

Teacher Teaching Skills at Melaka Suburban Secondary School: A Research Gap from Literature Perspective

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Abstract

This study examines the relationships between student engagement, student motivation, student learning environment, and technology access in shaping teaching skills among teachers in suburban secondary schools in Melaka, Malaysia. Despite national initiatives aimed at digital transformation in education, disparities in technological access and pedagogical readiness continue to challenge teachers in under-resourced school contexts. The findings provide empirical evidence on how psychological, pedagogical, and technological factors collectively influence teachers' teaching skills. This study contributes to the existing literature by offering a teacher-centred and context-sensitive perspective, providing insights to inform more inclusive educational policies and targeted professional development initiatives.

1. Introduction

The integration of digital technology in education has become a global priority for enhancing teaching and learning practices (Zou et al. 2025). In Malaysia, national initiatives such as the Malaysia Education Blueprint 2013–2025 emphasise ICT integration to improve educational quality and equity (Ismail et al. 2024). However, disparities between urban and suburban schools persist, particularly in technological infrastructure, internet accessibility, and teacher preparedness (Yulianto, 2025).

Although digital tools are widely recognised for their potential to enhance student engagement, motivation, and the learning environment, much of the existing research has focused on well-resourced urban school contexts. Consequently, teachers in suburban and under-resourced schools remain underrepresented, despite facing limited ICT access, insufficient professional training, and increasing workload demands that hinder effective technology integration (Abedi, 2024).

Student engagement, defined as students' behavioural, emotional, and cognitive involvement in learning activities (Wong & Liem, 2022), is associated with increased participation, attentiveness, and positive classroom interactions that support effective teaching practices (Tomaszewski et al. 2022). Engaged students contribute to dynamic classroom environments, enabling teachers to implement interactive and student-centred instructional strategies (Cline et al. 2023).

However, most studies on student engagement focus primarily on student outcomes rather than its implications for teachers' teaching and learning skills (Tao et al. 2022). In resource-constrained suburban schools, student engagement may play a crucial role in shaping teachers' instructional decision-making and classroom management (Zhang et al. 2025), highlighting the need to examine engagement as a factor influencing teaching practices.

Student motivation is a key psychological factor influencing learning behaviour, persistence, and classroom participation (Abuzar et al. 2024). Motivated students tend to respond positively to teaching strategies and contribute to supportive classroom climates that enhance teacher–student interactions (Radil et al. 2023). In under-resourced suburban schools, low student motivation may intensify teaching challenges and discourage innovative pedagogical practices (Awang et al. 2025), whereas motivated learners may encourage teachers to adapt instruction despite limited technological support (Sigalla and Kimario, 2025). Nevertheless, student motivation is often examined independently from other classroom and contextual factors, limiting holistic understanding of its influence on teaching practices (Wang & Yan, 2025).

The learning environment encompasses the physical, psychological, and social conditions in which teaching and learning occur (Li and Chen, 2025). A positive learning environment is characterised by supportive teacher–student relationships, classroom safety, collaborative culture, and adequate learning resources (Menaga Sri, 2024). Such environments enhance student engagement and motivation while supporting effective teaching practices (Gaisiey et al. 2025). However, suburban schools frequently face constraints such as overcrowded classrooms, limited facilities, and socio-economic challenges that hinder the creation of interactive learning spaces (Nongalo and Ciske, 2025). Despite its importance, the learning environment remains underexplored in relation to teachers’ teaching and learning skills in contexts of limited institutional and technological support (Zhou, 2025).

Technology integration plays a central role in contemporary teaching and learning by enabling interactive instruction, diversified materials, and improved teacher–student communication (Nsabayezu et al. 2025). While national policies promote ICT integration to enhance educational quality (Jamaludin & Rahman, 2025), substantial disparities in technological access between urban and suburban secondary schools persist (Lecomte, 2025). Challenges such as unreliable internet connectivity, outdated infrastructure, and limited digital resources restrict teachers’ ability to implement technology-enhanced instruction (Laible, 2025).

Previous research indicates that effective technology integration depends not only on digital access but also on teachers’ pedagogical competence, institutional support, and professional development (Amemasor et al. 2025). In under-resourced schools, insufficient training and low confidence in ICT use often result in minimal or surface-level implementation of technology (Mathebula et al. 2025). These findings suggest that access to technology should be understood as a contextual condition that interacts with teaching practices and learning environments rather than as an isolated predictor of teaching quality.

2. Research Gaps from Literature Review Perspectives

Despite Malaysia’s strong commitment to educational digitalisation through initiatives such as the Malaysia Education Blueprint 2013–2025, persistent disparities between urban and suburban secondary schools continue to affect the quality of teaching and learning (Mastam et al. 2024). While national policies promote ICT integration, teachers in suburban schools often face limited internet access, outdated technological infrastructure, and insufficient ICT training (Hidi et al. 2025). Existing studies tend to acknowledge these challenges descriptively, yet empirical investigations systematically examine their influence on teachers’ teaching and learning skills remain limited (Ahmad and Rathakrishnan, 2025).

Despite widespread acknowledgment of these issues, many studies focus on individual factors such as motivation or access to digital tools in isolation, rather than analyzing how these variables collectively influence teaching outcomes in suburban settings (Habibi et al. 2024). Digital learning platforms and student-centered approaches like project-based and inquiry-based learning have gained traction in urban schools, their adoption in suburban areas remains slow due to limited resources and teacher readiness (Hasyim et al. 2023). Furthermore, while digital equity remains a policy objective, recent assessments reveal suburban students still score significantly lower in digital competency compared to their urban peers, reinforcing the continued technology gap (Mail, 2024).

Although prior research has demonstrated digital tools can enhance student engagement, motivation, and learning environment, most of these studies are situated in urban or well-resourced school environments. Consequently, the unique contextual realities of suburban schools where technological constraints, socio-economic challenges, and limited institutional support intersect which are underrepresented in the literature (DeBarbieri, 2023). This limits the generalisability of existing findings and leaves a critical gap in understanding how teaching effectiveness is shaped in less advantaged educational contexts.

Previous studies frequently adopt a fragmented analytical approach by examining student engagement, motivation, or learning environment as isolated constructs. Such an approach fails to capture the interconnected nature of teaching and learning processes, particularly in classrooms where technology access is constrained (Alam and Mohanty, 2023). There is a lack of integrated models explore how these student-related factors collectively interact with technological access to influence teachers’ instructional practices and teaching skills.

Furthermore, there is a scarcity of empirical research focusing on how suburban teachers adapt their pedagogical approaches in response to environmental constraints. While teachers play a vital role in maintaining student motivation and engagement, they often lack adequate professional development opportunities to

implement modern instructional strategies effectively (Samundeeswari et al. 2024). Moreover, challenges such as outdated classroom equipment, lack of technical support, and inconsistent internet connectivity have further hindered the integration of digital tools in suburban teaching practices (Kasdiah et al. 2024). Even though student engagement and learning effectiveness are widely recognized as critical for improving academic outcomes, current literature lacks a holistic analysis of how these factors interconnect with student motivation and limited technology access in suburban Malaysian schools.

In addition, while effective technology integration is recognised as dependent on school leadership, organisational culture, and teacher readiness, empirical research examining these factors in under-resourced suburban schools remains scarce. Teachers are often expected to implement student-centred and digitally mediated pedagogical approaches without sufficient professional development, pedagogical guidance, or systemic support (Huang et al. 2024). This gap reflects an incomplete understanding of the conditions necessary for sustainable and meaningful technology integration in suburban school settings.

Additionally, the adoption of student-centered approaches like project-based and inquiry-based learning in suburban areas remains slow due to limited resources and teacher readiness (Zheng et al. 2022). Impact of the COVID-19 pandemic has further exacerbated the digital divide, particularly in suburban areas which students in these regions faced significant challenges in accessing online education due to limited internet connectivity and lack of digital devices, leading to reduced participation in online classes and widening educational inequalities (Sing Yun, 2023).

Another overlooked area concerns teachers' assessment literacy, particularly in the context of Malaysia's shift toward formative and school-based assessment practices. While educational reforms emphasise competency-based and formative assessment, many teachers continue to rely on traditional summative methods due to limited training and confidence in alternative assessment strategies (Zakaria et al. 2024). Research examining assessment literacy as a component of teaching skills, especially within technologically constrained suburban schools, remains limited.

Research aims to bridge these gaps by providing a comprehensive analysis from the perspective of suburban teachers, offering insights to guide more inclusive and targeted educational policies and practices. By understanding the multifaceted challenges and exploring effective strategies for ICT integration, the study seeks to contribute to the enhancement of teaching outcomes in suburban Malaysian schools.

Taken together, these gaps highlight the need for a comprehensive, teacher investigation integrates student engagement, student motivation, student learning environment, and technology access within the suburban secondary school context. By adopting a holistic and context-sensitive approach, this study seeks to address the limitations of fragmented and urban-centric research, contributing empirical evidence to inform more inclusive educational policies, targeted professional development, and sustainable teaching and learning practices in Malaysia.

3. Methodology

The data collected were derived from previously published studies, journal articles, and scholarly sources related to the identified variables. Relevant literature was systematically reviewed, analysed, and synthesised to identify patterns, relationships, and research gaps concerning the influence of these factors on teachers' teaching and learning skills.

4. Discussion

The findings revealed a significant and positive relationship, indicating that higher levels of student engagement contribute to improvements in teachers' teaching skills. When students are actively involved in classroom activities, teachers tend to create more dynamic, interactive, and effective learning environments, which in turn enhance their instructional performance. This finding supports the view that student engagement is a multidimensional construct encompassing behavioural, emotional, and cognitive involvement in learning, and that higher engagement encourages teachers to continuously adapt and refine their pedagogical strategies (Saheli, 2025). Responsive and participative students also stimulate teachers' motivation, adaptability, and creativity in lesson delivery reinforcing the reciprocal nature of engagement and teaching effectiveness (Nahid et al. 2023).

In the context of suburban secondary schools, where student participation may be influenced by socio-economic and resource-related constraints, teachers' ability to foster engagement becomes particularly important. Student engagement not only enhances learning outcomes but also strengthens teachers' emotional investment and enthusiasm for teaching (Alghamdi and Khadawardi, 2024). The findings therefore confirm that student engagement plays a crucial role in sustaining instructional quality and developing teaching competence, especially in under-resourced educational settings.

At the same time, this study was to determine the relationship between the learning environment and teachers' teaching skills. The results indicated no significant relationship. This suggests that the learning environment alone does not directly influence teaching skills in suburban schools. One possible explanation is that

contextual challenges such as limited facilities, large class sizes, and infrastructure constraints may restrict teachers' ability to fully optimise the physical and psychological aspects of the learning environment. Although a conducive learning environment is generally expected to promote interaction, collaboration, and effective teaching (Sher and Inamullah, 2025), inadequate teaching aids and insufficient classroom resources may reduce its overall impact on teaching performance (Zulfiqar, 2025).

Moreover, the effectiveness of a learning environment largely depends on how teachers adapt and utilise available resources to support instruction (Sigalla & Kimario, 2025). The findings suggest that in suburban secondary schools in Melaka, teachers' teaching skills are more strongly influenced by personal and pedagogical factors such as student engagement and motivation rather than by the structural or physical conditions of the learning environment. Positive relationship indicating that motivated students positively influence teachers' instructional enthusiasm, creativity, and adaptability. Student motivation functions as a powerful psychological factor that shapes both teaching and learning processes (Urhahne and Wijnia, 2023). When students display intrinsic motivation driven by curiosity and interest, teachers are more inclined to invest greater instructional effort, provide emotional support, and employ diverse teaching strategies (Merdiaty and Sulistiasih, 2024).

Motivated learners also contribute to a positive classroom atmosphere that encourages teachers to reflect on their teaching practices and pursue continuous improvement (Wiangga, 2024). In suburban school contexts, the findings suggest that student motivation can help teachers overcome environmental and resource limitations by fostering a collaborative and supportive learning culture. As such, student motivation not only enhances students' learning experiences but also acts as a catalyst for sustaining and strengthening teachers' teaching competence.

Furthermore, suggesting that technology integration alone does not directly enhance teaching skills in suburban secondary schools. This may be attributed to limited digital infrastructure, inconsistent internet connectivity, and insufficient training opportunities that hinder effective technology use. Prior studies emphasise that technology improves teaching only when teachers possess adequate digital literacy, confidence, and pedagogical readiness to integrate ICT meaningfully into instruction (Omar and Mohamad, 2023).

Despite these challenges, teachers in suburban schools often demonstrate creativity by utilising available digital resources, such as PowerPoint presentations, online quizzes, and video-based learning, sometimes relying on personal devices to support instruction (Harifin et al. 2025). However, these efforts may not be sufficient to produce a measurable impact on teaching skills without systematic support. Therefore, while technology integration remains a critical component of 21st-century education, its effectiveness in suburban schools depends heavily on continuous professional development, adequate infrastructure, and institutional support. Without these elements, the potential of technology to enhance teaching skills remains limited.

5. Limitations

This study has several limitations should be considered when interpreting the findings. The study was conducted exclusively among suburban secondary school teachers, which limits the generalizability of the results to other educational contexts such as urban or rural schools. Differences in resources, student demographics, and institutional support across regions may influence teaching and learning practices.

While this approach is effective for examining relationships among variables, it may not fully capture teachers' individual experiences and contextual nuances. The use of self-reported data may also introduce response bias. Future studies could adopt mixed-method approaches, incorporating qualitative data such as interviews or classroom observations, to provide deeper insights into teaching practices.

Data were collected within a limited time frame, which restricts the ability to examine changes in teaching skills, student engagement, or classroom dynamics over time. Teaching practices and student behaviours may vary across academic periods, suggesting longitudinal designs could offer a more comprehensive understanding of these relationships.

Finally, logistical constraints related to the geographical dispersion of the selected schools posed challenges during data collection, potentially limiting opportunities for follow-up clarification and response consistency. Despite these limitations, the findings provide valuable insights into teaching and learning practices within suburban secondary school contexts.

6. Conclusion

This study examined the relationships between student engagement, student motivation, learning environment, and technology access in shaping teachers' teaching and learning skills in suburban secondary schools. The findings highlight teaching effectiveness in under-resourced contexts is influenced not only by technological availability but also by the quality of the learning environment and the psychological engagement of students.

By adopting a holistic and teacher-centred approach, this study addresses key gaps in existing literature has largely focused on isolated variables and urban school settings. The results emphasise the importance of creating supportive learning environments, fostering student motivation, and providing realistic technological support to

enhance teaching and learning practices. These findings offer valuable implications for policymakers, school leaders, and educators seeking to improve teaching quality through integrated and context-sensitive strategies.

Declaration

We declare this manuscript is our original work and has not been submitted or published in any other journal. All authors have contributed significantly to the conception and completion of this study. Any remaining errors or oversights are entirely our own and occurred beyond our knowledge or observation.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of the paper.

Author Contribution

The authors are responsible for the study conception, research design, data collection, data analysis, result interpretation and manuscript drafting.

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