

Implementation of Intervention Programs in Inclusive Education and its Impact on Learning Outcomes: Basis for the Development of Inclusive Education Enhancement Model

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Date Submitted:

March 13, 2026

Date Accepted:

June 29, 2026

Date Published:

August 04, 2026

DOI:

10.5281/zenodo.21784437

ABSTRACT

This study assessed the implementation of intervention programs in inclusive education and their impact on the learning outcomes of learners with special educational needs in four Special Education Centers in District IV of the Schools Division of Manila. A quantitative descriptive-correlational design was used, involving 339 purposively selected respondents from a population of 640: four school administrators, 50 Special Needs Education (SNED) teachers, 224 general education or receiving teachers, and 61 parents. Data were gathered through an expert-validated researcher-developed questionnaire using a five-point Likert scale and analyzed through frequency, percentage, weighted mean, ranking, one-way analysis of variance, post hoc comparisons, and Pearson product-

moment correlation. The intervention programs were highly implemented overall (WM = 4.34), led by assistive technology (WM = 4.48), academic intervention (WM = 4.41), and behavioral intervention (WM = 4.38), while parent and family intervention obtained the lowest rating (WM = 4.22). Significant differences among respondent groups were found in six intervention areas, with school administrators generally providing higher assessments. The programs had a highly evident impact on learning outcomes (WM = 4.41), particularly social skills (WM = 4.48), followed by academic achievement (WM = 4.41) and emotional well-being (WM = 4.35). Most intervention components were significantly and positively related to learner outcomes, although assistive technology and occupational therapy were not consistently significant across outcomes. Limited training, resources, financing, large classes, and weak parental involvement were highly encountered challenges (WM = 4.27). Based on the findings, an Enhanced Inclusive Education Intervention Plan through the School Learning Action Cell was developed and rated highly acceptable (WM = 4.27). The study underscores the need for coordinated capacity-building, equitable resources, family engagement, and shared monitoring to sustain holistic inclusive education.

Keywords: *inclusive education, intervention programs, learning outcomes, assistive technology, stakeholder collaboration, School Learning Action Cell*

INTRODUCTION

Inclusive education is grounded in the principle that learners with disabilities and other diverse learning needs should receive equitable access to meaningful participation, appropriate support, and quality learning within regular educational environments. This direction is reinforced by the Convention on the Rights of Persons with Disabilities, Sustainable Development Goal 4, and the global commitment to remove barriers that restrict

participation and achievement. Intervention programs translate these commitments into classroom and school practices by providing individualized instruction, assistive technology, behavioral and social supports, therapy-related services, family engagement, and adapted physical activities (United Nations, 2006; UNESCO, 2020).

In the Philippines, Republic Act No. 11650 and Department of Education Order No. 44, s. 2021 provide a legal and policy foundation for programs and services for learners with disabilities, including Individualized Education Programs, support services, curriculum adaptations, transition preparation, and Inclusive Learning Resource Centers. Despite this framework, implementation remains uneven because schools differ in staffing, access to specialists, teacher preparation, financial resources, assistive technologies, and opportunities for family participation. These conditions can create gaps between policy expectations and the support experienced by learners in actual classrooms.

Evidence suggests that intervention programs can improve academic engagement, communication, social interaction, behavioral regulation, functional independence, and emotional well-being. Their effectiveness, however, depends on the consistency and quality of implementation. Teachers need appropriate knowledge, materials, and collaborative support; parents need meaningful opportunities to participate; and administrators need reliable information for planning, resource allocation, and monitoring. Differences in stakeholder roles may also result in different assessments of the same program, making a multi-stakeholder evaluation necessary.

This study therefore assessed the implementation of intervention programs in four Special Education Centers in District IV of the Schools Division of Manila from the perspectives of school administrators, SNED teachers, receiving teachers, and parents. It examined eight intervention areas, compared the assessments of respondent groups, determined the perceived impact on academic achievement, social skills, and emotional well-being, tested the relationships between implementation and outcomes, identified implementation challenges, and developed an inclusive education enhancement model. The study contributes localized evidence for strengthening intervention delivery through collaborative professional learning, equitable support, and systematic stakeholder participation.

Literature Review

Academic and Individualized Interventions

Individualized Education Programs provide a structured basis for identifying present performance, setting measurable goals, selecting support services, and monitoring learner progress. Philippine policy requires an IEP for learners with disabilities and emphasizes careful planning, regular monitoring, and periodic review (Department of Education, 2021; Republic Act No. 11650, 2022). Empirical work indicates that IEPs can improve learner engagement and progress, but their implementation depends on teachers' knowledge, evaluation skills, motivation, and collaboration with families and specialists (Perez & Ting, 2025; Rashid & Wong, 2023).

Small-group intervention and one-on-one tutoring complement individualized planning by increasing instructional intensity and allowing teachers to match activities to learners' current competencies. Small groups of fewer than ten learners have demonstrated positive effects on language and reading outcomes, while focused tutoring can increase participation, confidence, and mastery through immediate feedback and guided practice (Arancon & Soriano, 2025; Campbell Collaboration, 2022; Ong, 2022). These approaches are most sustainable when schools provide adequate time, staffing, instructional materials, and behavioral supports.

The literature also emphasizes the importance of peer tutoring and interactive learning in strengthening academic performance. Peer-mediated instructional arrangements allow learners to receive frequent practice and social reinforcement while participating with classmates. Studies cited in the thesis reported improvements in reading fluency and mathematics performance when learners were exposed to peer tutoring and structured collaborative strategies (Ay-ad, 2025; Jumud et al., 2023).

Assistive Technology and Communication Supports

Assistive technologies remove barriers by enabling learners to access content, express ideas, and participate more independently. Text-to-speech, speech-to-text, screen readers, Braille devices, adaptive keyboards, educational applications, and communication systems can improve reading comprehension, written production, motivation, academic self-efficacy, and participation (Lopez et al., 2025; Manuel, 2025; McNicholl et al., 2023; Raffoul & Jaber, 2023). The effectiveness of these tools depends not only on availability but also on appropriate assessment, user training, technical support, and integration into daily instruction.

Augmentative and Alternative Communication supports learners for whom speech is not a dependable means of expression. AAC may improve receptive language, functional communication, and participation when communication partners use evidence-based strategies such as aided language modeling, core vocabulary, and consistent partner support (Anwar & Barnett, 2024; Dada et al., 2020). Philippine work has also highlighted the value of culturally relevant AAC applications and collaboration among speech-language pathologists, occupational therapists, teachers, and families (Alvarez et al., 2024; Samonte et al., 2025; Yao et al., 2021).

Speech therapy and language development programs provide targeted exercises, structured communication opportunities, and individualized goals. Research reviewed in the thesis indicates that these supports can improve articulation, comprehension, expressive language, confidence, and academic engagement, particularly when intervention is consistent and responsive to learners' communication profiles (Buyukkose et al., 2025; Chan et al., 2025; Melchor et al., 2024). Limited specialist availability and inconsistent classroom integration, however, may reduce the reach of these services.

Social, Behavioral, and Functional Interventions

Social skills training and peer-mediated intervention promote communication, cooperation, reciprocal interaction, and social acceptance. Learners with disabilities may experience peer rejection, bullying, and isolation; therefore, explicit teaching through role-playing, social stories, video modeling, guided interaction, and peer assistance is important (Baker, 2023; Cahapay, 2022; Norouzi, 2023). Research further suggests that inclusive peer activities can reduce isolation and strengthen participation among learners with autism and other support needs (Steinbrenner et al., 2020; Venturini & Faria, 2024).

Behavioral interventions use positive, preventive, and data-informed approaches to understand challenging behavior and teach more appropriate alternatives. Positive reinforcement, structured routines, coaching, functional behavioral assessment, and positive behavioral support can improve classroom conduct, engagement, self-discipline, and interaction with authority (Fuchs, 2024; Obinay, 2025; Torregosa et al., 2024). These practices are most effective when expectations are clear, progress is monitored, and teachers collaborate with families and other professionals.

Occupational and functional interventions address sensory processing, fine and gross motor skills, daily living competencies, and executive functioning. Sensory integration and motor therapies have been associated with improved adaptive behavior, coordination, balance, motor planning, and independence, while executive functioning supports planning, organization, working memory, attention, and self-regulation (Farooq et al., 2025; McClain et al., 2022; Oh et al., 2024). Consistent practice, individualized goals, and collaboration between educators and allied professionals are necessary to transfer gains into classroom and daily-life performance.

Family Engagement and Inclusive Physical Education

Families are essential partners in assessment, goal setting, intervention practice, and progress monitoring. Republic Act No. 11650 calls for training, orientation, and counseling that equip parents and caregivers to understand inclusive education and support the development of learners with disabilities. Family-centered interventions can strengthen parental confidence, coping, home-based practice, and child functioning, but communication gaps and limited opportunities for participation can weaken implementation (Catama et al., 2023; Hyassat et al., 2024; Jaramillo & Garcia, 2023; Jardinez & Natividad, 2024).

Adaptive and inclusive physical education modifies activities, equipment, rules, assessment, and instructional support so that learners of different abilities can participate safely and meaningfully. Evidence

indicates that adapted programs can improve motor skills, confidence, social participation, motivation, and academic engagement (Estrella, 2020; Hidayat et al., 2024; Jariono et al., 2025). Effective implementation requires trained teachers, accessible facilities, flexible curriculum design, and individualized support.

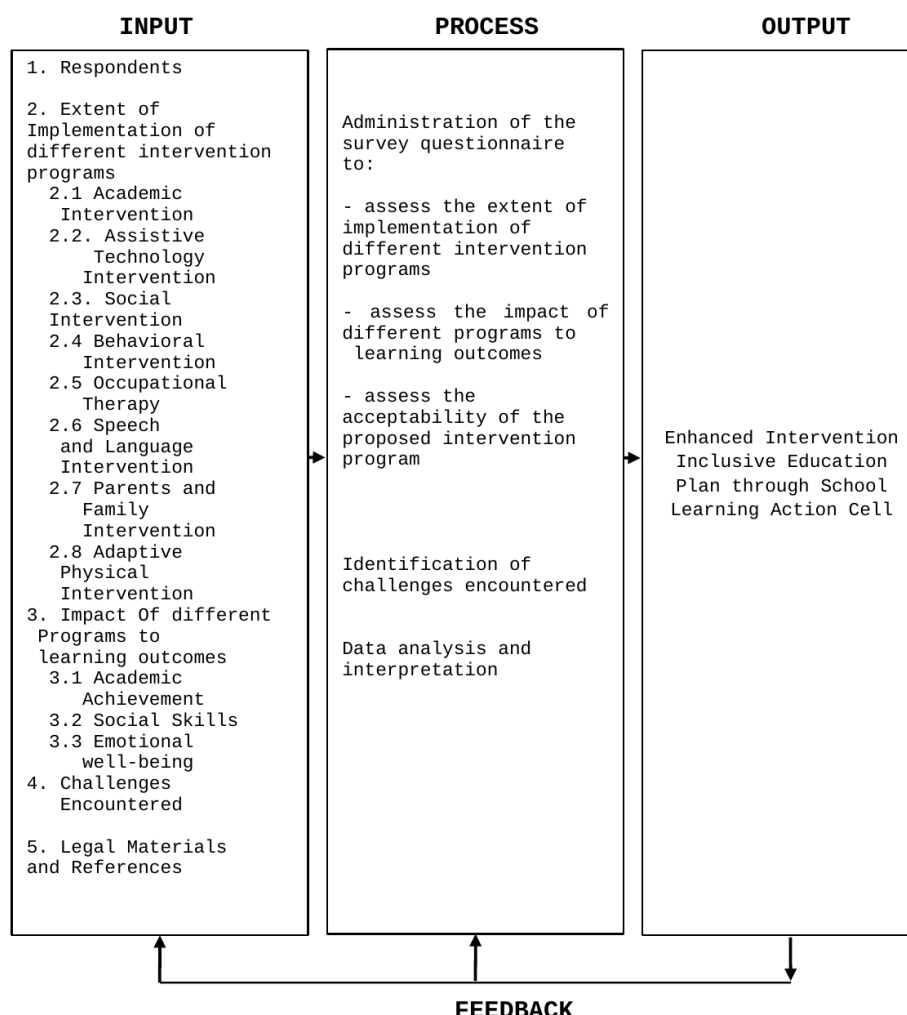
Collaboration links family participation and inclusive physical education to the wider intervention system. School leaders, SNED teachers, receiving teachers, parents, therapists, and community partners need shared goals and regular communication so that interventions are reinforced across settings. Studies reviewed in the thesis consistently identify professional development, adequate resources, policy support, and stakeholder coordination as conditions for sustainable inclusive practice (Laborte & Mejarito, 2025; Lopo et al., 2025).

Theoretical and Conceptual Framework

The study was anchored on Universal Design for Learning, which emphasizes multiple and flexible means of engagement, representation, and action or expression to reduce barriers and respond to learner variability (Meyer & Rose, 2025). Within this perspective, individualized instruction, assistive technology, adapted materials, remediation, tutoring, and differentiated participation are not isolated accommodations but interconnected means of creating accessible learning environments.

The conceptual framework used an Input-Process-Output model. Inputs included respondent perspectives, eight intervention domains, three learner-outcome domains, implementation challenges, and relevant legal and research materials. The process involved questionnaire administration, assessment of implementation and outcomes, identification of challenges, and statistical analysis. The output was an Enhanced Intervention Inclusive Education Plan implemented through the School Learning Action Cell, with feedback supporting continuous improvement.

Figure 1.
The Research Paradigm of Study



METHODS

Research Design

The study employed a quantitative descriptive-correlational research design. The descriptive component determined the existing extent of implementation of inclusive education interventions, their perceived impact on learning outcomes, the challenges encountered, and the acceptability of the proposed enhancement program. The correlational component examined the relationships between implementation and academic achievement, social skills, and emotional well-being without manipulating the study variables (Cohen et al., 2018; Creswell & Creswell, 2018).

Research Locale

The study was conducted in four Special Education Centers in District IV of the Schools Division of Manila: Dr. A. Albert Elementary School, Legarda Elementary School, P. Burgos Elementary School, and

Valeriano E. Fugoso Memorial Elementary School. These schools implemented inclusive education and served learners with special educational needs during the study period from May 2025 to May 2026.

Participants and Sampling Technique

The total population was 640, consisting of school administrators, SNED teachers, receiving teachers, and parents of learners with special educational needs. Slovin's formula was used to determine the sample, and purposive sampling identified respondents who had direct knowledge and experience of intervention implementation. The final sample comprised 339 respondents: four school heads, 50 SNED teachers, 224 receiving teachers, and 61 parents. This represented 52.96% of the identified population.

Research Instrument

Data were gathered using a researcher-developed survey questionnaire with a five-point Likert-type scale. The instrument contained five parts: respondent profile; implementation of intervention programs; impact on academic achievement, social skills, and emotional well-being; implementation challenges; and acceptability of the proposed program. The implementation section covered academic, assistive technology, social, behavioral, occupational therapy, speech and language, parents and family, and adaptive physical interventions. Field experts examined the questionnaire for relevance and appropriateness, and their recommendations were incorporated before final administration.

Data Gathering Procedure

The researcher secured written permission from the Schools Division Office of Manila and sought authorization from the participating school administrators. The nature and purpose of the study were explained to respondents before questionnaire distribution. Completed instruments were retrieved, checked, compiled, and encoded. The researcher consulted a statistician for statistical analysis and organized the findings in tables for interpretation.

Data Analysis

Frequency and percentage described respondent characteristics. Weighted means summarized implementation, perceived outcomes, challenges, and program acceptability, while ranking identified priority areas. One-way analysis of variance tested differences among the four respondent groups at the .05 level of significance, and post hoc comparisons located significant group differences. Pearson product-moment correlation determined the strength and statistical significance of relationships between intervention implementation and the three learner-outcome domains.

Ethical Consideration

Formal institutional permission preceded data collection, and respondents were informed of the study's purpose. Participation was handled respectfully, and all responses were treated with confidentiality and used exclusively for research. Results were reported in aggregate form to protect the identities of participating individuals and schools.

RESULTS AND DISCUSSION

Respondent Composition

Table 1. *Distribution of Respondents*

Respondent Group	Population	Sample	Population Represented (%)
School administrators	4	4	100.00
SNED teachers	57	50	87.72
Receiving teachers	507	224	44.18
Parents of LSENs	72	61	84.72
Total	640	339	52.96

The sample was dominated by receiving teachers because they represented the largest group directly implementing inclusive practices in regular classrooms. Most respondents were female, the largest age group was 31–35 years, and most educator-respondents had between six and ten years of service. The inclusion of administrators, specialist teachers, receiving teachers, and parents enabled the study to compare managerial, specialized, classroom-based, and family perspectives.

Extent of Implementation of Intervention Programs

Table 2. *Summary Assessment of Intervention Program Implementation*

Intervention Area	Composite WM	Interpretation	Rank
Assistive technology	4.48	Highly implemented	1
Academic intervention	4.41	Highly implemented	2
Behavioral intervention	4.38	Highly implemented	3
Adaptive physical intervention	4.37	Highly implemented	4
Social intervention	4.35	Highly implemented	5
Occupational therapy	4.25	Highly implemented	6
Speech and language intervention	4.23	Highly implemented	7
Parents and family intervention	4.22	Highly implemented	8
Overall	4.34	Highly implemented	—

Scale: 4.20–5.00 = Highly Implemented; 3.40–4.19 = Implemented.

The intervention programs were highly implemented overall (WM = 4.34). Assistive technology ranked first, indicating that tools and access supports were the most visible intervention domain. Academic and behavioral interventions also received strong ratings, consistent with the central role of individualized planning, tutoring, differentiated instruction, positive support, and progress monitoring. These findings accord with studies reporting that assistive technologies, structured academic support, and behavioral interventions can improve access, engagement, and functional participation (Manuel, 2025; Obinay, 2025; Raffoul & Jaber, 2023).

Parents and family intervention ranked last despite remaining within the highly implemented range. The lower result is important because sustained practice at home and family participation in goal setting can influence the continuity of intervention. The finding supports literature calling for parent orientation, collaborative planning, and communication systems that position families as equal partners rather than occasional participants (Hyassat et al., 2024; Jaramillo & Garcia, 2023). Receiving teachers also consistently provided lower ratings than administrators and SNED teachers, suggesting that implementation may appear stronger from a policy or supervisory perspective than from everyday classroom experience.

Differences among Stakeholder Assessments

Table 3. *Comparative Assessment of Intervention Program Areas*

Intervention Area	F-value	p-value	Decision
Academic	10.4602	.003835	Significant
Assistive technology	22.6876	.182472	Not significant
Social	72.5528	.005669	Significant
Behavioral	72.5528	.000607	Significant
Occupational therapy	5.3778	.009409	Significant
Speech and language	7.4083	.041335	Significant
Parents and family	6.1496	.055866	Not significant
Adaptive physical	109.8381	.000269	Significant

Alpha = .05. The tabulated behavioral-intervention F-value was retained.

Significant differences emerged in six of the eight intervention areas. Post hoc comparisons showed that school administrators frequently differed from SNED teachers, receiving teachers, and parents, while the latter groups more often shared similar assessments. Administrators may evaluate implementation through plans, reports, resource provision, and school-wide supervision; receiving teachers and parents may judge the same programs through their direct and recurring experiences with classroom delivery and learner support. The results indicate the need for shared indicators, joint monitoring, and feedback mechanisms that reconcile institutional reports with implementation realities.

No significant differences were found for assistive technology and parent-family intervention. This agreement suggests that stakeholders had relatively similar views regarding the availability and use of technological supports and the extent of family participation. Nevertheless, agreement does not necessarily mean adequacy: family intervention remained the lowest-ranked domain, and the correlation findings showed that assistive technology was not consistently associated with outcomes across the aggregated program areas.

Impact on Learning Outcomes

Table 4. *Summary of the Perceived Impact on Learners' Outcomes*

Outcome Area	Composite WM	Interpretation	Rank
Social skills	4.48	Highly evident	1
Academic achievement	4.41	Highly evident	2
Emotional well-being	4.35	Highly evident	3
Overall	4.41	Highly evident	—

Scale: 4.20–5.00 = Highly Evident; 3.40–4.19 = Evident.

The intervention programs had a highly evident overall impact (WM = 4.41). Social skills ranked first, reflecting improvements in peer support, interaction, communication, positive relationships, and collaborative behavior. This result is consistent with evidence that peer-mediated instruction, social skills training, and supportive inclusive environments strengthen communication, reciprocal interaction, and social participation (Baker, 2023; Norouzi, 2023; Venturini & Faria, 2024).

Academic achievement ranked second. Respondents observed increased confidence, class participation, independence, and progress toward IEP-related learning goals. Individualized instruction, small-group support, assistive technology, and peer tutoring provide plausible mechanisms for these perceived gains (Arancon & Soriano, 2025; Perez & Ting, 2025). Emotional well-being also received a high rating but ranked third, indicating a need to reinforce emotional regulation, psychological safety, confidence, and sustained support from teachers, peers, and families.

Relationships between Implementation and Learner Outcomes

Table 5. *Correlations of Intervention Components with Learner Outcomes*

Intervention Component	Academic Achievement r (p)	Social Skills r (p)	Emotional Well-being r (p)
Academic intervention	.9982 (.001824)*	.9796 (.020412)*	.9979 (.002082)*
Assistive technology	.9223 (.077664)	.9097 (.090323)	.9133 (.086670)
Social intervention	.9891 (.010942)*	.9277 (.036816)*	.9747 (.012736)*
Behavioral intervention	.9947 (.005252)*	.9761 (.023934)*	.9859 (.003528)*
Occupational therapy	-.6785 (.321470)	-.5709 (.429107)	-.6784 (.321623)
Speech and language	.9613 (.019333)*	.9325 (.067545)	.9564 (.043579)*
Parents and family	.9713 (.028661)*	.9443 (.055721)	.9672 (.032849)*
Adaptive physical	.9905 (.009476)*	.9826 (.017369)*	.9870 (.013020)*

* Significant at $p < .05$.

Academic, social, behavioral, and adaptive physical interventions were significantly and positively related to all three outcome domains. Speech-language and parent-family interventions were significantly related to academic achievement and emotional well-being but not to social skills at the .05 level. Assistive technology was highly implemented but did not reach statistical significance for any of the three aggregated outcome domains, while occupational therapy showed nonsignificant negative coefficients. These results should not be interpreted as evidence that the latter interventions are ineffective; the analysis reflects associations among a small number of aggregated program-area ratings, not causal effects or individual learner-level outcomes.

The pattern nevertheless highlights the importance of implementation quality and alignment. Technology may be available without consistent integration, user training, or individualized matching. Occupational therapy services may be constrained by specialist access, frequency, and transfer of therapeutic goals into classroom practice. Strengthening collaboration among teachers, therapists, families, and administrators may help translate specialized supports into observable academic, social, and emotional gains.

Implementation Challenges and Proposed Enhancement Plan

Table 6. *Challenges Encountered in Program Implementation*

Challenge	Composite WM	Interpretation	Rank
Limited access to specialized training and seminars	4.33	Highly encountered	1
Limited resources and materials	4.29	Highly encountered	2
Limited financing for professional support services	4.28	Highly encountered	3
Large class sizes	4.22	Highly encountered	4.5
Lack of parental involvement	4.22	Highly encountered	4.5
Overall	4.27	Highly encountered	—

The challenges were highly encountered overall (WM = 4.27), led by limited access to specialized training. This finding reinforces the need for continuous professional development that addresses differentiated instruction, assistive technology, behavior support, communication strategies, family engagement, and adaptive physical education. Resource and financing constraints further limit the consistency of implementation, especially when interventions require specialized equipment or allied professional services. Large classes reduce opportunities for individualized attention, while weak parental participation can interrupt continuity between school and home.

The Enhanced Inclusive Education Intervention Plan through the School Learning Action Cell was developed to address these concerns through collaborative professional learning, shared problem solving, instructional adaptation, parent engagement, and coordinated monitoring. The program was highly acceptable overall (WM = 4.27); SNED teachers gave the highest assessment (WM = 4.36), followed by school heads (WM = 4.30), parents (WM = 4.26), and receiving teachers (WM = 4.14). The relatively lower rating from receiving teachers suggests

that implementation planning should include their workload, classroom realities, and need for ongoing technical support.

CONCLUSION

Intervention programs in the participating inclusive education centers were highly implemented and were perceived to contribute positively to the holistic development of learners with special educational needs. Assistive technology, academic, behavioral, adaptive physical, and social interventions were the most visible strengths, while parent-family participation and therapy-related supports require more systematic attention. Stakeholder assessments differed in several intervention areas, particularly between school administrators and groups directly involved in classroom and home support, demonstrating that implementation should be monitored through shared evidence rather than a single institutional perspective.

The programs had a highly evident impact on social skills, academic achievement, and emotional well-being, with social development emerging as the strongest perceived outcome. Most classroom-based, behavioral, communication, family, and adaptive physical components were significantly related to one or more outcome domains. However, the inconsistent statistical relationships for assistive technology and occupational therapy indicate the need to improve integration, access, frequency, and coordination rather than relying on availability alone. The proposed School Learning Action Cell-based enhancement plan provides a practical framework for addressing training, resource, collaboration, and monitoring gaps while sustaining strengths in existing practice.

Recommendation

The Schools Division Office and participating schools should consider adopting the Enhanced Inclusive Education Intervention Plan through the School Learning Action Cell as a continuing, school-based mechanism for strengthening inclusive practice. Administrators should allocate adequate instructional materials, assistive technologies, and professional-service support; organize sustained training on differentiated instruction, behavior support, communication, adaptive physical education, and technology integration; and establish common monitoring tools that include the perspectives of SNED teachers, receiving teachers, parents, and learners.

Receiving teachers and SNED teachers should be supported through regular coaching, collaborative planning, and case-based problem solving. Schools should develop structured parent orientation, home-support activities, and accessible communication channels to increase family participation. Partnerships with guidance counselors, therapists, local government units, and community organizations should be strengthened to address specialist and resource gaps. Future research should examine learner-level outcomes, long-term sustainability, implementation fidelity, and the effects of the enhancement plan using longitudinal, experimental, or mixed-method designs across a wider range of schools.

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