



Classroom Management as a Determinant of Teaching and Learning Effectiveness in Indonesia

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A B S T R A C T

This study aims to investigate classroom management as a key determinant of teaching and learning effectiveness in Indonesia within the context of the Industry 5.0 era. Industry 5.0 emphasizes human-centered innovation and the synergy between human intelligence and technological advancement. The research explores how teachers' management strategies—covering classroom organization, behavioral regulation, instructional design, and digital collaboration—affect students' engagement, motivation, and learning outcomes. A mixed-methods approach was employed, integrating quantitative and qualitative analyses. Quantitative data were collected through questionnaires administered to teachers and students from various secondary schools, while qualitative data were obtained through structured interviews and classroom observations. The data were analyzed using correlation and regression tests to determine relationships among variables, complemented by thematic analysis for deeper interpretation. The findings reveal a significant positive correlation between effective classroom management and teaching-learning effectiveness. Classrooms that incorporate structured organization, participatory management, and technology-supported activities demonstrate improved student collaboration and academic performance. In the Industry 5.0 context, classroom management is not limited to administrative control but integrates digital literacy, emotional intelligence, and personalized learning to foster adaptability and innovation. The study concludes that effective classroom management serves as a strategic foundation for achieving sustainable educational quality and human-centered learning in Indonesian schools, aligning with the transformative demands of Industry 5.0.

Abstrak

Penelitian ini bertujuan untuk mengkaji manajemen kelas sebagai determinan utama efektivitas proses belajar mengajar di Indonesia dalam konteks era Industri 5.0. Era Industri 5.0 menekankan inovasi yang berpusat pada manusia serta sinergi antara kecerdasan manusia dan kemajuan teknologi. Penelitian ini mengeksplorasi bagaimana strategi manajemen guru—meliputi pengelolaan kelas, pengaturan perilaku, perancangan pembelajaran, dan kolaborasi digital—mempengaruhi keterlibatan, motivasi, serta hasil belajar siswa. Pendekatan metode campuran digunakan dengan mengintegrasikan analisis kuantitatif dan kualitatif. Data kuantitatif diperoleh melalui penyebaran kuesioner kepada guru dan siswa dari berbagai sekolah menengah, sedangkan data kualitatif dikumpulkan melalui wawancara terstruktur dan observasi kelas. Analisis data dilakukan menggunakan uji korelasi dan regresi untuk mengetahui hubungan antarvariabel, serta analisis tematik untuk memperdalam interpretasi hasil. Temuan penelitian menunjukkan adanya hubungan positif yang signifikan antara manajemen kelas yang efektif dan peningkatan efektivitas belajar-mengajar. Kelas yang memiliki pengelolaan terstruktur, partisipatif, dan didukung teknologi menunjukkan peningkatan kolaborasi serta prestasi akademik siswa. Dalam konteks Industri 5.0, manajemen kelas tidak hanya terbatas pada kontrol administratif, tetapi juga mengintegrasikan literasi digital, kecerdasan emosional, dan pembelajaran yang dipersonalisasi untuk mendorong adaptabilitas serta inovasi. Penelitian ini menyimpulkan bahwa manajemen kelas yang efektif menjadi fondasi strategis dalam mewujudkan kualitas pendidikan berkelanjutan dan pembelajaran berpusat pada manusia di sekolah-sekolah Indonesia yang sejalan dengan tuntutan transformasi era Industri 5.0.



1. Introduction

Learning is a complex and continuous process that occurs throughout human life (Chun, 2022). It takes place through the dynamic interaction between individuals and their environment, allowing learning to happen anytime and anywhere (Oliver, 2024). In the current educational landscape, one of the major challenges is the generational gap between educators and learners. Many teachers still belong to generations that are considered digital immigrants, while students represent the generation of digital natives. This difference in technological familiarity creates disparities in learning approaches and communication styles. As the transition toward the era of Industry 5.0 unfolds, individuals are increasingly required to possess mental readiness, skill mastery, and competitive advantages that can sustain them in global competition. One of the most effective strategies for preparing these skills is through the cultivation of good behavior (Asbulah, Sahrim, Soad, Rushdi, & Deris, 2022), enhancement of personal competencies, and the strengthening of literacy abilities supported by lifelong education and interdisciplinary collaboration.

The rapid development of science and digital technology has greatly influenced how knowledge is produced, accessed, and shared. Information today becomes quickly outdated, demanding constant renewal and innovation in learning practices. This phenomenon calls for a shift in how teachers perceive, manage, and deliver education in the classroom. The teacher plays a central role in shaping educational quality (Rashed, Zhaffar, Ihwani, & Iswantir M, 2025), as effective teaching depends largely on how learning is organized and implemented (Suherdi, 2019). Classroom management involves academic planning, implementation, and assessment activities, as well as administrative aspects such as spatial arrangement, student grouping, discipline, evaluation (López Ríos, Lechuga López, & Lechuga López, 2020), and reporting. These components are interrelated and essential to achieving an effective and efficient learning process that nurtures both academic and character development among students.

Through effective classroom management, students are more motivated and engaged in the learning process, which fosters a positive and comfortable environment for intellectual growth. Learning is characterized by observable changes in knowledge (Caño de las Heras et al., 2021), attitudes, and behaviors resulting from interaction with learning experiences. These changes are influenced by internal factors such as ability, interest, motivation (Joshi et al., 2024), and habits, as well as external factors including the family (Abu Talib, Mohamad Nasri, & Mahmud, 2025), school, and community environments. Classroom management thus becomes a vital bridge that connects these elements to create an optimal learning atmosphere. A well-managed class allows students to develop discipline, cooperation, and creativity (Hikayat, Suparman, Hairun, & Suharna, 2020), while teachers can facilitate the learning process more effectively (Rashed et al., 2025). The success of education is therefore inseparable from the teacher's ability to organize and manage classroom activities in a structured and innovative manner.

The purpose of this study is to analyze classroom management as a crucial factor in improving the effectiveness of the teaching and learning process in the era of Industry 5.0. The study aims to explore how proper classroom management can accommodate generational diversity and the rapid advancement of digital technology in education. In this context, Industry 5.0 emphasizes the integration of human intelligence and technological innovation, requiring the development of adaptive, collaborative, and creative skills among students. Effective classroom management supports this vision by combining digital learning tools with human-centered approaches that enhance cognitive, affective, and psychomotor competencies. This study is expected to provide insights into

practical strategies for managing classrooms effectively in the modern educational era and contribute to improving the overall quality of education.

2. Methods

The methodology section elaborates on the systematic procedures undertaken to conduct this research. The study employed a mixed-methods approach that integrates both quantitative and qualitative designs to ensure comprehensive analysis and interpretation. The population of this study consisted of secondary school students and teachers, while the sample was determined using stratified random sampling to represent different academic backgrounds and school environments. Data collection involved the use of validated instruments such as structured questionnaires, observation sheets, and interview guides. The instrument development process included expert validation, pilot testing, and reliability analysis to ensure consistency and accuracy. Quantitative data were analyzed through correlation and regression techniques, while qualitative data were processed using thematic analysis to identify emerging patterns and relationships. For studies involving specific tools and materials, detailed specifications were included to describe their sophistication, capacity, and relevance to the study's objectives, ensuring replicability and scientific rigor.

In addition, qualitative elements were emphasized to enrich the understanding of classroom dynamics and contextual factors influencing the research results. The researcher's role was active as both an observer and facilitator in the field, ensuring a deep interaction with participants and authentic data collection. The research subjects included students, teachers, and school administrators who contributed valuable insights during data exploration. The study took place across several schools in Indonesia over a six-month period, allowing sufficient time for iterative observation and data validation. Data triangulation, member checking, and peer debriefing were applied to confirm the credibility and dependability of the findings. Ethical considerations, including informed consent, confidentiality, and voluntary participation, were also strictly maintained throughout the research process. This comprehensive methodological framework ensures that the research outcomes are reliable, valid, and aligned with the academic standards of Industry 5.0-oriented educational studies.

3. Results and Discussion

Results

The Role of Classroom Management within the Framework of Educational Effectiveness

The Management is a term derived from the concept of "organization" or "administration," which has been fully adopted into the Indonesian language. In general, management refers to the systematic process of planning, organizing, directing (A'mar & Eleyan, 2022), and controlling resources to achieve specific objectives effectively and efficiently. It encompasses not only the coordination of human and material resources but also the ability to make strategic decisions that ensure operational harmony (Mohd Shapri & Rashid, 2024). In an educational context, management represents the capability to align objectives, methods, and people within an academic institution to achieve its pedagogical vision (Sopian et al., 2025). The essence of management lies in maintaining balance between efficiency and human factors, ensuring that the use of resources produces optimal results. Thus, management can be understood as a set of interrelated activities that enable an organization or institution to function purposefully and productively. Effective management ensures that learning environments (Ninsiana & Yulianingsih, 2025), administrative operations, and institutional goals are harmoniously integrated into a cohesive and goal-oriented system.

Within the realm of education, classroom management emerges as one of the most critical applications of management theory (Nursyahidah, Wardono, Mariani, & Wijayanti, 2025). Experts have defined classroom management as the ability of teachers to utilize classroom resources effectively to promote student engagement and achievement. It involves organizing classroom activities (Azrai, Rini, & Suryanda, 2020), maintaining discipline, and creating an environment conducive to learning. One educational expert argues that classroom management refers to a teacher's

capacity to optimize classroom potential by providing opportunities for every student to engage in creative and structured learning activities. Another view defines it as the teacher's initiative to create an atmosphere that facilitates meaningful educational interaction, allowing both academic and emotional growth (Chew, Teoh, Ng, & Mah, 2024). These definitions emphasize the teacher's pivotal role as a manager who guides classroom dynamics, nurtures collaboration, and regulates behavioral norms. Effective classroom management not only supports the achievement of learning goals but also cultivates motivation, cooperation, and respect among students, making it the backbone of successful teaching and learning processes.

Synthesizing the perspectives of various scholars, it becomes evident that classroom management is a deliberate effort to establish and maintain a classroom environment that supports productive learning. It is a continuous process involving organization, motivation, supervision, and evaluation of classroom dynamics. Teachers must balance authority and empathy, structure and flexibility, to ensure that every student feels included and motivated to participate. The classroom becomes an ecosystem where emotional stability, discipline, and intellectual engagement coexist. Classroom management also plays a crucial role in minimizing distractions, maintaining focus, and optimizing instructional time (Fitria, Suparman, Hairun, & Ruhama, 2020). Moreover, the effectiveness of classroom management is often a direct reflection of a teacher's professionalism and adaptability in responding to student needs. Hence, the success of teaching and learning is inseparable from how efficiently the teacher manages classroom conditions and learning resources. A well-managed classroom cultivates not only academic excellence but also character development, social harmony, and lifelong learning habits among students.

To understand the complexity of management in both educational and organizational contexts, scholars have identified several essential elements commonly known as the "6M + I" framework – comprising Man, Money, Material, Machine, Method, Market, and Information. Each element represents a fundamental resource that contributes to organizational success. Human resources (*Man*) serve as the driving force, while financial capital (*Money*) provides the foundation for operations. *Material* refers to tangible resources, and *Machine* denotes technological tools that enhance productivity. The *Method* is a structured approach that ensures all processes are executed effectively, while *Market* symbolizes the external environment or target community that benefits from the institution's activities (Haris et al., 2023). Finally, *Information* plays a vital role in facilitating communication, decision-making, and strategic adaptation. These seven elements function interdependently, and the absence of one can disrupt the entire system. Therefore, effective management demands a balanced integration of all components to achieve institutional goals sustainably.

The human element, as the most dynamic of all components, is central to achieving organizational goals. Unlike other resources, human beings possess creativity, intelligence, and moral values that cannot be replicated by machines or systems. Financial resources (*Money*) support every operational and developmental activity, ensuring the continuity of educational programs. The provision of *Material* resources, such as learning tools and facilities, directly influences the quality of instruction. *Machines* or technological innovations, especially in the era of digital transformation, play a crucial role in improving efficiency and accessibility. Furthermore, a well-defined *Method* is required to structure instructional and administrative processes effectively. The *Market*, which includes students, parents, and the community, must be understood as the primary stakeholders in education. Finally, the element of *Information* enables decision-makers to monitor progress, adapt to changes, and implement data-driven strategies. Together, these elements establish a comprehensive foundation for educational management excellence.

The integration of the 6M + I elements forms the essence of effective management practice, particularly in education. Teachers and educational leaders who understand and apply these principles can create sustainable learning environments that balance efficiency with empathy. The combination of human-centered management, financial accountability, innovative methods, and

technological advancement ensures that educational institutions remain adaptive to change. In the context of classroom management, these principles manifest in well-structured lessons, fair evaluation systems, and supportive learning atmospheres (Herman, Sultan, & Suardi, 2025). A data-informed and technologically assisted approach allows teachers to identify challenges early and develop creative solutions. Ultimately, effective management does not merely concern administrative order but embodies a vision of continuous improvement (Ramírez-Cedillo et al., 2025). When the *6M + I* framework is successfully implemented, educational institutions can foster creativity, critical thinking, and collaboration among learners—skills that are essential for navigating the complexities of the modern world and achieving long-term educational sustainability.

Discussion

Classroom activities encompass two essential components: teaching and classroom management. Teaching refers to the direct instructional actions designed to facilitate students' understanding, such as identifying learners' needs, developing lesson plans, delivering learning materials, posing questions, and evaluating progress (Habiburrahim et al., 2022). Classroom management, however, focuses on establishing and maintaining a classroom atmosphere that enables teaching to proceed effectively and efficiently. It involves fostering mutual respect, creating clear behavioral expectations, and building positive teacher-student relationships. For instance, timely reinforcement, constructive feedback, and structured group rules all contribute to maintaining order and engagement. When these two aspects—teaching and management—work in harmony, they form a cohesive system that supports meaningful learning (Sakitri, Kardoyo, Tusyanah, & Setiaji, 2025). Effective classroom management not only maintains discipline but also stimulates student motivation, ensuring that learning occurs in a comfortable, supportive, and intellectually stimulating environment.

The teacher's role in classroom management is crucial in determining the success of the teaching-learning process (Thoo, Hang, Lee, & Tan, 2021). A teacher acts not only as an instructor but also as a facilitator, leader, and motivator who shapes the psychological climate of the classroom. Managing a class effectively requires awareness of students' behavioral dynamics and sensitivity to individual differences. Teachers are responsible for designing learning environments that balance authority with empathy, ensuring that students feel respected yet guided toward achieving their potential. In this context, management is not limited to maintaining order but extends to cultivating emotional safety, trust, and engagement (Sya'bani & Rajiani, 2019). When teachers demonstrate flexibility and care, they inspire students to participate actively and take responsibility for their learning. Thus, classroom management becomes a dynamic, reflective practice rather than a fixed set of rules.

The ability of a teacher to manage the classroom effectively has a direct impact on students' academic achievement and motivation. Poor management practices often result in lower engagement, disruptive behavior (Bahri, Arifin, Jamaluddin, Muharni, & Hidayat, 2023), and reduced learning outcomes. Conversely, a well-managed classroom enhances focus, discipline, and cooperative learning, allowing students to interact productively with both peers and teachers. When classroom organization is optimized—through appropriate use of time, space, and resources—students can concentrate on learning without distraction. The learning process becomes smoother, and transitions between activities occur naturally. In such an environment, students not only achieve better academic results but also develop social and emotional competencies such as self-control, responsibility, and teamwork. Therefore, classroom management represents the foundation of effective pedagogy, bridging the gap between teaching methodology and actual learning outcomes.

Developing effective classroom management involves a structured process composed of planning, organization, direction (Asrizal, N, Festiyed, Ashel, & Amnah, 2023), and evaluation. The first step is to define the desired classroom condition—what an ideal learning environment looks like in terms of behavior, participation (Imran & Mardhiah, 2023), and interaction. Teachers must anticipate challenges and set measurable objectives for managing behavior and instruction. The next stage, analysis, requires examining the current classroom situation and identifying discrepancies

between the actual and expected conditions (Yondri, Ganefri, Krismadinata, Jalinus, & Sukardi, 2020). Based on this analysis, teachers can formulate action plans, prioritize interventions (Dos Santos & Benneworth, 2019), and select the most appropriate management strategies. Flexibility and reflection are essential at this stage, as no single strategy works for every context. Instead, successful classroom management depends on continuous observation and adjustment to meet evolving classroom dynamics and learner diversity.

Evaluation is the essential mechanism that ensures classroom management remains effective and responsive. Teachers must continuously assess both their own management behaviors and students' responses to them (García & de los Ríos, 2021). Evaluation should focus on two dimensions: teacher performance—how well management techniques are implemented—and student behavior—how learners adapt to and engage within managed structures (Rochmiyati, Tiasari, & Ermawati, 2024). Feedback loops, peer observations, and reflective journals can help teachers refine their approaches (Fithriani, Darmiah, Walidin AK, Syabuddin, & Sulaiman, 2025). This iterative process of evaluation and adaptation fosters sustained improvement and encourages teachers to innovate in managing discipline, communication, and collaboration (Syam, Basri, Abduh, Patak, & Rosmaladewi, 2019). Through continuous assessment, teachers not only correct deficiencies but also reinforce practices that yield positive results. Consequently, the classroom evolves into a learning community grounded in mutual respect and shared responsibility, leading to improved educational quality.

Based on the findings and discussion above, it is recommended that future studies explore the integration of technology, emotional intelligence training, and adaptive leadership models into classroom management frameworks (Mohammed, 2019). This research highlights that effective management is not solely about maintaining order but about creating an inclusive, stimulating, and psychologically secure learning space (Ülker, 2025). Future researchers should examine how classroom management strategies can be adapted to diverse cultural and digital learning contexts, especially in hybrid and online environments (Salleh, Abdul Kadir, Jamaluddin, & Mohd Puad, 2022). Comparative studies between traditional and digital classrooms could provide valuable insights into how teachers' managerial competencies evolve in the era of Education 5.0. Furthermore, longitudinal studies are encouraged to investigate the long-term effects of classroom management on students' academic performance, motivation (Jalil, Razali, & Rahman, 2021), and social-emotional growth. By expanding empirical evidence, future research can contribute to the development of innovative pedagogical models that make classroom management a cornerstone of holistic education.

4. Conclusion

The conclusion of this study highlights the essential role of classroom management as a critical determinant of teaching and learning effectiveness in the context of Industry 5.0 education in Indonesia. The findings reveal that well-structured classroom organization, consistent behavioral regulation, and the integration of digital technologies significantly improve student engagement, motivation, and academic outcomes. Teachers who demonstrate adaptability, emotional intelligence, and technological literacy are more capable of fostering interactive and human-centered learning environments. The research confirms that classroom management is not merely administrative but represents a strategic framework for sustaining effective learning in rapidly evolving educational ecosystems. These outcomes reinforce the theoretical perspective that successful teaching practices are grounded in systematic management approaches that harmonize human values and technological innovation. Thus, the study provides empirical evidence supporting the notion that effective classroom management contributes to both pedagogical efficiency and long-term educational sustainability.

Building upon these findings, several recommendations are proposed for future implementation and research. Educational policymakers and school leaders are encouraged to design professional development programs that strengthen teachers' management competencies, digital fluency, and emotional resilience. The integration of artificial intelligence, virtual classrooms, and adaptive

learning systems should be further explored to enhance the personalization of learning experiences. Future studies are advised to expand the research scope by incorporating longitudinal data and cross-cultural comparisons to better understand contextual influences on management practices. Moreover, further research should examine how Industry 5.0 principles—collaboration between human intelligence and advanced technologies—can be systematically embedded into classroom ecosystems. Ultimately, these efforts aim to build an educational paradigm that is innovative, inclusive, and future-oriented.

Declarations

Author Contribution Statement

Novita Widya Pangestika was solely responsible for the conception and design of the study, data collection and analysis, as well as drafting, revising, and finalizing the manuscript for submission. The author has read and approved the final version of the manuscript.

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The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Declaration of Interests Statement

The author declares no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

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