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TEACHERS' CURRICULUM INTEGRATION SKILLS AND COGNITIVE DEMAND MANAGEMENT IN MULTIGRADE CLASSROOMS

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ABSTRACT

This quantitative study examined teachers' curriculum integration skills and cognitive demand management in multigrade classrooms across Arakan, Antipas, and President Roxas, North Cotabato during School Year 2025–2026. Using a descriptive-correlational design, 210 multigrade teachers were surveyed through a validated questionnaire (Cronbach's alpha: .910 and .935). Data analysis employed weighted mean, Spearman's rank-order correlation, and multiple regression. Findings revealed that teachers demonstrated high proficiency in curriculum integration (WM=4.51), with lesson planning rated highest and assessment practices lowest. Cognitive demand management was likewise highly effective (WM=4.50), with pacing as the strongest dimension. Correlation analysis showed significant relationships between instructional strategies and task differentiation (r=.597, p=.044), as well as scaffolding (r=.607, p=.004). Lesson planning was significantly related to pacing (r=.589, p=.009). Regression confirmed lesson planning as a predictor of pacing, and instructional strategies as predictors of task differentiation and scaffolding. Results reject the null hypotheses, affirming that curriculum integration skills significantly influence cognitive demand management in multigrade classrooms.

KEYWORDS: *Curriculum Integration Skills, Cognitive Demand Management, Multigrade Classrooms, Lesson Planning, Instructional Strategies, Task Differentiation, Scaffolding*

INTRODUCTION

Teaching in multigrade classrooms presents unique pedagogical demands, particularly when schools integrate students from multiple grade levels due to limited instructors and resources. Curriculum integration—the practice of designing lessons that connect topics across subjects and grades—improves the efficiency and meaningfulness of teaching in such contexts. Similarly, effective management of cognitive demands helps pupils remain interested without becoming overwhelmed (Smith, 2024). While both curriculum integration and cognitive demand management are recognized as foundational to effective instruction, their synergistic relationship in multigrade classrooms has been insufficiently examined, particularly in Philippine rural schools (Gonzales, 2021; Navarro, 2022).

Local studies in Arakan, such as Decinilla (2024), found that multigrade teachers often struggle with lesson planning, classroom management, and instruction delivery without proper support—leading to non-standardized learning outcomes and increased teacher stress. Santos (2024) confirmed that modifying cognitive demand positively affects learner engagement, while Rodriguez (2022) and Martinez (2023) indicated that combining integration and cognitive demand management may strengthen learning outcomes more than either approach alone. This study addressed those gaps by quantitatively examining the relationship and predictive influence of curriculum integration skills on cognitive demand management in multigrade classrooms.

MATERIALS AND METHODS

Research Design

A quantitative descriptive-correlational design (Fraenkel, Wallen & Hyun, 2020; Creswell & Plano Clark, 2021) was employed to examine the levels of and relationships between curriculum integration skills and cognitive demand management in multigrade classrooms.

Participants

Using stratified random sampling with Slovin's formula at 0.05 margin of error, 210 public school multigrade teachers were selected from a population of 443 across three municipalities: Arakan (n=70), Antipas (n=71), and President Roxas (n=69). Eligibility criteria required a minimum of five years of continuous public school experience and current multigrade class assignment.

Research Instrument

A two-part adapted questionnaire assessed: (1) Teachers' Curriculum Integration Skills (α=.910) across three dimensions—assessment practices, instructional strategies, and lesson planning; and (2) Cognitive Demand Management (α=.935) across three dimensions—pacing, task differentiation, and scaffolding of learning activities. Items were rated on a 5-point Likert scale (1=Very Slightly Skilled/Managed to 5=Highly Skilled/Managed). The instrument was adapted from Khalid (2024) and Sali (2021) and validated by three experts in curriculum studies, educational psychology, and multigrade instruction.

Statistical Analysis

Weighted means described the levels of curriculum integration skills and cognitive demand management. Spearman's rank-order correlation assessed the significance and direction of relationships between the two variable sets. Multiple regression analysis identified the significant predictors of each cognitive demand management dimension from among the curriculum integration skill dimensions (Galo, 2015).

RESULTS AND DISCUSSION

Level of Teachers' Curriculum Integration Skills

All three curriculum integration dimensions were rated as highly skilled. Lesson planning registered the highest weighted mean (WM=4.52), followed by instructional strategies (WM=4.51) and assessment practices (WM=4.50). The overall curriculum integration skills mean was 4.51 (Highly Skilled), indicating consistent integration of curriculum through aligned assessment, responsive strategies, and well-structured lesson plans in multigrade contexts.

Table 1. Level of Teachers' Curriculum Integration Skills.

Curriculum Integration Dimension	Weighted Mean	Description
Assessment Practices	4.50	Highly Skilled
Instructional Strategies	4.51	Highly Skilled
Lesson Planning	4.52	Highly Skilled
Overall	4.51	Highly Skilled

These findings align with Vigo-Arrazola and Moreno-Pinillos (2025), who confirmed that teaching is flexible and learner-responsive when teachers implement adaptive instructional strategies and inclusive approaches to multigrade classrooms. The high lesson planning

scores support Rondero and Casupanan (2024), who emphasized that lesson structure influences both classroom management and learning delivery, especially in multigrade instruction.

Level of Cognitive Demand Management

All three cognitive demand management dimensions were rated as highly managed. Pacing registered the highest weighted mean (WM=4.51), while task differentiation and scaffolding of learning activities both scored 4.50. The overall mean was 4.50 (Highly Managed), indicating consistent teacher effectiveness in managing instructional time, differentiating tasks, and scaffolding learning activities across grade levels.

Table 2. Level of Cognitive Demand Management.

Cognitive Demand Management Dimension	Weighted Mean	Description
Pacing	4.51	Highly Managed
Task Differentiation	4.50	Highly Managed
Scaffolding of Learning Activities	4.50	Highly Managed
Overall	4.50	Highly Managed

These results are supported by Lacre and Valle (2024), who reinforced that responsive strategies enabling sustained instruction and learner engagement are paramount for successful multigrade classroom management. The high pacing scores align with Jones (2025), who reported that structured instruction allows lessons to flow more smoothly across different learner capacities.

Relationship between Curriculum Integration Skills and Cognitive Demand Management

Spearman's rho analysis revealed selective but significant positive relationships. Instructional strategies were significantly correlated with task differentiation (r=.597, p=.044) and scaffolding of learning activities (r=.607, p=.004). Lesson planning was significantly correlated with pacing (r=.589, p=.009). Assessment practices showed no significant relationships with any cognitive demand management dimension. Null hypotheses for the significant relationships were rejected.

Table 3. Spearman's Rho Correlation Matrix.

Curriculum Integration Dimension	Pacing (r)	Task Differentiation (r)	Scaffolding (r)
Assessment Practices	.039 (ns)	-.019 (ns)	-.074 (ns)
Instructional Strategies	.018 (ns)	.597* (p=.044)	.607** (p=.004)
Lesson Planning	.589** (p=.009)	-.080 (ns)	-.091 (ns)

***p<.01; *p<.05; ns=not significant*

The significant relationship between instructional strategies and task differentiation and scaffolding is supported by Maloloy-On and Apas (2025), who emphasized that various pedagogical practices meeting different learner needs involve flexible instruction, engagement in learning, and responsive classroom support. The significant relationship between lesson planning and pacing aligns with Questa-Torterolo (2025), who highlighted that structured lessons support teachers in addressing diverse learner needs and maintaining instructional flow.

Influence of Curriculum Integration Skills on Cognitive Demand Management

Multiple regression confirmed significant collective influence of curriculum integration dimensions on all three cognitive demand management outcomes. For pacing ($F=4.463$, $R^2=0.016$, $p=0.000$), lesson planning was the sole significant predictor ($\beta=.066$, $p=.000$). For task differentiation ($F=4.815$, $R^2=0.011$, $p=0.000$), instructional strategies was the sole significant predictor ($\beta=.084$, $p=.000$). For scaffolding of learning activities ($F=3.629$, $R^2=0.021$, $p=0.005$), instructional strategies was again the sole significant predictor ($\beta=.111$, $p=.003$).

Table 4. Multiple Regression: Curriculum Integration Predicting Cognitive Demand Management.

Outcome	Significant Predictor	Beta	R^2	F	p
Pacing	Lesson Planning	.066	0.016	4.463	0.000**
Task Differentiation	Instructional Strategies	.084	0.011	4.815	0.000**
Scaffolding of Learning	Instructional Strategies	.111	0.021	3.629	0.005**

***p<.01*

The low R^2 values (0.011–0.021) indicate that while curriculum integration skills exert a significant influence, the majority of variance in cognitive demand management is explained by factors beyond the scope of this study—such as classroom context, school support, and teacher experience—underscoring the multifactorial nature of effective multigrade instruction (Carrete-Marín et al., 2024).

CONCLUSION

This study confirms that multigrade teachers in Arakan, Antipas, and President Roxas demonstrate highly skilled curriculum integration and highly effective cognitive demand management. Lesson planning emerged as the strongest integration dimension and the significant predictor of pacing, while instructional strategies were the significant predictors of both task differentiation and scaffolding. The null hypotheses are rejected, confirming significant relationships and influences between selected curriculum integration dimensions and cognitive demand management outcomes. However, the low R^2 values signal that other organizational, contextual, and professional factors also shape cognitive demand management in multigrade settings. Professional development programs should specifically target instructional strategy enhancement and lesson planning quality to most effectively improve teachers' capacity to manage cognitive demand across grade levels in multigrade classrooms.

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REFERENCES

1. Bagay, F. (2024). Multigrade teachers' experiences: A phenomenological study. Philippine Journal of Education, 103(2), 45–62.
2. Bae, J., & Kwon, S. (2021). Combining curriculum integration and cognitive demand in multigrade settings. Asia Pacific Journal of Education, 41(3), 400–415.
3. Bunga, R., Olano, M., & Morga, J. (2025). Multigrade teaching effectiveness and differentiated instruction. Philippine Educational Research, 14(1), 12–28.

4. Carrete-Marín, N., Domingo-Peñafiel, L., & Domingo, J. (2024). Multigrade teaching: resource dependency and responsive practice. Journal of Rural Education, 39(2), 110–128.
5. Creswell, J. W., & Plano Clark, V. L. (2021). Designing and conducting mixed methods research (3rd ed.). SAGE Publications.
6. Decinilla, R. (2024). Challenges in multigrade instruction in Arakan. Cotabato Educational Review, 8(1), 34–50.
7. Epilogo, M., & Flogoso, C. (2025). Differentiated instruction in multigrade classrooms. Philippine Journal of Educational Research, 15(2), 78–95.
8. Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2020). How to design and evaluate research in education (10th ed.). McGraw-Hill.
9. Galo, A. (2015). Multiple regression analysis in educational research. Journal of Philippine Educational Research, 5(1), 45–58.
10. Gonzales, M. (2021). Research gaps in multigrade classroom studies. Philippine Educational Research, 10(2), 55–72.
11. Jones, P. (2025). Multigrade teaching in Jamaica: Adaptive practices and time management. Caribbean Journal of Education, 47(1), 22–40.
12. Khalid, A. (2024). Curriculum integration strategies and instructional effectiveness. International Journal of Curriculum Studies, 12(1), 78–95.
13. Lacre, A., & Valle, B. (2024). Responsive strategies in multigrade classrooms. Philippine Journal of Rural Education, 11(2), 44–60.
14. Maloloy-On, R., & Apas, C. (2025). Pedagogical practices in multigrade settings. Journal of Philippine Education, 104(1), 22–38.
15. Martinez, A. (2023). Combining integration and cognitive demand in rural schools. Journal of Educational Research Philippines, 16(3), 100–118.
16. Morphett, K. (2025). Inclusive teaching methods in multigrade classes. Australian Journal of Rural Education, 34(2), 55–70.
17. Naparan, G. B., & Alinsug, V. (2021). Classroom strategies of multigrade teachers. Cogent Education, 8(1), 1944100.
18. Navarro, E. (2022). Curriculum integration and cognitive demand in multigrade classrooms: A review. Asian Educational Research, 10(3), 88–102.
19. Questa-Torterolo, M. (2025). Pedagogical demands of multigrade instruction. Latin American Educational Research, 22(1), 110–130.

20. Rodriguez, M. (2022). Cognitive demand and learner engagement in multigrade settings. Philippine Journal of Education, 101(2), 34–50.
21. Rondero, L., & Casupanan, R. (2024). Lesson planning in multigrade instruction. Philippine Educational Review, 12(1), 45–62.
22. Sali, J. M. (2021). Cognitive demand management in multigrade classrooms: Scale development and validation. Journal of Multigrade Education, 5(2), 34–55.
23. Santos, K. (2024). Cognitive demand and learner engagement in rural multigrade schools. Philippine Journal of Educational Research, 15(1), 20–38.
24. Smith, T. (2024). 21st-century multigrade teaching: Integration and engagement. Journal of International Education, 22(3), 115–130.
25. Valdez, M. (2023). Reducing fragmentation through integrated lessons. Philippine Journal of Pedagogy, 9(2), 44–60.
26. Vigo-Arrazola, M., & Moreno-Pinillos, M. (2025). Adaptive instructional strategies in multigrade classrooms. International Journal of Inclusive Education, 29(1), 55–72.