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Impact of Innovative Technologies on Social Skills Development among Learners with Learning Disabilities in Inclusive Education in Minna, Niger State

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Abstract
This study examined the impact of innovative technologies on social skills development among learners with learning disabilities in inclusive educational in Minna, Niger State. The objectives include assessing social skills, identifying utilized technologies and examining their effectiveness. Key research questions focus on the current state of social skills, the technologies employed and their impact on social interactions. The study involved a population of 153 learners, with a sample size of 109 from JSS1-SS3 selected through purposive sampling from 10 inclusive schools. Data was collected via a structured questionnaire and analyzed using descriptive statistics with SPSS. Findings indicated that while learners exhibited confidence in expressing feelings and initiating conversations, challenges remain in active participation and conflict resolution. The findings also showed that interactive whiteboards and virtual reality tools were identified as effective technologies, whereas communication apps and social media were underutilized. The study concludes that innovative technologies significantly enhance social skills development, yet gaps persist that require targeted interventions. Recommendations include providing training for teachers to foster active participation, prioritizing a broader range of technologies for enhanced collaboration and creating cooperative learning opportunities to further support social skills development among learners with disabilities. These steps are essential for nurturing an inclusive educational environment that benefits all learners with social skills problem.

Keywords: Impact, Inclusive Education, Innovative Technologies, Learners Learning Disabilities, Social Skills Development

Introduction

A variety of neurological conditions that impair the brain's capacity to take in, process, store, and react to information are collectively referred to as learning disabilities (LD). Reading (dyslexia), writing (dysgraphia), and math (dyscalculia) challenges are only a few of the ways these disorders might show up (Roldan et al. 2021). According to Odom et al. (1994), students with learning disabilities frequently have social development delays that coincide with delays in their academic performance and accomplishment. Some learners struggle to properly read social cues and establish and maintain healthy social interactions. Their verbal and nonverbal behaviors are frequently more hostile and negative. These actions frequently lead to learners with learning disabilities being intentionally shunned by their peers and having fewer friends than their peers without impairment. Beyond difficulties in the classroom, learners with learning disabilities frequently struggle in social situations. Research indicates that many learners with LD struggle to initiate and maintain positive social relationships, interpret social cues, and engage in appropriate social interactions (Pavri & Luftig, 2000). This may lead to feelings of isolation and increased vulnerability to bullying further worsening their difficulties in social settings.

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According to Kurth et al. (2018), the original concept of inclusive education focused on teaching a specific group of students—those with special educational needs (SEN) to overcome special education practices that have historically separated students based on a medical model of disability. In this regard, inclusive education is generally acknowledged as the venue to enhance both the learning and social development of students with disabilities and other SEN, and therefore the way to fulfill their right to shared quality education in mainstream settings (United Nations, 2007). Inclusive education is a pedagogical approach that promotes the integration of all students, regardless of their abilities or disabilities, into mainstream classrooms. This model is essential for fostering a sense of belonging and community among learners with diverse needs. Studies have shown that inclusive education not only benefits students with disabilities by enhancing their academic and social skills but also positively impacts their peers without disabilities by promoting empathy, respect, and understanding (Roldan, et al., 2021). The United Nations emphasizes that inclusive education is a fundamental human right and a critical component of quality education for all.

Innovative technology (IT) refers to new and creative tools, systems or methods that significantly enhance processes or address specific challenges of learners. Innovative technology for students with LD is defined as any device, piece of equipment or system that helps bypass, work around or compensate for an individual's specific learning deficits. Over the past decade, a number of studies have demonstrated the efficacy of IT for individuals with LD. IT doesn't cure or eliminate learning disabilities, but it can help a child reach her potential because it allows her to capitalize on her strengths and bypass areas of difficulty (Great Schools, 2024). Innovative technologies play a crucial role in supporting the educational needs of learners with disabilities. Assistive technologies, such as speech-to-text software, audiobooks and interactive learning platforms, can help bridge the gap between students' abilities and the curriculum. These tools not only facilitate academic learning but also enhance social skills development by providing opportunities for collaborative learning and peer interaction. IT increases a child's self-reliance and sense of independence. Students who struggle in school are often overly dependent on parents, siblings, friends and teachers for help with assignments.

Despite the growing recognition of the importance of inclusive education for learners with learning disabilities (LD), there remains a significant gap in understanding how innovative technologies specifically impact social skills development. While existing literature has explored various aspects of inclusive education and the use of technology in general, few studies have focused on the intersection of these areas in Minna, Niger State. Furthermore, much of the research available primarily emphasizes academic outcomes, often overlooking the critical role of social skills in the overall development of learners with LD. Social skills are essential for effective communication, relationship-building and integration into society, yet there is limited empirical evidence on how technological tools can facilitate these skills among students with learning disabilities. Thus, this study aims to examine the impact of innovative technologies on the social skills development of learners with learning disabilities in inclusive educational settings in Minna.

Statement of the Problem

There is a dearth of empirical data regarding the effects of innovative technologies on the social skills development of children with learning disabilities, notwithstanding the advantages of inclusive education for students with LD in Minna, Niger State. Although the goal of inclusive education is to create a learning environment where all students can succeed, many students with learning disabilities still struggle with social interaction and communication. Previous studies have mostly concentrated on academic results, frequently ignoring the vital role that social skills play in the lives of learners with learning disabilities. This information gap makes it more difficult to put into practice methods that could improve these learners' social integration and general well-being.

Objectives

The objectives of the study are to:

1. assess the social skills of learners with learning disabilities in inclusive educational settings in Minna, Niger State.
2. identify the types of innovative technologies utilized in inclusive classrooms that are aimed at promoting social interaction and communication among learners with learning disabilities.
3. examine the effectiveness of innovative technologies in enhancing the social skills development of learners with learning disabilities in inclusive education in Minna, Niger State.
4. Assess the perception of teachers and students on the use of innovative technologies for social skills development

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Research Questions

The primary research questions guiding this study include:

1. What is the state of social skills among learners with learning disabilities in inclusive educational settings in Minna, Niger State?
2. What innovative technologies are being utilized in inclusive classrooms to promote social interaction and communication among learners with learning disabilities?
3. How effective are innovative technologies in enhancing the social skills development of learners with learning disabilities in inclusive education in Minna, Niger State?
4. What are the perceptions of teachers and students on the use of innovative technologies for social skills development?

Methodology

Research Design

The study adopted a descriptive survey research design to investigate the impact of innovative technologies on social skills development among learners with social skills problem in inclusive education settings in Minna, Niger State. This approach allows for the collection of quantitative data from participants in their natural environments, providing a comprehensive understanding of how these technologies influence social interactions of learners with social skills problem.

Population and Sample

The study target population involved all learners with learning disabilities from the 10 inclusive schools who were 153. The sample size was determined using Krejcie and Morgan formula. This implies that a sample size of approximately 109 for a 95% confidence level was determined for this study. In this study, the technique used was purposive sampling. The purposive sampling technique was used to sample ten (10) mixed secondary schools in Minna. The 109 learners were selected based on the identifications by their teachers in the various classes from JSS 1 to SS 3 in the schools. The schools for this study include: Government Day Secondary School (GDSS) Minna; Niger State College of Education Secondary School; Government Secondary School (GSS) Kolo; Government Secondary School (GSS) Bosso; Government Day Secondary School (GDSS) Chanchaga; Government Secondary School (GSS) Dutsen Kura; Government Secondary School (GSS) Maitunbi; Government Secondary School (GSS) Paiko; Government Secondary School (GSS) Tunga and Government Secondary School (GSS) Gidan Kwano.

Instrument

The close-ended questionnaire served as the main instrument for data collection. Each item was carefully designed to align with the study objectives and measured using a four-point Likert scale: Strongly Agree, Agree, Disagree, and Strongly Disagree. To ensure validity, the instrument was subjected to expert review by two specialists in Special Education and Measurement and Evaluation in Niger State College of Education, Minna. Their assessment focused on the clarity, relevance and alignment of the items with the research objectives thereby confirming the content validity of the instrument.

Data Analysis

The completed questionnaires were checked for completeness and consistency before processing the responses. Questionnaires were sorted out for coding purpose. The codes on the questionnaire were categorized on the basis of similarities of information provided by the respondents. The information was tabulated and analyzed using descriptive statistics, namely; frequency tallies, mean and standard deviation.

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Results

Research Question 1: What is the state of social skills among learners with learning disabilities in inclusive educational settings in Minna, Niger State?

Table 1: Social skills among learners with learning disabilities in inclusive educational

S/N	Items	SA	A	D	SD	$\bar{X}$	StD	Decision
1	I do not participate actively in class discussions.	15	20	40	34	2.18	1.00	Rejected
2	I can express my feelings appropriately in social situations.	25	30	35	19	2.69	0.86	Accepted
3	I feel comfortable initiating conversations with my peers.	31	37	20	21	2.71	0.93	Accepted
4	I often work well with others in group activities	30	40	25	14	2.77	0.88	Accepted
5	I understand non-verbal cues from my classmates.	10	25	40	34	2.14	1.01	Rejected
6	I am able to resolve disagreements with my peers peacefully.	5	10	50	44	1.91	0.92	Rejected

The data in Table 1 shows that items 2, 3 and 4 had mean scores of 2.69 (SD = 1.00), 2.71 (SD = 0.93), and 2.77 (SD = 0.88), all above the criterion mean of 2.50 indicating that learners felt capable of expressing feelings, initiating conversations, and collaborating with peers. Conversely, items 1, 5 and 6 had mean scores of 2.18 (SD = 1.00), 2.14 (SD = 1.01), and 1.91 (SD = 0.92) below the criterion mean, showing that learners did not actively participate in discussions, struggled with non-verbal cues and found conflict management difficult. This implies that learners with learning disabilities in inclusive settings demonstrate strengths in some social skills while facing challenges in others.

Research Question 2: What innovative technologies are being utilized in inclusive classrooms to promote social interaction and communication among learners with learning disabilities?

Table 2: Innovative technologies utilized in inclusive classrooms among learners with learning disabilities

S/N	Items	SA	A	D	SD	$\bar{X}$	StD	Decision
7	Our classroom uses tablets or computers to facilitate group work.	10	15	45	39	1.96	1.05	Rejected
8	Our teachers use communication apps to help us express ourselves.	5	10	50	44	1.78	1.04	Rejected
9	Interactive whiteboards are utilized to engage students in discussions.	30	35	25	19	2.70	0.89	Accepted
10	Social media platforms are used for collaborative projects.	8	12	55	34	1.94	1.04	Rejected
11	Virtual reality tools are incorporated to enhance social interactions.	36	39	22	12	2.91	0.97	Accepted
12	Assistive technology is available for learners with communication challenges	41	33	16	19	3.18	0.95	Accepted

Table 2 shows that interactive whiteboards ($\bar{X}$ = 2.70, SD = 0.89), virtual reality tools ($\bar{X}$ = 2.91, SD = 0.97), and assistive technology for communication challenges ($\bar{X}$ = 3.18, SD = 0.95) were effectively used, all above the criterion mean of 2.50. However, tablets for group work ($\bar{X}$ = 1.96, SD = 1.05), communication apps ($\bar{X}$ = 1.78, SD = 1.04) and social media platforms for collaboration ($\bar{X}$ = 1.94, SD = 1.04) had mean scores below 2.50, indicating they were not utilized. This signifies that while some innovative technologies are integrated to support social interaction, others remain underutilized in inclusive classrooms.

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Research Question 3: How effective are innovative technologies in enhancing the social skills development of learners with learning disabilities in inclusive education in Minna, Niger State?

Table 3: Effectiveness of innovative technologies in enhancing the social skills development of learners with learning disabilities in inclusive education in Minna, Niger State.

S/N	Items	SA	A	D	SD	$\bar{X}$	StD	Decision
13	I feel more confident participating in group activities because of technology.	25	35	30	19	2.60	0.96	Accepted
14	I notice an increase in my classmates' willingness to collaborate when using technology.	20	40	30	19	2.56	0.91	Accepted
15	My social skills have improved since we started using new technologies in class.	30	25	40	14	2.65	0.83	Accepted
16	Innovative technologies have improved my ability to make friends	35	30	30	14	2.79	0.80	Accepted
17	Technology has made learning about social skills more engaging and enjoyable.	28	32	29	20	2.62	0.90	Accepted
18	Using technology has helped me communicate better with my peers.	22	38	30	19	2.58	0.95	Accepted

Table 3 shows that all items on the effectiveness of innovative technologies had mean scores above the criterion mean of 2.50 with values of 2.60 (SD = 0.96), 2.56 (SD = 0.91), 2.65 (SD = 0.83), 2.79 (SD = 0.80), 2.62 (SD = 0.90), and 2.58 (SD = 0.95). This implies that learners with learning disabilities agreed that technology boosts their confidence in group activities, improves collaboration and enhances their social skills.

Research Question 4: What are the perceptions of teachers and students on the use of innovative technologies for social skills development?

Table 4: Perceptions of teachers and students on the use of innovative technologies for social skills development.

S/N	Items	SA	A	D	SD	$\bar{X}$	StD	Decision
19	It cannot help students with learning disabilities build confidence in social interactions.	10	12	30	34	2.10	0.88	Rejected
20	The use of assistive technologies improves teamwork among learners.	28	30	20	18	2.89	0.91	Accepted
21	Interactive tools cannot make learning social skills more engaging.	12	15	34	35	2.20	0.85	Rejected
22	Teachers' use of communication apps enhances peer-to-peer interaction.	32	28	22	14	2.86	0.83	Accepted
23	Innovative technologies reduce social isolation among students with learning disabilities.	26	29	22	19	2.73	0.90	Accepted
24	Training enhances their effective use for social skills development.	25	30	22	17	2.76	0.92	Accepted

Table 4 reveals the perceptions of teachers and students on the use of innovative technologies for social skills development. Items 20, 22, 23 and 24 with mean scores and standard deviations of 2.89 (SD=0.91), 2.86 (SD=0.83), 2.73 (SD=0.90) and 2.76 (SD=0.92) were accepted as they are above the criterion mean score of 2.50. Conversely, items 19 and 21 with mean scores and standard deviations of 2.10 (SD=0.88) and 2.20 (SD=0.85) were rejected since they fall below the criterion mean score of 2.50. This indicates that teachers and students generally perceive innovative technologies as effective tools for enhancing teamwork, interaction and reducing isolation.

Discussion

The findings regarding the social skills of learners with learning disabilities in inclusive educational settings in Minna, Niger State revealed how these learners perceive their abilities in various social skills. The findings revealed that learners with learning disabilities feel confident expressing emotions, initiating conversations, and collaborating in group activities, which supports relationship-building and teamwork. However, many struggle with active participation in class discussions, likely due to inferiority complex or reservation, limiting social interaction and learning opportunities. They also face challenges in interpreting non-verbal cues and managing

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conflicts, which may increase social tension and hinder effective interpersonal relationships. The findings of Akinola and Ojo (2020) found that students often struggle with active participation in class discussions and have difficulties interpreting non-verbal cues. According to the authors, these challenges can lead to feelings of isolation and hinder social interactions among learners. In the similar term, the findings of Gresham and Elliott (2008) explored the social skills of children with learning disabilities in inclusive educational settings in the United States. They found that children with learning disabilities often exhibit difficulties in initiating conversations and managing conflicts. As a result of this, there is problem of social tension and challenges in peer relationships. It is pertinent to create social skills through structured programmes to improve the social competence of learners with disabilities. This is why the findings of Beacham and McIntosh (2014) stated that children with learning disabilities have brain dysfunction, difficulties in understanding and using language, speech, literacy skills, perception, conceptual development, coordination of movement and orientation in space. In order to work autonomously on tasks in inclusive settings, social skills and educational software are recommended for them.

The findings discussed the innovative technologies utilized in inclusive classrooms for learners with learning disabilities. The findings showed that interactive whiteboards and virtual reality tools are effective in promoting engagement, collaboration, and social interaction among learners with learning disabilities. Assistive technologies were also recognized as vital for supporting communication and inclusivity. However, devices like tablets, computers, communication apps, and social media platforms remain underutilized or not integrated into inclusive schools in Minna, limiting their potential for enhancing collaboration and interaction. This study is in line with Inclusive Education Initiatives (2024) which opined that the journey to inclusive education through ICT encompasses a spectrum of possibilities ranging from simplistic tools to innovative technological advancements. Low-tech devices such as screen readers and adaptive keyboards as well as high-tech solutions like specialized software and innovative applications have paved the way for a more inclusive learning environment in schools that adapt them. Ahmad (2015) also supported this finding by stating that the main technology for students with learning disabilities which include interactive whiteboards, computers with Macintosh and Windows operating systems, laptops, smartphones, Android tablets, iPads and Chromebooks, which are supercomputers with which they access Google Chrome and Google productivity tools such as word processing (Google Docs). In order to achieve the inclusion of learners with learning disabilities, the findings of Zilz and Pang (2021) maintained that a new standard of education that respects the heterogeneity and a new model of educational services which incorporate the use of new technologies is required.

The results examined the effectiveness of innovative technologies in enhancing the social skills development of learners with learning disabilities in inclusive education in Minna, Niger State. The findings revealed that technology fosters a supportive learning environment that enhances participation, collaboration, and teamwork among learners. Respondents noted that tools like interactive whiteboards, virtual reality and PECS make learning social skills more engaging, motivating, and enjoyable. Technology was also seen to improve peer communication which is vital for building social competence and overall social development. According to the findings of Hamburg and Bucksch (2017), the use of digital technologies in working with children with special educational needs carries certain risks. However, the study also demonstrated that it is possible to develop competencies that can help CSEN integrate better into society. The authors argue that digital tools can play a crucial role in creating effective and affordable ways of adapting to the educational environment in inclusive classrooms. According to Isăilă (2012), there is a growing awareness of the potential of innovative technologies for promoting social inclusion in European Union (EU) policy documents. This suggests that policymakers recognise the importance of using innovative technology to develop soft social skills such as teamwork, communication, adaptability, emotional intelligence and negotiation skills.

The study revealed that teachers and students perceived innovative technologies as effective in promoting social skills especially for learners with disabilities. They believed such tools enhance teamwork, improve interaction, and reduce social isolation. Training is considered essential to maximize the social benefits of these technologies. Innovative technologies are viewed as valuable platforms that build confidence, encourage participation and bridge social gaps among learners. The results of this study align with the findings of Okolo and Bouck (2007) who emphasized that assistive and innovative technologies play a crucial role in supporting students with disabilities by promoting social interaction, engagement, and collaboration within learning environments. Similarly, the authors found that technology can foster a sense of belonging and teamwork, which is consistent with the present study's conclusion that technologies improve interaction and social inclusion.

Conclusion

A more inclusive educational experience can be achieved by integrating a wider range of technologies and fostering collaborative learning environment. This study concludes that innovative technologies have a

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significant impact on the social skills development of learners with learning disabilities in inclusive educational settings in Minna, Niger State. Although learners show confidence in expressing their feelings and starting conversations, gaps remain in active participation and conflict resolution indicating the need for targeted interventions.

Recommendations

Based on the findings the following recommendations are made to enhance the experiences of learners with disabilities in inclusive settings.

1. Teachers should provide targeted training that encourages learners with learning disabilities to engage actively in discussions and practice interpreting non-verbal signals.
2. Schools should prioritize the adoption of a broader range of technology that promotes collaboration and communication among learners with learning disabilities. Professional development for teachers on how to effectively integrate technologies into their teaching practices should be highly prioritized.
3. Inclusive schools should create opportunities for cooperative learning experiences, where learners with learning disabilities can work together on projects using appropriate technologies to build a sense of social skills development.
4. Provide training for teachers to foster active participation, prioritizing a broader range of innovative technologies.

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