C. Software Productivity Skills	\bar{x}	SD	Verbal Description
1 I know what PDF files are, and I can download and view them.	2.32	1.53	Little Extent
2 I am familiar with MS Word and use it comfortably.	2.56	1.77	Little Extent
3 I am able to have several applications opened at the same time and move between them.	2.48	1.72	Little Extent
4 I know how to use file compression (WinZip, Rar, etc.).	2.38	1.70	Little Extent
5 I know how to use spreadsheet applications (MS Excel).	2.32	1.78	Little Extent
6 I know how to use presentation software applications.	2.34	1.73	Little Extent
Overall Weighted Mean	2.40		Little Extent
Overall Standard Deviation		1.71	
Overall Verbal Description			Little Extent

Table 3 shows that SPED teachers demonstrated software productivity skills to a little extent, with an overall weighted mean of 2.40 and standard deviation of 1.71. Among the indicators, familiarity and comfortable use of MS Word obtained the highest mean of 2.56, while knowledge of PDF files and spreadsheet applications both received the lowest mean of 2.32. These findings suggest that teachers need additional training in productivity tools, especially spreadsheets, presentations, file compression, and digital document management.

Table 4. Training

No. D. Training	\bar{x}	SD	Verbal Description
1 I have training on the use of the internet.	2.50	1.82	Little Extent
2 I have attended distance learning classes before.	2.49	1.69	Little Extent
3 I have used a learning management system before.	2.38	1.70	Little Extent
4 I have the skills to modify and add content and assessment using a distance learning management system.	2.32	1.78	Little Extent
5 I have attended seminars/workshops related to distance learning activities.	2.48	1.78	Little Extent
Overall Weighted Mean	2.43		Little Extent
Overall Standard Deviation		1.75	
Overall Verbal Description			Little Extent

Table 4 indicates that SPED teachers had training on technology integration only to a little extent, with an overall weighted mean of 2.43 and standard deviation of 1.75. The highest mean was training on internet use at 2.50, while the lowest was the ability to modify and add content and assessment in a learning management system at 2.32. These results suggest inadequate exposure to distance learning systems and highlight the need for sustained training on LMS use, content development, and online assessment.

Table 5. Level of Effectiveness of Technology Integration in Teaching LSEs

No. Indicator	\bar{x}	SD	Verbal Description
1 Technology allows students to be more creative and imaginative.	3.29	1.71	Strongly Agree
2 The use of technology helps students to find related knowledge and information for learning.	3.30	1.69	Strongly Agree
3 The use of technology encourages students to communicate more with their classmates.	3.27	1.70	Strongly Agree
4 The use of technology increases students' confidence to participate actively in class.	3.39	1.83	Strongly Agree
5 I think students learn more effectively with the use of technology.	3.21	1.66	Strongly Agree
6 I think the use of technology helps to broaden students' knowledge paradigm.	3.28	1.81	Strongly Agree

No. Indicator	\bar{x}	SD	Verbal Description
7 I think the use of technology helps to improve students' ability, specifically in reading and writing.	3.32	1.82	Strongly Agree
8 The students are more behaved and under control with the use of technology.	3.22	1.69	Agree
9 The use of technology enables students to express their ideas and thoughts better.	3.16	1.66	Agree
10 The use of technology promotes active and engaging lessons for students' best learning experience.	3.37	1.84	Strongly Agree
Overall Weighted Mean	3.28		Strongly Agree
Overall Standard Deviation		1.74	
Overall Verbal Description			Strongly Agree

Table 5 indicates that technology integration in teaching LSEs was perceived as highly effective, with an overall weighted mean of 3.28 and standard deviation of 1.74. The highest rating was on increasing students' confidence to participate actively, while the lowest was on enabling students to express ideas better. Most indicators were rated Strongly Agree, showing that teachers viewed technology as helpful in creativity, communication, engagement, and learning. This suggests that technology supports meaningful and active instruction for LSEs.

Table 6. Extent of Utilization of Technology-Based Activities in Teaching LSEs

No. Indicator	\bar{x}	SD	Verbal Description
1 Browse/search the internet to collect information to prepare lessons.	3.13	1.71	Often
2 Browse/search the internet to collect resources to be used during lessons.	3.19	1.80	Often
3 Use applications to prepare presentations for lessons.	3.16	1.78	Often
4 Create your own digital learning materials for students.	3.14	1.75	Often
5 Prepare exercises and tasks for students.	3.13	1.73	Often
6 Post homework for students on the school website.	3.05	1.68	Often
7 Use technology to provide feedback and/or assess students' learning.	3.07	1.70	Often
8 Evaluate digital learning resources in the subject(s) you teach.	3.00	1.61	Often
9 Communicate online with parents.	3.06	1.69	Often
10 Download/upload/browse material from the school's website.	3.03	1.67	Often
11 Download/upload/browse material from a learning platform.	3.02	1.64	Often
12 Look for online professional development opportunities.	3.02	1.65	Often
Overall Weighted Mean	3.08		Often
Overall Standard Deviation		1.70	
Overall Verbal Description			Often

Table 6 shows that SPED teachers often utilized technology-based activities in teaching LSEs, with an overall weighted mean of 3.08 and standard deviation of 1.70. The highest mean was on browsing or searching the internet to collect lesson resources at 3.19, while the lowest was on evaluating digital learning resources at 3.00. These findings indicate that teachers regularly use technology for preparation, communication, assessment, and resource gathering, but may need support in evaluating digital materials effectively.

Table 7. Usage in their Teaching

No. Indicator	\bar{x}	s.d.	Verbal Description
I use technology in my teaching because:			
1 I feel confident learning new technological skills.	3.27	1.70	Strongly Agree
2 I find it easier to teach my class by using technology.	3.38	1.83	Strongly Agree
3 I am aware of the great opportunities that technology offers for effective teaching.	3.28	1.80	Strongly Agree
4 I think that technology-supported teaching makes learning more effective.	3.27	1.73	Strongly Agree

No. Indicator	\bar{x}	s.d.	Verbal Description
5 I think the use of technology improves the quality of teaching.	3.27	1.72	Strongly Agree
6 The use of technology enables the students to be more active and engaging in the lesson.	3.27	1.75	Strongly Agree
7 I have more time to cater to students' needs if technology is used in teaching.	3.19	1.80	Agree
8 I can still have effective teaching without the use of technology.	2.47	1.75	Disagree
9 I am confident that my students learn best without the help of technology.	2.48	1.79	Disagree
10 Classroom management is out of control if technology is used in teaching.	2.49	1.70	Disagree
11 Students pay less attention when technology is used in teaching.	2.42	1.68	Disagree
12 Students make no effort for their lessons if technology is used in teaching.	2.48	1.75	Disagree
13 It will help me understand the subject material more deeply.	3.21	1.66	Agree
14 It motivates me to explore many topics I may not have seen before.	3.30	1.67	Strongly Agree
Overall Weighted Mean	2.98		Agree
Overall Standard Deviation		1.74	
Overall Verbal Description			

Table 7 shows that teachers generally agreed on using technology in teaching, with an overall weighted mean of 2.98 and standard deviation of 1.74. The highest mean, 3.38, indicates that teachers find technology helpful in making teaching easier. They also strongly agreed that technology improves learning, engagement, and instructional quality. Meanwhile, disagreement with negative statements suggests that teachers do not see technology as disruptive. Overall, technology is viewed as useful, supportive, and beneficial in SPED instruction across varied learning activities.

Table 8. Teacher-Respondents' Perception on the Goodness and Usefulness of the Educational Technologies Currently or Would Be in Their Teaching (Regardless of whether or not they have used each technology in the past)

No. Indicator	\bar{x}	s.d.	Verbal Description
<i>In your teaching, how useful do you think it would be to...</i>			
1 Design and build web pages as part of your course.	3.33	1.81	Very Useful
2 Create and present multimedia shows as part of your course requirements, e.g., MS PowerPoint.	3.42	1.83	Very Useful
3 Create and present audio/video as part of your course requirements.	3.30	1.67	Very Useful
4 Download or access online audio/video recordings of lectures you could not attend.	3.30	1.82	Very Useful
5 Download or access online audio/video recordings to revise the content of lectures you have already been to.	3.27	1.73	Very Useful
6 Download or access online audio/video recordings of supplementary content material.	3.38	1.83	Very Useful
7 Use the Web to access university-based services, e.g., enrollment, paying fees.	3.28	1.75	Very Useful
8 Use your mobile phone to access web-based university services or information, e.g., enrollment, paying fees.	3.27	1.73	Very Useful
9 Use instant messaging/e-chat, e.g., Skype, Messenger, Hangout, etc., on the Web to communicate/collaborate with other students in the course.	3.27	1.72	Very Useful
10 Use instant messaging/e-chat, e.g., Skype, Messenger, Hangout, etc., on the Web to communicate with teachers and administrative staff from the course.	3.27	1.75	Very Useful
11 Use a social networking platform, e.g., Facebook, on the Web to communicate/collaborate with other students on the course.	3.33	1.81	Very Useful
12 Use micro-blogging, such as Twitter, to share information about class-related activities.	3.42	1.83	Very Useful
13 Keep your own blog as part of your course requirements.	3.35	1.83	Very Useful
14 Contribute to another blog as part of your course requirements.	3.44	1.78	Very Useful

No.	Indicator	\bar{x}	s.d.	Verbal Description
15	Use the Web to share digital files related to your course, e.g., sharing photos, audio files, movies, digital documents, websites, etc.	3.33	1.81	Very Useful
16	Use Web-conferencing or video chat to communicate/collaborate with other students in the course.	3.42	1.83	Very Useful
17	Receive alerts about course information, e.g., timetable changes, the release of new learning resources, changes in assessment, via RSS feeds on the Web.	3.27	1.75	Very Useful
18	Receive alerts about course information, e.g., timetable changes, the release of new learning resources, changes in assessment, via text message on your mobile phone.	3.33	1.81	Very Useful
19	Contribute with other students to the development of a wiki as part of your course requirements.	3.35	1.83	Very Useful
20	Receive grades/marks from your lecturer via text message on your mobile phone.	3.44	1.78	Very Useful
21	Receive pre-class discussion questions from your lecturer via text message on your mobile phone.	3.28	1.75	Very Useful
22	Use a personal dashboard on the university intranet to access all your academic information related to courses, grades, etc.	3.27	1.73	Very Useful
23	Use an e-Portfolio system to record your achievements for future use beyond the course of your studies.	3.42	1.83	Very Useful
	Overall Weighted Mean	3.34		Very Useful
	Overall Standard Deviation		1.78	
	Overall Verbal Description			Very Useful

Table 8 reveals that teacher-respondents perceived educational technologies as very useful, with an overall weighted mean of 3.34 and standard deviation of 1.78. All indicators were rated Very Useful, showing strong appreciation for multimedia presentations, audio/video materials, online communication, file sharing, web conferencing, blogs, wikis, dashboards, text alerts, and e-portfolios. The highest means were on contributing to blogs and receiving grades through text messages. Overall, teachers recognized technology as valuable for enhancing instruction, communication, collaboration, and learning support.

Table 9. Significant Relationship between the Level of Effectiveness of Technology Integration in Teaching Learners with Different Exceptionalities and the Extent of Utilization of Technology in Technology-Based Activities

Variable	Mean	Std. Dev.	N	Comp rho	p-value	Decision	Result
Effectiveness	32.73	2.86	64	0.284	0.023	Reject H ₀	Positive Correlation
Extent of Utilization	36.95	3.08	64				

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

Table 9 presents the relationship between the perceived effectiveness of technology integration and the extent of utilization of technology-based activities in teaching learners with different exceptionalities. The computed rho value of 0.284 with a p-value of 0.023 indicates a significant positive correlation at the 0.05 level. Since the p-value is lower than 0.05, the null hypothesis is rejected. This means that as teachers perceive technology integration to be more effective, their utilization of technology-based activities also tends to increase. Although the relationship is positive, the correlation is weak, suggesting that other factors may also influence technology use, such as access to devices, training, internet connectivity, and teacher confidence in technology-supported instruction for LSENs.

Table 10. Challenges Encountered by Teachers in the Use of Technology Learning Resources in Teaching LSENs

Themes	Illustrative Response Quotes
Lack of Instructional Resources	"If I had to change anything, it would be to put a system in place for some of the resources I would like for my classroom when it comes down to technology use."

Lack of Preparation Time	"A big part of changing anything in the classroom in regard to technology would be to allow teachers more time to try the technology in order to have more fun and make it educational for the students."
Lack of Technical Support	"There is no immediate help that I can find when a piece of equipment breaks down."
Lack of Confidence in using Educational Technologies	"I'm sometimes embarrassed to admit that I rarely use technology in the classroom to differentiate learning for my students. I am scared to use them because I first need to know how to use them."

Table 10 shows the main challenges encountered by teachers in using technology learning resources in teaching LSENs. The responses reveal four major concerns: lack of instructional resources, lack of preparation time, lack of technical support, and lack of confidence in using educational technologies. These challenges indicate that although teachers recognize the value of technology, their actual use may be limited by insufficient equipment, limited time to explore tools, and absence of immediate technical assistance. The lack of confidence also suggests that some teachers may hesitate to use technology for differentiated instruction because they need more training and practice. Overall, the findings highlight the need for better resources, technical support, and capacity-building programs for SPED teachers.

Discussions

The results reveal a clear contrast between teachers’ technological readiness and their perception of technology’s value in teaching LSENs. Basic computer skills, internet and distance learning skills, software productivity skills, and training were all rated only to a little extent, showing that many SPED teachers still have limited confidence in handling files, using online platforms, managing productivity software, and applying learning management systems. However, despite these limitations, teachers strongly agreed that technology integration is effective in improving learners’ confidence, creativity, communication, engagement, and learning participation. This means that teachers recognize the instructional value of technology, even though their own technical skills and formal preparation remain insufficient.

The findings also show that teachers often use technology-supported activities, especially for searching resources, preparing lessons, creating digital materials, communicating with parents, and assessing learners. Educational technologies were also perceived as very useful, suggesting strong acceptance and willingness to integrate digital tools in SPED instruction. The significant positive correlation between effectiveness and utilization indicates that teachers who view technology as effective are more likely to use it in teaching. However, the weak relationship suggests that other factors affect technology use, including limited resources, lack of preparation time, lack of technical support, and low confidence. These results point to the need for continuous training, accessible tools, technical assistance, and practical mentoring for SPED teachers.

Conclusion

Based on the findings of the study, a conclusion is drawn. It could be concluded that SPED teachers in the Cebu City School Division will use technology appropriately and effectively in their SPED classrooms if they are familiar and comfortable with the technology. Teachers will further utilize the necessary ICT tools given for use in the classroom if they are provided with enough preparation time to learn the technology and provided with technical support. From the findings, there is a need for exposure to the strategic utilization of technological devices and other instructional resources in teaching. Technology integration in teaching learners with different exceptionalities has a significant role and impact on Special Education; hence, the provision of all needed support is necessary. With these challenges, the Sped teachers may be addressed.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

Publisher's Note: All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers.

References

- [1] Ajlouni, A. O., Ibrahim, A. H., et al. (2025). *Predicting preservice teachers' intentions to integrate AI-based mobile applications in special education*. International Journal of Interactive Mobile Technologies. <https://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=18657923&AN=184462172>
- [2] Alshehri, M. (2025). *Examining Saudi teachers' professional competency and attitudes toward technology-integrated teaching for students with intellectual disabilities*. Discover Education. <https://link.springer.com/article/10.1007/s44217-025-00966-w>
- [3] Andrada, M. A., & Barrot, J. S. (2025). *Parental involvement during online learning of learners with special educational needs*. Educational Review. <https://doi.org/10.1080/00131911.2025.2459387>
- [4] Benigno, V., Panesi, S., Dalla Mutta, E., et al. (2023). *Online video training to improve digital competence and computer self-efficacy for support teachers*. Journal of Inclusive Methodology and Technology in Learning and Teaching. <https://inclusiveteaching.it/index.php/inclusiveteaching/article/view/109>
- [5] Du, X., & Lyublinskaya, I. (2022). *Designing professional development for special education teachers: Effects on assistive technology competency in developing inquiry-based student experiences*. Journal of Digital Learning in Teacher Education.
- [6] Espinosa, A. A., Gomez, A. C., Miranda, P. A., David, A. P., Abulon, E. L. R., & Hermosissima, V. C. (2025). *Bridging a digital divide: A critical analysis of contextual factors affecting ICT integration in Philippine schools*. Issues in Educational Research. <https://www.iier.org.au/iier35/espinosa-2-abs.html>
- [7] Gabumpa-Asas, C. (2025). *Digital literacy integration for learners with special educational needs*. British Journal of Teacher Education and Pedagogy. <https://al-kindipublishers.org/index.php/bjtep/article/view/11065>
- [8] Hamid, M. S., Abo Hamza, E. G., & Bedewy, D. (2025). *Impact of digital competencies and assistive technologies on learning outcomes for students with learning disabilities in Kingdom of Saudi Arabia: A systematic review*. Frontiers in Education.
- [9] Howorth, S. K., Marino, M. T., & Flanagan, S. (2024). *Integrating emerging technologies to enhance special education teacher preparation*. Journal of Research in Innovative Teaching & Learning.
- [10] Hu, X., Xu, W., Wan, Z., Liu, M., & Xu, W. (2025). *Bridging self-efficacy and digital competence: A comprehensive scoping review of teachers' readiness for the digital age*. SAGE Open.
- [11] Liu, X., Wang, B., Yin, X., & Bai, B. (2025). *Quantitative study of technology integration and professional happiness among special education teachers in smart schools*. Education and Information Technologies.
- [12] Llerin, R. N. (2019). *The effectiveness of using technology-enhanced learning strategy for the delivery of K-12 education programs in senior high schools in the Division of Cebu City, Department of Education amidst of COVID-19 pandemic* [Doctoral dissertation, Cebu Technological University].
- [13] Lustica, Z., Sapio, S. S., Paredes, R. S., et al. (2025). *Improving learning outcomes of students through technology integration in special needs education programs*. British Journal of Teacher Education and Pedagogy. <https://al-kindipublishers.org/index.php/bjtep/article/view/11647>
- [14] Mahmood, F., Halim, H. A., Rajindra, S., & Ghani, M. M. (2014). *Factors affecting teachers' utilization of technology in Malaysian ESL classrooms*. Malaysian Online Journal of Educational Technology, 2(2), 15–23. <https://eric.ed.gov/?id=EJ1086397>
- [15] Matulac, M. (2013). *Experiences in technology integration: ICTs in basic education*. First National Congress. Retrieved April 1, 2022, from <http://www.fited.org/ictcongress/paper/fullpapers/matulac.pdf>
- [16] Montenegro-Rueda, M., & Fernández-Batanero, J. M. (2022). *Digital competence of special education teachers: Impact, challenges and opportunities*. Australasian Journal of Special and Inclusive Education. <https://www.cambridge.org/core/journals/australasian-journal-of-special-and-inclusive-education/article/digital-competence-of-special-education-teachers-impact-challenges-and-opportunities/114AA6D28B985B72C7F18D23DD8711F5>
- [17] Montenegro-Rueda, M., & Fernández-Batanero, J. M. (2025). *Digital competence: A challenge for special education teachers*. Exceptionality. <https://doi.org/10.1080/09362835.2025.2522080>
- [18] Opoku, M. P., Elhoweris, H., Alhosani, N., Mustafa, A., Alkhateri, T., & Nketsia, W. (2023). *Factors influencing the intention of trainee special education teachers to integrate assistive technology into teaching students with disabilities in the United Arab Emirates*. Heliyon. [https://www.cell.com/heliyon/fulltext/S2405-8440\(23\)09944-9](https://www.cell.com/heliyon/fulltext/S2405-8440(23)09944-9)
- [19] Proedrou, A., Stankova, M., Malagkoniari, M., et al. (2023). *Self-efficacy and attitudes toward computers of general and special education teachers in Greece during the COVID-19 period*. European Journal of Educational Research. <https://www.eu-jer.com/index.php/self-efficacy-and-attitudes-toward-computers-of-general-and-special-education-teachers-in-greece-during-the-covid-19-period>

- [20] Rivera, J. P. R., Sinsay-Villanueva, L. M. V., Tanyag, I. H., et al. (2025). *Revitalizing the Philippine education system: Facilitating access and participation to in-service training and teacher professional development*. EconStor. <https://www.econstor.eu/handle/10419/322243>
- [21] Sağırođlu, N., Uzunboylu, H., Akçamete, G., & Demirok, M. S. (2025). *Learning disability program offered face to face with interactive online learning from smart learning environments on teachers' knowledge and self-efficacy*. Applied Sciences, 15(10), 5326. <https://www.mdpi.com/2076-3417/15/10/5326>
- [22] Şahin, F., Kızılaslan, A., & Şimşek, Ö. (2024). *Factors influencing the acceptance of assistive technology by teacher candidates in the context of inclusive education and special needs students*. Education and Information Technologies.
- [23] Sakarneh, M. (2023). *Teachers' attitudes towards the rights of students with special education needs during the COVID-19 pandemic*. Center for Educational Policy Studies Journal. <https://www.ojs.cepsj.si/index.php/cepsj/article/view/1155>
- [24] Shi, Y. R., Sin, K. F. K., & Wang, Y. Q. (2025). *Teacher professional development of digital pedagogy for inclusive education in post-pandemic era: Effects on teacher competence, self-efficacy, and work engagement*. Teaching and Teacher Education. <https://www.sciencedirect.com/science/article/pii/S0742051X25003075>
- [25] Utami, I. S., & Ghufron, A. (2025). *Professional development in digital competence for special education teachers: A systematic review*. Electronic Journal of e-Learning. <https://files.eric.ed.gov/fulltext/EJ1489019.pdf>
- [26] Vosough Matin, M. (2023). *Investigation of special education teachers' technology integration self-efficacy levels*. International Journal of Technology in Education and Science. <https://eric.ed.gov/?id=EJ1400278>
- [27] Yao, N., & Wang, Q. (2024). *Factors influencing pre-service special education teachers' intention toward AI in education: Digital literacy, teacher self-efficacy, perceived ease of use, and perceived usefulness*. Heliyon. <https://www.cell.com/heliyon/fulltext/S2405-8440>