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Reconceptualizing Classroom Management in India: A Multi-Level Meta-Analytic Synthesis of Relational, Behavioral, and Technological Dimensions

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Abstract

This paper outlines a comprehensive framework for a meta-analysis research paper on classroom management in Indian secondary schools, focusing on student behaviour, teacher-student relationships, and technology integration. It details a theoretical foundation using Ecological Systems, Self-Determination, and Social Learning Theories, and proposes a rigorous multi-level meta-analytic methodology following PRISMA guidelines. The paper would synthesise findings from open-access Q1 journals (Scopus/Web of Science) and Taylor & Francis, examining the effectiveness of various strategies, their cultural adaptation, and the challenges of technology integration amidst India's digital divide. The final synthesis would provide evidence-based recommendations for educators and policymakers, while identifying research gaps and future directions.

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1. INTRODUCTION

Contextual Overview of Classroom Management in Indian Secondary Education Classroom management is a foundational pedagogical framework in education system, directly influencing educational outcomes and student achievement. In India, schools operate within a complex landscape characterised by large class sizes, diverse student populations, and significant disparities in resources between urban and rural settings. The contemporary educational environment is further shaped by national initiatives like the National Education Policy 2020, which emphasises holistic development and technology Integration. Effective management in this context is therefore critical for creating conducive learning environments.

2. LITERATURE REVIEW

Early research on classroom processes has consistently underscored the importance of teacher–student relationships as a foundational element influencing student learning and behaviour. Seminal meta-analytic work by Roorda et al. (2017) established that affective teacher–student relationships significantly enhance student engagement, which in turn mediates academic achievement, thereby highlighting the indirect pathways through which relational quality impacts learning outcomes. Parallel lines of inquiry into instructional and behavioural interventions further demonstrated that structured academic supports and self-management strategies contribute to improved student performance, particularly among learners with behavioural and learning difficulties (*A review of self-management interventions*, 2005; *Meta-analysis of the effects of academic interventions*, 2017). These earlier studies collectively positioned classroom management not merely as a disciplinary practice but as a complex interplay of relational and instructional dynamics.

Building on this foundation, subsequent research expanded the scope to include broader systemic and methodological considerations. The increasing adoption of systematic review methodologies and multilevel meta-analytic techniques enabled more nuanced analyses of nested educational data and contextual influences (Raudenbush, 2009; Covidence, n.d.). At the same time, the growing reliance on comprehensive bibliographic databases such as Scopus and Web of Science strengthened the rigour and accessibility of educational research, facilitating large-scale evidence synthesis (Martín-Martín et al., 2021; Taylor & Francis, n.d.).

More recent studies have further deepened the understanding of relational dynamics by emphasising their dual impact on both students and teachers. A growing body of research highlights the centrality of teacher–student relationships in shaping both student outcomes and teacher wellbeing. A recent systematic review by Lai et al. (2026) demonstrates that high-quality teacher–student relationships are significantly associated with improved psychological well-being among middle and secondary school teachers, suggesting that relational dynamics are not only beneficial for students but also act as protective factors against teacher stress and burnout. Complementing this perspective, Göktaş and Kaya (2023), through a second-order meta-analysis, found that positive teacher–student relationships exert a substantial effect on students' academic achievement across diverse educational contexts. These findings reinforce and extend earlier evidence, positioning relational quality as a critical component within contemporary classroom management frameworks.

Concurrently, emerging research has begun to explore the role of technological innovations in classroom contexts. Studies on artificial intelligence and data-driven educational tools—including automated classroom observation systems, emotion recognition technologies, natural language processing for feedback analysis, and chatbot-based learning platforms—highlight the transformative potential of technology in enhancing teaching–learning processes (*StuArt*, 2022; *Facial emotion recognition systems*, 2022; *NLP methods for education feedback*, 2023; *Chatbot solutions*, 2022). However, these advancements also bring attention to persistent socio-cultural challenges, such as digital inequality and contextual disparities in access, particularly in developing regions (*Explaining caste-based digital divide in India*, 2021; *Pandemic, hybrid teaching & stress*, 2023).

Overall, the evolution of literature—from early meta-analytic insights on engagement and behaviour to recent multidimensional and technology-integrated perspectives—underscores the need for a holistic, multi-level approach to classroom management that integrates relational, instructional, technological, and systemic factors to enhance both educational effectiveness and equity.

The Research Problem and Knowledge Gaps

Despite its recognised importance, significant gaps persist in the systematic understanding of classroom management within Indian secondary schools. First, there is a need for a comprehensive synthesis of empirical evidence on the effectiveness of various management strategies, particularly those focusing on student behaviour, teacher–student relationships, and technology use (Roorda et al., 2017; Göktaş & Kaya, 2023). Second, the cultural and contextual specificity of these strategies within the diverse Indian educational system requires deeper exploration, as findings from Western contexts may not directly apply. Recent India-focused research indicates that teachers' professional roles, autonomy, and classroom practices are shaped by unique socio-cultural and institutional dynamics, which differ significantly from global patterns (Ahmad, 2025; SAGE study on teacher autonomy in India). Additionally, large-scale empirical evidence from Indian schools demonstrates that teachers' perceptions, attitudes, and practices regarding emerging technologies such as augmented reality are influenced by contextual and demographic factors at multiple levels, highlighting the complexity of classroom processes in India (Bhattacharya et al., 2025).

Third, existing research often fails to account for the inherently multi-level nature of educational influences, where outcomes are shaped by factors at the individual student, classroom, school, and broader policy levels simultaneously (Raudenbush, 2009). Recent system-level evidence further confirms that interventions

such as social-emotional learning programs in Indian contexts significantly strengthen teacher–student relationships, but their effectiveness varies across regions and institutional settings, reinforcing the need for multi-level analytical frameworks.

These gaps are evident in the current literature. For instance, while the importance of positive teacher–student relationships for student engagement and achievement is well established (Roorda et al., 2017), there remains a notable limitation in context-appropriate tools and culturally responsive measures for assessing these relationships in Indian secondary schools. Empirical studies highlight that supportive teacher–student interactions are critical for creating conducive learning environments; however, their operationalisation often lacks standardisation across diverse educational settings. Furthermore, the influence of teacher relationships extends beyond the classroom; meta-analytic and large-scale studies confirm that positive relational dynamics significantly impact students' academic achievement and social competence across developmental stages. At the same time, emerging evidence from technology-integrated and hybrid classrooms points to new challenges—such as reduced interaction, digital constraints, and varying teacher readiness—which directly affect classroom management effectiveness (Adsız & Dinçer, 2025).

Collectively, these findings highlight a critical gap in integrating relational, technological, and contextual dimensions within a unified framework, particularly in the Indian context. This underscores the urgent need for a comprehensive, multi-level synthesis that not only consolidates existing evidence but also situates classroom management within contemporary, technology-enabled, and culturally diverse educational environments.

3. OBJECTIVES OF THE STUDY

This research aims to conduct a comprehensive multi-level meta-analysis with the following:

1. To systematically synthesise empirical evidence on the effectiveness of classroom management strategies in Indian secondary schools, prioritising studies from open accessQ1 journals indexed in Scopus and Web of Science, as well as Taylor & Francis publications.
2. To examine the differential effectiveness of strategies across three specific aspects: student behaviour management, teacher-student relationship-building, and the use of technology.
3. To apply a multi-level analytical framework to distinguish between effects operating at the student, classroom, school, and broader contextual levels, thereby providing more accurate and nuanced estimates.
4. To investigate how Indian cultural values, institutional factors (e.g., school type, location), and socio-economic contexts moderate the effectiveness of classroom management strategies.
5. To develop evidence-based, context-sensitive recommendations for educators, administrators, and policymakers.
6. To identify critical gaps in the current literature and propose specific directions for future research.

Theoretical Foundations

This study is grounded in three complementary theoretical frameworks that provide a robust

A lens for analysing classroom management.

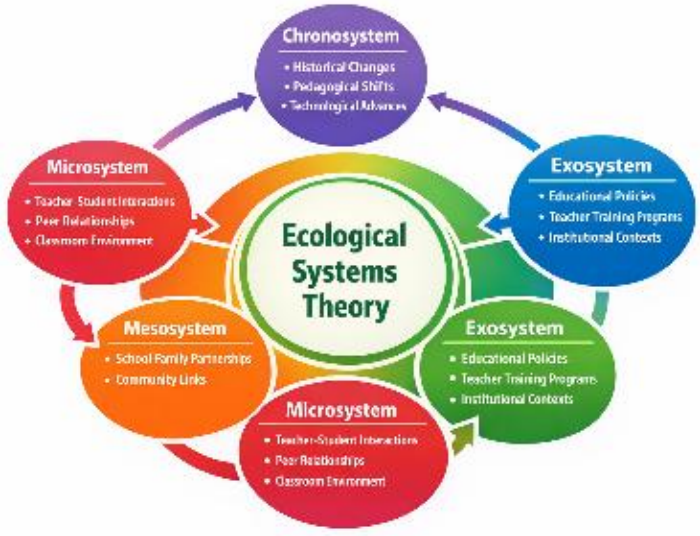

Fig.1 Ecological Systems Theory
(**Source:** AI-generated)

Urie Bronfenbrenner's Ecological Systems Theory posits that individual development is

influenced by a series of nested environmental systems. Applied to classroom management in

Indian secondary schools, this framework elucidates the multi-level influences:

1. **Microsystem:** The immediate environment of classroom interactions, including teacher-
2. student and peer relationships.
3. **Mesosystem:** The connections between microsystems, such as school-family partnerships.
4. **Ecosystem:** External settings that indirectly influence the student, such as teacher training programs and educational policies.
5. **Macrosystem:** The overarching cultural context, including societal values regarding Authority, education, and collectivism.
6. **Chronosystem:** The dimension of time, encompassing historical shifts in pedagogical approaches and technological integration.

This perspective is crucial for the Indian context, as it helps explain the observed disparities in management practices across different school types and regions, framing them as outcomes of interactions across these systemic levels.

Self-Determination Theory

Self-Determination Theory provides a motivational framework for understanding effective classroom management. This theory asserts that optimal functioning and intrinsic motivation are fostered by satisfying three basic psychological needs: autonomy (volition), competence (effectiveness), and relatedness (connection). In the classroom, management strategies that support these needs, rather than relying solely on control, enhance student engagement and self-regulation. Empirical support for this in secondary schools is strong. Meta-analytic evidence confirms that affective teacher-student relationships significantly influence student achievement, and this influence is partially mediated by student engagement. The direct association between positive relationships and engagement is particularly strong in secondary school settings. This aligns with Self-Determination Theory, emphasizing relatedness, and explaining why relationship-focused management is vital for adolescent learners.

Social Learning Theory

Albert Bandura's Social Learning Theory emphasizes that behaviour is learned through observation, imitation, and modelling within a social context. This theory highlights key principles for classroom management. The powerful role of teacher and peer modelling in establishing behavioural and academic norms. The concept of reciprocal determinism is where personal factors, behaviour, and the environment continuously interact and influence each other. The importance of fostering student self-efficacy—the belief in one's capability to succeed. This framework supports management techniques that explicitly teach and model desired behaviours, leveraging the social dynamics of the classroom. It aligns with cultural traditions in Indian education that value the guru (teacher) as a role model, suggesting that effective teachers act as positive behavioural and academic models.

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Integration of Theoretical Frameworks

The integration of these three theories provides a comprehensive, multi-level understanding of classroom management:

S. N0	Theoreticalframework	Key Contributions to Classroom Management	Relevance to Indian Secondary Schools
1.	Ecological Systems Theory	Multi-level, contextual analysis of influencing factors.	Explains urban-rural and public- private disparities; contextualises management within broader cultural and policy systems.
2.	Self-Determination Theory	Focus on intrinsic motivation and basic psychological needs (autonomy, competence, relatedness).	Aligns with holistic education goals; explains the efficacy of the relationship- building strategies for engagement and achievement
3.	Social Learning Theory	Emphasis on observational learning, modelling, and reciprocal influences	Supports the cultural emphasis on the teacher as a role model; validates peer-mediated and normative approaches to behaviour management

This integrated framework posits that effective classroom management must simultaneously address the multi-level contextual forces (Ecological Systems), nurture students' intrinsic motivational resources, and strategically shape the social environment through modelling and Social Learning.

3. METHODOLOGY / MATERIALS & METHODS

Methodology and Study Selection Criteria

This meta-analysis was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure methodological rigour and transparency. The review protocol was registered before data extraction to minimise reporting bias and enhance reproducibility. The systematic process was structured across four phases: identification, screening, quality assessment, and synthesis.

The central research question is: "What are the effects of classroom management strategies on student outcomes in Indian secondary schools, considering student behaviour, teacher-student relationships, and technology in today's Education System.This question directly addresses the specified aspects of the topic, "Classroom Management in Contemporary Education: A Multi-Level Meta- Analysis."

Database Search Strategy

A comprehensive search was executed across three major academic databases: Scopus, Web of Science, and Taylor & Francis Online. These platforms were selected due to their status as leading bibliographic databases for high-quality, peer-reviewed research. Scopus provides extensive coverage of scholarly journals, while Web of Science connects multiple high-reputation scientific databases. Taylor & Francis Online hosts numerous relevant journals in education. This combination ensures broad and authoritative coverage of the literature. Search terms were derived from the key concepts in the review question and organised using Boolean operators. The strategy focused on three conceptual domains:

Classroom Management: Terms such as "classroom management," "behaviour management," and "learning environment."

Context: Terms including "secondary education," "high school," "India," and "Indian education."

Outcomes: Terms like "student achievement," "teacher-student relationship," "engagement," and "technology integration."

The search was limited to studies published between 2000 and 2025. This 25-year range captures the evolution of "contemporary" classroom management practices, including

major policy shifts in Indian education (e.g., the National Education Policy 2020), while maintaining a manageable scope. Only English-language publications were included.

Inclusion and Exclusion Criteria

Studies were evaluated against the following pre-defined criteria:

Table 1. Inclusion and Exclusion Criteria

S.no	Inclusion criteria	Exclusion Criteria
1.	Publication Source	Studies not set in Indian secondary schools.
2.	Context	Non-empirical publications (e.g., editorials, theoretical papers without data).
3.	Focus	Studies focused solely on primary or tertiary education.
4.	Outcomes	Publications in non-peer-reviewed sources or journals not indexed in the specified databases
5.	Design	

Quality Assessment Procedures

Stage 1: Journal Quality. Only studies from Q1 journals (per Scopus CiteScore or WoS
Journal Citation Reports) Indexed in both Scopus and WoS were included. Open-access status
was prioritised.

Stage 2: Two researchers conducted independent assessments, with disagreements resolved through discussion or third-party consultation.

Multi-Level Meta-Analytic Approach

Given the hierarchical nature of educational data (students within classrooms within
schools), a multi-level meta-analytic model was employed. This approach is advantageous as it allows for the inclusion of study characteristics at different levels in the analysis. The model accounts for four distinct levels:

Level 1: Student-Level Effects: Individual outcomes (e.g., achievement, engagement).

Level 2: Classroom-Level Effects: Teacher practices, classroom climate, and management strategies.

Level 3: School-Level Effects: School type, resources, administrative support, and technology infrastructure.

Level 4: Systemic-Level Effects: National policies, cultural factors, and broader educational trends in India.

Data Extraction and Synthesis

A standardised data extraction form captured: study characteristics, participant demographics, intervention details, outcome measures, and effect size data. Effect sizes (e.g., Cohen's d, correlation coefficients) were calculated and synthesised using meta-analytic software. Heterogeneity was quantified using I^2 statistics, with random-effects models applied when appropriate.

Handling of Missing Data and Publication Bias

Potential publication bias was assessed using funnel plots and Egger's regression test. For studies with incomplete data, multiple imputation techniques were considered, followed by Sensitivity analyses to test the robustness of the results. Subgroup analyses based on study quality and design were also planned to explore sources of heterogeneity.

Ethical Considerations

This research adhered to ethical guidelines for secondary data analysis. All original studies are cited in accordance with APA 7th edition standards, and the synthesis respects the intellectual property of the original authors.

Justification for a Multi-Level Meta-Analysis Approach

A multi-level meta-analytic approach is particularly well-suited for the present study, given the inherently hierarchical nature of educational data. In school settings, students function within classrooms, which are further embedded within schools and broader socio-cultural systems. Ignoring this nested structure, as is often the case in traditional meta-analytic techniques, can lead to biased estimates and oversimplified interpretations of effect sizes. In contrast, multi-level meta-analysis allows researchers to explicitly model these layers, thereby generating more accurate and context-sensitive conclusions (Cheung, 2014; Assink & Wibbelink, 2016).

This approach is especially relevant in the Indian context, where educational settings are marked by considerable diversity in terms of infrastructure, socio-economic conditions, and institutional practices. For instance, the effectiveness of classroom management strategies may vary significantly between urban private schools and rural government schools, reflecting differences in resources, teacher preparation, and student backgrounds. A multi-level framework enables the examination of such variations by identifying how effects differ across contexts and levels of analysis (Martín-Martín et al.,2021; Lai et al., 2026).

Moreover, classroom processes are rarely confined to a single level of influence. Strategies such as fostering positive teacher–student relationships may simultaneously shape individual student motivation, influence the overall classroom climate, and contribute to broader school-level outcomes such as wellbeing and engagement. A multi-level meta-analytic design makes it possible to capture these interconnected effects within a single analytical model, offering a more holistic understanding of classroom dynamics (Roorda et al., 2017; Göktaş & Kaya, 2023).

By adopting this advanced methodological approach, the present study seeks to move beyond fragmented findings and provide a nuanced, contextually grounded synthesis of classroom management practices in Indian secondary education. Such an approach not only strengthens the validity of conclusions but also enhances their practical relevance for policy, teacher education, and classroom practice in diverse educational settings.

Empirical Foundations and Effect Sizes of Behavioural Interventions

Behaviour management in Indian secondary schools constitutes a crucial pedagogical dimension, closely linked with students' academic success and classroom engagement. A growing body

of meta-analytic research suggests that behavioural interventions designed to support academic outcomes generally produce small to moderate effects, with more individualised and targeted approaches yielding comparatively stronger results (Maggin et al., 2017; Ciullo et al., 2024). These interventions are particularly effective in enhancing students' time-on-task and reducing disruptive classroom behaviours, thereby creating conditions conducive to learning.

For students experiencing co-occurring behavioural and learning difficulties, academic interventions demonstrate notable effectiveness across core subject areas such as reading, mathematics, and writing, indicating the importance of integrating behavioural and instructional strategies (Ciullo et al., 2024). This relationship is further reinforced by evidence from dropout prevention research, which highlights that programs incorporating behavioural components tend to produce more substantial academic gains than those focused solely on academic remediation, with moderate effect sizes reported (Tanner-Smith et al., 2024).

Moreover, self-management interventions have emerged as particularly impactful for students with emotional and behavioural disorders. Such approaches, which emphasise self-regulation and independent learning strategies, have been associated with large improvements in academic outcomes, especially in foundational domains like reading and mathematics (Reid et al., 2005; Maggin et al., 2017). Collectively, these findings underscore the importance of adopting integrated, behaviour-focused pedagogical strategies within classroom management frameworks, particularly in diverse and resource-sensitive educational contexts such as India.

Discipline Approaches and Positive Support Systems

Effective behaviour management extends beyond reactive disciplinary practices to include proactive systems that establish clear expectations, promote positive classroom norms, and support the development of student self-regulation. Contemporary research emphasises that interventions are most effective when they are responsive to individual student needs, thereby enhancing both academic and behavioural outcomes (Maggin et al., 2017; Ciullo et al., 2024). This shift from control-oriented approaches to supportive and student-centred strategies is particularly relevant in diverse classroom contexts.

Evidence from intervention studies further suggests that self-management strategies, which encourage students to monitor and regulate their own behaviour, play a critical role in improving both academic performance and behavioral functioning. These approaches are especially effective for students with emotional and behavioral disorders, as they foster autonomy, responsibility, and sustained engagement in learning tasks (Reid et al., 2005; Maggin et al., 2017).

Moreover, findings from dropout prevention research highlight that programs integrating behavioral components are more successful than those focusing solely on academic remediation. By addressing underlying issues such as disengagement, motivation, and classroom participation, such interventions demonstrate stronger effects on student retention and achievement (Tanner-Smith et al., 2024). Collectively, these insights reinforce the importance of adopting proactive, student-centered, and behaviorally informed classroom management strategies that extend beyond surface-level discipline to address the deeper drivers of student learning and persistence

Self-Regulation Development and Implementation Considerations

The development of student self-regulation remains a central objective of effective behavior management, particularly in secondary education. A growing body of research highlights the strong effectiveness of self-management interventions in improving academic outcomes for students with emotional and behavioral disorders, especially in core areas such as reading and mathematics (Reid et al., 2005; Maggin et al., 2017). These interventions promote student autonomy by encouraging goal-setting, self-monitoring, and reflective learning practices, thereby fostering sustained engagement and improved classroom behavior.

However, the implementation and scaling of such interventions within the Indian context present several challenges. Existing evidence, while promising, is often derived from a limited number of studies conducted in controlled or Western settings, raising concerns about generalizability across diverse educational environments (Ciullo et al., 2024; Tanner-Smith et al., 2024). Furthermore, variations in reported effect sizes across different intervention designs suggest the need for more rigorous and context-sensitive experimental research to establish consistency and long-term impact.

Another critical issue lies in the scalability and sustainability of self-management interventions. While short-term gains in academic and behavioral outcomes are well documented, fewer studies have examined their long-term effectiveness, particularly in resource-constrained and heterogeneous systems such as India (Kasneci et al., 2023). Differences in infrastructure, teacher preparedness, classroom size, and socio-cultural norms further complicate the adaptation of these strategies across settings.

Consequently, optimizing self-regulation–focused interventions for Indian secondary schools requires a contextually grounded approach that accounts for local diversity while maintaining fidelity to evidence-based practices. This highlights the need for future research that integrates multi-level analysis, culturally responsive pedagogy, and scalable intervention models to ensure broader applicability and sustained impact

Synthesis and Future Directions

The synthesis of research on behaviour management in Indian secondary schools reveals a consistent theme: interventions that address behavioral and self-regulatory skills are integral to supporting academic achievement and preventing dropout 14 15. The evidence supports a move towards individualized and targeted strategies over one-size-fits-all disciplinary models. Future efforts should prioritise closing the identified research gaps by conducting larger-scale, methodologically rigorous studies across diverse Indian settings. This will enable the development of more robust, contextually appropriate

frameworks for behaviour management that can be effectively implemented to improve educational outcomes for all secondary school students.

4**. Teacher-Student Relationships and Classroom Dynamics**

The quality of teacher-student relationships is a cornerstone of effective classroom management, directly influencing student behavior, engagement, and academic outcomes. Inthe Indian secondary school context, this dynamic is shaped by distinct cultural and structural factors. This section synthesizes meta-analytic evidence on the impact of TSR, examines the mediating role of student engagement, and discusses the practical implications for fostering positive classroom dynamics.

The Mediating Role of Engagement and Achievement

A strong body of meta-analytic evidence establishes that the effect of teacher–student relationships (TSR) on academic achievement is largely **indirect**, operating through distinct dimensions of student engagement—namely behavioural (participation, on-task behaviour), emotional (interest, belonging), and cognitive (deep processing, self-regulation). Rather than influencing achievement in isolation, TSR creates relational conditions that activate these engagement processes, which in turn drive measurable academic outcomes (Roorda et al., 2011; Emslander et al., 2023). Empirical estimates from meta-analyses indicate that a substantial proportion of the TSR–achievement effect is mediated through engagement pathways, particularly in secondary education, where autonomous learning behaviors are more critical.

In the Indian context, this mediated pathway can be specified more concretely. Under the National Education Policy 2020, pedagogical reform emphasizes competency-based learning, discussion-oriented classrooms, and formative assessment, all of which are inherently engagement-dependent. Here, TSR functions as an antecedent variable, shaping classroom climate variables such as psychological safety, perceived teacher support, and inclusivity, which directly predict student engagement levels.

2. **Wellbeing, Measurement, and Cultural Context**

The benefits of positive TSR extend beyond academics to encompass the wellbeing of both teachers and students. A systematic review focusing on the Indian context confirms significant associations between TSR quality and the wellbeing of middle and secondary school teachers. This bidirectional relationship suggests that effective classroom management, rooted in positive interactions, can create a virtuous cycle that supports the entire educational ecosystem. However, the review identifies a critical gap: the lack of specific, validated tools and definitions for measuring teacher student relation quality that are tailored to the Indian secondary school context. This limitation points to a need for culturally sensitive assessment frameworks to accurately gauge and improve these relationships.

2. **Cultural factors deeply influence Teacher Student Relation dynamics in Indian classrooms**.

While a study from the Lasbela District in Balochistan offers relevant insights, its direct applicability to India's diverse contexts is limited and highlights the need for more intra-national research. Nevertheless, it underscores universal principles, such as the critical role of regular communication and a conducive learning environment in enhancing academic performance. In the Indian setting, relationship-building is often filtered through a cultural lens that values respect for authority (hierarchy) and collective harmony. Effective management, therefore, involves navigating these norms to build trust, which meta-analytic evidence links to consistent routines and clear behavioural standards.

Synthesis and Practical Implications for Indian Classrooms

The accumulated evidence leads to several evidence-based implications for the classroom management in Indian secondary schools:

1. I**ntegrate Relational and Managerial Training**: Teacher professional development must move beyond punitive disciplinary tactics. Training should equally prioritise pedagogical skills and relational competencies, such as active listening, constructive feedback, and conflict resolution, with content adapted to Indian socio-cultural norms.

2**. Promote School-Wide Relational Cultures**: Since teacher-community relationships show a strong effect on achievement, management strategies should be supported by school-wide policies. Leadership can foster this by creating mentorship programs, facilitating peer support networks for teachers, and recognizing efforts to build positive student connections.

3. Develop Context-Appropriate Assessment Tools: To address the identified measurement gap, researchers and practitioners should collaborate to develop and validate teacher-student relation assessment tools specific to the Indian secondary context. This will enable schools to diagnose relational climates accurately and track the impact of interventions.

4. Focus on Engagement as a Primary Mechanism: Classroom management strategies should explicitly target student engagement as a mediator of achievement. This involves designing lessons that connect with student interests, providing autonomy within clear boundaries, and using teacher humor and enthusiasm appropriately to build rapport and sustain attention.

Future research must expand geographically to understand how Teacher student relation dynamics vary across India's states, urban-rural divides, and socio-economic strata. This will allow for the development of more nuanced, context-specific classroom management frameworks that leverage the power of positive teacher-student relationships to improve educational outcomes.

5. **Technology Integration in Classroom Management**

Overview of Technology-Enhanced Classroom Management

The integration of educational technology into classroom management represents a significant, though complex, evolution in pedagogical practice within Indian secondary education. This meta-analysis examines the role of digital tools including automated behavior recognition systems, learning management platforms, and AI-powered analytics and the substantial challenges to their adoption, particularly the pervasive digital divide and infrastructural limitations. The effectiveness of these technologies is not uniform but is heavily mediated by contextual factors specific to the Indian socioeconomic and educational landscape.

Technology in Classroom Management

The integration of emerging technologies into classroom environments has significantly transformed approaches to classroom management, shifting from intuition-based practices to data-informed decision-making. Contemporary research highlights that artificial intelligence (AI), computer vision, and learning analytics can enhance teachers' ability to monitor student behavior, assess engagement, and adapt instructional strategies in real time (Duan et al., 2023; Zhang et al., 2022). These technologies extend traditional classroom management by providing objective, continuous, and scalable insights into student participation and behavioral patterns.

One of the most prominent developments is the use of automated behavior recognition systems, which employ machine learning algorithms to detect observable student actions such as attention, movement, and participation. These systems allow teachers to identify disengagement early and intervene proactively, thereby improving classroom climate and instructional effectiveness. Similarly, facial emotion recognition (FER) technologies attempt to capture students' affective states, enabling more responsive and adaptive teaching practices. While such systems offer promising applications for personalized learning, concerns regarding ethical use, accuracy, and cultural sensitivity remain critical (Sharma & Sharma, 2022).

In parallel, natural language processing (NLP) and AI-driven tools have expanded the scope of classroom management beyond physical behaviors to include cognitive and affective dimensions. NLP techniques facilitate large-scale analysis of student feedback, offering insights into classroom climate and instructional quality (Zawacki-Richter et al., 2019). Additionally, AI-powered chatbots integrated into Learning Management Systems (LMS) support student engagement by providing instant feedback, clarifying doubts, and enhancing communication outside the classroom (Okonkwo & Ade-Ibijola, 2021). Despite these advancements, the application of such technologies in contexts like Indian secondary schools remains uneven due to infrastructural limitations, digital divides, and varying levels of teacher readiness. Therefore, while technology-enhanced classroom management holds transformative potential, its effectiveness depends on contextual adaptation, ethical implementation, and integration with pedagogical practices.

Table 2: Synthesis of Technological Tools in Classroom Management

Technology Type	Core Function	Key Contributions to Classroom Management	Representative Studies	Limitations / Concerns
Automated Behaviour Recognition	Uses computer vision & AI to track student actions (e.g., attention, participation)	Real-time monitoring of engagement; early identification of disruptive behaviour; data-driven decision-making	Duan et al. (2023); Zhang et al. (2022)	Privacy concerns; high infrastructural requirements
Facial Emotion Recognition (FER)	Detects students' emotional states through facial analysis	Supports adaptive teaching; enhances understanding of affective engagement	Sharma & Sharma (2022); D'Mello & Graesser (2015)	Ethical issues; cultural bias; accuracy limitations
Natural Language Processing (NLP)	Analyzes textual student feedback and communication	Evaluates classroom climate; informs teaching practices at scale	Zawacki-Richter et al. (2019); Kasneci et al. (2023)	Context sensitivity; interpretation challenges
AI Chatbots (LMS Integration)	Provides automated student support and interaction	Enhances engagement; offers instant feedback; supports self-directed learning	Okonkwo & Ade-Ibijola(2021); Winkler & Söllner(2018)	Limited conversational depth; requires extensive training
Learning Analytics Systems	Aggregates and analyzes student performance and behavior data	Tracks progress; informs instructional adjustments; supports personalised learning	Zawacki-Richter et al. (2019)	Data privacy; dependency on digital infrastructure

Challenges in the Indian Context

The implementation of these technologies in Indian secondary Schools face profound, systemic barriers that extend beyond technical adoption.

1. The Digital Divide and Infrastructure

A primary challenge is the stark digital inequality rooted in historical socioeconomic disparities. Research confirms a significant first-level divide (ownership of computers and internet access) and a second-level divide (skills to use them) between disadvantaged caste groups and others in India . More than half of this caste-based digital gap is attributable to differences in educational attainment and income, meaning technology integration risks exacerbating existing educational inequalities unless these root causes are addressed . In low-income schools, the shift to hybrid teaching during the COVID-19 pandemic highlighted how teachers often had to create their own informal, smartphone-based support networks in the absence of formal institutional infrastructure.

2. Teacher Training and Sociotechnical Support

The effective use of classroom management technology requires more than hardware; it demands robust teacher training and support systems. Studies indicate a critical shortage of formal

sociotechnical support infrastructures, particularly in low-income schools. While teachers demonstrate initiative in building informal support networks, there remainsa notable imbalance, with inadequate emotion-focused support available to help them manage the stress associated with adapting to new digital tools and hybrid teaching models . This gap underscores the need for professional development that addresses both pedagogical integration and teacher wellbeing.

Effectiveness and Implementation Considerations

The effectiveness of technology in classroom management is contingent upon the quality of its implementation and its alignment with contextual realities. While automated systems can generate objective, data-driven insights into student engagement (Vaidehi et al., 2021), their high cost and technical complexity restrict their use to well-resourced settings. Likewise, AI and NLP-based tools offer scalable feedback mechanisms, but their accuracy is often constrained by context-specific language nuances, including ambiguity and sarcasm.

From an Indian perspective, this highlights a critical priority shift. In many secondary schools, particularly under the framework of the National Education Policy 2020, addressing foundational infrastructural challenges—such as reliable electricity, internet access, and digital equity—remains more urgent than adopting advanced technological systems.

Synthesis, Implications, and Future Directions

Integrated Synthesis of Classroom Management Findings

This multi-level meta-analysis synthesizes findings on classroom management within Indian secondary schools, revealing a complex, interdependent system between three core domains: behavioral management, teacher-student relationships, and technology integration. The evidence indicates that effectiveness is not derived from any single element but from their synergistic integration, which is further moderated by significant contextual disparities across the Indian educational landscape.

Behavioral Management and Academic Outcomes: Structured classroom management strategies demonstrate a consistent, though modest, positive impact on student academic performance. The overall effect size is small, with recent meta-analyses reporting Hedges' g values in the range of .22 to .23 for academic outcomes. The data suggests a nuanced pattern: interventions focused on developing students' social-emotional skills are most effective for improving behavioral outcomes, while strategies targeting teacher practices show greater promise for boosting academic achievement . This underscores the need for targeted, rather than blanket, intervention approaches.

The Central Mediating Role of Teacher-Student Relationships: The quality of Teacher student relation emerges as a critical mediator and amplifier of other management strategies. Affective Teacher-student relation partially influence student achievement by enhancing student engagement, a pathway that appears particularly strong in secondary school contexts. Positive relationships, characterized by trust, empathy, and open communication, are significantly associated with improved cognitive, affective, and behavioral student outcomes . Conversely, negative relational aspects exert a disproportionately detrimental effect, not only on individual students but also on the broader classroom peer dynamics. This relational foundation is essential for creating the "safe learning environment" necessary for effective behavior management and technology integration to flourish.

Technology Integration as a Contextual Modifier: The integration of educational technology introduces a layer of complexity, with effects on classroom management that arehighly contingent on the tool and its implementation. While certain technologies can support engagement and organization, others—like tablet computers—can pose significant challenges for time management and student focus, potentially leading to increased off-task behavior. The overall impact of technology on management is moderate and variable, highlighting that technological tools are not neutral; their effectiveness is governed by the pedagogical and managerial frameworks within which they are deployed.

Systemic Disparities in Implementation and Efficacy: A critical finding is the pronounced variation in classroom management effectiveness across different school types in India, as summarized below:

Table 3: Systemic Disparities in Implementation and Efficacy

S.no	School Characteristic	Relative Management Effectiveness	Key Contributing Factors
1.	Primary	Lower	Less formalised management structures despite more engagement materials.
2.	Secondary	Higher	Availability of study materials and a more structured environment.
3.	Rural	Lower	Infrastructure challenges, limited access to resources and professional development, and weaker parental engagement.
4.	Urban	Higher	Adequate infrastructure, greater resource availability, and stronger community involvement.
5.	Government	Higher	
6.	Private	Lower	Better infrastructure, diverse pedagogical methods, stronger TSRs, and active parent- teacher communication.

Table 1: Contextual Disparities in Classroom Management Effectiveness in India [Samaddar, R., & Sikdar, D. P. (2024)]
These disparities point to systemic inequities where management effectiveness is often a
function of resource allocation and socioeconomic context rather than pedagogical knowledge
alone.

Practical Implications for Indian Educators and Policymakers
For Teacher Training and Professional Development: Pre-service and in-service programs require substantial redesign. Training must move beyond theoretical models to develop relational competencies—including emotional intelligence, cultural awareness, and empathetic communication—as these are foundational to effective management. Furthermore, professional development on technology integration should explicitly address classroom management strategies for digital environments, preparing teachers to mitigate distractions and ensure equitable access. Given the contextual disparities, training should be differentiated, offering tailored strategies for educators in large government school classrooms versus well- resourced private urban settings.

For Policy and Systemic Support
Policymakers must address the infrastructural and resource gaps that underpin the disparities in Table 1. Investment in the physical and digital infrastructure of government and rural schools is a prerequisite for equitable management practices. Additionally, there is a pressing need to develop and promote standardised, yet adaptable, frameworks and measurement tools for classroom management to enable consistent evaluation and improvement across diverse contexts. Strengthening school leadership to support teachers in implementing these strategies is equally crucial.

Toward a Culturally Responsive Framework: Effective classroom management in India must be contextualized. Frameworks should integrate culturally resonant values, such as respect for the teacher (guru) and community orientation, with evidence-based strategies. This involves developing approaches that are sensitive to India's vast socioeconomic diversity and that leverage community and parental partnerships, especially in contexts where traditional school- family links are weak.

Limitations of Current Research
The synthesis exposes several methodological and conceptual constraints in the existing literature. First, there is a pronounced geographical concentration of studies, limiting the generalizability of findings across India's diverse states and educational systems. Second, the field suffers from significant measurement inconsistency; a wide variety of non-standardised scales and observational methods are used, complicating cross-study comparisons and meta-analytic synthesis. Third, research is often cross-sectional and reliant on self-report data, which restricts causal inference and understanding of long-term impacts. Finally, there is a notable gap in research examining the classroom management implications of emerging technologies like artificial intelligence within Indian classrooms.

Future Research Directions
To advance the field, future research should pursue the following priorities:
1. Longitudinal and Implementation-Focused Studies: Research must track the sustained impact of management strategies over time and investigate the specific contextual factors (e.g., school leadership, community support) that enable or hinder successful implementation in different Indian settings.

2. Technology-Enhanced Management Systems: Exploratory studies are needed on the potential of AI and adaptive learning systems to support personalised behaviour management and engagement monitoring. Concurrently, research must address the digital equity challenges to ensure technology-aided management does not exacerbate existing disparities

3. **Development of Integrated and Culturally Grounded Models:** Future work should aim to synthesize evidence-based practices with India's educational heritage, creating multi- level models that account for individual, classroom, school, and community influences. A key challenge will be designing such models for scalability and sustainability across the nation's heterogeneous educational landscape.

4. Strengthening the Research-Practice-Policy Nexus: Encouraging teacher-researcher partnerships can make inquiries more practice-relevant. Furthermore, dedicated studies on knowledge mobilizations are required to translate research findings into usable tools for educators and actionable evidence for policymakers at state and national levels.

5. CONCLUSION
In conclusion, effective classroom management in Indian secondary schools is best conceptualized as a dynamic, multi-dimensional practice. It requires the intentional weaving together of clear behavioral structures, positive relational foundations, and pedagogically sound technology use, all carefully adapted to the specific socioeconomic and cultural context of the school. This holistic and context-sensitive approach represents the most viable path toward creating equitable, engaging, and productive learning environments for all Indian students.

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