

Multilevel Analysis of Teachers Professional Competence, Instructional Management Proficiency, And Students Academic Performance

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ABSTRACT

This study examined the influence of teachers' professional competence and instructional management on students' academic performance, based on their general weighted average, through a multilevel analysis that accounts for classroom-level variance and informs the design of a professional development program in the third Congressional District, Division of Camarines Sur, school year 2025-2026. It assessed teacher competence across domains such as content knowledge, pedagogy, learning environment, diversity of learners, curriculum planning, assessment, community linkages, and professional growth. Instructional management proficiency was examined in terms of instructional delivery, planning and resources, pedagogical practice, and assessment and feedback. Learners' academic performance was measured through their general weighted average (GWA). Using multilevel modeling, the study determined the extent of variance in student GWA attributable to teacher-level factors and established the predictive power of teacher competence and instructional management while accounting for classroom-level differences. A professional development program on instructional management was crafted to enhance teacher effectiveness and improve student achievement. There were 556 respondents in the study, composed of 43 teachers and 513 students. Purposive Sampling was used to identify the schools, teachers, and learners. Descriptive-Correlational and Comparative methods were used in this study. Conclusions revealed that teachers demonstrated very high levels of competence and commendable instructional proficiency, though targeted improvement in weaker dimensions remains necessary. Student performance was consistently high, with notable district-level variations that call for equitable interventions. Multilevel analysis confirmed that teacher-level factors significantly and meaningfully explained differences in student achievement, with professional competence emerging as the strongest predictor of learners' general weighted average. Instructional management contributed additional support, but its interaction with competence highlighted the importance of balanced integration rather than maximization. A professional development program was designed to strengthen instructional management, promote equity, and uphold innovation and quality standards across districts.

Keywords: Teachers' professional competence, Instructional management, Student academic performance (GWA), Multilevel analysis, Professional development program.

Introduction

Teacher professionalism and competence are widely recognized as foundational to effective education systems, directly shaping instructional quality and student achievement (Herawati & Tjahjono, 2020; Handini, 2024; Zakirova, 2016; Asmarani et al., 2020). Globally, educators face pressures to uphold ethical standards, adapt to evolving curricula, and respond to diverse student needs. When institutional support is limited, overcrowded classrooms and resource constraints further weaken motivation, accountability, and trust, ultimately affecting student outcomes (Murkatik et al., 2020; Rusman, 2020). These systemic issues underscore the interdependence of professionalism, competence, and instructional management in sustaining high-quality education (Suharsaputra, 2018; Kurniasih, 2017; Mulyasa et al., 2021).

This concern is closely aligned with Sustainable Development Goal 4 (SDG 4), which calls for inclusive and equitable quality education and lifelong learning opportunities for all. SDG 4 emphasizes reducing disparities in both access and quality, particularly for vulnerable groups such as children from low-income families, rural communities, indigenous populations, and refugees. Central to achieving this goal is the presence of well-trained teachers, whose professionalism and competence enable the creation of effective learning environments where all learners can succeed (Aqib et al., 2018; Syaodih, 2018; Uno & Odu, 2018; Sani, 2017). In the Philippines, the Department of Education (DepEd) has introduced initiatives to strengthen teacher skills and competencies, with DepEd Memorandum No. 050, series 2020, serving as a legal basis. This memorandum outlines the Professional Development Priorities for Teachers and School Leaders for School Year 2020–2023, emphasizing continuous upskilling and reskilling guided by needs assessments conducted by the National Educators Academy of the Philippines (NEAP).

Despite these efforts, challenges persist. International assessments such as TIMSS (2019) and PISA (2018) revealed that the Philippines ranked lowest among 58 participating countries, raising concerns about instructional quality and pressing the need for reforms (Dingal, 2023). Studies affirm that competence is multidimensional and central to student success: Dy-Cok (2024) highlighted the influence of leaders' instructional competence on teacher performance, Riva (2023) linked organizational culture to improved outcomes, and Raganas & Collado (2016) emphasized instructional management as deliberate planning, implementation, and assessment of the learning environment. The significance of this study extends to teachers, students, school leaders, and policymakers, offering insights into enhancing competence and instructional management. However, gaps remain in sustaining professional development, ensuring adequate resources, and addressing systemic inequities. The rationale for conducting this research lies in its potential to identify specific areas where teachers require support, thereby improving teaching practices and fostering better academic outcomes. This study underscores the critical importance of teaching effectiveness in advancing student achievement and fulfilling the commitment to inclusive and quality education.

Research Objectives

This study determined the influence of teachers' professional competence on their instructional management proficiency and the academic performance of Grade 11 learners in the Third Congressional District, Division of Camarines Sur, school year 2025-2026, and crafted a professional development program. Specifically, it determined the level of teachers' professional competence in terms of content knowledge and pedagogy, learning environment, diversity of learners, curriculum and planning, assessment and reporting, community linkages and professional engagement, and personal growth and

professional development; assess the level of instructional management proficiency along instructional delivery, instructional planning and resources, content and pedagogical practice, and assessment and feedback; describe the learners' academic performance in terms of their general weighted average; determine the extent of variance in student GWA attributable to the teacher level; assess whether teacher competence and instructional management significantly predict students' GWA through a multilevel model while accounting for random intercepts across classrooms; and craft a professional development program on instructional management based on the results of the study.

Methodology

This study employed a descriptive-correlational and comparative design to examine the influence of teachers' professional competence on instructional management proficiency, learners' academic performance, and the development of a professional development program in the Third Congressional District, Division of Camarines Sur. The descriptive method was used to profile teacher competence based on the Philippine Professional Standards for Teachers (PPST), instructional management proficiency, and learners' general weighted average (Santos, 2019; Reyes, 2021). The correlational method analyzed the relationship between teacher competence and instructional management (Herawati & Tjahjono, 2020; Handini, 2024; Murkatik et al., 2020; Rusman, 2020; Mulyasa et al., 2021), while the comparative method assessed differences in learners' performance across districts (Cano, 2022; Palmerola, Amorado, & Arabilla, 2024; Umpar, Sinfuego, Condez, Abuton, & Punzalan, 2025).

Respondents were selected through purposive sampling, involving 12 national high schools with 43 teachers and 513 Grade 11 learners across six municipalities. This ensured participants were directly relevant to the study's objectives, aligning with standardized assessments and curriculum benchmarks. The survey questionnaire, anchored on PPST, measured teacher competence and instructional management proficiency, validated through expert review, revisions, and reliability testing (Santos, 2020; Reyes & Bautista, 2022). Documentary analysis complemented this by determining learners' academic performance through their General Weighted Average (Garcia, 2019; Domingo, 2021).

For data analysis, descriptive statistics summarized teacher competence, instructional management, and learner performance. Weighted mean and standard deviation were used to measure levels and variability (Reyes, 2020; Lopez, 2019; Villanueva, 2021), while performance levels categorized achievement outcomes (Tison, Lachica, & Bautista, 2025). Intraclass Correlation (ICC) quantified variance in student GWA attributable to teacher-level factors (Zhang & Lai, 2024; Mehrvarz & Rouder, 2025). Multilevel modeling (MLM) analyzed student- and teacher-level predictors simultaneously, accounting for classroom clustering (Closser, Sales, & Botelho, 2024; Zhang, Tse, & Lai, 2024; Shao, Xu, & Jacobucci, 2025). The Modified ADDIE Model guided the design of the professional development program, ensuring evidence-based, iterative, and adaptable training modules (Benedicto, 2025; Abuhassna et al., 2024; Zahida et al., 2024).

Results And Discussion

This section presents and interprets the data in line with the study's objectives. Results are organized around the key variables: teachers' professional competence, instructional management proficiency, and the academic performance of Grade 11 learners in the Third Congressional District, Division of Camarines Sur. The discussion integrates statistical findings with related studies and theoretical perspectives to explain the relationships among these variables.

Professional Competence of Teachers

Table 1 presents the professional competencies of teachers across the Third Congressional District of Camarines Sur. Teachers were generally rated “Very Highly Competent” across all seven domains, with slight variations among districts and schools. District-level results showed strengths in Learning Environment, Curriculum and Planning, and Assessment and Reporting, while Diversity of Learners and Personal Growth and Professional Development tended to be lower, though still highly rated. At the school level, School E achieved the highest overall mean of 3.86, followed by Schools C, F, B, and A, all “Very Highly Competent,” while School D registered the lowest mean at 3.22, interpreted as “Highly Competent.” In general, Assessment and Reporting emerged as the strongest domain, while Diversity of Learners was the weakest, emphasizing consistent excellence in teacher competence with areas for further development.

Table 1 Summary of the Professional Competencies of Teachers

Professional Competencies	A	B	C	D	E	F	AWM	Int.
Assessment and Reporting	3.45	3.59	3.83	3.21	3.86	3.79	3.62	VHC
Curriculum and Planning	3.40	3.64	3.80	3.21	3.87	3.74	3.61	VHC
Learning Environment	3.46	3.53	3.76	3.26	3.86	3.74	3.60	VHC
Linkages and Professional Engagement	3.46	3.57	3.78	3.18	3.85	3.74	3.60	VHC
Content Knowledge and Pedagogy	3.38	3.57	3.75	3.22	3.88	3.76	3.59	VHC
Personal Growth and Professional Development	3.42	3.61	3.68	3.25	3.85	3.75	3.59	VHC
Diversity of Learners	3.34	3.54	3.79	3.23	3.85	3.74	3.58	VHC
Average Weighted Mean	3.42	3.57	3.79	3.22	3.86	3.74	3.60	VHC
Interpretation	VHC	VHC	VHC	HC	VHC	VHC		

Note: 1.00-1.75=Fairly Competent (FC); 1.76-2.50=Moderately Competent (MC); 2.51-3.25=Highly Competent (HC); 3.26-4.00=Very Highly Competent (VHC).

The findings reveal that teachers consistently demonstrate very high competence across professional domains, with notable strengths in assessment, curriculum planning, and content knowledge, reflecting their ability to design effective learning experiences and evaluate student progress with confidence (Aguilar, 2018; Ferrer, 2019). Slightly lower ratings in diversity of learners and professional engagement suggest areas needing more deliberate focus, as disparities across schools highlight contextual challenges and varying institutional support (Ortega, 2021; Salazar, 2023). These results align with recent scholarship emphasizing the multidimensional nature of teacher competence—strong in assessment and planning but tempered by gaps in inclusivity and sustained professional development (Jimenez, 2020)—thus affirming Medley’s Teacher Competence Theory (1977). Overall, the study portrays a robust professional profile while underscoring the need for balanced growth to ensure excellence across all domains of teaching practice.

Level of Instructional Management Proficiency of Teachers

Table 2 demonstrates the teachers’ instructional proficiency across four major dimensions: assessment and feedback, instructional delivery, instructional planning and resources, and content and pedagogical

practices. Teachers’ instructional management proficiency was rated overall as Very Highly Proficient (mean = 3.50), with strengths in assessment and feedback (3.53) and slightly lower ratings in content and pedagogical practices (3.47). District-level results showed variation: District E achieved the highest mean (3.87), followed by Districts F (3.74) and C (3.72), while District D recorded the lowest (2.99, Highly Proficient). Across dimensions, teachers consistently demonstrated effective delivery, planning, and resource use, with assessment emerging as a key strength. These findings affirm strong instructional proficiency overall, while highlighting minor contextual differences that suggest areas for targeted support.”

Table 2 Level of Teachers’ Instructional Proficiency

Dimensions	A	B	C	D	E	F	AWM	Int.
Assessment and Feedback	3.28	3.45	3.77	3.02	3.90	3.77	3.53	VHC
Instructional Delivery	3.38	3.36	3.70	3.00	3.86	3.70	3.50	VHC
Instructional Planning & Resources	3.21	3.46	3.68	2.98	3.85	3.77	3.49	HC
Content and Pedagogical Practice	3.16	3.38	3.74	2.96	3.87	3.73	3.47	VHC
Average Weighted Mean	3.26	3.41	3.72	2.99	3.87	3.74	3.50	
Interpretation	VHC	VHC	VHC	HC	VHC	VHC		

Note. 3.26-4.00=Very Highly Proficient (VHP), 2.50-3.25=Highly Proficient (HP), 1.76-2.50=Moderately Proficient (MP), 1.00-1.75=Fairly Proficient (FP).

Teachers demonstrated strong instructional proficiency across all dimensions, with most indicators rated Very Highly Proficient, particularly in assessment and feedback and instructional delivery (Sajonia & Gabion, 2025). Slightly lower ratings in content and pedagogical practices suggest areas requiring reinforcement, consistent with findings by Torregosa (2024) and Baylon, Manla, & Mahinay (2023) that gaps in pedagogy can hinder consistent outcomes. Differences among respondents highlight contextual influences such as resources and administrative support, echoing Santos & Bautista’s (2023) emphasis on instructional leadership. The importance of continuous professional development, noted by Amemasor et al. (2025) and Edu (2025), further supports targeted interventions to balance proficiency levels. Anchored on Medley’s Teacher Competence Theory (1977, as cited by Villegas, 2021), these results affirm that competence is multidimensional, shaped by both individual skills and systemic support, underscoring the need for strategic focus on weaker domains to sustain excellence.

Level of Learners’ Academic Performance

Table 3 illustrates the distribution of students’ academic performance across six districts, categorized by grade ranges, which was generally rated Very Satisfactory, with an overall mean of 87.49 and standard deviation of 4.13. District-level results showed that District E achieved the highest mean (88.53), followed by District B (88.04), District F (87.63), District D (86.93), District A (86.74), and District C (86.45). The lowest mean was recorded in District D (86.93), though still within the Very Satisfactory range. Grade distributions revealed that the highest frequencies were consistently in the 90–92 bracket, while the lowest were in the 78–80 bracket. These findings indicate that learners across districts maintain commendable performance levels, with slight variations reflecting contextual differences in instructional support and learning environments.

Table 3 Academic Performance of Students

District	A		B		C		D		E		F		Total	
Grades	f	%	f	%	f	%	f	%	f	%	f	%	f	%
96-98	16	2.68	0	0	0	0	3	4.48	7	8.00	5	0	31	3.04
93-95	20	3.57	3	3.66	2	3.33	3	7.46	10	12.00	8	3.75	46	6.08
90-92	41	21.43	27	39.02	9	15.00	7	17.91	20	20.00	30	37.50	134	25.10
87-89	33	23.22	14	23.17	15	33.33	5	22.39	28	26.40	20	18.75	115	24.33
84-86	29	25.89	15	25.61	10	25.00	4	19.40	21	20.80	24	26.25	103	23.76
81-83	19	16.96	6	6.10	8	21.67	5	22.39	11	8.80	8	10.00	57	13.50
78-80	12	6.25	2	2.44	1	1.67	4	5.97	5	4.00	3	3.75	27	4.19
Total	170	100	67	100	45	100	31	100	102	100	98	100	513	100
Mean	86.74		88.04		86.45		86.93		88.53		87.63		87.49	
SD	4.18		3.38		3.43		4.66		4.56		3.71		4.13	
PL	VS		VS		VS		VS		VS		VS		VS	

Note: Interpretation values for Performance Level (PL): 90-100=Outstanding (O); 85-89=Very Satisfactory (VS); 80-84=Satisfactory (S); 75-79=Fairly Satisfactory (FS); 74 and Below=Did not Meet Expectations (DNME).

The academic performance of students indicates that achievement is consistently strong, with most learners attaining Very Satisfactory levels. This stability, reflected in narrow standard deviations, suggests that instructional programs and learning environments are generally effective in minimizing underperformance. However, the concentration of students in the high-performance bracket also points to untapped potential for elevating more learners into the Outstanding category. Contextual factors such as resources, leadership, and teaching conditions remain influential, as highlighted in recent studies linking socioeconomic status, instructional delivery, and professional development to achievement outcomes (Tison et al., 2024; Umpar et al., 2025; EDCOM II, 2025). Anchored on Walberg’s Theory of Academic Achievement (1980, as cited by Bentsi-Enchill, 2024), the findings affirm that both instructional quality and environmental support shape performance, underscoring the need for strategic interventions that strengthen weaker contexts while sustaining excellence across districts.

Extent of Variance in Student GWA Attributable to the Teacher Level

The analysis of variance in student GWA attributable to teacher-level factors demonstrates that instructional quality and contextual influences significantly shape learner achievement. The conditional model, in Table 4a, with an R² of 0.754 and a highly significant likelihood ratio test ($\chi^2 = 671.606, p < .001$), indicates that including teacher-level variables substantially improves explanatory power compared to the marginal model (R² = 0.589, $\chi^2 = 443.904, p < .001$). The results in Table 5b (Random Components) show that the teacher-level intercept has a variance of 1.60, a standard deviation of 1.26, and an intraclass correlation coefficient (ICC) of 0.403. The residual variance is 2.37 with a standard deviation of 1.54. The dataset includes 513 observations across 43 teacher groups.

Table 4a

Model Fit

Type	R ²	df	LRT X ²	p
Conditional	0.754	4	671.606	<.001
Marginal	0.589	3	443.904	<.001

Table 4b

Random Components

Groups	Name	Variance	SD	ICC
Teacher ID	(Intercept)	1.60	1.26	0.403
Residual		2.37	1.54	

Note. Number of Obs: 513, Number of groups: Teacher ID 43

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The analysis confirms that teacher-level factors account for a substantial proportion of variance in student GWA, with the conditional model showing strong explanatory power and the intraclass correlation indicating that roughly 40% of performance differences are attributable to teachers. This underscores the critical role of instructional quality, teaching strategies, and classroom management in shaping academic outcomes, while also highlighting the importance of complementary factors such as resources and school environment. Recent studies affirm these findings, showing that teacher effectiveness significantly predicts achievement (Mendez, 2025; Zhang, 2025; Garcia & Reyes, 2023), though socioeconomic and systemic conditions also exert influence (Santos, 2022; Lee, 2021). Anchored on Medley’s Teacher Competence Theory (1977, as cited by Villegas, 2021), the results emphasize that competence is multidimensional and context-dependent, validating the need for targeted interventions in teacher development alongside broader educational reforms to maximize student performance.

Teacher Competence and Instructional Management Significantly Predict Students' GWA through a Multilevel Model while Accounting for Random Intercepts Across Classrooms

The multilevel model results show that both teacher competence and instructional management significantly predict students’ General Weighted Average (GWA). Teacher competence demonstrated the strongest positive effect ($F = 260.4, p < .001$), while instructional management contributed moderately ($F = 16.1, p < .001$). The interaction between the two factors was also statistically significant ($F = 17.5, p < .001$), though the negative coefficient ($-2.093, p < .001$) suggests that their combined influence does not always yield additive benefits. Parameter estimates further confirm these effects, with teacher competence ($\beta = 6.152$) exerting the largest impact, instructional management ($\beta = 0.843$) showing a smaller but meaningful contribution, and the interaction term indicating a complex relationship between the two predictors. Overall, the data highlight that teacher competence is the dominant factor in shaping student GWA, while instructional management and its interaction with competence also play significant, though nuanced, roles.

Table 5a
Fixed Effects Omnibus Tests

	F	df	df (res)	p
Teacher Competence (IV1)	260.4	1	498	<.001
Teacher Competence (IV2)	16.1	1	509	<.001
Teacher Competence (IV1) * Instructional Management (IV2)	17.5	1	509	<.001

Table 6b
Parameter Estimates (Fixed coefficients)

Names	Estimate	SE	95% Confidence Intervals		df	t	p
			Lower	Upper			
(Intercept)	89.180	0.213	88.761	89.60	48.2	417.86	<.001
Teacher Competence (IV1)	6.152	0.381	5.403	6.90	498.2	16.14	<.001
Instructional Management (IV2)	0.843	0.210	0.430	1.26	508.8	4.01	<.001
Teacher Competence (IV1) * Instructional Management (IV2)	-2.093	0.501	-3.076	-1.11	508.9	-4.18	<.001

The multilevel model results confirm that teacher competence exerts the strongest positive effect on student GWA, while instructional management contributes moderately, and their interaction, though significant, yields a negative coefficient, suggesting complexity in how these dimensions combine. The very high F-value for teacher competence underscores its dominant role, but the significant interaction effect indicates that instructional management can moderate or reshape this influence. These findings highlight that teaching effectiveness is multidimensional, requiring both competence and management strategies, yet their interplay must be balanced to avoid redundancy or diminishing returns. Consistent with recent scholarship (Zhang & Li, 2022; García & Torres, 2023; Nguyen et al., 2021; Kumar & Singh, 2024; Rivera & Santos, 2025), the results affirm that competence and management are interdependent dimensions of effective teaching. Anchored on Medley’s Teacher Competence Theory (1977, as cited by Villegas, 2021), the study underscores that teacher expertise and classroom practices jointly shape student achievement, reinforcing the need for integrated professional development that harmonizes both domains.

Professional Development Program to Enhance the Professional Competence and Instructional Management Proficiency of Teachers and the Academic Performance of Learners

The Professional Development Plan (PDP) provides a structured roadmap to strengthen teacher competence and instructional proficiency in line with the Philippine Professional Standards for Teachers (PPST). Guided by the Modified ADDIE model, it systematically addresses identified gaps, particularly in diversity of learners, community linkages, and school-based management, while sustaining strengths in assessment, curriculum planning, and pedagogy. The Analyze phase highlights uneven performance across districts, with strong technical skills but weaker inclusivity and collaboration. The Design phase outlines targeted, SMART interventions such as differentiated instruction, stakeholder engagement, and advanced training in assessment and pedagogy. The Develop phase translates these into concrete modules, toolkits,

and resources contextualized to district needs, piloted through workshops, peer coaching, and Learning Action Cells (LACs). Overall, the PDP ensures balanced growth across PPST domains, fostering equity, collaboration, and continuous improvement, with the ultimate goal of elevating learner performance from Very Satisfactory toward Outstanding

CONCLUSIONS

The study concluded that teachers exhibited very high competence and proficiency overall, though continuous improvement is necessary to sustain excellence. District-level variations in student performance highlight the need for targeted support to ensure equitable outcomes, while teacher-level influences emerge as critical determinants of achievement. Teacher competence stands out as the most powerful predictor, with instructional management providing additional support but requiring careful integration to avoid diminishing returns. These support the importance of prioritizing teacher development, balancing competence with management strategies, and implementing professional development programs that promote equity, innovation, and quality education across all districts.

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