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Impact of Social Interaction on the Physiological Development of the Special Needs Education (SNED) Learners

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ABSTRACT: Social interaction plays a dynamic role in fostering emotional intelligence, interpersonal skills, and collaborative learning, while physiological development including motor skills, brain function, and sensory integration forms the foundation for cognitive growth and academic achievement. The interaction of these areas is especially important for students in Special Needs Education (SNED), since it has a direct impact on their ability to grow holistically and be included. This study looked at how social contact affected the physiological growth of SNED students in Calamba City, Laguna's Schools Division. It specifically aimed to ascertain the type and degree of associations between important markers of physiological development and social interaction features. A design that combined descriptive, developmental, and evaluative elements was used in a mixed-method approach. Participants comprised 137 students with SNED diagnoses who were monitored by 18 Sped Teacher I-III who were specifically chosen from two SPED schools. To ascertain the predictive impact of peer connections, social skills, and group activities on physiological development, regression analysis was used. Peer relationships were shown to be the most powerful positive predictor of physiological development ($\beta = 0.71$; $sr^2 = 0.116$), highlighting the importance of supportive networks in fostering motor and physical development. On the other hand, there was a strong negative connection between social skills and activity-based environments ($\beta = -0.559$; $sr^2 = 0.093$), indicating the necessity for integrated therapies that incorporate social competence. engagement in group activities had little predictive value ($\beta = -0.032$), suggesting that unstructured group engagement is not enough to promote growth on its own. The study showed that developing peer interactions in inclusive, organized contexts can have a major impact on SNED learners' physiological results. The suggested De Guzman Multi-Dimensional Paradigm for SNED Learners promotes inclusive education by combining multi-factored assessment with responsive pedagogy, providing a framework for policy, curriculum, and teacher training.

KEYWORDS: social interaction, physiological development, SNED learners, inclusive education, peer relationships, educational framework

I. INTRODUCTION

Social interaction promotes emotional intelligence, interpersonal skills, and collaborative learning in the classroom through verbal and nonverbal communication and teamwork. Building vital social skills for both academic and personal development is facilitated by meaningful interactions between students, educators, and the community. According to Vygotsky's Zone of Proximal Development (ZPD), students gain a deeper understanding when they receive advice from adults or peers who possess more expertise (McLeod, 2024; Khamkaew & Trussat, 2024). Moreover, social interaction such as peer discussions and group activities promote learning and retention, therefore social involvement helps students thrive academically which led to positive impact as a result can improve students' emotional health, which leads to increased resilience and motivation (Yaxin & Noordin, 2024; Tikkanen et al., 2024; Shao et al., 2024; Schoop-Kasteler & Müller, 2019).

Physiological development, which includes motor skill growth, brain function, sensory systems, and health, is critical for academic learning and engagement. Nutrition, physical activity, and sleep have a substantial impact on children' cognitive capacities and academic performance (Mukhamedzhanov et al., 2023; Dykens et al., 2019; Manas, 2020; Zavitsanou et al., 2022). Research shows that proper nutrition enhances brain function (Ekstrand et al., 2020), while regular physical activity boosts attention and memory (Manas, 2020) supporting better outcomes in schools with active physical education programs (Manas, 2020; Hillman et al., 2008). Altogether, these elements strengthen students' cognitive and physical development, fostering academic success.

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Inclusive education in the Philippines is founded on principles that promote the integration of children with special needs, along with those from marginalized communities, into regular classrooms. This approach reflects the country's commitment to international agreements, such as the United Nations' Sustainable Development Goals (SDGs), particularly Goal 4, which advocates for inclusive and equitable quality education (UNESCO, 2021). Over the past decade, inclusive education has become a focal point in Philippine educational reforms, with various schools implementing programs to accommodate diverse learners (Bautista & Aranas, 2023; Luz, 2019).

Special needs education refers to instructional programs tailored to support individuals who require additional assistance due to physical, behavioral, intellectual, emotional, or social challenges. These programs adapt curricula, teaching methods, and resources to accommodate diverse learning needs, ensuring all students can achieve educational objectives (UNESCO, n.d). Special Needs Education (SNED) provides specialized programs that support students with diverse learning needs through individualized instruction, accommodations, and resources, enabling them to thrive academically and socially (Allam & Martin, 2021). Numerous research underlines SNED's positive impact, especially in inclusive classrooms where students with special needs learn alongside peers, promoting empathy and reducing stigmatization (Allam & Martin, 2021; Ekstrand et al., 2020). Academically, SNED uses individualized education plans (IEPs) and adaptive teaching, improving outcomes in literacy and numeracy (Koßmann, 2022. Beyond academics, SNED develops essential life skills, fostering independence. Early intervention further enhances cognitive, social, and behavioral development, preparing SNED learners for future success (Koßmann, 2022).

Education is a fundamental right recognized globally and protected by national legislation. In the Philippines, the legal basis for education stems from the 1987 Philippine Constitution, which mandates that the state "protect and promote the right of all citizens to quality education at all levels." It guarantees the right of every Filipino to receive basic education and provides for the establishment of programs supporting special and inclusive education. Additionally, Republic Act 7277, or the Magna Carta for Disabled Persons, mandates the integration of special education services to ensure that learners with disabilities have access to quality and inclusive education. This act aligns with international frameworks, such as the United Nations Convention on the Rights of Persons with Disabilities (CRPD), which advocates for inclusive education worldwide.

Integrating philosophies of education from proponents such as John Dewey and Lev Vygotsky further supports inclusive education's principles. Dewey emphasized the role of education in developing students' social skills and fostering a democratic, interactive learning environment, which underscores the importance of social interaction in learning (Saleem et al., 2021). Vygotsky, in his Social Development Theory, stressed that learning is inherently social and that students benefit from interactions with peers and teachers within a structured educational environment (McLeod, 2024; Khamkaew & Trussat, 2024; Escalaw, 2024).

Together, these theories emphasize the need for an inclusive approach to education, where students with diverse abilities can engage socially and academically in shared spaces.

Special education (SPED) in the Philippines is designed to address the needs of learners with disabilities, learning difficulties, or developmental challenges by providing specialized programs, resources, and accommodations. This includes Special Needs Education (SNED), a program aiming to integrate learners with disabilities into general education settings, where they can participate meaningfully and achieve their full potential.

Studies on special education abroad, such as those conducted by McLeskey et al. (n.d), highlight the social and academic benefits of inclusive classrooms (Jardinez & Natividad, 2024), while national research emphasizes the significance of support services for learners in SPED programs to enhance their educational experience and outcomes (Alam & Martin, 2023). Based on some local research, special education programs in inclusive settings promote SNED learners' academic achievement and social development, supporting the need for sustained and improved SPED (Buenrostro-Jocson, 2024; Kilag et al., 2024).

Special Needs Education (SNED) in the Schools Division of Calamba City aims to ensure inclusive, equitable, and accessible education for learners with disabilities or developmental challenges. The city's commitment to inclusive education aligns with national policies such as the Department of Education's (DepEd) Inclusive Education policy, which seeks to provide tailored instructional methods, resources, and support services to SNED learners. Through individualized education plans (IEPs), specialized instruction, and an inclusive environment, Calamba City aims to foster the personal, social, and academic growth of these learners.

Special education initiatives within Calamba City are designed not only to address academic competencies but also to promote social skills, independence, and resilience among SNED learners. This holistic approach acknowledges that SNED learners benefit from both structured educational content and social interactions that nurture their overall development. Teachers and educational support staff in Calamba City are trained to create environments where SNED learners can thrive, interact with peers, and develop essential life skills.

The present study, Impact of Social Interaction on the Physiological Development of Special Needs Education (SNED) Learners in the Division of Calamba City, Laguna, examined the impact of social interaction to physiological development among SNED learners. Focusing on the Division of Calamba City.

Given Calamba City's ongoing efforts to implement inclusive education, this study provides valuable insights into the effectiveness of social engagement strategies within SNED classrooms. Social interaction, as understood in educational psychology, can influence cognitive and emotional development, suggesting that interactive learning environments may also promote physiological improvements. For SNED learners, regular interaction with teachers and peers could aid in better social adaptation, enhanced physical coordination, and improved focus, all of which contribute to their ability to participate fully in the educational experience.

This study examined the impact of social interaction and the physiological development of SNED learners in Calamba City. Analyzing how social factors interact with physiological outcomes, the study results provided an evidence-based recommendations for enhancing SNED programs in the area. This research ultimately aimed in supporting the Schools Division of Calamba City in refining its inclusive education approaches, ensuring SNED learners not only received academic support but also benefit from an enriched social and developmental environment.

II. RESEARCH QUESTIONS

1. What is the level of social interaction of the special needs education (SNED) learners in terms of peer relationships, social skills, and participation in group activities?
2. What is the level of physiological development of the special needs education (SNED) learners in terms of growth metrics, and motor skills development?
3. Is there a significant relationship between the level of social interaction and the level of Physiological Development of SNED Learners?
4. Does the level of social interaction impact the physiological development of special education needs learners (SNED)?
5. Based on the results of the study, what framework may be proposed?

III. RESEARCH METHOD

This study employed an Embedded Mixed Methods Design to examine the impact of social interaction on the physiological development of Special Needs Education (SNED) learners. The quantitative component, serving as the primary method, assessed (1) the level of social interaction in terms of peer relationships, social skills, and group participation, and (2) the level of physiological development measured through growth metrics and motor skills. Data were collected using standardized observation checklists, rating scales, and performance assessments, and analyzed through mean, standard deviation, Pearson correlation, and regression analysis to address Research Questions 1–4. The qualitative component, embedded within the quantitative phase, provided explanatory depth through semi-structured interviews and focus group discussions with teachers, therapists, and caregivers, clarifying how social interactions influenced learners' physical activity, motivation, and developmental progress. Integration of both strands occurred during interpretation, where quantitative results identified the extent and impact of social interaction, while qualitative insights explained underlying factors and contextual influences. The merged findings informed the development of a proposed framework to enhance social and physiological outcomes among SNED learners. The study was conducted in Jose Rizal Memorial School (JRMS) and Prinza Elementary School in the Schools Division of Calamba City, involving 137 SNED learners observed by 18 SPED teachers (12 Teacher I, 5 Teacher II, and 1 Teacher III) purposively selected as raters. In the evaluative phase, a panel of experts in Special Needs Education, educational research, and pedagogy reviewed the proposed paradigm and provided feedback on its quality and applicability.

IV. RESULTS AND DISCUSSION

Table 1. Level of Peer Relationship

Indicator	SD	MEAN	Verbal Description
The learner has formed trusting relationships with classmates.	**0.88**	**4.22**	**Very High**
The learner receives support from friends and classmates.	**0.73**	**4.22**	**Very High**
The learner shows a willingness to help peers when needed.	**0.71**	**3.83**	**High**
The learner maintains positive connections with friends over time.	**0.73**	**3.94**	**High**
The learner demonstrates care and respect toward classmates.	**0.68**	**4.11**	**High**
Average	**0.74**	**4.07**	**High**

Learners demonstrated very high levels of peer trust and mutual assistance, reflecting a safe and supportive environment that fosters emotional well-being and collaboration. While overall peer interactions were rated high (M = 4.07), sustaining long-term

relationships and consistent helping behaviors require further nurturing through group activities, peer mentoring, and social-emotional learning programs to strengthen academic and social-emotional growth among SNED learners.

Table 2. Level of Social Skills

Indicator	SD	MEAN	Verbal Description
The learner appropriately initiates conversations with others.	**0.75**	**3.72**	**High**
The learner maintains conversations effectively.	**0.84**	**3.33**	**Moderate**
The learner ends conversations appropriately when necessary.	**1.15**	**3.17**	**Moderate**
The learner demonstrates awareness of social cues during interactions.	**0.85**	**3.61**	**High**
The learner adapts their tone or approach based on the social setting.	**0.86**	**3.5**	**High**
Average	**0.89**	**3.47**	**High**

Learners demonstrated high ratings in responding to social cues, initiating conversations, and adjusting communication based on context, reflecting sensitivity, confidence, and flexibility in interactions. However, sustaining and appropriately ending conversations were rated moderate, indicating areas for improvement; with an overall mean of 3.47 (High), results suggest the need for targeted interventions such as role-playing, peer-assisted learning, and SEL strategies to strengthen conversational maintenance, closure skills, and socioemotional resilience among SNED learners.

Table 3. Participation in Group Activities

Indicator	SD	MEAN	Verbal Description
The learner actively participates in group activities or projects.	**0.99**	**4.61**	**Very High**
The learner contributes ideas during classroom discussions.	**1.02**	**4.44**	**Very High**
The learner shows enthusiasm for collaborative tasks with peers.	**0.84**	**4.44**	**Very High**
The learner engages in team activities with minimal prompting.	**0.85**	**4.5**	**Very High**
The learner appears comfortable sharing responsibilities in group work.	**0.92**	**4.22**	**Very High**
Average	**0.92**	**4.44**	**Very High**

Learners consistently achieved Very High ratings across all indicators of group participation, with the highest scores in active involvement in projects (M = 4.61), teamwork with minimal guidance (M = 4.50), and contributions to class discussions (M = 4.44). With an overall mean of 4.44, results indicate that students thrive in collaborative settings, demonstrating strong cooperative tendencies, enthusiasm for teamwork, and social motivation; these outcomes highlight the importance of sustaining project-based learning, peer mentorship, and cooperative problem-solving to further enhance leadership, communication, and inclusion among SNED learners.

Table 4. Descriptives of Growth Metrics

Indicator	SD	MEAN	Verbal Description
The learner's height is consistently monitored and shows normal growth patterns.	**0.61**	**4.06**	**High**
The learner's weight is within a healthy range for their age and height.	**0.62**	**3.69**	**High**
The learner's BMI is tracked regularly and falls within the recommended range.	**0.62**	**3.76**	**High**

Indicator	SD	MEAN	Verbal Description
The learner's indicate positive physical development over time.	**0.79**	**3.91**	**High**
The learner's physical growth aligns with age-appropriate developmental benchmarks.	**1.00**	**3.76**	**High**
Average	**0.73**	**3.83**	**High**

Learners' growth indicators, including height, weight, BMI, and developmental benchmarks, were all rated High, with mean scores ranging from 3.69 to 4.06. Height monitoring received the highest rating (M = 4.06), while healthy weight range scored lowest (M = 3.69), suggesting generally positive growth patterns but with variability in weight control and developmental benchmarks. With an overall mean of 3.83, results emphasize the importance of continuous monitoring, school-based nutrition and health programs, and tailored interventions for learners with special education needs to ensure age-appropriate development and prevent risks such as undernutrition, overweight, or delays.

Table 5. Descriptives Motor Skills Development

Indicator	SD	MEAN	Verbal Description
2.1 The learner demonstrates age-appropriate gross motor skills (e.g., running, jumping).	**0.78**	**4.06**	**High**
2.2 The learner shows progress in fine motor skills (e.g., holding a pencil, using small tools).	**1.08**	**3.69**	**High**
2.3 The learner can perform tasks that require hand eye coordination effectively.	**0.91**	**3.76**	**High**
2.4 The learner participates actively in activities that enhance motor skills.	**0.9**	**3.91**	**High**
2.5 The learner's is progressing steadily over time.	**0.81**	**3.76**	**High**
Average	**0.9**	**3.83**	**High**

Learners are making steady progress in motor abilities, with all five indicators rated high (M = 3.69–4.06). Gross motor skills such as running and jumping received the highest rating (M = 4.06), while fine motor skills scored lower (M = 3.69, SD = 1.08), reflecting variability among learners and the need for additional support. With an overall mean of 3.83, results highlight the importance of structured activities and targeted interventions—such as play-based learning, physical education, and occupational therapy - to strengthen both gross and fine motor development, thereby enhancing physical health, social interaction, and academic readiness.

Table 6. Correlation Matrix on the level of social interaction and on the level of Physiological Development of SNED Learners

Physiological Development Variables				
Social Interaction Variables	**Growth Metrics**		**Motor Skills Development**	
	r	**r^2**	**r**	**r^2**
Peer Relationships	0.17	0.03	0.21	0.04
Social Skills	-0.11	0.01	0.10	0.01
Participation in Group Activities	0.19	0.04	0.08	0.01
Social Interaction	**0.13**	**0.02**	**Physiological Development**	

Correlations between social interaction variables (peer relationships, social skills, and group participation) and physiological development indicators (growth metrics and motor skills) are weak, with Pearson r values ranging from –0.1084 to 0.2082. Peer relationships and group participation demonstrated weak positive correlations with both growth and motor skills, while social skills showed a weak negative correlation with growth and a weak positive correlation with motor skills, indicating minimal influence overall. These results suggest that although social engagement contributes slightly to learners' physical and motor

development, physiological progress is more strongly shaped by other factors such as nutrition, genetics, and health interventions, underscoring the need for holistic educational strategies that integrate both social and physical development supports.

Table 7. Simple Regression Analysis of Social Interaction Predicting Physiological Development (Model 1)

Predictor	B (Unstandardized)	T	p	R^2	Adjusted R^2	F(1,135)	f^2
Social Interaction	**0.125**	**1.51**	**0.133**	**0.017**	**0.009**	**2.28**	**.017**

Social interaction was not a statistically significant predictor of physiological development among SNED learners (F(1,135) = 2.28, p = .133), explaining only 1.7% of the variance with a small effect size (f^2 = .017). While the positive coefficient suggests that greater engagement may support development, the weak and non-significant relationship indicates that social interaction alone is insufficient; instead, interdisciplinary approaches combining social engagement with structured therapies, nutrition, and targeted interventions are necessary to strengthen learners' overall growth and motor outcomes.

Table 8. Regression Coefficients for Predictors of Physiological Development (Model 2)

Predictor	B (Unstandardized)	SE	95% CI for B	t	p
Constant	1.824	0.545	[0.746, 2.901]	3.35	0.001
Peer Relationships	0.947	0.226	[0.499, 1.395]	4.18	<.001
Social Skills	−0.429	0.116	[−0.658, −0.200]	−3.70	<.001
Participation in Group Activities	−0.021	0.072	[−0.163, 0.120]	−0.30	0.765

Peer relationships significantly and positively predicted physiological development (B = 0.947, p < .001), indicating that supportive peer connections strongly contribute to learners' growth and motor engagement. In contrast, social skills showed a significant negative effect (B = –0.429, p < .001), suggesting that difficulties in social behaviors may hinder development if not integrated with physical objectives, while group activity involvement was not a significant predictor (B = –0.021, p = .765). Overall, the findings emphasize that peer bonding is a key driver of physiological growth, whereas social skills and group participation require structured, goal-oriented interventions to effectively support SNED learners' holistic development.

Table 9 Model Summary of Multiple Regression Predicting Physiological Development (Multiple: Physiological Development ~ Peer Relationship + Social Skills + Participation in Group Activities)

n	R^2	Adjusted R^2	F(3,133)	p	RMSE	AIC	BIC	f^2
137	136	0.117	6.98	<.001	0.545	226.45	238.13	0.157

Peer relationships, social skills, and group activity involvement significantly predicted physiological development among SNED learners, F(3,133) = 6.98, p < .001, accounting for 13.6% of the variance (R^2 = .136; Adjusted R^2 = .117) with a small-to-moderate effect size (f^2 = 0.157). While these social factors collectively contribute to growth, the majority of variance remains unexplained, underscoring the importance of integrating peer support, structured social skills training, and organized group activities with broader interventions such as environmental support, health programs, and individualized strategies to foster holistic development.

Table 10. Model Summary of Regression Analysis Predicting Growth Metrics from Social Interaction)

n	R^2	Adjusted R^2	F(df1, df2)	p	RMSE	AIC	BIC	f^2
137	0.007	0	1.02	0.315	0.48	189.81	195.65	0.008

Social contact did not significantly predict growth metrics among SNED learners (F(1,135) = 1.02, p = .315), explaining only 0.7% of the variance (R^2 = .007) with a negligible effect size (f^2 = .008). These findings indicate that while social interaction is valuable for cognitive, emotional, and social development, it does not directly drive physical growth, which is more strongly influenced by biological, dietary, medical, and genetic factors. The results underscore the need for comprehensive,

interdisciplinary strategies, combining social engagement with structured physical activities, nutrition programs, and health interventions, to ensure balanced development in special education contexts. Future research should explore whether specific forms of social interaction, such as sports or cooperative movement activities, can more meaningfully contribute to physical growth outcomes.

Table 11. Regression Coefficients for Social Interaction Predicting Motor Skills Development

Predictor	B (Unstandardized)	SE	95% CI for B	t	p
Constant	3.113	0.437	[2.249, 3.977]	7.12	<.001
Social Interaction (Motor Skills)	0.18	0.116	[−0.050, 0.411]	1.55	0.124

While learners already demonstrated a moderate to high baseline of motor skill development (B = 3.113, p < .001), the effect of social interaction on motor abilities was positive but not statistically significant (B = 0.180, p = .124; CI [−0.050, 0.411]). This indicates that social engagement may play a supportive role but is not a fundamental predictor of motor development, which is more strongly influenced by structured interventions such as adaptive physical education, occupational therapy, and targeted motor training. Practically, this highlights the need for a dual approach in SNED programs—integrating social interaction to boost motivation and engagement while prioritizing systematic motor-specific strategies to ensure learners achieve developmental milestones.

Table 12. Model Summary of Simple Regression Predicting Motor Skills Development from Social Interaction

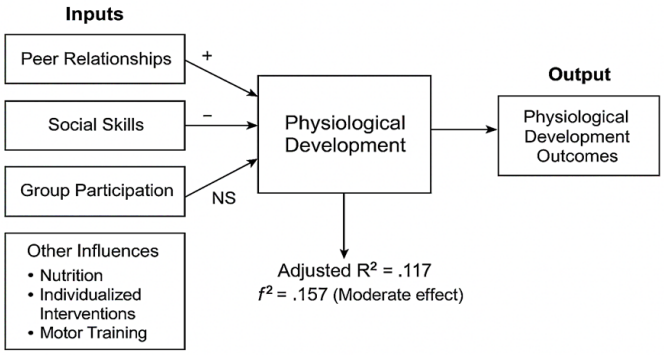
n	R^2	Adjusted R^2	F(1,135)	p	RMSE	AIC	BIC	f^2
137	0.017	0.01	2.4	0.124	0.813	333.89	339.73	0.018

Social interaction explained only 1.7% of the variance in motor skill development among SNED learners (R^2 = 0.017, Adjusted R^2 = 0.010), with results not reaching statistical significance (F(1,135) = 2.40, p = 0.124) and a very small effect size (f^2 = 0.018). These findings indicate that while social engagement may provide supportive opportunities, motor skill growth is primarily driven by direct interventions such as neurological development support, adaptive physical education, occupational therapy, and individualized motor training. In practice, social interaction should be treated as a complementary factor that enhances motivation and participation, but not as a central predictor of motor development, highlighting the need for multifactorial models and interdisciplinary approaches in future research and educational programs.

Table 13. Standardized Beta, Semi-Partial Correlations, and VIF for Predictors of Physiological Development

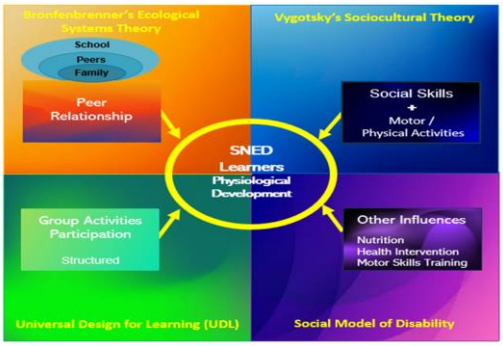
Predictor	β (Standardized)	Semi-Partial sr^2	VIF
Peer Relationships	0.71	0.116	4.43
Social Skills	−0.559	0.093	3.51
Participation in Group Activities	−0.032	0.001	1.74

Peer relationships were the strongest positive predictor of physiological development among SNED learners (β = 0.71, explaining 11.6% of unique variance), highlighting the importance of supportive peer connections in fostering growth and motor engagement. In contrast, social skills showed a significant negative effect (β = –0.559, 9.3% variance explained), suggesting that difficulties in social behaviors may hinder development or divert focus from physical outcomes, while group activity participation had negligible impact (β = –0.032). These findings underscore that genuine peer bonding is a critical driver of physiological growth, whereas social skills training and group activities must be carefully structured and integrated with physical development goals. For practice and policy, this points to the need for dual-focus interventions, programs that intentionally build peer connections while embedding motor skill development into inclusive, adaptive, and cooperative learning environments. Future research should investigate the complex interplay between social competence and physical growth, particularly the unexpected negative link between social skills and physiological outcomes.



Proposed theoretical framework for SNED learners

The proposed theoretical framework for SNED learners highlights the complex relationship between social interaction and physiological development, showing that peer relationships are the most powerful positive driver of growth, while social skills demonstrate a paradoxical negative effect and group participation alone has little measurable impact. Peer connections provide scaffolding for both social and motor development, fostering trust, imitation, and engagement in physical activities, whereas social skills interventions must be integrated with motor-rich tasks to avoid limited outcomes. Group activities, meanwhile, require intentional design and developmental relevance to produce benefits, underscoring the importance of structured, adaptive, and inclusive approaches. Since the model explains only a portion of the variance in development, other contextual factors such as nutrition, health interventions, individualized motor training, and environmental supports are also critical. By integrating quantitative findings with qualitative insights from teachers and caregivers, the framework emphasizes that holistic, evidence-based strategies, combining peer support, structured social engagement, and targeted physical programs—are essential to promote both social and physiological growth among SNED learners.



The Propose De Guzman's Multi-Dimensional Framework for SNED Learners

The Proposed De Guzman's Multi-Dimensional Framework for SNED Learners presents a holistic, learner-centered paradigm that situates physiological development—motor coordination, physical health, and adaptive functioning, at the core, shaped by interconnected social and contextual influences. Organized into four quadrants, the framework identifies peer relationships as the strongest positive driver, emphasizing their role in fostering both social belonging and physical growth through collaborative play and mentorship. Social skills are framed as conditional, requiring integration with motor-rich activities to avoid limited or negative outcomes, while group participation is seen as beneficial only when deliberately structured with developmental goals, consistent with Universal Design for Learning principles. The fourth quadrant highlights other moderating influences such as nutrition, health interventions, and motor training, interpreted through the Social Model of Disability, which stresses the removal of systemic barriers. Grounded in Bronfenbrenner's Ecological Systems Theory, Vygotsky's Sociocultural Theory, UDL, and the Social Model of Disability, the framework underscores that SNED learners' growth emerges from the dynamic interplay of social, physical, and environmental factors. Evaluation results confirmed its theoretical soundness and practical relevance, though policy alignment requires refinement to ensure broader applicability. Overall, the paradigm advocates for inclusive, evidence-based strategies that integrate peer support, structured social engagement, and multi-sectoral collaboration to maximize developmental outcomes for learners with special needs.

TRAINING MATRIX PROPOSAL: Division Training on Strengthening Inclusive Education and SPED Competencies Among Teachers

The proposed Division Training on Strengthening Inclusive Education and SPED Competencies among Teachers is a five-day program designed to enhance teacher capacity in delivering inclusive, learner-centered, and technology-enabled instruction for learners with special needs. Anchored in DepEd Order No. 44, s. 2021, the MATATAG Curriculum, and De Guzman's Multi-Dimensional Framework, the training integrates Bronfenbrenner's Ecological Systems Theory, Vygotsky's

Sociocultural Theory, Universal Design for Learning, and the Social Model of Disability to promote holistic development. Through modules on IEP design, differentiated instruction, behavior management, assistive technology, and collaboration, the program aims to strengthen teacher competencies, standardize inclusive practices, and foster partnerships among schools, families, and communities. With 50–60 participants expected, the initiative emphasizes sustainability through school-based echo trainings, professional learning communities, and dissemination of best practices, ensuring that inclusive education is embedded in classroom practice and supported by systemic interventions.

CONCLUSIONS

The study underscores the nuanced impact of social interaction on the physiological development of SNED learners in Calamba City, Laguna. While peer relationships emerged as the strongest positive driver of growth, fostering inclusion, resilience, and motor engagement, social skills showed a paradoxical negative correlation, highlighting the need for integration with physical activities rather than isolated training. Group participation, meanwhile, proved beneficial only when deliberately structured with developmental goals, reaffirming the importance of purposeful program design. Physiological outcomes revealed generally positive progress in growth and motor skills, though variability underscores the necessity of continuous monitoring, targeted interventions, and collaboration with families and health professionals. Overall, the findings emphasize that social and physical development are interconnected yet complex, requiring holistic, evidence-based strategies that combine peer mentoring, SEL integration, adaptive physical education, and systemic supports. The proposed De Guzman Multi-Dimensional Paradigm offers a robust framework for guiding inclusive education practices, curriculum design, and teacher training, advancing equity and responsiveness in meeting the diverse needs of SNED learners.

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