

MOVING CLASS AS A LEARNING ENVIRONMENT INNOVATION IN VOCATIONAL EDUCATION: EVIDENCE FROM TWO INDONESIAN VOCATIONAL SCHOOLS

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ABSTRACT

The Moving Class System is one of the learning environment innovations that has the potential to improve the quality of learning in Vocational High Schools (SMK), but its implementation in the context of vocational education in Indonesia has not been comprehensively studied. This study aims to analyze the planning process, implementation, supporting and inhibiting factors, and the impact of Moving Class implementation on student learning motivation, teacher professionalism, and facilities and infrastructure management. The study used a qualitative multi-site case study approach at two SMKs in East Java, namely SMK Islam 2 Wlingi and SMK Unggulan NU Mojoagung. Data were collected through in-depth interviews with 22 participants, observation, and document analysis, then analyzed using the interactive model of Miles and Huberman through within-site and cross-site analysis. The results identified four main themes, namely system planning, Moving Class implementation, supporting and inhibiting factors, and their impact on students, teachers, and institutions. Moving Class implementation was proven to increase student learning motivation, strengthen teacher professionalism, and optimize the use and management of school facilities and infrastructure when supported by strong leadership and integrated planning. The novelty of this study lies in the Integrated Moving Class Management Model (IMCM), which combines strategic leadership, integrated planning, dynamic implementation, and pedagogical as well as institutional outcomes in vocational education. These findings provide practical implications as a reference for schools and policy makers in designing more systematic Moving Class implementation to improve the quality of learning and the effectiveness of vocational education management.

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INTRODUCTIONS

Technical and Vocational Education and Training (TVET) systems in various countries face increasingly great demands to produce graduates who possess not only technical competence but also the ability to adapt, learn independently, and maintain motivation for lifelong learning (UNESCO-UNEVOC, 2022). These demands arise as a consequence of the increasingly dynamic changes in the world of work, requiring vocational education institutions to

create learning environments capable of supporting competency development while also building the character of learners who are ready to face industry challenges.

In Indonesia, Vocational Secondary Schools (*Sekolah Menengah Kejuruan/SMK*) hold a strategic position within the national education system because they serve as providers of skilled labor ready to enter the business and industrial world. The number of SMK students, which reaches approximately 5.3 million, demonstrates the significant contribution of vocational education to the national human resource development agenda (Kemdikbudristek, 2023). Nevertheless, various challenges are still faced in the delivery of vocational education, particularly those related to low student engagement, the quality of the learning process, and the not yet optimal alignment between the school learning environment and the continually evolving needs of the world of work (Mulyasa, 2022; Panjaitan et al., 2022; Situmorang et al., 2022).

One problem that is still frequently encountered in SMK is a learning environment that tends to be static and less able to encourage active learning (Eliza et al., 2023). In general, the learning process still uses a fixed classroom system, in which students remain in the same classroom while teachers move from one classroom to another. This condition has the potential to encourage passive learning behavior, reduce students' opportunities to gain contextual learning experiences, and cause laboratory facilities and practice rooms to not be utilized optimally (Haisunasya et al., 2024). In fact, the characteristics of vocational education require the availability of a learning environment capable of representing real conditions in the world of work so that students can develop competencies in a more applicative manner.

As an alternative to the conventional classroom system, the concept of Moving Class is implemented, namely a learning system in which students move to classrooms designed according to the subject, while teachers continue teaching in the room that corresponds to their area of expertise. This concept allows each learning space to be equipped with facilities, media, and equipment relevant to the characteristics of the subject so that learning becomes more contextual. In Indonesia, the implementation of Moving Class obtains its legal basis through Permendiknas Number 24 of 2007, which encourages the provision of thematic and activity-based learning spaces. Nevertheless, the implementation of this system in schools remains limited, and empirical evidence regarding its effectiveness, particularly in vocational education, is still relatively scarce.

Various studies show that the learning environment has a close relationship with students' motivation, engagement, and learning achievement (Grannäs et al., 2026; Kariippanon et al., 2017). Classrooms specifically designed according to their field of knowledge, equipped with learning media, practice tools, and various relevant visual representations, are able to create more meaningful learning experiences and increase students' intrinsic motivation as explained in Self-Determination Theory (Ryan & Deci, 2020). However, the implementation of Moving Class also faces challenges that are not simple. Managing student movement, arranging schedules for room use, maintaining shared facilities, and providing supporting infrastructure require a good school management system, especially in SMK that have laboratories and practice workshops with more complex management needs.

Conceptually, the quality of the learning environment is determined not only by the physical condition of the classroom but also by the compatibility between spatial design, learning strategy, and student needs (Barrett et al., 2019; Imms & Byers, 2016; Purnama & Winarsih, 2025). Therefore, the success of Moving Class implementation depends not only on the availability of dedicated rooms for each subject but also on the school's ability to manage facilities and infrastructure effectively. The management of educational facilities, which includes asset maintenance, room use arrangement, scheduling, and fulfillment of safety aspects, is increasingly regarded as an important part of educational leadership (Mardiana et al., 2025). In the context of SMK, this management becomes even more important because the quality of laboratories and practice workshops directly affects the quality of learning as well as the reputation of the educational institution.

In addition to facilities and infrastructure aspects, the success of learning innovation is also greatly influenced by school leadership and teacher involvement. Sustainable educational reform is determined not only by curriculum changes or the use of technology but also by leadership capable of building a culture of innovation, encouraging collaboration, and increasing the organizational capacity of schools (Fullan & Quinn, 2015)). Hallinger (2020) shows that principals' instructional leadership makes a significant contribution to improving school quality, especially when principals are directly involved in the learning process. On the other hand, the success of implementing an innovative learning environment is also influenced by the level of teacher ownership of the changes being made. Teachers who act as both designers and managers of the learning space tend to be more capable of developing learning strategies that suit the characteristics of their students (Vangrieken et al., 2015).

Various investigations in Indonesia have examined the implementation of Moving Class, learning environment, and education management, but the studies are still focused on certain aspects separately. Hasnadi (2022) showed that the

implementation of Moving Class can support increased learning motivation through a more dynamic learning environment, while Telaumbanua et al. (2025) showed a relationship between the Moving Class system and student learning motivation in the SMK context. Fatah et al. (2025) also emphasized the importance of developing a Moving Class based school environment as a learning resource that supports student engagement. In addition, Masri et al. (2022) emphasized that facilities and infrastructure management is an important factor in supporting vocational learning, while Saputra et al. (2021) showed that school leadership plays a role in encouraging learning innovation. However, most previous studies still focus on the relationship between Moving Class and motivation or learning outcomes, use quantitative approaches, and are mostly conducted at the general education level without deeply exploring the planning process, implementation mechanisms, learning space management, and school infrastructure management (Haisunasya et al., 2024; Nurmalina, 2020). Therefore, research that specifically integrates aspects of planning, implementation, supporting and inhibiting factors, and the impact of Moving Class implementation on student learning motivation, teacher professionalism, and facilities and infrastructure management in the context of SMK in Indonesia is still relatively limited.

Based on this gap, this study positions itself to provide a more comprehensive understanding of the implementation of the Moving Class system in the SMK context through a qualitative multi-site approach. Unlike previous research that mostly used quantitative approaches and focused on learning outcomes, this study explores how schools plan, implement, and manage the Moving Class system, including space arrangement strategy, facility utilization, the role of school leadership, and teacher involvement in creating a learning environment appropriate to the characteristics of vocational education. Therefore, this study specifically aims to (1) analyze the planning process for Moving Class implementation; (2) describe the implementation of the system in supporting vocational learning; (3) identify the supporting and inhibiting factors of implementation; and (4) analyze its impact on student learning motivation, teacher professionalism, and school facilities and infrastructure management. This approach is expected to strengthen the research contribution to the development of vocational education management practice in Indonesia.

METHODS

This study used a qualitative multi-site case study design referring to the methodological tradition of case study developed by Yin (2018) and deepened by Merriam and Tisdell (2015). This design was chosen because it is able to explore the implementation of Moving Class in depth within the real context of the school without manipulation of variables. The multi-site approach was used to compare implementation patterns at two schools with different institutional characteristics, allowing the identification of similarities and contextual variations between research locations. This study used an interpretivism perspective which views participants' experience and construction of meaning as the main source of understanding of the phenomenon studied (Creswell & Poth, 2018). The researcher acted as the main instrument in the process of data collection and analysis by applying reflexivity during the study.

The research location was selected through purposive sampling based on three criteria, namely: (1) the school has implemented Moving Class for at least two academic years; (2) has different organizational characteristics and community context; and (3) provides adequate research access (Patton, 2008). Two vocational schools in East Java were selected, namely SMK Islam 2 Wlingi and SMK Unggulan NU Mojoagung. SMK Islam 2 Wlingi is a medium sized vocational school in Blitar Regency with around 600 students and has implemented Moving Class since 2019. Meanwhile, SMK Unggulan NU Mojoagung in Jombang Regency has around 900 students and has implemented Moving Class since 2020. The differences in institutional background, field of expertise, and social context of the two schools provide empirical variation for understanding the implementation of Moving Class in vocational education. A total of 22 participants were selected through a combination of purposive and snowball sampling, consisting of vice principals (n=4), curriculum coordinators (n=2), facility managers (n=2), heads of study programs (n=4), subject teachers (n=6), and students (n=4). This composition was chosen to obtain perspectives from various organizational levels, from policy makers to direct users of the Moving Class system.

Data were collected through three techniques, namely in-depth interviews, non-participant observation, and document analysis in accordance with the case study principles of Yin (2018). Interviews were conducted with all participants from March to July 2023 with a duration of 45 to 90 minutes using open ended questions developed based on the research objectives. Interview data were recorded, transcribed verbatim, and translated for analysis purposes. Observation was carried out for 12 days at each school with a focus on class transitions, use of learning space, facility management, and teacher and student interaction. Document analysis included the school work plan, facility inventory, learning schedule, school self evaluation report (EDS), and student attendance data.

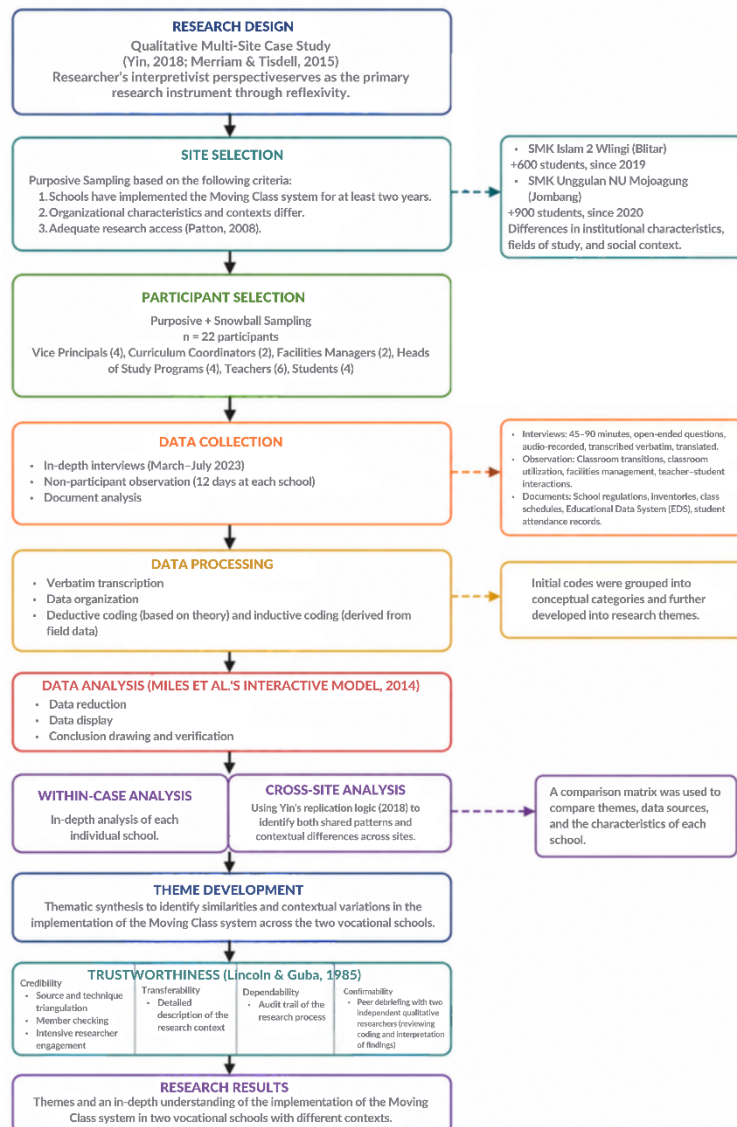


Figure 1. Research Flow Diagram
Source: Researcher's compilation, 2023

Data analysis followed the interactive model of Miles et al. (2014), which includes data reduction, data display, and conclusion drawing and verification. The coding process was carried out through a combination of deductive codes based on the theoretical framework and inductive codes emerging from field data. The initial codes were then grouped into conceptual categories and developed into research themes. The analysis was conducted through within-case analysis at each school, then continued with cross-site analysis using Yin (2018) replication logic to identify similar patterns and contextual differences between sites. A comparative matrix was used to compare themes, data sources, and characteristics of each school.

Data validity was ensured through a trustworthiness strategy based on Lincoln and Guba (1985), including credibility, transferability, dependability, and confirmability. Credibility was carried out through source and technique triangulation, member checking, and intensive researcher engagement at the research locations. Transferability was strengthened through detailed description of the research context, while dependability was maintained through an audit trail of the research process. Confirmability was carried out through peer debriefing with two independent qualitative researchers who reviewed the coding process and interpretation of results.

RESULTS

Four overarching themes emerged from cross-site analysis: (1) planning the Moving Class system; (2) operational implementation; (3) supporting and inhibiting factors; and (4) impacts on students, teachers, and the institution. These themes and their constituent sub-themes are summarised in Table 1.

Table 1. Summary of Themes, Sub-themes, and Key Indicators

Theme	Sub-themes	Key Indicators	Sites Identified
Planning	Infrastructure & Curriculum Preparation Budget & Stakeholder Planning	Room allocation, labelling, subject-specific furnishing, timetable design BOS (School Operational Assistance fund) allocation, parent engagement, teacher orientation	SMK Islam 2 Wlingi; SMK Unggulan NU Mojoagung Both sites
Implementation	Digital Scheduling & Mobility Shared Classroom Ownership	Bell-based movement, digital timetables, corridor protocols Teacher-managed rooms, collaborative upkeep	Both sites Both sites
Factors	Supporting Factors Inhibiting Factors	Leadership commitment, teacher creativity, community support, digital literacy Limited space, transition adjustment, resource constraints	Both sites Both sites
Impact	Student Outcomes Teacher & Institutional Outcomes	Enhanced motivation, autonomy, creativity, vocational readiness Professional growth, improved facilities management, institutional reputation	Both sites Both sites

Source: Researchers' own analysis (2023)

Planning the Moving Class System Infrastructure Preparation

At both sites, moving to a Moving Class system required extensive advance planning of physical spaces. Existing multi-purpose classrooms were redesignated and retrofitted as subject-specific rooms, with each space furnished, decorated, and equipped to reflect its assigned discipline. At SMK Islam 2 Wlingi, this involved converting six standard classrooms into dedicated spaces for Accounting, Office Administration, Computer Applications, Automotive Theory, Workshop Practice, and General Sciences, respectively. At SMK Unggulan NU Mojoagung, eight rooms were reconfigured to support Computer Networking, Multimedia Production, Light Vehicle Engineering theory, English Language, Mathematics, and Islamic Studies. A facilities coordinator at SMK Islam 2 Wlingi described the planning process in the following terms:

"Before we could implement Moving Class properly, we had to completely rethink how every room in this school was used. We drew up floor plans, identified which subjects needed what kinds of displays and equipment, and budgeted each room separately. It took almost a full academic year of preparation before we were confident enough to go live." (Facilities Coordinator, SMK Islam 2 Wlingi)

At SMK Unggulan NU Mojoagung, the preparation was described as an iterative process guided by feedback from department heads:

"We piloted Moving Class with just three rooms in the first year. Teachers told us what worked and what didn't, some rooms needed more storage, others needed better lighting or display boards. We used that feedback to upgrade the rest of the rooms in the following year." (Deputy Principal, SMK Unggulan NU Mojoagung)

Curriculum Alignment and Timetabling

Infrastructure reconfiguration was preceded by a curriculum mapping exercise at both sites to ensure that room assignments matched the epistemological demands of each subject. Department heads worked alongside curriculum coordinators to identify which competencies required workspace-level infrastructure (e.g., workshop benches, diagnostic equipment) versus those primarily requiring visual and ICT resources. At both schools, the revised timetable allocated each subject-specific room to a single teacher-owner, with student groups rotating according to a master schedule. A curriculum coordinator at SMK Unggulan NU Mojoagung noted:

"The hardest part of planning was the timetable. With Moving Class, you cannot think about time and space separately, every scheduling decision has spatial consequences. We had to use spreadsheet software and, later, a digital scheduling application to manage the complexity." (Curriculum Coordinator, SMK Unggulan NU Mojoagung)

Budget Planning and Resource Mobilisation

Both schools funded infrastructure preparation primarily through the Government School Operational Assistance fund (Bantuan Operasional Sekolah, BOS), supplemented by community contributions from parent-teacher associations (*Komite Sekolah*). Expenditure was concentrated on display boards, subject-specific furniture, storage systems, and ICT peripherals. Both principals reported that transparent communication with school committees about the educational rationale for investment was crucial in securing community buy-in.

Implementation of the Moving Class System

Digital Scheduling and Mobility Protocols

At the operational level, Moving Class was managed through a combination of digital timetabling and regulated student transition protocols. Both schools used bell systems to signal the beginning and end of each lesson period (typically 45 minutes), providing a structured cue for student movement. At SMK Unggulan NU Mojoagung, QR-coded daily schedules were posted at room entrances and were also accessible via the school's internal WhatsApp broadcast group, enabling students to confirm their next classroom destination before transitions began. A student from SMK Unggulan NU Mojoagung articulated the experience of navigating the system:

"In the first few weeks we were confused about which room to go to, but now I just check the schedule in the WhatsApp group every morning and it becomes automatic. I actually like moving, it wakes me up between lessons. Each room feels different and that helps me switch into the right mindset for the subject." (Student, SMK Unggulan NU Mojoagung)

Shared Classroom Governance

A distinctive feature of the Moving Class model at both sites was the assignment of each subject room to a specific teacher-owner responsible for its maintenance, decoration, and resource management. This arrangement transformed the traditional teacher-as-visitor dynamic into one of teacher-as-steward, fostering professional ownership of the instructional environment. Teachers curated their rooms with student work displays, disciplinary vocabulary charts, equipment catalogues, and motivational posters aligned with their subject's vocational identity. A teacher of Computer Networking at SMK Unggulan NU Mojoagung reflected:

"When I have my own room, I am not a guest in someone else's space. I can set up my equipment in the most efficient way, I can display student projects from previous years, and I can create a real professional atmosphere. My room looks like a small IT lab now, and students respond to that, they take it more seriously." (Teacher, Computer Networking, SMK Unggulan NU Mojoagung)

Students were also assigned shared responsibilities for keeping rooms clean and orderly during their rotation, a practice that several teachers and coordinators identified as contributing to students' sense of ownership and discipline.

Transition Challenges and Adaptive Responses

Initial implementation at both sites was accompanied by logistical challenges. At SMK Islam 2 Wlingi, narrow corridor widths caused congestion during peak transition periods, requiring the school to stagger release times by year group. At SMK Unggulan NU Mojoagung, the longer walking distances between some room clusters led to occasional late arrivals. Both schools addressed these issues iteratively, adjusting transition windows, reconfiguring corridor flow patterns, and re-assigning certain rooms to reduce travel distances.

Supporting and Inhibiting Factors

Internal Supporting Factors

The most consistently cited internal supporting factor across both sites was the proactive and visible commitment of school principals and deputy principals. Participants at both schools described leaders who not only mandated Moving Class but actively participated in planning meetings, facilitated teacher training, and communicated the educational vision to parents and staff. A teacher at SMK Islam 2 Wlingi observed:

“Our principal is always asking how we can make the rooms better. He visits classrooms regularly and notices things, if a display board needs updating or if a room needs new equipment. That kind of attention from the top makes us all take the system more seriously.” (Teacher, Accounting, SMK Islam 2 Wlingi)

Teacher creativity and commitment were the second major internal supporting factor. Teachers who embraced their role as room curators invested personal time and professional energy in designing stimulating, discipline-authentic environments. This creativity was partly self-motivated and partly stimulated by informal peer competition which teachers reportedly took pride in having the best-decorated and most professionally equipped room.

External Supporting Factors

External support manifested primarily through community engagement and policy alignment. At both sites, parent associations provided supplementary funding for room furnishings, display materials, and ICT accessories beyond the scope of BOS allocations. Several participants noted that parents were more willing to contribute materially when they could physically observe the tangible improvements made to learning spaces. At the policy level, the alignment of Moving Class with national TVET infrastructure standards (Permendiknas No. 24/2007) legitimised the investment and facilitated access to quality assurance processes.

Internal Inhibiting Factors

Spatial constraints emerged as the principal internal inhibitor at both sites. Neither school had purpose-built Moving Class facilities; both had adapted existing infrastructure. This resulted in rooms that were, in several cases, smaller than ideal for group practical activities, and corridors that were not designed to accommodate high-density student traffic. A deputy principal at SMK Islam 2 Wlingi acknowledged:

“Our building was never designed for Moving Class. We have made it work through creativity, but there are real physical limits. Some rooms are just too small for certain activities, and that forces teachers to compromise on their instructional approach.” (Deputy Principal, SMK Islam 2 Wlingi)

Adaptation challenges for students and teachers in the early implementation phase were also identified as inhibiting factors, including loss of the psychological anchoring associated with a fixed home classroom, and the additional administrative burden of maintaining subject-specific rooms.

External Inhibiting Factors

External inhibiting factors were primarily economic. Dependence on BOS funding which is allocated per enrolled student and subject to national disbursement timelines created uncertainty in infrastructure planning. Both sites reported periods in which room upgrades were delayed due to funding cycle misalignments. At SMK Unggulan NU Mojoagung, a lack of locally available technical support for ICT infrastructure in subject rooms was also noted as a constraint.

Impacts of the Moving Class System

Student Impacts

The most frequently and emphatically reported student-level impact was an increase in learning motivation. Students at both sites consistently described heightened enthusiasm for attending classes, attributing this in part to the stimulating visual environment of subject rooms and in part to the novelty and physical dynamism of transitioning between spaces. Several students noted that the subject-specific atmosphere of each room helped them orient mentally toward the content before a lesson began, a phenomenon consistent with context-dependent memory and environmental cueing theories (Smith, 2021). A student from SMK Islam 2 Wlingi explained:

“When I walk into the Accounting room, I see numbers, charts, financial statements on the walls, the teacher’s desk organised like an office. It immediately puts me in an ‘accounting mindset’ before the teacher has even spoken. In a normal classroom with nothing on the walls, I sometimes forget which subject I am in.” (Student, SMK Islam 2 Wlingi)

Enhanced student autonomy and self-regulation were also reported. The responsibility for navigating the school, arriving punctually, and maintaining shared spaces fostered self-management skills that several teachers and coordinators linked to broader indicators of vocational readiness, including time management and professional conduct. Increased

student participation in class activities and higher levels of creative output in subject-specific rooms were additionally observed by teachers at both sites.

Teacher Impacts

Teachers reported multiple professional benefits from the Moving Class arrangement. The permanent ownership of a subject-specific room enabled deeper curriculum materialisation—teachers could invest in physical and digital resources calibrated to specific competency standards and maintain them across academic years. The visibility of their room environments to peers, students, parents, and inspectors motivated ongoing professional reflection and instructional innovation. A teacher at SMK Islam 2 Wlingi described how the arrangement transformed her pedagogical practice:

“Before Moving Class, I would carry my materials from classroom to classroom in a bag. Now everything is where I need it, and I have to think more carefully about how I use the space. It has made me a more creative teacher. I plan lessons thinking about the room as a teaching tool, not just a container for students.” (Teacher, Office Administration, SMK Islam 2 Wlingi)

Interestingly, participants at both sites reported that Moving Class contributed to stronger collegial relationships among subject-area teachers, who spent more time in shared professional spaces and engaged in more frequent informal discussion of subject-specific pedagogy and student progress.

Institutional Impacts

At the institutional level, Moving Class yielded measurable improvements in infrastructure utilisation and management efficiency. Fixed-room assignment enabled facilities coordinators to conduct targeted maintenance cycles, as each room had a clearly accountable teacher-owner who reported faults and managed day-to-day upkeep. Room inventories were more accurately maintained, and utilisation data which collected through the digital scheduling system enabled school management to identify and address under-used spaces. Both schools reported that Moving Class had contributed positively to their performance in national school quality accreditation (*Akreditasi Sekolah*), particularly in the facilities and learning environment dimensions. A facilities coordinator at SMK Unggulan NU Mojoagung summarised the institutional impact:

“Before Moving Class, nobody felt responsible for keeping a room in good condition, it was everyone’s room and no one’s room. Now, if there is a problem with the Computer Networking room, I know exactly who to contact. The accountability is much clearer, and the rooms are visibly better maintained than they were before.” (Facilities Coordinator, SMK Unggulan NU Mojoagung)

Both schools also reported enhanced institutional reputation within their local educational communities, with Moving Class frequently cited as a distinguishing feature by prospective students and parents during open-day events. This reputational benefit had indirect enrolment implications, with both schools reporting modest increases in new student intake in the years following Moving Class adoption.

DISCUSSION

Planning as Foundational Infrastructure for Innovation

The findings reveal that successful Moving Class implementation is predicated on extensive, multi-dimensional planning that encompasses physical infrastructure, curriculum alignment, human resource preparation, and financial mobilisation. This finding resonates with Fullan and Quinn (2015) coherence framework, which posits that sustainable educational innovation requires simultaneous attention to direction setting, collaborative culture, and deepening learning which are dimensions that were operationalised in the studied schools through the parallel processes of infrastructure redesign, curriculum mapping, and teacher engagement. The iterative planning approach documented at SMK Unggulan NU Mojoagung which piloting with three rooms before scaling exemplifies the disciplined innovation model advocated by Dede and Richards (2012), wherein small-scale experimentation mitigates systemic risk.

From an educational facility management perspective (Mardiana et al., 2025), the planning phase documents a significant expansion of facilities governance from a maintenance function to a strategic pedagogical function. Facilities coordinators in both schools were not merely managing assets but actively co-designing learning environments in dialogue with curriculum leaders and teachers, reflecting what Hashim et al. (2021) describe as ‘integrated facility-pedagogy alignment’. This represents a departure from conventional TVET facilities management models in which infrastructure decisions are made independently of instructional considerations.

These findings show that the success of Moving Class implementation is not solely determined by the availability of physical facilities, but by the school's ability to integrate various management components into one interrelated planning process. This phenomenon occurs because changes to the learning system not only change classroom space use, but also change teachers' work patterns, schedule management, resource distribution, and coordination mechanisms between stakeholders. Therefore, planning functions as a mechanism to reduce implementation uncertainty while also building organizational readiness for change.

Theoretically, this finding extends Fullan and Quinn (2015) coherence framework by showing that in the context of vocational education, organizational coherence is also formed through the integration of learning facility planning and pedagogical needs. Thus, planning is not only an administrative activity, but becomes part of the school organization's transformation strategy. From a practical perspective, this result shows that vocational schools that will implement Moving Class need to make cross field planning covering curriculum, facilities and infrastructure, human resources, and financing a main prerequisite before change is implemented.

Implementation Dynamics: Digital Scheduling, Mobility, and Shared Ownership

The operational implementation findings highlight the centrality of two interdependent mechanisms: structured mobility management and shared classroom governance. Digital scheduling tools particularly the WhatsApp-based dissemination of daily room assignments functioned as critical coordination infrastructure, reducing the transaction costs of student navigation and enabling near real-time schedule modifications. This finding aligns with Hammad et al. (2024) observation that low-cost digital communication platforms have become essential enablers of organisational agility in resource-constrained schools. The appropriation of WhatsApp for institutional scheduling rather than purpose-built learning management systems reflects a pragmatic technological adaptation strategy consistent with Indonesia's broader pattern of mobile-first digital inclusion (Gusti & Adzima, 2026).

The teacher-as-room-steward model documented at both sites carries significant implications for professional identity and instructional quality. By transforming each teacher from a mobile visitor into a permanent resident of a subject-specific space, Moving Class reframes the teacher's relationship with the material environment of instruction. This shift resonates with Vangrieken et al. (2015) findings on teacher agency in innovative learning environments, and with constructivist scholarship on the role of artefacts and physical cues in mediating cognition (Jonassen, 2013). When teachers curate discipline-specific displays, organise equipment to mirror professional workflows, and embed student work within the room's visual fabric, they are performing what Grannäs et al. (2026) describe as 'environment-pedagogy alignment' which is the active synchronisation of spatial design with intended learning activities.

These findings indicate that the success of Moving Class implementation is more influenced by the effectiveness of coordination than by the level of sophistication of the technology used. The use of simple applications such as WhatsApp was able to function effectively because it matches the communication habits of school members, making it easily accepted and operated without requiring high technology investment. This shows that technology context fit is more important than the complexity of the digital system used.

In addition, the change in teachers' role as the person in charge of learning space resulted in an increased sense of ownership toward the learning environment. This condition encouraged teachers to be more creative in developing learning media and creating learning spaces appropriate to the characteristics of the subject. This finding extends previous research by showing that learning space design can be a factor that strengthens teacher professionalism, particularly in vocational education which relies heavily on a learning environment resembling the world of work.

Contextual Factors: Leadership, Creativity, and Constraint

The identification of principal leadership as the most salient internal supporting factor corroborates a substantial body of educational leadership research (Hallinger, 2020; Hammad et al., 2024). Principals at both sites exemplified what Day et al. (2016) term 'values-led transformational leadership', combining a clear pedagogical vision for Moving Class with practical engagement in its execution. Their regular classroom visits, active participation in planning meetings, and public endorsement of teacher creativity functioned as motivational signals that legitimised the reform and sustained its momentum.

The constraints documented in Theme 3 are equally theoretically significant. Spatial limitations which are the most prevalent inhibiting factor remind us that innovative learning models are not spatially neutral; they make specific demands on the physical environment that may exceed the adaptive capacity of legacy building stock. Barrett et al. (2019) have similarly noted that many schools attempting flexible or innovative learning environment reforms are constrained by inherited architectural configurations. The adaptive strategies developed by both sites which staggered release times,

corridor flow redesign, room reassignment illustrate the improvisational dimension of implementation fidelity (Dede & Richards, 2012) and suggest that resilience and problem-solving capacity are institutional competencies as important as resource availability.

The results also show that principal leadership functions not only as a decision maker, but as a driver of organizational change. The principal's direct involvement in the implementation process builds teacher trust toward the policies being implemented, thereby reducing resistance to change. Conversely, various facility limitations did not fully hinder implementation because schools were able to develop various adaptive strategies according to their existing conditions.

These findings show that the success of educational innovation is determined more by the adaptive capacity of the organization than by resource availability alone. Therefore, the contribution of this study is to show that organizational creativity and adaptive leadership are important factors that bridge facility limitations in the implementation of learning innovation in SMK.

Impact Interpretation through Self-Determination Theory

The student-level impacts documented in Theme 4 are interpretable through multiple lenses, of which SDT (Ryan & Deci, 2020) is the most analytically productive. The heightened motivation reported by students maps onto all three basic psychological needs. Competence was supported by the discipline-authentic environments of subject rooms, which provided contextual cues resonant with students' developing vocational identities. Autonomy was reinforced by the independence demands of navigating the school, managing transitions, and exercising shared responsibility for room maintenance. Relatedness was fostered by the collaborative use of shared spaces and the deepened teacher-student relationships enabled by teachers' sustained presence in their rooms.

The phenomenon described by one student, mentally shifting into an 'accounting mindset' upon entering the Accounting room represents a concrete manifestation of what cognitive scientists term 'context-dependent memory' (Tippenhauer & Saylor, 2026): the tendency for environmental cues to activate domain-specific cognitive schemas. This finding suggests that Moving Class may function not merely as a logistical arrangement but as a form of environmental priming, systematically cueing students' prior subject-area knowledge and predisposing them toward engaged learning. This interpretation extends the existing literature, which has not previously documented this mechanism in the TVET context.

The impacts on teacher professionalism and instructional creativity are interpretable through expectancy-value theory (Eccles & Wigfield, 2020): when teachers perceive their instructional environment as a site of professional expression and identity, they assign higher value to the task of room maintenance and pedagogical innovation, sustaining engagement over time. The collegial benefits observed, stronger peer relationships and more frequent informal professional discussion align with Vangrieken et al. (2015) evidence that proximity-based professional communities are important drivers of instructional improvement.

This interpretation shows that the impact of Moving Class is not only reflected in increased learning motivation, but also in the formation of a more authentic learning experience appropriate to the characteristics of vocational education. A learning environment designed based on the characteristics of skill competencies allows students to connect learning material with real work context, thereby increasing learning engagement.

From the perspective of theory development, the results of this study extend the application of Self Determination Theory in the context of vocational education by showing that the design of the physical learning environment can function as a stimulus that supports the fulfillment of students' psychological needs. Previous literature has more often placed motivation as the result of teacher and student interaction, while this study shows that the learning environment also has a role as a mediator that strengthens intrinsic motivation.

Institutional and Policy Implications

The institutional impacts of Moving Class which improved infrastructure utilisation, clearer accountability for room maintenance, and enhanced accreditation performance have direct implications for educational management policy in Indonesian SMK. Indonesia's national school accreditation framework (Badan Akreditasi Nasional Sekolah/Madrasah, BAN-S/M) assigns substantial weight to facilities quality and learning environment standards (Kemdikbudristek, 2023). Moving Class, by concentrating and deepening subject-specific infrastructure investment, appears to produce accreditation dividends beyond those achievable through conventional multi-purpose classroom arrangements.

The dependency on BOS funding documented at both sites reveals a structural vulnerability in Moving Class sustainability. Educational management scholars (Mardiana et al., 2025; Nuralina, 2020) have consistently argued that

innovative facility initiatives require diversified, stable funding streams rather than reliance on single, cycle-dependent government allocations. Policymakers at district and provincial levels should consider establishing dedicated infrastructure innovation grants for SMK implementing system-level learning environment reforms, with performance-based disbursement linked to accreditation outcomes.

These findings have important implications for the management of vocational education in Indonesia. Moving Class implementation should not be viewed merely as an arrangement for changing learning spaces, but as a school management strategy capable of simultaneously improving the effectiveness of facility utilization, learning quality, and institutional performance. Therefore, local governments and education stakeholders need to provide more sustainable funding policies so that this innovation does not depend entirely on BOS funds.

In addition to providing practical recommendations, this study also offers empirical evidence that innovation in learning environment management can be a strategic instrument in improving the quality of vocational education. This contribution enriches education management studies that have so far focused more on curriculum and leadership aspects than on learning space management as part of a school quality improvement strategy.

A Conceptual Integrated Moving Class Management Model for Vocational Education

Drawing on the theoretical frameworks and empirical findings of this study, the Researchers propose an Integrated Moving Class Management Model (IMCM Model) for vocational education. The model comprises four interacting dimensions arranged in a dynamic cycle. The first dimension, Strategic Leadership and Vision, constitutes the initiating and sustaining force of the system. Principals and senior leaders articulate a compelling pedagogical rationale for Moving Class, secure institutional commitment, and model professional accountability through regular engagement with classroom environments. The second dimension, Integrated Planning, encompasses the simultaneous development of infrastructure, curriculum, human resources, and financial frameworks. Planning is not sequential but concurrent: room design informs curriculum sequencing, which in turn shapes timetabling, which determines room allocation. The iterative pilot approach documented at SMK Unggulan NU Mojoagung is advocated as a risk-mitigation strategy applicable across contexts.

Figure 2 presents the Integrated Moving Class Management Model (IMCM) developed based on the empirical findings and theoretical synthesis of this study. This model illustrates the dynamic relationship between the four management dimensions and shows how continuous feedback supports the sustainable implementation of the Moving Class system in vocational education.

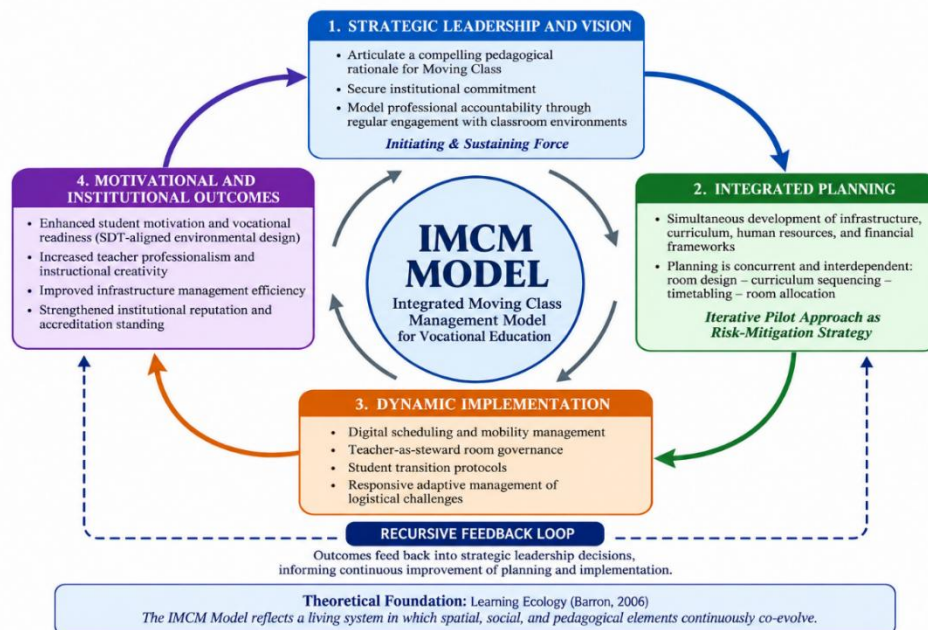


Figure 2. Integrated Moving Class Management Model (IMCM) for Vocational Education

Source: Researcher's compilation

The third dimension, Dynamic Implementation, captures the operational processes through which Moving Class is delivered: digital scheduling and mobility management; teacher-as-steward room governance; student transition protocols; and responsive adaptive management of logistical challenges. The fourth dimension, Motivational and Institutional Outcomes, reflects the system's intended and observed impacts: enhanced student motivation and vocational readiness through SDT-aligned environmental design; increased teacher professionalism and instructional creativity; improved infrastructure management efficiency; and strengthened institutional reputation and accreditation standing.

Critically, the IMCM Model is recursive: outcomes feed back into strategic leadership decisions, informing continuous improvement of planning and implementation. This recursive dynamic reflects Learning Ecology principles (Barron, 2006), wherein the learning environment is understood as a living system in which spatial, social, and pedagogical elements continuously co-evolve. The model is proposed as a transferable analytical and planning tool for TVET institutions in Indonesia and analogous emerging-economy contexts, recognising that contextual adaptation will be required in application.

CONCLUSION

This study examines the implementation of Moving Class at two Vocational High Schools (SMK) in Indonesia through a qualitative multi-site case study approach. The results show that the success of Moving Class implementation does not only depend on spatial arrangement changes, but is a change management process that involves infrastructure planning, human resource readiness, learning schedule management, and school leadership support. The effectiveness of this system is influenced by the school's ability to build adaptive space governance through collaboration between leadership, teachers, and education personnel.

Theoretically, this study extends the study of learning environment, vocational education, and education management by showing that subject based learning space management can be a pedagogical instrument that supports student motivation, teacher professionalism, and improvement of education service quality. This study also offers the Integrated Moving Class Management (IMCM) Model as a conceptual framework that integrates aspects of motivation, pedagogy, management, and leadership in vocational learning environment innovation.

Although providing empirical and conceptual contributions, this study has limitations because it used a case study design at two purposively selected schools, so the findings are more transferable rather than statistically generalizable. In addition, the study was conducted within one observation period so it has not been able to describe the sustainability of Moving Class implementation in the long term. Therefore, future research needs to use longitudinal designs and mixed methods to test the relationship between learning environment quality, student motivation, teacher competence, and vocational learning outcomes more comprehensively.

Practical and Policy Recommendations

Based on the research findings, schools that will implement Moving Class need to carry out implementation gradually through several strategic steps. First, schools need to form a Moving Class management team involving the principal, curriculum vice principal, subject teachers, and administrative staff to map space needs, facilities, and operational readiness. Second, schools need to develop a simple digital scheduling system appropriate to the school's technology capacity to reduce potential schedule conflicts and delays in student movement. Third, each subject room needs to have a responsible teacher who plays a role in maintaining facility readiness, developing a relevant learning environment, and ensuring the room functions as a learning support medium.

At the initial implementation stage, schools are advised to conduct trials in several learning spaces before expanding implementation entirely. This gradual approach allows schools to evaluate operational obstacles, make system adjustments, and increase school members' acceptance of change. Further, teacher competence development needs to be directed not only at pedagogical aspects, but also at the ability to design and manage space based learning environments.

For policy makers, the results of this study show the importance of regulatory support and special funding for the development of innovative learning environments in SMK. The government needs to provide a more flexible funding scheme to support the transformation of learning spaces, develop pedagogically oriented Moving Class implementation guidelines, and include learning environment management competence as part of vocational teacher professional development programs. This support is needed so that Moving Class implementation is not only an administrative change, but becomes a sustainable strategy for improving the quality of vocational learning.

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