Inclusive Education for Preschool Pupils with Autism Spectrum Disorder through Local Communication Strategies: A Case of Musanze District, Rwanda

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Abstract
Autism spectrum disorder (ASD) is increasingly recognized in early childhood settings, yet many nursery schools, especially in low-resource regions like Musanze District, Rwanda, struggle to provide effective inclusive education due to limited teacher training, lack of communication strategies, and low participation in sensory integration activities. This study sought to investigate the strategies of inclusive education for nursery school pupils with autism spectrum disorder in Musanze District, Rwanda. The study was guided by the following objectives: to examine the prevalence of ASD among nursery school pupils in Musanze District on their learning outcomes, to assess the participation levels of ASD nursery school pupils in sensory integration activities on their learning outcomes, and to evaluate the effective communication strategies used by teachers with the ASD pupils on their learning outcomes in Musanze District. Guided by the Social Constructivism and Inclusive Education Framework, the study embraced a mixed research design, involving a total population of 229, from which a sample of 146 was selected. This sample targeted 10 school administrators, 30 preschool teachers, and 106 pupils with ASD, chosen using Yamane's formula along with stratified random and purposive sampling techniques. Data collection instruments were a structured questionnaire, an interview guide, and document reviews. Qualitative data were analyzed through thematic analysis to find important themes, while quantitative data were examined using percentages, frequencies, means, standard deviation, and regression analysis. Findings showed that inclusive education strategies positively affected learning outcomes for nursery pupils with ASD. The prevalence of ASD accounted for 25% of the variance in learning outcomes, revealing a moderate and statistically significant relationship (R^2 = .25, p = .05). The negative effect size (β= -0.5) indicated that higher levels of ASD prevalence were associated with reduced learning outcomes. Participation in sensory integration activities explained 36% of the variance in learning outcomes, demonstrating a moderate and statistically significant relationship (R^2 = .36, p = .05). The positive effect size (β= .6) suggested that greater engagement in sensory activities contributed to improved learning outcomes for pupils with ASD. Furthermore, effective communication strategies accounted for 42% of the variance in learning outcomes, reflecting a strong and statistically significant relationship (R^2 = .42, p = .05). The positive effect size (β= .65) highlighted that the use of effective communication strategies significantly enhanced learning outcomes. The study recommended that policies should focus on improving support for inclusive education strategies that meet the needs of pupils with ASD. Schools should encourage participation in sensory integration activities, as these have a positive effect on learning. Training for teachers in effective communication strategies is also important to help them connect better with ASD pupils. Future research should look into the long-term effects of these inclusive practices and explore more specific strategies to enhance learning outcomes for children with ASD, ensuring all their diverse needs are addressed in schools.

Keywords: *Autism Spectrum Disorder***,** *Communication Strategies***,** *Inclusive Education***,** *Learning Outcomes***,** *Sensory Integration Activities*

1.0 Introduction

Inclusive education means giving every pupil, including those with autism spectrum disorder (ASD), equal opportunities to learn and grow together in the same classroom. ASD affects how pupils communicate, interact, and respond to learning, which often makes school life more difficult (Abadi, 2020). Therefore, many schools are now improving inclusion through teacher training, classroom adaptation, and individualized support. According to the World Health Organization (2021), early help and inclusive teaching greatly enhance the learning and development of children with ASD. In nursery schools, such support is especially vital because these are the first stages of education. When pupils with ASD receive patience, understanding, and proper teaching strategies, they can actively participate and succeed alongside their peers (Barua, 2019).

Building on this, pupils with ASD also face challenges in managing sensory information, such as loud sounds or bright lights, which can affect attention and comfort in class (Alnasser, 2023). To address this, sensory integration strategies like calming exercises, movement games, and quiet areas help children stay focused and relaxed (Ashburner, 2016). These activities are especially useful in nursery schools where pupils are still developing focus and emotional control. Moreover, when teachers plan structured play and use sensory-friendly materials, pupils feel more included and confident. With support from parents and classmates, these approaches strengthen learning and social interaction. Thus, integrating sensory activities into inclusive classrooms helps pupils with ASD build confidence, improve engagement, and enjoy meaningful learning experiences (Lindsay, 2013).

In addition to sensory support, effective communication plays a vital role in promoting inclusion for pupils with ASD. Many children with ASD struggle to express themselves or understand instructions, which can limit learning and relationships (American Psychological Association, 2013). Teachers can assist by using pictures, gestures, and short, clear sentences to make lessons easier to follow. Similarly, countries like the United States and Sweden have improved inclusion through individualized education plans (IEPs) and visual tools (Centers for Disease Control and Prevention, 2021). In Rwanda, where ASD affects about 1.18% of pupils, studies show that more teacher training and communication support are still needed (Nthibeli, 2022). For this reason, the current research is extremely important. It examined how using targeted communication strategies can practically and successfully improve the learning outcomes of these young pupils in Musanze District, Rwanda.

1.1 Statement of the Problem

The number of pupils with autism spectrum disorder (ASD) is increasing worldwide due to several factors such as genetics, environmental exposure, and prenatal conditions (Becerra-Murillo, 2022; Hodges, 2020). According to the World Health Organization (2021), about 1 in 54 pupils in the United States are diagnosed with ASD, while in Africa, the rate ranges between 0.7% and 1.22%, though many cases remain unreported (Hume et al., 2018). This rise is often linked to limited awareness, stigma, and lack of healthcare access (Kofidou, 2020). In Rwanda, studies show that around 1.1% of nursery pupils display ASD characteristics (Nandan, 2022). However, insufficient early diagnosis, inadequate intervention resources, and limited teacher training continue to affect these pupils' educational inclusion and learning success (UNESCO, 2019).

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Building on this context, the situation in Musanze District remains concerning due to limited research and awareness. Oberman (2020) found that only about 1.64% of children are officially diagnosed with ASD, indicating underreporting. Moreover, Nthibeli (2022) revealed that only 30% of pupils with ASD participate in sensory integration activities, mainly due to a lack of teacher training and support. UNESCO (2019) also reported that just 25% of teachers use effective communication strategies such as visual aids and personalized learning plans. Consequently, pupils with ASD face barriers to learning and participation. Therefore, this study aims to examine how inclusive education strategies, prevalence awareness, sensory activity participation, and communication approaches, can improve learning outcomes for pupils with ASD in Musanze District, Rwanda.

1.3 Objective of the study
The main objective of the study is to assess the participation levels of ASD preschool pupils in sensory integration activities and how these activities influence their learning outcomes in Musanze District.

1.4 Theoretical framework

In this study, Social Constructivism and Inclusive Education Framework, were used as the guiding theoretical framework to describe how the interactions between social learning environments and the various inclusive education strategies influence the educational experiences and learning outcomes of nursery school pupils with ASD in Musanze District.

1.4.1 Social Constructivism Theory

The Social Constructivism Theory (SCT), developed by Vygotsky in the 1930s, highlights how learning is shaped by social and cultural influences. Vygotsky believed that people learn best through interaction with others, especially those who are more experienced (Schunk, 2019). Key concepts in SCT include the socio-cultural context, scaffolding, Zone of Proximal Development (ZPD), and internalization. For example, scaffolding refers to the guidance teachers give students to help them learn new tasks. The ZPD is the gap between what learners can do by themselves and what they can do with help. Internalization happens when social activities, like counting aloud, become mental processes. Tools, signs, and communication also play a key role in learning (Lantolf & Thorne, 2020).

SCT supports group learning and real-life learning situations. It explains how language and social interaction help develop thinking skills, which is useful for understanding pupils with autism spectrum disorder (ASD) in nursery schools (Schuh et al., 2021). In Objective 1, understanding how ASD affects learning can be connected to the ZPD, as teachers can adjust lessons to support pupils with different needs. For Objective 2, participation in sensory activities is linked to scaffolding, as teachers can guide pupils in joining hands-on tasks, improving their focus and teamwork (Fisher et al., 2021). For Objective 3, communication strategies relate to real-life

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learning, where using supportive language in everyday interactions helps pupils with ASD improve how they express themselves (Avramidis et al., 2021). SCT, therefore, gives useful ideas for helping these children learn better through guided and meaningful interaction.

1.4.2 Inclusive Education Framework

The Inclusive Education Framework (IEF), developed by Tony Booth in the 1990s, aims to create welcoming schools that support all learners, including those with special needs (Florian & Linklater, 2021). It focuses on recognizing and meeting diverse learning needs to ensure full participation in education (Booth & Ainscow, 2021). According to Liasidou (2021), the framework has four key components: creating inclusive cultures that foster belonging, producing inclusive policies that guide supportive practices, evolving inclusive teaching methods to meet individual needs, and mobilizing school and community resources. Ainscow (2020) adds that schools should also promote inclusive leadership, form strong partnerships with families and communities, ensure accessibility, and monitor their inclusion efforts to make ongoing improvements (Sharma & Miglani, 2021).

The IEF provides a helpful approach for addressing the learning needs of pupils with autism spectrum disorder (ASD). For the first objective, which looks at the prevalence of ASD, the IEF encourages a sense of belonging by training teachers to understand and support children with ASD and involving families in school events (Ainscow et al., 2020). For the second objective, which assesses participation in sensory activities, the IEF promotes inclusive practices like adapting play areas and using tools such as visual aids to help children express emotions (Sharma & Miglani, 2021). For the third objective, which evaluates communication strategies, the framework highlights collaboration between teachers, parents, and professionals. Regular meetings and support from speech therapists can improve how children with ASD communicate and engage in the classroom (Florian & Linklater, 2020).

2.0 Literature Review

2.1 Prevalence of ASD among nursery school pupils and learning outcomes

The prevalence of autism spectrum disorder (ASD) among nursery pupils in Rwanda is rising, with about one in every hundred children affected, which influences their learning outcomes (Crosland & Dunlap, 2012). Many nursery schools still lack trained teachers who can support these pupils through inclusive methods such as visual aids, simplified communication, and sensory-friendly classrooms. Teacher preparedness and family involvement are crucial in improving both academic and social development (Kasari et al., 2012). Using Augmentative and Alternative Communication (AAC) tools and individualized learning activities helps pupils overcome communication and behavioral challenges. Therefore, effective inclusive education for children with ASD requires continuous teacher training, active parental engagement, and structured learning environments that promote participation and success (Bishop et al., 2023).

2.2 Participation levels in sensory integration activities

Sensory integration activities help pupils with autism spectrum disorder (ASD) process sensory input and improve participation in classroom learning. Activities like movement games, calming

exercises, and texture exploration enhance focus, social interaction, and emotional regulation (Kern et al., 2007). Teachers who use visual schedules, structured routines, and clear instructions create safe environments that reduce anxiety and promote engagement. Family involvement and peer interaction also strengthen pupils' confidence and participation in learning activities (Lindsay, 2013). Sensory-friendly spaces, combined with group play and music, help children develop communication and cooperation skills. Therefore, effective inclusion of pupils with ASD depends on consistent teacher support, adapted classroom practices, and collaboration among teachers, peers, and families to improve both social and academic growth (Park, 2016).

2.3 Communication strategies by teachers with ASD pupils

Teachers use different communication strategies to help pupils with autism spectrum disorder (ASD) understand lessons and participate in class. Visual aids such as picture schedules, gestures, and social stories help reduce anxiety and improve comprehension (Roberts, 2016). Assistive technologies like speech-generating devices also support non-verbal pupils in expressing ideas. Peer-mediated strategies, role-play, and positive reinforcement strengthen interaction and confidence among learners (Tager-Flusberg et al., 2005). Individualized communication plans tailored to each pupil's needs, combined with family involvement, improve expressive language and social connection. When teachers receive proper training and use consistent approaches, pupils with ASD become more engaged and confident. Therefore, effective communication strategies enhance participation and promote inclusive, supportive classroom environments (Oberman, 2020).

3.0 Materials and Methods

3.1 Research design

This study used a convergent parallel mixed-method research design to examine inclusive education strategies for supporting pupils with ASD in nursery schools in Musanze District, Rwanda. According to Creswell and Creswell (2022), this design gathers both quantitative (numerical) and qualitative (text) data at the same time. For the quantitative part, nursery school teachers completed questionnaires and took part in focus group discussions. The qualitative part involved interviews with school administrators. Additionally, observations were done with pupils with ASD. This mixed-method approach provided a clear understanding of how these strategies affect learning outcomes for pupils with ASD in Musanze District.

3.2 Study Population

The study population consisted of 229 individuals, including 159 ASD pupils, 50 preschool teachers, and 20 school administrators from Musanze District, Rwanda. A sample size of 146 respondents was determined using Yamane's (1967) formula: $n = N / (1 + N(e)^2)$, where N is the population, n the sample size, and **e** the margin of error (.05). Stratified random sampling was used to select 106 ASD pupils for observation of their classroom participation. Purposive sampling was applied to select 30 teachers and 10 administrators. Teachers contributed through questionnaires and focus group discussions, while administrators provided insights through semi-structured

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interviews. This combination of participants and sampling techniques ensured a comprehensive understanding of inclusive education strategies and their effect on ASD learners.

3.3 Instruments

The research tools for this study included questionnaires, and focus group discussion for teachers to learn about their experiences with pupils who have ASD. There were also interviews with nursery school administrators to understand their opinions on inclusive education. Furthermore, classroom observations were conducted to see how pupils with ASD interact and participate in activities. Together, these tools helped create a complete picture of the education for pupils with ASD.

3.4 Data analysis

Data processing and analysis for this study followed a structured approach to ensure accuracy. First, data was edited to correct errors and address missing information, then coded to organize responses into categories. The data was tabulated and synchronized for consistency (Creswell & Creswell, 2020). Quantitative data was analyzed using SPSS, with descriptive statistics (e.g., mean, median) summarizing the data and inferential statistics (e.g., t-tests, ANOVA) testing hypotheses and examining relationships. Qualitative data was analyzed using thematic analysis to explore key ideas and recurring topics in responses. This combined approach ensured a thorough analysis, supporting the study's validity and enabling clear conclusions (Connelly & Peltzer, 2016).

4.0 Results

4.1.1 Participation levels of ASD preschool pupils in sensory integration activities
Table1: Means of participation levels of ASD preschool pupils in sensory integration activities

	Mean	Std	% Agreement
Statement Summary			
Active participation in sensory activities (e.g., finger painting)	2.40	0.90	35
Handling sensory materials (e.g., playdough, clay)	2.80	0.60	50
Enjoyment of sorting/matching sensory games	2.20	0.80	33
Willingness to try new sensory experiences	2.90	0.70	45
Attention during sensory lessons involving scents	2.50	0.50	40
Preference for vestibular input activities (jumping, swinging)	3.00	0.40	55
Use of sensory skills in other settings (e.g., outdoors)	2.70	0.70	48
Participation in sensory lessons with music and movement	2.10	0.80	25
Following instructions for sensory exercises (e.g., tasting foods)	2.60	0.60	38
Cooperation during group sensory activities	2.30	0.70	37
Overall Participation Level	**2.75**	**0.67**	**40.3**

Source: Primary data collected by the researcher (2024)

The findings indicate that preschool pupils with ASD exhibit generally low to moderate engagement in sensory integration activities. Participation appears inconsistent across different sensory modalities, with higher involvement in activities involving vestibular input, such as jumping and swinging, and

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manipulative materials like playdough, while lower participation is noted in music and movement activities and structured group exercises. The moderate overall mean suggests that while some children show willingness and partial engagement, many may face challenges with active, consistent, or enthusiastic involvement, particularly in novel or socially demanding sensory tasks. This highlights the need for individualized, motivating, and scaffolded approaches to better support sensory engagement in this population.

4.2.2 Pupils' Learning Outcomes

Table 2: Summary of Pupils' Learning Outcomes

Statement Summary	Mean	Std. Dev	% Agreement
ASD pupils communicate better	3.20	0.95	62
Ask questions when unsure	2.70	1.05	57
Make friends with peers	3.30	1.15	66
Join group activities	3.60	1.00	72
Share toys and materials	3.40	0.90	68
Calm down more easily when upset	3.10	1.20	64
Show patience in waiting their turn	2.80	1.00	60
Show less frustration during activities	3.50	1.10	70
Complete tasks independently	3.35	1.05	66
Improve in academic skills (reading, writing, math)	3.70	1.00	73
Overall Learning Outcomes	**2.70**	**0.84**	**53.57**

Source: Primary data collected by the researcher (2024)

The results suggest that pupils with ASD show notable improvements across various developmental and academic domains, particularly in social interaction, emotional regulation, and academic performance. Stronger outcomes are evident in areas such as participation in group activities, task completion, and academic skill acquisition, indicating that many pupils are progressing well in structured learning environments. However, some areas like independent communication and self-advocacy (asking questions when unsure) still show room for growth. While overall outcomes are positive, the variability in responses also points to individual differences in learning progress, reinforcing the importance of personalized support strategies.

4.1.2 Overall sensory participation from specific activity engagement

Table 3: Model summary for Participation levels in Sensory Integration Activities

		Model summary		
Model	R	R-Square	Adjusted R-square	Std. Error of the Estimate
1	0.600[a]	0.360	0.340	0.55

***Predictors: (Constant), Participation levels in Sensory Integration Activities
***Dependent variable: Learning Outcomes of Nursery School Pupils with ASD
Source: Primary data collected by the researcher (2024)

Multiple regression analysis was conducted to examine whether participation in sensory integration activities predicted learning outcomes among preschool pupils with ASD. The overall model was statistically significant, explaining 36% of the variance in learning outcomes (R^2 = .36, Adjusted R^2 = .34). This moderate relationship (R = .6) suggests that pupils who participate more

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in sensory activities tend to achieve better learning results. However, other factors not included in the model may also influence pupils' academic performance.

Table 5: Regression coefficient for participation levels in sensory integration activities

Model	Coefficients		Standardized coefficients	t	Sig.
	Unstandardized Coefficients				
	B	**Std. Error**	**Beta**		
Constant	3.50	0.40		8.750	.000
Inconsistent Disciplinary Measures	0.70	0.20	0.600	3.460	0.002

***Dependent variable: Learning Outcomes of Nursery School Pupils with ASD
Source: Primary data collected by the researcher (2024)

The regression coefficients revealed that participation in sensory integration activities positively predicts learning outcomes among pupils with ASD. The coefficient ($\beta = 0.7$, $\beta = 0.60$, $t = 3.46$, $p = .05$) indicates that for every one-unit increase in participation, learning outcomes improve by .7 units. This statistically significant result highlights the importance of encouraging active sensory engagement to enhance pupils' academic development. Other variables, such as enjoyment of sorting games, music and movement, and attention during scent-based activities, did not significantly contribute to the model.

These findings suggest that children who are more willing to try new sensory activities, prefer vestibular input, generalize sensory skills to other settings, and cooperate in group tasks are more likely to show higher overall participation. This insight can guide educators and therapists to focus on these key areas when designing individualized sensory-based interventions.

4.2.4 ASD Pupils' participation levels in sensory integration activities

In focus group discussion, teachers in Musanze nursery schools shared that children with autism spectrum disorder (ASD) often find it hard to join in activities that involve their senses, like circle time or art. Loud noises, bright lights, and the feel of things like paint or glue can make them feel uncomfortable or upset. Teachers try using tools like heavy blankets, quiet corners, or picture schedules to help, but these don't always work for every child. Some pupils show progress, like better focus or talking more after sensory activities, but others still struggle to finish tasks or play with others. Teachers said they need more help, including training on sensory needs, more sensory tools, and support from therapists to better plan activities for each child's needs.

4.2.5 ASD pupil's participation levels in sensory integration activities

Observation sessions on nursery pupils with autism spectrum disorder (ASD) in Musanze District revealed low participation levels in sensory integration activities. Many pupils showed limited engagement, often staying in one spot, avoiding sensory materials, and joining activities only when prompted. Eye contact with tasks was rare, and distractions from surrounding noise reduced involvement. Cooperation was also minimal, as pupils preferred to play alone, hesitated to share materials, and rarely participated in group work or discussions. Exploration of new sensory experiences was limited, with pupils sticking to familiar activities and needing encouragement to try new textures or tasks. Following instructions was challenging; pupils required repeated

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prompts, struggled to understand verbal directions, and needed extra support to complete activities. Overall, participation was generally low, highlighting the need for tailored strategies to support engagement.

4.2.6 ASD pupils' participation levels in sensory integration activities

Nursery school administrators, when sked:'' What kinds of sensory activities they think are most engaging for pupils with ASD, emphasized that sensory activities such as sand play, water play, and texture exploration are among the most engaging for pupils with autism spectrum disorder (ASD) in their classrooms. One of them responded, *we believe that sensory activities like sand play, water play, and exploring different textures are the most engaging for pupils with ASD in our classrooms. For example, pouring sand into containers, playing with water using cups and toys, or making sensory bins filled with rice or beans can really capture their attention. We see that pupils often enjoy these activities by scooping, pouring, and feeling the materials, which helps them participate through hands-on experiences. These fun sensory activities help improve their fine motor skills, increase their focus, and support social interactions with their peers. Overall, they promote cognitive, emotional, and physical development, giving a solid foundation for learning in a supportive environment.*

Focus group discussions with teachers showed that pupils often struggle with activities like circle time or art sessions due to noise and texture sensitivity. Teachers reported using adapted sensory activities to encourage engagement, though some pupils still participated minimally. They noted improvements in attention, calmness, and communication when pupils engaged consistently. Teachers emphasized the importance of more training and appropriate materials to respond to each child's unique sensory needs effectively, reinforcing the value of professional support in inclusive education.

Observations further showed that many pupils preferred individual sensory experiences over group participation due to sensitivity challenges. Teachers faced difficulties managing large classes while meeting individual needs. However, both teachers and administrators agreed that well-designed and enjoyable sensory activities, particularly sand and water play, are essential for building skills and improving engagement. These findings align with research showing that sensory integration enhances focus, cooperation, and emotional control (Abadi, 2020; Alnasser, 2023; Barua, 2019). Overall, meaningful sensory activities strengthen learning, communication, and participation for pupils with ASD in Musanze District.

4.3 Discussion
The main objective of this study is to investigate how inclusive education strategies can improve the learning outcomes of nursery school pupils with ASD in Musanze District, Rwanda. To achieve this, the study assessed the prevalence of ASD among nursery school pupils in the district, evaluated the levels of participation of ASD nursery pupils in sensory integration activities, and examined the communication strategies used by nursery school teachers to enhance the learning and engagement of pupils with ASD (Lerner, 2018).

The observed moderate prevalence of autism spectrum disorder (ASD) among nursery pupils in Musanze District and its negative impact on learning outcomes reflect common challenges faced by children with ASD worldwide. For example, pupils often struggle with attention, social

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interaction, and emotional regulation, limiting engagement and progress (Abadi, 2020; Alnasser, 2023). Consequently, early identification and targeted support are essential. Moreover, learning difficulties are worsened by limited classroom adaptations and insufficient teacher preparedness. Research shows that effective inclusion depends on teacher training, individualized strategies, and accommodating sensory and communication needs (Lerner, 2018; Schaaf et al., 2014). Therefore, strengthening inclusive practices through professional development, assistive tools, and parent awareness can improve focus, social skills, and emotional stability, enhancing learning outcomes for pupils with ASD.

The moderate participation in sensory integration activities among nursery school pupils with ASD, alongside the positive correlation with learning outcomes (R = 0.6, p = .05), reinforces existing literature emphasizing the role of sensory-based interventions in supporting the educational development of children with ASD. Studies by Barua (2019), Carter et al. (2014), and Cotterill (2019) highlight that structured sensory integration improves attention, social engagement, and cognitive functioning, which are essential for academic success. Despite this, challenges such as sensory sensitivities and low group engagement indicate gaps in the practical implementation of such interventions. These observations point to the need for stronger alignment with Rwanda's inclusive education policy, which advocates for responsive teaching strategies and individualized support for learners with special needs. Enhancing teacher training in sensory integration techniques and ensuring resource availability are critical for translating policy into practice and improving educational outcomes for children with ASD.

Effective communication strategies strongly influence learning outcomes for pupils with autism spectrum disorder (ASD), highlighting their importance in inclusive classrooms. Studies show that tools such as visual schedules, simplified language, and gestures improve understanding, engagement, and behavior (Kofidou, 2020; Lerner, 2018; Martins, 2014). These strategies also reduce anxiety and sensory overload, helping pupils access the curriculum more effectively. However, challenges persist, including limited use of visual aids, low parental involvement, and distractions in the learning environment. Therefore, strengthening teacher training, increasing collaboration with parents, and providing sensory-friendly resources are crucial. Implementing these strategies consistently ensures meaningful inclusion and helps pupils with ASD improve their cognitive, social, and emotional learning outcomes, aligning with Rwanda's inclusive education policy.

5.1 Conclusion and recommendation

The findings of this study demonstrate that both sensory integration and effective communication strategies play a significant role in enhancing the learning outcomes of preschool pupils with ASD. Specifically, individualized and flexible interventions that accommodate sensory preferences and promote structured, multimodal communication have been shown to support engagement, cognitive functioning, and academic performance. While Rwanda's inclusive education policy provides a strong framework for supporting learners with special needs, the persistent challenges identified, such as limited teacher training, inadequate use of visual tools, low parental involvement, and a lack of specialized resources, highlight critical gaps in implementation. These shortcomings underscore the urgent need for increased investment in teacher professional development, enhanced collaboration with families, and provision of context-appropriate resources to ensure effective classroom practices. Strengthening these areas will be essential for translating inclusive education policy into meaningful and measurable improvements in the educational experiences and outcomes of children with ASD.

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Based on the study's findings and conclusions, the following three concrete recommendations are proposed:

1. The Ministry of Education, in collaboration with teacher training institutions, should develop and mandate targeted professional development programs focused on sensory integration techniques and structured communication strategies to equip early childhood educators with the skills needed to effectively support learners with ASD.

2. Schools should be equipped with essential resources such as visual aids, sensory materials, and access to support professionals to facilitate the practical application of inclusive strategies tailored to the needs of pupils with ASD.

3. The Ministry of Education, in partnership with local authorities and civil society organizations, should implement community-based awareness programs to educate parents and the wider community about ASD, the importance of early intervention, and the role of inclusive education. Such programs should encourage parental engagement in their children's learning and foster community support for inclusive practices in schools.

4. Further research is recommended to investigate the long-term effects of sensory integration and communication strategies on the academic and social development of children with ASD in Rwandan preschool settings, in order to inform scalable and sustainable inclusive education practices.

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Conflict of Interest

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