

Mediating Effect of Peer Collaboration on the Relationship Between Teacher Management Strategies and Academic Performance of Learners with Intellectual Disabilities

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ABSTRACT

Problems about the academic performance of learners with intellectual disabilities have long existed in educational institutions worldwide. These students often struggle to meet academic standards, creating a clear gap between them and their non-disabled peers, which reflects broader educational and social inequities. This study aims to determine the mediating effect of peer collaboration on the relationship between teacher management strategies and the academic performance of learners with disabilities. This study employed a quantitative descriptive-correlational approach, incorporating mediation analysis, using adapted questionnaires for dependent and independent variables. This negates Vygotsky's Sociocultural Theory of Cognitive Development, particularly the Zone of Proximal Development (ZPD) concept, which emphasizes that learning is a social process where interactions with peers and teachers significantly influence cognitive development.

Keywords: Peer collaboration, teacher management strategies, academic performance, learners with disabilities

INTRODUCTION

The Problem and Its Scope

The academic performance of learners with intellectual disabilities remains a significant concern in education systems worldwide. Studies show that learners with intellectual disabilities often perform at lower levels compared to their peers without disabilities. Global assessments reveal that many students with intellectual disabilities struggle to meet minimum proficiency standards in literacy and numeracy, highlighting persistent disparities in academic performance (UNESCO, 2021). This under-performance issue is evident across various educational contexts and levels, reflecting the need for greater attention to their unique academic needs and challenges (World Bank, 2022).

In Zimbabwe, learners with intellectual disabilities experience lower academic performance (Chataika & Hlatywayo, 2022), while in the United States, despite inclusive education policies, only 63 percent of learners with disabilities graduate high school compared to 82 percent of all students (National Center for Education Statistics, 2021). Furthermore, evidence suggests that learners with intellectual disabilities frequently face poor academic performance, including higher rates of grade repetition, delayed progression, and reduced opportunities for academic success (OECD, 2020). Poor academic performance persists in the Philippines despite policies like the Enhanced Basic Education Act of 2013. Learners with intellectual disabilities face similar disparities, particularly in Region XII, where various conditions hinder their academic progress (Sambra, 2021; Moríña, 2019).

If this problem remains unaddressed, it could lead to severe long-term consequences, such as higher dropout rates, limited job prospects, and more significant social exclusion (UNESCO, 2020). Addressing these disparities is vital to meeting global commitments to inclusive and equitable education for all students

(UNICEF, 2019). This study is particularly significant due to the limited research available in the locality where it is conducted, underscoring the importance of identifying and addressing the unique challenges faced by LWDs in this context.

Statement of the Problem

This study determined the mediating effect of peer collaboration on the relationship between teacher management strategies and academic performance of learners with disabilities. Specifically, this addressed the following objectives:

1. To determine the levels of peer collaboration of teachers in terms of positive interaction, task support, communication and collaboration skills, and social learning; teacher management strategies in terms of observation, attention, retention, reproduction, and motivation; and academic performance of learners with intellectual disabilities.
2. To determine the significant relationship between the peer collaboration, teacher management strategies, and the academic performance of learners with intellectual disabilities.
3. To determine the significance of the degree of influence of peer collaboration, and teacher management strategies on academic performance of learners with intellectual d
4. To determine the significance of the mediating effect of peer collaboration in the relationship between teacher management strategies and academic performance of learners with intellectual disabilities.

Hypotheses

This research study had the following null hypotheses tested at 0.05 level of significance:

H₀1 Teacher management strategies and peer collaboration are not significantly correlated with the academic performance of the learners with intellectual disabilities.

H₀2 Teacher management strategies do not significantly influence the academic performance of learners with intellectual disabilities.

H₀3 Peer collaboration has no significant mediating effect on the relationship between teacher management strategies and academic performance of learners with intellectual disabilities.

Theoretical Framework and Conceptual Framework

Anchored on Vygotsky's Sociocultural Theory of Cognitive Development and its Zone of Proximal Development (ZPD) concept, this study posits that teacher management strategies influence the academic performance of learners with intellectual disabilities, with peer collaboration acting as a mediating factor that enhances the effectiveness of these strategies by fostering supportive social interactions within the classroom.

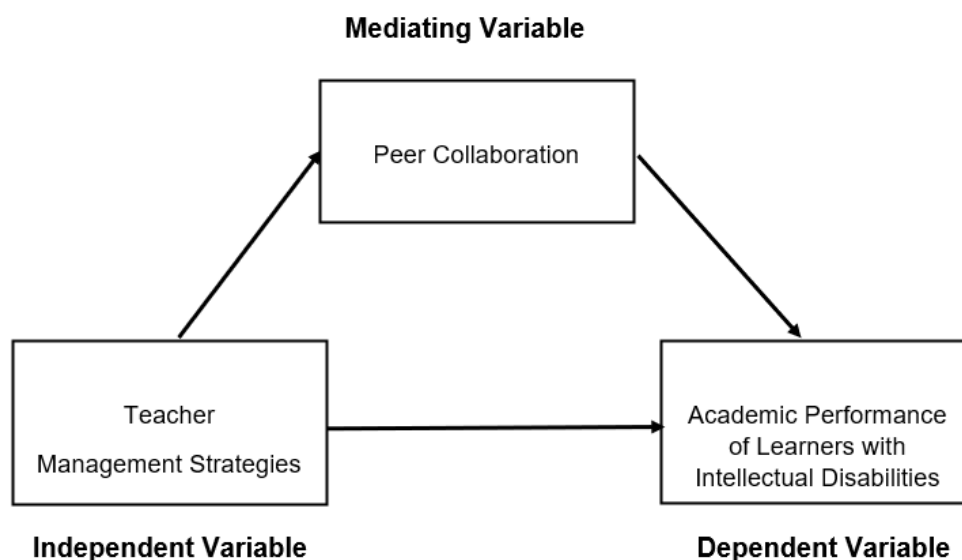


Figure 1. Conceptual Framework of the Study

METHODOLOGY

Research Design

This study employed a quantitative descriptive-correlational design with mediation analysis to systematically investigate the relationships among teaching management strategies, peer collaboration, and the academic performance of learners with learning difficulties, using descriptive analysis to assess variable levels, correlation to determine relationships, linear regression to evaluate effects, and causal mediation analysis within a counterfactual framework to explore direct and mediated influences.

Locale of the Study and Sampling Technique

The study, conducted in five major schools in Sarangani, Region XII, which cater to learners with intellectual disabilities, aligned with DepEd Order No. 44, series of 2021, mandating inclusive education in public and private schools starting the 2021-2022 school year, and involved 200 general education elementary teachers handling learners with intellectual disabilities, selected through stratified random sampling to ensure proportional representation of key subgroups, thereby enhancing the reliability, accuracy, and generalizability of the findings. This study, employing stratified random sampling to ensure proportional representation and reduced sampling error, surveyed 200 general education elementary teachers handling learners with intellectual disabilities in selected Sarangani schools during the 2024-2025 academic year, adhering to eligibility criteria focused on employment in public institutions and willingness to participate.

Research Instruments

The survey questionnaire used to measure Peer Collaboration (PC) and Teacher Management Strategies (TMC), developed and validated by experts, demonstrated excellent reliability with a Cronbach's alpha of 0.973 computed using SPSS, confirming its internal consistency and suitability for data collection and analysis in the study.

Moreover, a self-designed research questionnaire was developed to measure Teacher Management Strategies (TMC) based on Richard Scrivener's (2012) Classroom Management Techniques and A Handbook for Classroom Management that Works (Marzano et al., 2005). The questionnaire underwent review and validation by experts before the commencement of the study. All items in the questionnaire asked the respondents to indicate a response on a 5-point Likert scale such as 5 – strongly agree, 4 – agree, 3 – neutral, 2 – disagree, 1 – strongly disagree. For interpretation of the levels, the Likert scale below was used to analyze the result:

However, the given grading scale is a key framework for evaluating the academic performance of students in subjects like Math, Science, and English including learners with intellectual difficulties. It divides performance into five levels: "Outstanding" (90-100), "Very Satisfactory" (85-89), "Satisfactory" (80-84), "Fairly Satisfactory" (75-79), and "Did Not Meet Expectations" (below 75). Each level signifies different degrees of comprehension and mastery of the curriculum, as outlined in DepEd Order No. 8, s. 2015.

Data Gathering Procedure and Data Analysis

The study involved identifying the research problem, setting objectives, validating tools through expert consultation, obtaining necessary permissions, collecting informed consent, administering and analyzing data using statistical tools such as mean, standard deviation, standardized z-scores, Pearson-r correlation, multiple linear regression, and mediation analysis (following the Baron and Kenny approach), to evaluate relationships, predict outcomes, and assess mediating effects, with findings presented for feedback and improvement.

Ethical Consideration

The researcher adhered to nine ethical considerations, ensuring social value by offering insights to improve policies and practices, securing informed consent, prioritizing participant safety and confidentiality under the

Data Privacy Act, upholding justice through fair sampling and recognition, fostering transparency in communication and results sharing, maintaining competency through qualifications and expert consultation, promoting community involvement for inclusive education, mitigating risks of psychological harm through support resources, and ensuring unbiased data analysis with expert statistical review, thereby creating a safe, respectful, and credible research environment.

RESULTS

Reveals the respondents' perceptions of peer collaboration among teachers, highlighting indicators such as positive interaction (mean = 3.97, SD = 0.76), task support (mean = 3.82, SD = 0.78), communication and collaboration skills (mean = 3.78, SD = 0.92), and social learning (mean = 3.68, SD = 0.9), with an overall high level of collaboration (mean = 3.81, SD = 0.67), while teachers' management strategies, including motivation (mean = 4.17, SD = 0.61), attention (mean = 4.13, SD = 0.73), observation (mean = 4.07, SD = 0.73), retention (mean = 4.06, SD = 0.73), and reproduction (mean = 4.03, SD = 0.73), were perceived as highly effective (mean = 4.09, SD = 0.62), and learners with intellectual disabilities demonstrated fairly satisfactory academic performance (mean score = 77.51, SD = 1.69) with Z-scores indicating variability and underscoring the importance of targeted interventions.

The results on the relationship between peer collaboration, teachers management strategies and academic performance of learners with intellectual disabilities are presented in table of correlation.

Table 1: Table of Correlation

Variables	Academic Performance		
	r – value	p-value	Decision on Ho
Teachers Management Strategies	0.079	0.269	Fail to Reject Ho
Peer Collaboration	0.163	0.021	Reject Ho

The study revealed a significant relationship between teachers' peer collaboration and the academic performance of learners with intellectual disabilities (p-value = 0.021), though with a very weak correlation (r-value = 0.100), and no significant relationship between teachers' management strategies and academic performance (p-value = 0.541), supported by a negligible correlation (r-value = 0.044), leading to the acceptance of the null hypothesis.

The study systematically presents the regression analysis results, showing the significant influence of peer collaboration and teachers' management strategies on the academic performance of learners with intellectual disabilities, with assumptions of normality (Shapiro-Wilk test), homoscedasticity, linear independence (Durbin-Watson test), absence of outliers (Cook's Distance and leverage plots), and no multicollinearity (VIF values below 10) all satisfied.

Table 2: Degree of Influence

Predictor	Estimate	SE	t	P
Intercept	1.633	0.188	8.702	<.001
Teacher Management Strategies	-0.034	0.059	-0.583	0.56
Peer Collaboration	0.116	0.055	2.109	0.036

R= 0.168; $R^2 = 0.028$; F-value = 100.70; p- value = 0.060

Model Fit Measure reveals a weak positive correlation (R = 0.168) and limited predictive capability ($R^2 = 0.028$), with an Adjusted R^2 of 0.018, indicating a minimal contribution of predictors, and while the overall model is not statistically significant (p = 0.060), the intercept is significant (p < 0.001), and peer collaboration has a positive and statistically significant relationship with academic performance (coefficient = 0.116, p =

0.036), whereas teacher management strategies show a slight negative but statistically insignificant relationship (coefficient = -0.034, $p = 0.560$).

Table 3: Mediation Table

Effect	Estimate	SE	95% Confidence	Z	p	%Mediation
			Interval			
Indirect	0.0834	0.0431	[0.0048, 0.162]	2.08	0.038	62.98
Direct	0.049	0.044	[-0.037, 0.135]	1.11	0.267	37.02
Total	0.1334	0.0596	[0.0156, 0.249]	2.22	0.028	100

The study of mediation estimates reveal that peer collaboration significantly mediates the relationship between the independent variable and academic performance (indirect effect = 0.0834, $p = 0.038$), accounting for 62.98% of the total effect, while the direct effect (0.0490, $p = 0.267$) is weak and non-significant, and the total effect (0.1334, $p = 0.028$) is statistically significant, confirming full mediation according to the Baron and Kenny framework; the findings suggest that peer collaboration plays a crucial role in improving academic performance, while teacher management strategies show negligible impact, with the model having limited predictive capability and minimal influence on academic performance.

DISCUSSIONS

The results indicate that teachers view peer collaboration and classroom management strategies as essential for shaping the classroom environment, acknowledging their benefits in supporting teaching and learning, while also recognizing that the academic performance of learners with intellectual disabilities is only "fairly satisfactory," suggesting room for improvement in enhancing support and refining teaching strategies, which aligns with the findings of Zhang et al. (2021), Rivera and Solano (2021), and Evans et al. (2021), who highlight the positive impact of teacher collaboration on student outcomes, relational skills, and mindset, and emphasize the role of collaborative approaches, alongside adaptive teaching methods like differentiated instruction (Lin et al., 2020) and assistive technologies (Torres et al., 2023; Cruz & Lopez, 2020), in improving both academic and social growth.

The results indicating negligible relationships between peer collaboration, teachers' management strategies, and the academic performance of learners with intellectual disabilities suggest that these factors may not directly impact academic outcomes for this population, which aligns with Stockard et al. (2020), who found that direct instruction outperforms other methods, and with Eppley et al. (2019), who highlighted that tailored direct instruction has a stronger effect on academic achievement than general collaborative practices or management strategies, while Hellmich & Görel (2020) and Chao et al. (2021) emphasize the importance of individualized support and targeted interventions, suggesting the need for more focused instructional strategies to improve outcomes for students with intellectual disabilities.

The findings indicate that the model has limited predictive capability and is not statistically significant, with independent variables showing minimal influence on academic performance, though peer collaboration demonstrates a positive and significant relationship, aligning with Mitchell and Sutherland (2020) who found that customized instructional approaches yield better outcomes for learners with intellectual disabilities, and with Iacono et al. (2023) who emphasized the necessity of tailored support, while Cao et al. (2024) highlighted the positive influence of peer interactions on academic performance, and contrasting findings, such as those from ERIC (2022), illustrate that the effectiveness of peer collaboration depends on specific tasks and group dynamics.

The mediation analysis indicates that peer collaboration significantly mediates the relationship between the independent variable and academic performance, accounting for the majority of the effect, with the total effect being statistically significant while the direct effect is weak and not significant, aligning with Romiszowski

(2024) who emphasized the importance of individualized teaching methods over general management or collaborative practices, and with Brown et al. (2020) and Patel et al. (2020), who noted that peer collaboration and classroom management alone may not significantly improve academic outcomes for learners with intellectual disabilities, suggesting the need for targeted interventions addressing specific student needs with intellectual disabilities.

CONCLUSION

Based on the findings of the study, it is concluded that peer collaboration has no significant mediating effect on the correlation between teacher management strategies and academic performance of learners with intellectual disabilities. This conclusion negates Vygotsky's Sociocultural Theory of Cognitive Development, particularly the concept of the Zone of Proximal Development (ZPD), which emphasizes that learning is a social process where interactions with peers and teachers significantly influence cognitive development.

RECOMMENDATIONS

Promote inclusive education through teacher training, peer collaboration, and supportive policies. Education systems should prioritize inclusive practices by training teachers in effective classroom management and peer collaboration strategies, integrating these approaches into curricula, and establishing supportive policies. Providing resources, fostering community engagement, and ensuring an inclusive environment will enhance the academic performance of students with disabilities, advancing equitable access to quality education in line with Sustainable Development Goal 4 (SDG 4). Furthermore, incorporating diverse research methodologies, such as qualitative or mixed methods, can deepen the understanding of inclusive education practices and contribute to more effective policymaking and program development.

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