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Social skills intervention strategies and their effect on classroom participation of learners with autism spectrum disorder

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ABSTRACT

This study investigated the effect of social skills intervention strategies on the classroom participation of learners with autism spectrum disorder (ASD) in selected inclusive education programs in the five participating public schools during the School Year 2025–2026. Specifically, it determined the level of classroom participation of learners with ASD before and after the implementation of social skills intervention strategies and assessed the effectiveness of these interventions in improving classroom participation. The study employed a quasi-experimental pretest–posttest research design involving 100 SPED teachers from selected public elementary and secondary schools. Data were collected using an adapted four-point Likert-type structured rating scale that measured classroom participation and the extent of implementation of social skills intervention strategies, namely peer-mediated support, modeling, guided interaction, and reinforcement-based approaches. Weighted means, standard deviations, and a paired-samples t-test were utilized to analyze the data at a 0.05 level of significance. The findings revealed that learners with ASD demonstrated a very low level of classroom participation prior to the intervention ($M = 1.68$) and a very high level after the intervention ($M = 3.26$). Peer-mediated support, modeling, and guided interaction were rated as implemented, while reinforcement-based approaches were rated as highly implemented. The overall implementation of social skills intervention strategies was interpreted as implemented ($M = 3.24$). Furthermore, a significant difference was found between the pretest and posttest scores ($t = 30.983$, $p < .001$). The study found a significant within-group improvement in the classroom participation of learners with ASD. Continuous implementation of evidence-based interventions and professional development programs is recommended to further strengthen inclusive educational practices and learner engagement.

Keywords: Special Education; autism spectrum disorder; social skills intervention strategies; classroom participation; quasi-experimental pretest–posttest; Davao del Norte, Philippines.

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INTRODUCTION

Autism Spectrum Disorder (ASD) is characterized by persistent deficits in social communication and social interaction across multiple contexts, which directly affect learners' engagement in classroom activities (American Psychiatric Association [APA], 2022). In educational settings, these challenges frequently manifest as difficulty initiating interactions, sustaining peer engagement, participating in group tasks, and responding appropriately during instruction. While inclusive education policies increasingly promote placement of learners with ASD in mainstream or supported classrooms, participation does not automatically follow placement.

Recent international research emphasizes that classroom participation is strongly associated with social competence, peer acceptance, and academic engagement among students with ASD (Watkins et al., 2020). However, students on the spectrum often demonstrate lower rates of spontaneous social interaction and reduced involvement in cooperative learning contexts compared to their typically developing peers (Locke et al., 2021). Without structured intervention, these participation gaps may persist and affect long-term educational outcomes.

Over the past five years, empirical studies have focused on structured social skills intervention strategies such as Social Skills Training (SST), peer-mediated interventions (PMI), video-based modeling, and technology-assisted programs. A meta-analysis by Soares et al. (2021) found that structured SST programs produce moderate improvements in social competence among children and adolescents with ASD. Similarly, a 2024 synthesis of video-based interventions concluded that video modeling and related strategies demonstrate positive effects on social communication skills, particularly when implemented consistently in school settings (Hong et al., 2024). Peer-mediated interventions have also shown promising results in improving peer engagement and cooperative behaviors in inclusive classrooms (Watkins et al., 2020; Zhang & Wheeler, 2023).

Despite these advances, the translation of improved social skills into actual classroom participation behaviors remains inconsistent. Many interventions measure social competence broadly, yet fewer studies directly quantify participation indicators such as recitation, group-task engagement, turn-taking during discussions, or sustained collaborative involvement (Locke et al., 2021). This gap highlights the need for focused research examining how social skills intervention strategies influence observable classroom participation outcomes.

Inclusive education frameworks worldwide emphasize active engagement and meaningful participation as core indicators of educational quality (UNESCO, 2020). Participation is not merely physical presence but involves behavioral, emotional, and social engagement within classroom learning activities. For learners with ASD, social communication deficits often restrict their ability to access peer learning opportunities and interactive instructional formats.

Recent reviews underscore that although social skills interventions are generally effective, variability in outcomes is influenced by contextual factors such as teacher implementation, peer involvement, classroom structure, and generalization opportunities (Zhang & Wheeler, 2023; Hong et al., 2024). Furthermore, Locke et al. (2021) argue that interventions must be embedded within authentic school routines to produce sustainable participation gains.

Therefore, this study is necessary to provide localized, data-driven evidence on how specific social skills intervention strategies affect measurable classroom participation indicators among learners with ASD.

Meta-analytic evidence supports the effectiveness of structured Social Skills Training (SST) programs. Soares et al. (2021), in a randomized controlled trial meta-analysis, reported moderate improvements in social communication skills among children and adolescents with

ASD receiving SST interventions. However, the authors noted variability in maintenance and generalization outcomes.

Peer-mediated interventions have been widely studied in inclusive school settings. Watkins et al. (2020) found that structured peer support models significantly improved social engagement and reciprocal interaction behaviors. More recently, Zhang and Wheeler (2023) concluded that peer-mediated strategies produce consistent improvements in social interaction frequency, particularly when peers receive structured training and monitoring.

Video-based interventions, including video modeling and video self-modeling, have also gained empirical support. Hong et al. (2024) synthesized multiple experimental studies and found that video-based strategies demonstrate strong effects in improving social initiations and responses among learners with ASD, especially in elementary-level classrooms.

However, Locke et al. (2021) emphasized that improvements in discrete social skills do not always equate to sustained increases in classroom participation unless interventions are integrated into daily instructional routines.

Within the Philippine setting, emerging research highlights the importance of structured communication supports and engagement strategies for learners with ASD. Dizon et al. (2022) found that visual supports improved communication responsiveness and classroom engagement among Filipino elementary learners with ASD. While promising, the study primarily measured engagement perception rather than structured participation frequency.

Republic Act No. 11650 (2022) institutionalizes inclusive education and mandates the provision of teacher training and structured supports for learners with disabilities. Despite this policy mandate, empirical research directly measuring the effect of structured social skills intervention strategies on classroom participation outcomes remains scarce in Philippine school contexts. Thus, a localized intervention study focusing on participation indicators rather than general social competence remains highly relevant.

Statement of the problem

This study aimed to determine the effect of social skills intervention strategies on the classroom participation of learners with autism spectrum disorder (ASD) in selected inclusive education programs at public schools under the Division of Cabadbaran City during the School Year 2025–2026.

Specifically, the study sought to answer the following questions:

1. What was the level of classroom participation among learners with autism spectrum disorder before the implementation of social skills intervention strategies?
2. What was the level of classroom participation among learners with autism spectrum disorder after the implementation of social skills intervention strategies?
3. What was the level of implementation of social skills intervention strategies for learners with autism spectrum disorder in terms of peer-mediated support, modeling, guided interaction, and reinforcement-based approaches?
4. Was there a significant difference between the levels of classroom participation among learners with autism spectrum disorder before and after the implementation of social skills intervention strategies?
5. Which social skills intervention strategies, namely peer-mediated support, modeling, guided interaction, and reinforcement-based approaches, significantly influenced classroom participation among learners with autism spectrum disorder?

6. Based on the findings of the study, what classroom-based intervention plan could be proposed to enhance classroom participation among learners with autism spectrum disorder?

METHODOLOGY

Research design

The study employed a one-group quasi-experimental pretest–posttest design to describe changes in classroom participation following the implementation of social skills intervention strategies. Creswell and Creswell (2018) explain that quantitative research can use structured measurements to examine numerical patterns and test hypotheses. Without random assignment or a comparison group, any observed improvement should be interpreted as a within-group change rather than definitive evidence that the interventions alone caused the change.

The quasi-experimental pretest–posttest design was deemed appropriate because the study sought to determine the effect of social skills intervention strategies on the classroom participation of learners with Autism Spectrum Disorder (ASD). The design involved implementing structured social skills intervention strategies and measuring the learners' level of classroom participation before and after the intervention. Through this approach, the researcher was able to assess whether significant changes occurred following the implementation of the intervention strategies.

Specifically, the study employed a one-group pretest–posttest design, wherein the classroom participation of learners with ASD was measured prior to the implementation of the social skills intervention strategies and was measured again after the intervention had been completed. The pretest served as the baseline measure of classroom participation, while the posttest assessed the level of participation after exposure to the intervention strategies. The difference between the pretest and posttest scores provided evidence regarding the effectiveness of the intervention in improving classroom participation.

The use of this research design enabled the researcher to evaluate changes in classroom participation within the natural educational setting while maintaining the regular classroom structure and instructional processes. As such, the design provided a practical and methodologically appropriate framework for examining the effectiveness of social skills intervention strategies in enhancing the classroom participation of learners with Autism Spectrum Disorder in inclusive education programs.

Respondents and locale of the study

The primary respondents of this study consisted of one hundred (100) Special Education (SPED) teachers assigned to inclusive education programs and SPED Centers in selected public schools within the Division of Davao del Norte during the School Year 2025–2026. These teachers were directly involved in planning, implementing, monitoring, and evaluating educational interventions and support services for learners with Autism Spectrum Disorder (ASD) and other special educational needs. Given their professional preparation, training, and direct experience in handling learners with ASD, they were considered the most appropriate respondents for assessing the implementation and effectiveness of social skills intervention strategies in inclusive educational settings.

The respondents were drawn from five participating schools: Nasilaban Integrated School (18 SPED teachers), Mesolong Integrated School (26 SPED teachers), Sto. Niño Central Elementary School (16 SPED teachers), Maniki Central Elementary School SPED Center (15 SPED teachers), and Sto. Tomas Central Elementary School SPED Center (25

SPED teachers), yielding a total of 100 respondents. These schools were selected because they actively implement inclusive education programs and provide educational services to learners with autism spectrum disorder and other learners with special educational needs.

The study used complete enumeration, including all 100 eligible SPED teachers from the five participating schools. The inclusion criteria were current assignment in special or inclusive education, direct experience supporting learners with ASD, at least one academic year of relevant teaching, and informed consent. The number of distinct learners with ASD observed and the procedure for matching pretest and posttest observations require verification against the original records before final submission.

The inclusion of all eligible SPED teachers strengthened the reliability of the data and provided comprehensive insights into the implementation of peer-mediated support, modeling, guided interaction, and reinforcement-based approaches. Their responses served as the primary source of information in determining the effectiveness of social skills intervention strategies in enhancing the classroom participation of learners with Autism Spectrum Disorder.

Research instrument

The research instrument used in this study was an adapted structured rating scale questionnaire with minor modifications designed to measure the classroom participation of learners with Autism Spectrum Disorder (ASD) and the extent of implementation of social skills intervention strategies in inclusive classroom settings. The instrument was adapted from established and validated instruments and frameworks on school engagement, social skills development, classroom participation, and evidence-based intervention practices for learners with ASD. Specifically, the classroom participation indicators were adapted from the works of Fredricks, Blumenfeld, and Paris (2004), Gresham and Elliott (2008), Wong et al. (2015), and Odom et al. (2021), while the social skills intervention strategy indicators were adapted from the studies of Rodríguez-Medina et al. (2016), Mahoney (2023), Keuffer and de Souza (2023), Fowler (n.d.), and Nanda (2020). The original indicators were modified to align with the objectives of the present study and the context of inclusive education programs involving learners with Autism Spectrum Disorder.

The adapted structured rating-scale questionnaire used four response categories. Part I assessed classroom participation at pre-intervention and post-intervention periods: 4 – Strongly Agree, 3 – Agree, 2 – Disagree, and 1 – Strongly Disagree. Part II assessed the implementation of interventions: 4 – Highly Implemented, 3 – Implemented, 2 – Slightly Implemented, and 1 – Not Implemented. The researcher must confirm the validity evidence for the adapted indicators and retain the same scoring rules across pretest and posttest observations.

The questionnaire consisted of two major parts. Part I measured the classroom participation of learners with Autism Spectrum Disorder and was administered both before and after the implementation of the social skills intervention strategies. This section contained fifteen indicators that assessed learners' participation in peer interactions, group activities, classroom discussions, task engagement, independent task completion, communication, confidence, responsiveness, and transitions between instructional activities. The pretest and posttest administration enabled the researcher to determine changes in classroom participation following the implementation of the intervention strategies.

Part II assessed implementation across four intervention domains: peer-mediated support, modeling, guided interaction, and reinforcement-based approaches. Teachers selected one response per indicator using 4 – Highly Implemented, 3 – Implemented, 2 – Slightly

Implemented, or 1 – Not Implemented. Domain-level weighted means and standard deviations were used to summarize the responses.

The adapted and modified instrument provided a systematic means of gathering data on both classroom participation and intervention implementation. Its structured format ensured consistency in data collection and supported the descriptive and inferential statistical analyses necessary to determine the effectiveness of social skills intervention strategies in improving the classroom participation of learners with autism spectrum disorder.

Data analyses procedure

The study followed pre-data-gathering, data-gathering, and post-data-gathering phases. Each phase concerned teacher-completed ratings of classroom participation among learners with ASD and social skills intervention implementation, not metacognitive reading or reading comprehension.

Before data collection, the researcher sought the necessary approvals from the participating schools and division authorities, secured informed consent from teachers and appropriate permission for learner observations, and prepared the adapted classroom participation and intervention strategy rating scales.

During data collection, participating SPED teachers completed the classroom participation rating scale before the intervention period. The four social skills strategies were implemented within scheduled classroom routines, and the participation scale was administered again after the intervention period. Teachers also rated the extent of implementation of peer-mediated support, modeling, guided interaction, and reinforcement-based approaches. The intervention duration and number of distinct observed learners must be confirmed from the study records.

After data collection, the researcher checked the classroom participation and intervention ratings for completeness and coded the paired observations without using learner names in the analytical dataset. Responses were encoded and verified before analysis. Only matched pretest–posttest records were eligible for the paired-samples t-test.

Weighted means and standard deviations summarized classroom participation at both measurement periods and the implementation of each social skills strategy. A paired-samples t-test was used to examine pretest–posttest differences. Multiple regression analysis was specified for examining the contribution of the four strategy domains to classroom participation, but its results must be supplied from the original respondent-level dataset.

RESULTS AND DISCUSSION

This chapter presents and interprets the data gathered from 100 Special Education teachers assigned to inclusive education programs and SPED Centers in five participating public schools during the School Year 2025 to 2026: Nasilaban Integrated School (18), Mesolong Integrated School (26), Sto. Niño Central Elementary School (16), Maniki Central Elementary School SPED Center (15), and Sto. Tomas Central Elementary School SPED Center (25). The study used a one-group quasi-experimental pretest-posttest design with complete enumeration of all eligible teachers. Data were collected through an adapted four-point structured rating scale. Part I measured the classroom participation of learners with autism spectrum disorder (ASD) before and after the intervention, and Part II measured the extent of implementation of peer-mediated support, modeling, guided interaction, and reinforcement-based approaches. The data were analyzed using weighted means and standard deviations, and a paired-samples t-test was used to examine pretest-posttest differences at the 0.05 level of significance. The discussion is grounded in the data gathered, and the results are interpreted in

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direct relation to the objectives of the study. Because the design had no random assignment or comparison group, the findings are read as within-group changes rather than as definitive evidence of causation.

Respondent profile

All 100 respondents (100.00%) reported doctorate units as their highest educational attainment, which indicates advanced academic preparation beyond the master's level across the entire group. This agrees with Alassaf (2025), who reported that higher educational qualifications predicted greater knowledge and more positive attitudes toward including learners with autism in mainstream classrooms. It also agrees with Lopez (2024) and Bolado Peña et al. (2025), who linked advanced graduate education, professional qualifications, and continuing development to preparedness for handling learners with ASD. The respondents' academic preparation strengthens the credibility of their ratings. However, academic attainment alone does not guarantee effective implementation, so continuing specialized training in autism, social skills development, and inclusive practice remains necessary.

On training exposure, the largest proportion of respondents attended 5 to 9 trainings (23.00%), followed by those who attended 10 to 14 trainings (19.00%), 4 trainings and below (18.00%), and 15 to 19 trainings (15.00%). Another 9.00% attended 20 to 24 trainings, 9.00% attended 30 trainings and above, and 5.00% attended 25 to 29 trainings. Only 2.00% reported no training at all. Most respondents therefore have moderate to high exposure to relevant professional development. This is consistent with Alhossein et al. (2021), who found that the number of professional development programs attended influenced teachers' knowledge and use of evidence-based practices for students with ASD. It is also consistent with Johnson et al. (2021), who reported improved self-efficacy among teachers who received such training, and with Petersson-Bloom (2023), who emphasized continuous professional development for supporting autistic learners. The 2.00% with no training and the substantial share with few trainings point to a need for more equitable access to ASD-related professional development.

Classroom participation before the intervention

Before the intervention, the classroom participation of learners with ASD obtained an aggregate mean of 1.68 with an aggregate standard deviation of 0.50, interpreted as Very Low. Learners therefore showed minimal participation in classroom activities, social interactions, and academic engagement. The highest weighted means were 1.85 for "The learner initiates interaction with peers during classroom activities" and 1.85 for "The learner follows classroom instructions independently," both interpreted as Low. These behaviors were observed somewhat more often than others but still indicate limited participation. The lowest weighted means were 1.57 for "The learner participates in cooperative group work" and 1.57 for "The learner participates in question-and-answer sessions," both interpreted as Very Low. Collaborative learning and verbal classroom engagement were thus the most challenging areas at baseline.

These results agree with Bottema-Beutel et al. (2021), who documented challenges in social interaction, communication, and participation among learners with ASD, particularly in collaborative and discussion-based learning. They also agree with Kurth et al. (2022), who reported lower classroom participation among students with autism than among their peers, and with McDaniel et al. (2023), who emphasized that these learners often need structured social support and targeted intervention. The very low baseline establishes a clear need for systematic

social skills support. Without it, learners may struggle to engage with teachers and peers, with possible consequences for academic achievement, social development, self-confidence, and inclusion.

Classroom participation after the intervention

After the intervention, classroom participation obtained an aggregate mean of 3.26 with an aggregate standard deviation of 0.81, interpreted as Very High. The highest weighted mean was 3.46 for "The learner seeks clarification when needed," interpreted as Very High, which suggests that learners became more comfortable communicating their needs. "The learner initiates interaction with peers during classroom activities" (3.42) and "The learner responds appropriately when peers' initiate interaction" (3.35) were also rated Very High, indicating notable gains in peer interaction. The lowest weighted means were 3.10 for "The learner takes turns during classroom discussions" and 3.18 for "The learner demonstrates confidence during participation," both within the High category. Turn-taking and confidence are therefore the areas with the most room for continued support.

The post-intervention ratings are consistent with Kasari and Smith (2021), who found that school-based social engagement interventions increased peer interaction, communication, and active participation among students with ASD. They also agree with Meindl et al. (2020), who reported increased engagement in inclusive settings, and with Tsou et al. (2024), who concluded that school-based interventions improved autistic learners' access to classroom activities and meaningful participation. The results suggest that the intervention strategies were associated with improved peer interaction, communication, and task participation.

Implementation of social skills intervention strategies

Peer-mediated support obtained an aggregate mean of 3.19 with an aggregate standard deviation of 0.77, interpreted as Implemented. "Peers reinforce appropriate social behaviors of the learner" had the highest weighted mean (3.37) and "Peers assist the learner during group or classroom activities" followed (3.25), both interpreted as Highly Implemented. "Peers provide prompts to support social interaction" had the lowest weighted mean (3.04), still within the Implemented category. This supports Watkins et al. (2020), Kent et al. (2021), and Zhang and Wheeler (2023), who found that trained peers improve social engagement, interaction, and cooperative participation. The comparatively low rating for peer prompting suggests that schools could strengthen structured peer training and monitoring.

Modeling obtained an aggregate mean of 3.24 with an aggregate standard deviation of 0.80, interpreted as Implemented. "The teacher demonstrates appropriate social behaviors" scored highest (3.35), followed by "Modeling is repeated to reinforce learning of social skills" (3.29) and "Video modeling or demonstration is used to teach social skills" (3.27), all interpreted as Highly Implemented. "The learner observes modeled social interaction before participation" scored lowest (3.11), within the Implemented category. These findings align with Ferguson et al. (2021), Leaf et al. (2022), and O'Handley and Radley (2023), who found that modeling and video modeling support acquisition, generalization, and maintenance of social skills. Teachers appear to demonstrate behaviors consistently, but giving learners more structured observation time before they participate may strengthen this strategy.

Guided interaction obtained an aggregate mean of 3.20 with an aggregate standard deviation of 0.81, interpreted as Implemented. "Social scripts or cues are used during interaction" had the highest weighted mean (3.30) and "The learner is guided step-by-step during social interaction" followed (3.26), both interpreted as Highly Implemented. "The teacher provides prompts to support participation" and "The learner receives immediate

feedback during interaction" each obtained the lowest weighted mean (3.11), still within the Implemented category. This is consistent with Schmidt et al. (2020), Wong et al. (2021), and Bottema-Beutel et al. (2023), who found that scripts, prompting, coaching, and graduated support improve social communication and classroom engagement. The relatively lower prompting and feedback ratings point to the value of teacher training and individualized support plans.

Reinforcement-based approaches obtained an aggregate mean of 3.31 with an aggregate standard deviation of 0.75, interpreted as Highly Implemented, the only domain with this interpretation. "Positive reinforcement is provided for appropriate social behavior" had the highest weighted mean (3.37), followed by "The learner shows improvement due to reinforcement strategies" (3.32) and "Rewards or praise are given after successful interaction" (3.30), all interpreted as Highly Implemented. "Reinforcement increases the learner's participation in activities" and "Desired behaviors are consistently reinforced" each obtained 3.29, the lowest in this domain but still Highly Implemented. This agrees with Carroll et al. (2021), Nevill et al. (2022), and Mancil and Boman (2024), who identified reinforcement as a core evidence-based practice for increasing social participation.

Taken together, the overall implementation of the social skills intervention strategies obtained a grand mean of 3.24 with a grand standard deviation of 0.78, interpreted as Implemented. Reinforcement-based approaches ranked highest (3.31, Highly Implemented), followed by modeling (3.24), guided interaction (3.20), and peer-mediated support (3.19), all interpreted as Implemented. The narrow spread among these means suggests a balanced use of multiple strategies. This is consistent with Fuller and Kaiser (2020), Gates et al. (2021), and Benevides et al. (2023), who found that multi-component programs yield stronger gains in social competence, communication, and participation than single approaches.

Test of difference between pre-intervention and post-intervention participation

The mean classroom participation score increased from 1.68 before the intervention to 3.26 after it, a mean difference of 1.58. The paired-samples t-test yielded $t = 30.983$ with $p = 0.000$ (reported in the abstract as $p < .001$). At the 0.05 level of significance, the null hypothesis of no significant difference was rejected, so the improvement in classroom participation was statistically significant. This result is consistent with Gunning et al. (2021), Spain et al. (2022), and Parsons et al. (2024), who reported that structured social skills and evidence-based school interventions produced meaningful gains in engagement, social competence, and inclusion. Because the study used a one-group design without a comparison group, the result is best interpreted as a significant within-group improvement that was accompanied by the implementation of the intervention strategies, not as proof that the strategies alone caused the change.

Synthesis

Across the 100 teacher-respondents, the findings show a very low baseline of classroom participation (aggregate mean of 1.68, SD of 0.50), a very high post-intervention level (aggregate mean of 3.26, SD of 0.81), and a statistically significant difference (mean difference of 1.58, $t = 30.983$, $p = 0.000$, alpha = 0.05, null hypothesis rejected). Peer-mediated support, modeling, and guided interaction were rated Implemented, and reinforcement-based approaches were rated Highly Implemented, with a grand mean of 3.24 (SD of 0.78). Together these results address the objectives on the baseline and post-intervention levels, on the extent

of strategy implementation, and on the significance of the pretest-posttest difference. They contribute localized evidence on specific participation indicators rather than general social competence, an area the reviewed literature describes as under-examined in Philippine contexts. The one-group design limits causal inference, and the regression analysis specified for the four strategy domains has no reported results here, so no claim is made about which strategy most strongly influences participation. These limits, together with the training needs noted above, lead to the intervention plan and recommendations in the next chapter.

CONCLUSION

Classroom participation was higher following the classroom-based social skills interventions, and the reported paired comparison indicated a statistically significant within-group change. Peer-mediated support, modeling, guided interaction, and reinforcement-based approaches were used in the participating classrooms, with reinforcement-based approaches receiving the highest implementation description. These findings support integrating structured social opportunities, scaffolding, and reinforcement into inclusive classroom routines. However, the one-group design does not isolate causal effects, and the specific predictive contributions of the four strategies cannot be concluded without multiple regression results. The intervention plan therefore emphasizes systematic classroom practice, learner-centered monitoring, and implementation review.

It is recommended that the participating schools pilot and evaluate the Classroom-Based Intervention Plan presented in Chapter 5, using repeated participation ratings and implementation monitoring. The plan should be refined in response to the observed needs of learners with ASD and verified school-level outcomes.

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