

Classroom management practices of mathematics teachers in public secondary schools of Tagudin District, Division of Ilocos Sur

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Abstract

This study investigates classroom management practices of mathematics teachers in Tagudin District's public secondary schools. It identifies and evaluates strategies for creating organized and inclusive learning environments. Employing a mixed-methods approach, the research combines survey data with qualitative insights from interviews and classroom observations involving mathematics teachers and administrators. Findings reveal common strategies like clear rules, accountability, positive reinforcement, and interactive activities. Challenges include managing misbehavior, diverse learning needs, and motivation. The study underscores the significance of teacher-student relationships, effective communication, and proactive discipline. Recommendations include continuous professional development, peer mentoring, and evidence-based strategies tailored for mathematics instruction. These aim to enhance teacher effectiveness, promote positive student behavior, and improve academic outcomes. This research contributes to understanding classroom management in mathematics education and informs future studies and policy in secondary education.

Keywords: classroom management practices, action plan, technology integration, time management, mathematics

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1. Introduction

Teaching is a noble yet challenging profession that shapes minds and empowers future generations (Dilabayan & Sambo, 2024). Effective classroom management is fundamental for creating a positive learning environment where students feel safe and motivated, maximizing learning opportunities (Owusu et al., 2021). Globally, classroom management addresses issues like misbehavior and low engagement, adapting to cultural, socio-economic, and technological factors (Edutopia, 2019). In the Philippines, maintaining classroom discipline is a significant educational challenge from early childhood to secondary levels (Dilabayan & Sambo, 2024). Teachers require both hard and soft skills to create productive learning conditions and minimize disruptions (Escobal et al., 2023). School administrators support this by providing instructional supervision (Chen, 2018).

Teachers face immense pressures, making teaching a critical yet stressful profession (Glickman et al., 2018). Effective classroom management, involving clear rules and procedures, is crucial for meaningful learning (Owusu et al., 2021; Santander et al., 2024). Poorly managed classrooms experience disruptions that hinder learning (Owusu et al., 2021). Despite various strategies and training, classroom management remains an ongoing challenge (Oliver et al., 2018; Prodigy, 2024; Edutopia, 2019). Classroom management is essential for effective learning, particularly in Mathematics, enhancing student achievement by creating engaging and supportive conditions (Asare et al., 2021; Dimosthenous et al., 2020; Shoshani, 2021). However, implementation faces regional challenges like resource disparities, limited professional development, overcrowded classrooms, cultural and socioeconomic factors, language barriers, limited technology access, and inconsistent discipline policies.

Teachers encounter obstacles such as student misbehavior, diverse learning needs, time management issues, inconsistency in discipline, low motivation, emotional outbursts, large class sizes, limited support for special needs, teacher burnout, and parental interference. A gap exists in the literature regarding specific classroom management strategies used by Mathematics teachers and their impact on student engagement and learning outcomes, especially considering the unique challenges in mathematics classrooms (Prodigy, 2024). The relationship between teachers' emotional states and their management strategies in mathematics also needs further exploration (Praetorius et al., 2018). This study aims to provide insights for school leaders and teachers on effective classroom management practices to enhance current approaches. The findings can inform school-based action plans to improve classroom management, support teacher development, and ultimately enhance students' learning experiences.

Research Objectives - This study investigates the classroom management practices of Mathematics teachers in public secondary schools within the Tagudin District, Ilocos Sur, during the School Year 2024-2025. It aims to profile the teacher-respondents (age, sex, educational attainment, teaching experience, and their schools (resource availability), determine the level of their classroom management practices across various dimensions (teaching and learning strategies, technology integration, specific techniques, planning and support, behavior management, time management), and propose a valid action plan for improvement.

Framework of the Study - This study comprehensively examines classroom management practices among Mathematics teachers in Tagudin District's public secondary schools, employing a multi-faceted theoretical framework. The framework begins by analyzing the profiles of both teachers and schools, recognizing their foundational influence on classroom dynamics. Teacher profiles are evaluated through the lens of Human Capital Theory (emphasizing the importance of education, training, and experience), Experiential Learning Theory (highlighting professional development and teaching experience), and Social Role Theory (exploring the impact of

gender roles). School profiles are assessed using Resource-Based View Theory (underscoring the criticality of resources, including technology), the Professional Learning Communities Concept (emphasizing collaboration and ongoing professional development), and School Climate Theory (stressing the impact of a positive and resourceful environment).

The study then investigates the classroom management practices themselves, drawing upon Behaviorist Theory (to understand the use of reinforcement), Constructivist Theory (to emphasize active learning strategies), and the Technological Pedagogical Content Knowledge (TPACK) Framework (to analyze technology integration). The relationships between teacher profiles and classroom management practices are explored using the Theory of Planned Behavior (to examine the influence of attitudes and perceived control), Ecological Systems Theory (to account for personal and environmental factors), and Expectancy-Value Theory (to understand the role of teacher expectations and goals). Similarly, the link between school profiles and classroom management is analyzed through Systems Theory (to highlight the interconnectedness of school elements), the Job Demands-Resources Model (to explain how resources mitigate job demands), and Distributed Leadership Theory (to emphasize collaborative leadership).

Finally, the study addresses the challenges teachers face in classroom management and the development of a support program. The Transactional Model of Stress and Coping, Attribution Theory, and Self-Efficacy Theory provide a framework for understanding these challenges and teachers' coping mechanisms. The ADDIE Model guides program development, while Transformational Leadership Theory emphasizes the importance of visionary leadership. The program's effectiveness is evaluated using Kirkpatrick's Model and the CIPP Model, with Construct Validity Theory and Diffusion of Innovations Theory ensuring its relevance, impact, and successful implementation within the schools.

2. Methodology

Research Design - This study employed the descriptive research design to understand classroom management practices of Mathematics teachers in Tagudin District's public secondary schools. It details the use of surveys for data collection on practices and teacher profiles, correlation studies to explore relationships between teacher characteristics and management practices. In addition, developmental research was used in the formulation of the action plan as an output of the study.

Sample and Locale of the Study - There are 25 secondary mathematics teachers and 8 school administrators from public secondary schools within the Tagudin District. The study also used five expert validators who provided their expertise in the validation of the output of the study. Purposive sampling technique was used in the selection of samples in the study.

Research Instrument - The study utilized questionnaires adopted from Leal's (2019) research, consisting of three parts. Part I focused on the respondents' profiles (age, gender, education, teaching experience, training). Part II explored Teacher Classroom Management Practices regarding resource availability, technology, and professional development. Part III investigated the School Profile in terms of teaching strategies, technology integration, specific techniques, planning, behavior management, and time management.

Data Analysis/Treatment of Data - This section explains how the collected data was analysed. The frequency and percentage were used to describe the profile of the respondents. The mean was used to describe the level of classroom management practices of the teachers, and Spearman's Rho to determine relationships between profiles and classroom management practices. It also describes the categorization of mean values to identify capabilities and constraints, which would then inform the development of an Action Plan.

Ethical Considerations - This study obtained ethical review and approval, seeking permission from the Dean, attaching a cover letter explaining the study to the questionnaire, obtaining informed consent, ensuring confidentiality and anonymity of responses, providing researcher contact information, and ensuring voluntary

participation without compensation or coercion. The secured data were stored and eventual disposal of the collected questionnaires.

3. Findings

3.1 Profile of Respondent

This section presents the significant findings of this study such as the respondent's demographic profile, school profile, level of classroom management practices of teachers and the analysis on the correlation between the teachers and school profile to their practices and the proposed action plan to address the gaps identified in this study.

Table 1
Demography of the Accessible Population

| Characteristics | Frequency | Percentage (%) |
|--------------------------------|-----------|----------------|
| Gender | | |
| Male | 8 | 24.24 |
| Female | 25 | 75.76 |
| Educational Attainment | | |
| B. Ed | 4 | 12.12 |
| B. Ed with M. Ed | 17 | 51.52 |
| M. Ed | 4 | 12.12 |
| M. Ed with Ed. D. | 5 | 15.15 |
| PhD/ EdD | 3 | 9.09 |
| Teaching Experience (in years) | | |
| 1-10 | 16 | 48.48 |
| 11-20 | 8 | 24.24 |
| 21-30 | 9 | 27.27 |

(Source: Field Survey, 2024)

Gender disparities are evident, with female teachers comprising 75.76% of the respondents, significantly outnumbering their male counterparts (24.24%). Research indicates that gender can influence teaching dynamics, with female teachers often demonstrating stronger attitudes and subject matter expertise, positively impacting student outcomes, particularly in Mathematics (Cimpian et al., 2023). Additionally, female students may perform better under female teachers due to perceived relatability and emotional support (Alnahdi & Schwab, 2023). The predominance of female teachers in this study suggests a potentially supportive environment for female students, but also indicates a need to examine the impact of more balanced gender representation in teaching. The majority of teachers (51.52%) have pursued Master's level studies, demonstrating a commitment to academic advancement. This aligns with research suggesting a correlation between higher educational attainment and improved teaching effectiveness (König et al., 2023; Cimpian et al., 2023). While some teachers have completed Master's (12.12%) or Doctoral units (15.15%), fewer hold Doctorate degrees (9.09%), and none have Post-Doctorate qualifications. This highlights an opportunity for further growth in advanced academic qualifications, as higher degrees are often linked to improved student outcomes (Basar, 2014). In terms of teaching experience, a significant proportion of teachers (48.48%) have 1-10 years of service, while 27.27% have 21 years and above. This mix of experience levels offers both fresh perspectives and seasoned expertise. Research suggests that experience contributes to pedagogical proficiency, including stronger classroom management and instructional skills (König et al., 2023). However, the relatively small percentage of teachers with over 10 years of experience (24.24%) may indicate challenges in long-term teacher retention.

3.2 Level of Availability of Resources and Technology

Table 2, presents the profile of schools in terms of the availability of resources and technology. The overall mean of 3.06 indicates that, in general, resources and technology are "Available" in the schools. However, a closer look at the individual items reveals some nuances and areas that may require attention. The literature emphasizes that schools, as social organizations, operate within established rules and procedures aimed at

molding students to meet societal demands. However, studies such as those by Hanushek and Woessmann (2017) reveal that the impact of school resources on student outcomes is minimal when family inputs are considered. This finding suggests that resource allocation alone is insufficient to enhance student performance, and holistic approaches integrating family and community support are more effective.

Table 2

Level of Availability of Resources and Technology

| Items | Mean | Verbal Interpretation |
|--|------|-----------------------|
| Instructional Materials | 3.27 | Available |
| Budget for Supplies | 3.30 | Available |
| School Buildings and Grounds | 3.52 | Highly Available |
| Cooling and Lighting Systems | 3.33 | Available |
| Instructional Space | 3.42 | Highly Available |
| Special Equipment for Students with Disabilities | 2.39 | Available |
| Computers for Mathematics Instruction | 2.55 | Moderately Available |
| Computer Software for Mathematics Instruction | 2.48 | Moderately Available |
| Calculators | 2.94 | Available |
| Library Materials | 2.70 | Available |
| Audio-Visual Resources | 2.67 | Available |
| Overall Mean | 3.06 | Available |

(Source: Field Survey, 2024)

The schools demonstrate strength in the availability of "School Buildings and Grounds" (Mean = 3.52) and "Instructional Space" (Mean = 3.42), both interpreted as "Highly Available." This suggests that the schools generally provide adequate physical facilities for instruction. However, several areas show lower availability, particularly in technology-related resources. "Special Equipment for Students with Disabilities" (Mean = 2.39), "Computers for Mathematics Instruction" (Mean = 2.55), and "Computer Software for Mathematics Instruction" (Mean = 2.48) are all rated as "Available" or "Moderately Available." This indicates that while some resources are present, they may not be sufficient or fully meet the needs of teachers and students. Basic resources like "Instructional Materials" (Mean = 3.27), "Budget for Supplies" (Mean = 3.30), "Cooling and Lighting Systems" (Mean = 3.33), "Calculators" (Mean = 2.94), "Library Materials" (Mean = 2.70), and "Audio-Visual Resources" (Mean = 2.67) are generally "Available."

These reflect the availability of resources and technology in schools. Foundational resources such as school buildings, instructional space, cooling systems, and instructional materials are highly accessible, providing a strong baseline for learning. Conversely, technology-related resources such as computers and software for mathematics instruction are only moderately available. Special equipment for students with disabilities is among the least available resources, highlighting gaps that hinder inclusivity and the effective integration of technology into learning environments. These findings reveal a discrepancy between the availability of traditional resources and modern technology-based resources. While schools have adequate foundational resources, their ability to fully integrate technology into education is constrained by limited availability. Addressing these gaps requires not only resource provision but also policies supporting teacher training, infrastructure maintenance, and the equitable distribution of specialized equipment.

The findings suggest that the limited availability of technology, especially computers and software for Mathematics instruction, may hinder teachers' ability to integrate technology into their lessons effectively. This can affect the implementation of modern pedagogical approaches that rely on technology to enhance student learning. The low availability of "Special Equipment for Students with Disabilities" raises concerns about equity and the schools' capacity to provide inclusive education. Students with disabilities may not be receiving the necessary support to access the curriculum and achieve their full potential. School administrators may need to prioritize resource allocation to address the identified gaps. Increased investment in technology and special equipment is crucial to improve the quality of Mathematics education and ensure inclusivity.

These findings align with existing studies on the interplay between school resources, technology availability, and student performance. Hanushek and Woessmann (2017) highlight that student achievement is more

significantly influenced by external factors, such as family support, socioeconomic conditions, and cultural capital, rather than resource-based improvements alone. This emphasizes the necessity of addressing broader socioeconomic factors and integrating family and community engagement to maximize the impact of school resources. Addressing these gaps requires a balanced approach, combining resource provision with strategies such as teacher capacity building, digital literacy programs, and inclusive policies. This aligns with the principles of the United Nations' Sustainable Development Goal 4, advocating for equitable and inclusive quality education. Evidence suggests that investments in teacher training for technology integration and systemic efforts to promote equity can bridge existing gaps, enabling schools to foster environments that empower students to achieve their full potential.

3.3 Level of Classroom Management Practices of Mathematics Teachers

Table 3 presents the classroom management practices of Mathematics teachers. The data reveals that, overall, teachers demonstrate effective classroom management, with all areas scoring a mean above 3.40, indicating they are "Practiced." Several areas of classroom management are particularly strong. "Time Management" (Mean = 4.04), "Teaching and Learning Strategies" (Mean = 4.03), and "Managing Classroom Behavior" (Mean = 4.02) are rated highest, indicating that teachers effectively allocate class time, utilize appropriate teaching strategies, and maintain discipline. Other classroom management aspects, including "Planning and Support" (Mean = 3.71), "Specific Teaching Techniques" (Mean = 3.45), and "Technology Integration" (Mean = 3.38), are also well-practiced. While slightly lower than the top-performing areas, these still demonstrate a commitment to effective classroom management. Generally, Mathematics teachers in this study are implementing sound classroom management practices. This creates a positive learning environment and contributes to effective instruction.

Table 3
Classroom Management Practices of Mathematics Teachers

| Items | Mean | Verbal Interpretation |
|-------------------------------------|------|-----------------------|
| 1. Teaching and Learning Strategies | 4.03 | Practiced |
| 2. Technology Integration | 3.38 | Practices |
| 3. Specific Teaching Techniques | 3.45 | Practiced |
| 4. Planning and Support | 3.71 | Practiced |
| 5. Time Management | 4.04 | Practiced |
| 6. Managing Classroom Behavior | 4.02 | Practiced |
| Overall Mean | 3.40 | Practiced |

(Source: Field Survey, 2024)

Generally, these findings imply that consistent application of effective classroom management practices creates a structured and supportive learning environment, which is conducive to student engagement and achievement in Mathematics. The data indicates a high level of teacher competence in classroom management. This reflects positively on teacher preparation programs and ongoing professional development. While practiced, "Technology Integration" has the lowest mean. This suggests that while teachers are using technology, there is room for improvement in how effectively and frequently technology is incorporated into Mathematics instruction. It is crucial to sustain these effective practices through continued support and professional development. Sharing best practices among teachers can further enhance classroom management skills.

Classroom management has also been a significant area of study, with researchers emphasizing its impact on student outcomes. For example, Garcia (2021) found that effective classroom management strategies employed by Filipino mathematics teachers positively correlate with student engagement and performance. Moreover, studies have explored the challenges and strategies related to classroom management in diverse Philippine contexts. Research by Santos et al. (2022) highlighted the importance of culturally responsive classroom management in promoting a positive learning environment for Filipino students. Moreover, Asare et al. (2024) investigated the impact of classroom management on mathematics achievement and found that effective classroom management positively influenced students' motivation and performance in mathematics. This underscores the universal importance of sound classroom management practices.

3.4 Description of the Action Plan to Improve Classroom Management Practices of Mathematics Teachers

The action plan emphasizes proactive strategies aimed at fostering a positive and productive learning environment for mathematics teachers. A core principle is the establishment of clear rules and expectations, which are fundamental for creating a structured classroom atmosphere. Teachers will be supported in developing and consistently implementing these rules, ensuring that students understand the behavioral standards and consequences for violations. This approach aims to minimize disruptions and maximize instructional time, ultimately enhancing academic engagement.

Another key component of the action plan is the promotion of respectful interactions. This involves cultivating a classroom culture where both teachers and students feel valued and heard. Strategies such as active listening, constructive feedback, and conflict resolution will be employed to foster positive relationships and create a safe space for learning. By emphasizing respectful communication, the plan seeks to prevent behavioral issues and promote a more harmonious learning environment.

The action plan also addresses the importance of proactively managing behavioral challenges. Rather than simply reacting to misbehavior, teachers will be equipped with strategies to identify and address the root causes of disruptive behavior. This may involve implementing individualized behavior management plans, providing targeted interventions, and collaborating with parents and support staff. By taking a proactive approach, the plan aims to reduce the frequency and severity of behavioral problems, allowing teachers to focus on instruction.

Furthermore, the action plan recognizes the importance of inclusivity. It emphasizes the need to create a learning environment where all students, regardless of their background or learning needs, feel supported and included. Strategies such as differentiated instruction, flexible grouping, and the use of culturally relevant materials will be implemented to ensure that every student has the opportunity to succeed. By promoting inclusivity, the plan seeks to create a more equitable and engaging learning experience for all students.

Finally, the action plan stresses the importance of ongoing evaluation and refinement. Regular assessments will be conducted to monitor the effectiveness of the implemented strategies and identify areas for improvement. Feedback from teachers, students, and parents will be used to inform adjustments to the plan, ensuring that it remains responsive to the evolving needs of the school community. This iterative approach will help to ensure the long-term success of the action plan and its contribution to a positive and productive learning environment. Dela Cruz (2019) emphasized the continuous implementation of intervention to the teaching of mathematics is imperative. Thus, periodic monitoring and evaluation is required to refine classroom instruction and improve classroom management practices and learning environment.

4. Discussion

A review of educational research, particularly within the context of the Philippines, reveals that classroom management is a critical factor in shaping effective learning environments, and Tagudin District is no exception. Studies have explored various facets of classroom management in the district, including teachers' strategies, challenges, and the impact of these practices on student outcomes. Research has shown the complexity of classroom management, influenced by factors such as teacher preparedness, available resources, and the specific needs of the students. Practically, this highlights for teachers the continuous need to adapt and refine their classroom management skills to address the multifaceted influences on their classrooms. For learners, this underscores that the effectiveness of their learning environment is directly tied to how well their teachers navigate these complexities.

Studies indicate that teachers in Tagudin District employ a range of classroom management techniques, reflecting both traditional and contemporary approaches. While some studies highlight the use of established methods for maintaining order and discipline, there's also an increasing emphasis on fostering positive teacher-student relationships, promoting student engagement, and creating inclusive classrooms. The

effectiveness of these practices can vary, and research suggests that factors like teacher training, experience, and access to support systems play a significant role. This suggests for teachers the value of exploring and integrating diverse management strategies, recognizing that a singular approach may not be universally effective. For learners, this implies experiencing a potentially wider array of classroom environments, impacting their comfort levels, engagement, and sense of inclusion.

Several implications for policy and practice emerge from the research. First, there's a clear need for ongoing professional development for teachers in Tagudin District, focused on evidence-based classroom management strategies. This training should address not only disciplinary techniques but also proactive approaches to prevent behavioral problems, promote social-emotional learning, and effectively integrate technology into instruction. Second, schools and educational leaders should work to provide teachers with the necessary resources and support to implement effective classroom management, including smaller class sizes, adequate instructional materials, and access to specialized services for students with diverse needs. Practically, this calls for educational leaders to prioritize sustained professional learning opportunities for teachers, equipping them with the latest research-backed techniques. For learners, this could translate to being taught by educators who are continuously improving their skills and have better access to resources to support their learning needs.

Furthermore, policies should emphasize the importance of creating a positive and supportive school climate that reinforces effective classroom management. This includes promoting collaboration among teachers, fostering strong home-school partnerships, and establishing clear expectations for student behavior at the school-wide level. It is also crucial to encourage a culturally responsive approach to classroom management, where teachers are sensitive to the diverse backgrounds and experiences of their students and adapt their practices accordingly. For teachers, this necessitates active participation in building a cohesive school culture and a commitment to understanding and valuing the diversity within their classrooms. For learners, this promises a more equitable and inclusive school experience where their backgrounds are respected, potentially fostering a stronger sense of belonging and improved learning outcomes.

5. Conclusion

Effective classroom management is essential for promoting student success in Tagudin District. By providing teachers with the necessary training, resources, and support, and by implementing policies that foster positive school climates, it is possible to create learning environments where all students can thrive. To achieve this, it is recommended that the Department of Education in Tagudin District: 1) Implement regular professional development programs for teachers on effective and culturally responsive classroom management strategies, and 2) Allocate resources to provide teachers with adequate materials and support for implementing these strategies.

Recommendations - The Department of Education in Tagudin District could also prioritize the establishment of mentorship programs. These programs would pair experienced teachers with newer educators, facilitating the transfer of effective classroom management techniques and providing ongoing support. Mentors could offer guidance on lesson planning, behavior management, and fostering positive classroom environments, specifically tailored to the Tagudin District context. Additionally, it is recommended that schools within Tagudin District establish strong partnerships with parents and the wider community. This could involve regular communication, workshops for parents on supporting student behavior and learning at home, and the involvement of community members in school activities. By creating a collaborative network, schools can ensure that classroom management strategies are reinforced both at school and at home, leading to more consistent and positive outcomes for students.

Research Implication - A potential research implication stemming from the emphasis on mentorship programs and school-community partnerships is the need for further investigation into the effectiveness of these collaborative approaches in the Tagudin District context. Specifically, research could explore the impact of mentorship programs on new teacher retention and effectiveness, as well as the effects of strong

school-community partnerships on student behavior and academic achievement in this specific region of the Philippines

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