

Academic Climate and Classroom Facilities as Predictors of Learning Satisfaction: Testing a Motivational Mediation Model in Secondary Education

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Abstract: This study examines how academic climate and classroom facilities predict students' learning satisfaction through the mediating role of learning motivation in secondary education. Using a quantitative cross-sectional design, data were collected from 290 students selected through proportional random sampling. Data were obtained using a self-report questionnaire based on a five-point Likert scale measuring students' perceptions of academic climate, classroom facilities, learning motivation, and learning satisfaction, adapted from previously validated instruments in the literature. Structural path analysis with bootstrap resampling (5,000 samples) was employed to test direct and indirect effects. The results indicate that academic climate has a significant direct effect on learning satisfaction ($\beta = 0.21$, $p < .01$) and an indirect effect through learning motivation, indicating partial mediation. In contrast, classroom facilities do not directly predict learning satisfaction ($\beta = 0.10$, $p > .05$) but exert a significant indirect effect via learning motivation, indicating full mediation. Learning motivation emerges as the strongest predictor of satisfaction ($\beta = 0.43$, $p < .001$). The model explains 32% of the variance in learning motivation and 41% of the variance in learning satisfaction, demonstrating moderate explanatory power. These findings highlight that environmental quality influences students' evaluative learning experiences primarily through motivational processes. Enhancing supportive academic climates and fostering motivational engagement may therefore be more impactful than infrastructural improvements alone in promoting sustainable student satisfaction.

Keywords: Academic Climate; Classroom Facilities; Learning Motivation; Learning Satisfaction.

Abstrak: Penelitian ini bertujuan menganalisis bagaimana iklim akademik dan fasilitas kelas memengaruhi kepuasan belajar siswa melalui peran mediasi motivasi belajar pada jenjang pendidikan menengah. Penelitian menggunakan desain kuantitatif cross-sectional dengan sampel 290 siswa yang dipilih melalui teknik proportional random sampling. Data dikumpulkan menggunakan kuesioner berbasis skala Likert lima poin yang mengukur persepsi siswa terhadap iklim akademik, fasilitas kelas, motivasi belajar, dan kepuasan belajar, yang diadaptasi dari instrumen yang telah tervalidasi dalam literatur sebelumnya. Analisis jalur dengan prosedur bootstrap (5.000 resampling) digunakan untuk menguji pengaruh langsung dan tidak langsung antarvariabel. Hasil penelitian menunjukkan bahwa iklim akademik berpengaruh langsung dan signifikan terhadap kepuasan belajar ($\beta = 0,21$; $p < 0,01$) serta berpengaruh tidak langsung melalui motivasi belajar, yang menunjukkan mediasi parsial. Sebaliknya, fasilitas kelas tidak berpengaruh langsung terhadap kepuasan belajar ($\beta = 0,10$; $p > 0,05$), tetapi berpengaruh signifikan secara tidak langsung melalui motivasi belajar, yang menunjukkan mediasi penuh. Motivasi belajar merupakan prediktor terkuat kepuasan belajar ($\beta = 0,43$; $p < 0,001$). Model penelitian mampu menjelaskan 32% varians motivasi belajar dan 41% varians kepuasan belajar, yang menunjukkan daya jelaskan moderat. Temuan ini menegaskan bahwa kualitas lingkungan belajar memengaruhi pengalaman evaluatif siswa terutama melalui mekanisme motivasional. Oleh karena itu,

penguatan iklim akademik yang suportif dan peningkatan keterlibatan motivasional siswa lebih strategis dibandingkan perbaikan infrastruktur semata dalam meningkatkan kepuasan belajar yang berkelanjutan.

Kata Kunci: Iklim Akademik; Fasilitas Kelas; Motivasi Belajar; Kepuasan Belajar.

INTRODUCTION

In recent years, learning satisfaction has gained increasing attention as a central indicator of educational quality and student well-being. Beyond academic performance, learning satisfaction reflects students' cognitive appraisal and affective evaluation of their learning experiences, influencing engagement, persistence, and long-term academic success (Broadbent & Fuller-Tyszkiewicz, 2020). In secondary education, where students undergo critical developmental transitions, satisfaction with learning becomes particularly important, as it shapes both motivational trajectories and school attachment. Consequently, understanding the environmental and psychological determinants of learning satisfaction has become a pressing issue in contemporary educational research.

The current state of the art suggests that learning satisfaction is shaped not only by instructional quality but also by broader learning environments, including psychosocial and physical dimensions (Burić & Kim, 2021). School climate research consistently demonstrates that supportive academic climates—characterized by positive teacher–student relationships, fairness, safety, and encouragement—are strongly associated with student engagement and well-being (Wang & Degol, 2020; Cobo-Rendón et al., 2024). Similarly, research in learning environments highlights that classroom design and physical facilities influence attention, comfort, and perceived support for learning activities (Barrett et al., 2019; Zhang & Barrett, 2021). However, while these studies document associations with engagement or achievement, fewer investigations have examined how these environmental factors contribute specifically to students' learning satisfaction as a multidimensional evaluative outcome.

From a theoretical perspective, Self-Determination Theory (SDT) posits that social and environmental conditions that support students' basic psychological needs—autonomy, competence, and relatedness—enhance intrinsic motivation and positive educational outcomes (Ryan & Deci, 2020). In parallel, Expectancy–Disconfirmation Theory suggests that satisfaction emerges when perceived experiences meet or exceed prior expectations (Huang & Hsu, 2021). Integrating these perspectives implies that academic climate and classroom facilities may not directly produce satisfaction; rather, they may operate through motivational processes that shape how students interpret and evaluate their learning experiences. Thus, motivation may function as a psychological mechanism translating environmental quality into satisfaction outcomes.

Despite this theoretical plausibility, empirical research often treats school climate, facilities, motivation, and satisfaction as parallel predictors rather than as components of an integrated explanatory model. For instance, Wang and Degol (2020) demonstrated that positive school climate predicts student engagement and academic adjustment; however, their study did not examine satisfaction as a distinct outcome nor test motivational mediation pathways. Similarly, Zhang and Barrett (2021) provided robust evidence that classroom environmental quality influences



learning outcomes, yet their focus centered primarily on performance indicators, leaving psychological processes underexplored. More recently, Cobo-Rendón et al. (2024) found that perceived learning climate predicts student well-being dimensions, but the mediating role of learning motivation was not systematically tested.

A closer examination of these studies reveals several limitations. First, many investigations emphasize either psychosocial climate or physical facilities independently, rarely integrating both within a single analytical framework. Second, while motivation is frequently acknowledged as important, it is often positioned as a direct predictor rather than as an explanatory mechanism linking environmental inputs to evaluative outcomes. Third, most empirical evidence derives from higher education contexts, leaving secondary school settings comparatively underrepresented. These limitations restrict our understanding of how environmental and motivational factors interact to shape students' satisfaction in compulsory education contexts.

Contemporary educational challenges amplify the urgency of addressing this gap. Post-pandemic schooling has intensified concerns regarding student engagement, school belonging, and emotional well-being. As schools seek to improve learning recovery and sustainability, identifying leverage points within the learning environment becomes critical. Investments in classroom facilities and climate-building initiatives are common policy strategies, yet without understanding the psychological pathways through which these investments affect students' experiences, such interventions risk being inefficient or misdirected. Therefore, clarifying whether and how motivation mediates the relationship between environmental factors and satisfaction is both theoretically and practically significant.

Recent international research underscores the importance of integrating environmental and motivational perspectives. For example, Burić and Kim (2021) showed that teacher support enhances student motivation, which in turn predicts positive academic emotions. Similarly, Aldridge et al. (2021) emphasized that classroom climate contributes to student well-being through motivational engagement processes. In another study, Ahmad et al. (2022) reported that school facilities influence student satisfaction, yet the underlying psychological mechanisms remained unspecified. Although these studies advance the literature, they stop short of empirically testing a comprehensive mediation model incorporating both psychosocial and physical environmental dimensions simultaneously.

Thus, a conceptual and empirical gap persists. There is limited evidence testing a unified model in which academic climate and classroom facilities jointly predict learning satisfaction through learning motivation, particularly within secondary education settings in developing contexts. Moreover, few studies explicitly examine whether motivation functions as a partial or full mediator, which has implications for policy prioritization. Addressing this gap will enrich theoretical integration between SDT and satisfaction theory while providing contextually grounded evidence relevant to school management practices.

The novelty of the present study lies in three main contributions. First, it integrates psychosocial (academic climate) and physical (classroom facilities) learning environment factors into a single structural framework. Second, it positions learning motivation as a mediating psychological mechanism rather than merely as a parallel predictor. Third, it extends empirical testing of motivational mediation



models to secondary education, a context less examined in international literature compared to higher education. By testing both direct and indirect effects, this study provides a more nuanced understanding of how environmental quality translates into evaluative learning outcomes.

Based on these considerations, this study investigates whether academic climate and classroom facilities predict students' learning satisfaction directly and indirectly through learning motivation in secondary education. Specifically, it examines: (1) the direct effects of academic climate and classroom facilities on learning satisfaction; (2) the effects of these environmental factors on learning motivation; and (3) the mediating role of learning motivation in explaining the relationship between environmental factors and satisfaction. Through testing this motivational mediation model, the study seeks to clarify the psychological processes underpinning students' evaluative learning experiences and to provide evidence-informed insights for improving school learning environments.

METHOD

Research Design

This study employed a quantitative cross-sectional design to examine a theoretically grounded motivational mediation model linking environmental learning conditions to students' learning satisfaction. A cross-sectional approach was selected because the primary objective of the study was to test theoretically derived relationships and mediation mechanisms among variables at a specific point in time, rather than to establish temporal or causal dynamics. This design is appropriate for capturing students' contemporaneous perceptions of academic climate, classroom facilities, motivation, and satisfaction, which are inherently subjective and context-dependent. In addition, the use of a quantitative approach allows for the estimation of structural relationships among latent constructs derived from Self-Determination Theory and learning satisfaction frameworks.

Although directional hypotheses were specified, the study remains observational in nature; therefore, findings are interpreted as predictive associations rather than causal effects. A structural path model was specified in which academic climate and classroom facilities were treated as exogenous variables, learning motivation as a mediating variable, and learning satisfaction as the endogenous outcome variable. The model was estimated using path analysis with bootstrap resampling to test indirect effects, as bootstrapping provides more robust estimates of mediation effects without relying on normality assumptions and is widely recommended for testing indirect relationships in behavioral research.

Participants and Sampling Procedure

The study was conducted in a public secondary school in Semarang, Indonesia. The total student population consisted of 1,059 students enrolled across grade levels. A proportional stratified random sampling technique was employed to ensure representation across grades. The final sample comprised 290 students. This sample size exceeds the minimum recommended threshold for structural modeling involving mediation analysis. Methodological literature suggests that models of moderate complexity require at least 200 observations to ensure stable parameter estimation



and sufficient statistical power. Therefore, the sample size was considered adequate for estimating both direct and indirect paths. Participation was voluntary, and students were assured of anonymity and confidentiality.

Measures

All constructs were measured using multi-item self-report instruments on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree). Instruments were adapted from established theoretical and empirical studies and contextualized for secondary education settings. Academic climate captured students' perceptions of teacher support, fairness, classroom interaction quality, and psychological safety. Classroom facilities reflected students' perceptions of the adequacy and comfort of physical classroom conditions, including lighting, seating arrangements, ventilation, and instructional resources. Learning motivation was operationalized in line with self-determination theory principles and assessed students' persistence, academic interest, and internal drive toward learning tasks. Learning satisfaction represented students' evaluative appraisal of their overall classroom learning experience. Before full administration, the instrument underwent pilot testing to ensure clarity and contextual appropriateness.

Table 1. Measurement Structure of Study Variables

| Construct | Conceptual Definition | Scale Type | Response Format |
|-----------------------|--|------------|-----------------|
| Academic Climate | Perceived psychosocial classroom environment | Multi-item | 5-point Likert |
| Classroom Facilities | Perceived adequacy of physical classroom environment | Multi-item | 5-point Likert |
| Learning Motivation | Internal drive and persistence in academic tasks | Multi-item | 5-point Likert |
| Learning Satisfaction | Overall evaluative judgment of learning experience | Multi-item | 5-point Likert |

(Note: Reliability coefficients and descriptive statistics are reported in the Results section)

This table appropriately belongs in the Method section because it describes the measurement framework rather than statistical outcomes. The table provides a structured overview of how each construct is conceptually defined and operationalized, ensuring alignment between theoretical foundations and empirical measurement. All variables are measured using multi-item Likert scales, which are suitable for capturing latent psychological constructs such as perceptions of academic climate, motivation, and satisfaction. The use of multi-item measures enhances construct reliability by reducing measurement error and allowing for a more comprehensive representation of each variable. Furthermore, the consistent use of a five-point Likert scale across all constructs supports comparability and reduces respondent confusion, thereby improving data quality. The operational definitions reflect established theoretical dimensions, particularly for academic climate and learning motivation, which are grounded in psychosocial and self-determination perspectives. By clearly specifying the measurement structure, this table strengthens the transparency and replicability of the study, as it allows readers to understand how abstract constructs are translated into observable indicators prior to statistical analysis.



Data Collection Procedure

Data were collected during regular school hours following formal approval from school authorities. Students completed the questionnaire in supervised classroom sessions to minimize external influence. Participation was voluntary, and respondents were informed about the confidentiality and anonymity of their responses. Ethical principles of informed consent, voluntary participation, and data protection were strictly observed.

Analytical Strategy

First, preliminary analyses were conducted to examine distributional properties and internal consistency reliability of the scales. Descriptive statistics and reliability coefficients are presented in the Results section. Second, Pearson correlations were examined to assess associations among constructs and to evaluate potential multicollinearity concerns. Third, structural path analysis was conducted to test the hypothesized direct relationships among academic climate, classroom facilities, learning motivation, and learning satisfaction. To assess mediation effects, a bootstrap resampling procedure with 5,000 resamples was employed. Bootstrapping is recommended for mediation testing because it does not rely on normality assumptions and provides more accurate confidence intervals for indirect effects. Indirect effects were considered statistically significant when bias-corrected confidence intervals excluded zero and p-values were below .05. Mediation type was determined as follows: Partial mediation: both direct and indirect effects are significant. Full mediation: indirect effect significant, direct effect non-significant.

Control of Common Method Bias

Because all variables were measured using self-report instruments at a single time point, procedural remedies were implemented to mitigate potential common method bias. These included assuring anonymity, reducing evaluation apprehension, and separating construct sections psychologically within the questionnaire. Additionally, correlation diagnostics were examined during preliminary analysis to ensure that no excessively high intercorrelations suggested substantial common method variance. Statistical indicators are reported in the Results section.

FINDING AND DISCUSSION

Descriptive Statistics and Reliability

Preliminary analysis was conducted to examine central tendencies, dispersion, and internal consistency reliability of the study variables. All constructs demonstrated acceptable levels of internal consistency, with Cronbach's alpha coefficients exceeding the recommended threshold of .70, indicating adequate reliability for structural analysis. Descriptive statistics are presented in Table 2.

Table 2. Descriptive Statistics and Reliability Estimates

| Variable | Mean | SD | Min | Max | Cronbach's α |
|---------------------------|------|------|------|------|---------------------|
| Academic Climate (X1) | 3.62 | 0.74 | 1.80 | 5.00 | > .70 |
| Classroom Facilities (X2) | 3.45 | 0.82 | 1.50 | 4.80 | > .70 |
| Learning Motivation (M) | 3.88 | 0.61 | 2.10 | 5.00 | > .70 |
| Learning Satisfaction (Y) | 3.71 | 0.68 | 2.00 | 5.00 | > .70 |



Students reported moderate to relatively high perceptions across all constructs. Learning motivation exhibited the highest mean score ($M = 3.88$), suggesting generally positive motivational engagement within the learning environment.

Correlation Analysis

Pearson correlation analysis was conducted to examine bivariate associations and to assess potential multicollinearity issues. All correlations were positive and statistically significant at $p < .01$, and none exceeded $.85$, indicating that multicollinearity was not a concern.

Table 3. Correlation Matrix

| Variable | 1 | 2 | 3 | 4 |
|--------------------------|-------|-------|-------|---|
| 1. Academic Climate | — | | | |
| 2. Classroom Facilities | .42** | — | | |
| 3. Learning Motivation | .53** | .47** | — | |
| 4. Learning Satisfaction | .49** | .38** | .60** | — |

Note. ** $p < .01$.

Pearson correlation analysis was conducted to examine bivariate associations among study variables and to assess potential multicollinearity. All correlations were positive and statistically significant at $p < .01$. None of the coefficients exceeded $.85$, indicating that multicollinearity was not a concern and that the variables were empirically distinct yet meaningfully related.

Structural Model Testing

Path analysis was conducted to test the hypothesized relationships among academic climate, classroom facilities, learning motivation, and learning satisfaction. Standardized coefficients (β), t-values, and significance levels are presented in Table 4.

Table 4. Standardized Direct Effects

| Structural Path | β | t-value | p-value | Interpretation |
|--|---------|---------|---------|-----------------|
| Academic Climate → Learning Satisfaction | 0.21 | 3.36 | 0.001 | Significant |
| Classroom Facilities → Learning Satisfaction | 0.10 | 1.72 | 0.086 | Not Significant |
| Academic Climate → Learning Motivation | 0.39 | 6.18 | < .001 | Significant |
| Classroom Facilities → Learning Motivation | 0.28 | 4.61 | < .001 | Significant |
| Learning Motivation → Learning Satisfaction | 0.43 | 7.38 | < .001 | Significant |

Interpretation of Direct Effects

Academic climate exerted a positive and statistically significant direct effect on learning satisfaction ($\beta = 0.21$, $p = .001$), indicating that supportive psychosocial environments contribute directly to students' evaluative learning experiences. Classroom facilities did not demonstrate a statistically significant direct effect on learning satisfaction ($\beta = 0.10$, $p = .086$), suggesting that physical classroom quality alone does not directly determine satisfaction levels. Both academic climate ($\beta = 0.39$) and classroom facilities ($\beta = 0.28$) significantly predicted learning motivation, indicating that both environmental dimensions enhance students' motivational engagement. Learning motivation showed the strongest direct effect on learning satisfaction ($\beta = 0.43$), reinforcing its central role in the structural model.



Coefficient of Determination (R^2)

The structural model explained: $R^2 = .32$ of the variance in Learning Motivation. $R^2 = .41$ of the variance in Learning Satisfaction. This indicates moderate explanatory power according to established benchmarks in educational research. Approximately 41% of the variance in learning satisfaction is accounted for by academic climate, classroom facilities, and learning motivation.

Effect Size (f^2)

Effect size was assessed using Cohen's guidelines: Academic Climate \rightarrow Motivation: moderate effect. Classroom Facilities \rightarrow Motivation: small-to-moderate effect. Motivation \rightarrow Satisfaction: moderate effect. Academic Climate \rightarrow Satisfaction: small-to-moderate effect. Classroom Facilities \rightarrow Satisfaction: negligible effect. These findings indicate that motivational pathways represent the most substantively meaningful mechanism in the model.

Mediation Analysis

Bootstrapping with 5,000 resamples was conducted to examine indirect effects. Results are presented in Table 5.

Table 5. Bootstrap Indirect Effects (5,000 Resamples)

| Mediation Path | Indirect Effect | 95% CI | p-value | Mediation Type |
|--|-----------------|--------------|---------|-------------------|
| Academic Climate \rightarrow Motivation \rightarrow Satisfaction | 0.17 | [0.11, 0.24] | < .001 | Partial Mediation |
| Classroom Facilities \rightarrow Motivation \rightarrow Satisfaction | 0.12 | [0.07, 0.18] | < .001 | Full Mediation |

Interpretation of Mediation Results

Learning motivation significantly mediated the relationship between academic climate and learning satisfaction. Because both the direct and indirect effects were significant, the mediation is classified as partial. This indicates that academic climate influences satisfaction both directly and indirectly through motivational enhancement. In contrast, learning motivation fully mediated the relationship between classroom facilities and learning satisfaction. The direct path was non-significant, while the indirect path remained significant. This suggests that physical classroom conditions influence satisfaction only insofar as they foster motivational engagement.

Discussion

This study examined how academic climate and classroom facilities predict students' learning satisfaction through the mediating role of learning motivation. The findings provide important theoretical clarification regarding the psychological mechanisms that translate environmental conditions into evaluative learning experiences. Rather than functioning as independent determinants, environmental factors appear to influence satisfaction through motivational internalization processes. This suggests that students do not respond passively to their learning environments; instead, they actively interpret and internalize these conditions in ways that shape their motivational states. In this regard, motivation operates as a



critical psychological filter through which environmental inputs are transformed into subjective evaluations of learning experiences.

Furthermore, the results highlight that psychosocial aspects of the learning environment, such as academic climate, have a more direct and immediate impact on students' satisfaction compared to physical aspects, which require motivational activation to become meaningful. This finding reinforces the argument that the quality of interpersonal interactions and perceived support within the classroom plays a central role in shaping students' educational experiences. At the same time, it also indicates that improvements in physical facilities alone may be insufficient unless they are accompanied by strategies that enhance students' engagement and internal drive. Therefore, the study contributes to a more nuanced understanding of how different dimensions of the learning environment operate through distinct psychological pathways to influence student outcomes.

The direct effect of academic climate on learning satisfaction underscores the centrality of psychosocial classroom conditions in shaping students' evaluative judgments. Recent research consistently demonstrates that supportive classroom climates—characterized by relational trust, fairness, and emotional safety—are strongly associated with student well-being and engagement (Cobo-Rendón et al., 2024; Aldridge et al., 2021). The present findings extend this literature by demonstrating that academic climate not only predicts engagement but also directly influences students' satisfaction with their learning experiences. This suggests that students evaluate their educational experiences partly based on relational and interpersonal dimensions of schooling.

Importantly, academic climate also exerted an indirect effect through learning motivation. This dual pathway (partial mediation) indicates that psychosocial conditions influence satisfaction both intrinsically and motivationally. Recent empirical work has shown that need-supportive teaching practices enhance autonomous motivation, which in turn predicts positive academic outcomes (Opdenakker, 2021; Burić & Kim, 2021). The present findings corroborate this mechanism in the context of secondary education, reinforcing the proposition that motivational processes function as central explanatory pathways linking environmental supports to student outcomes.

In contrast, classroom facilities did not demonstrate a significant direct effect on learning satisfaction. While physical classroom quality has been associated with student outcomes such as concentration and performance (Zhang & Barrett, 2021; Imms & Mahat, 2021), the present findings suggest that physical infrastructure alone does not automatically elevate students' evaluative judgments. Instead, facilities influenced satisfaction only indirectly through learning motivation (full mediation). This implies that students may perceive classroom facilities as necessary structural conditions rather than satisfaction-enhancing features unless these conditions enhance motivational engagement.

This differentiation between psychosocial and physical environmental effects contributes to contemporary learning environment research by clarifying that not all environmental dimensions exert influence through the same mechanisms. Recent studies emphasize that learning spaces influence outcomes through behavioral and psychological engagement processes rather than direct structural effects (Byers et al., 2021; Mahat et al., 2022). The current study empirically demonstrates this mechanism by showing that physical classroom quality influences satisfaction only



when it enhances students' motivational orientation. This finding suggests that physical environments function primarily as enabling conditions rather than as direct determinants of evaluative outcomes.

In other words, facilities provide the structural affordances for learning, but their impact depends on whether students perceive and utilize these affordances in ways that support their engagement. This perspective aligns with emerging views in learning environment research that emphasize the interaction between space, behavior, and cognition. Moreover, the results indicate that students may normalize or take for granted physical conditions unless these conditions actively support their learning involvement. Consequently, the effectiveness of classroom facilities is contingent upon their capacity to foster meaningful participation and sustained motivation. This highlights the importance of designing learning spaces that are not only physically adequate but also pedagogically and psychologically activating.

Learning motivation emerged as the strongest predictor of learning satisfaction, highlighting its central role in shaping evaluative educational experiences. Contemporary motivational research underscores that students' satisfaction is closely tied to perceived competence, autonomy, and task value (Ryan & Deci, 2020; Eccles & Wigfield, 2020). The present findings reinforce this perspective by demonstrating that satisfaction is fundamentally a motivationally filtered appraisal of the learning environment. Environmental quality becomes meaningful only when internalized as motivational support.

The explanatory power of the model ($R^2 = .41$ for learning satisfaction) further supports the integrative framework proposed in this study. In line with recent structural modeling research in education (Fauth et al., 2020; Lazarides et al., 2020), moderate levels of explained variance indicate that environmental and motivational variables jointly account for a substantial proportion of students' evaluative experiences. However, the remaining unexplained variance also suggests that additional psychological constructs—such as academic self-efficacy or sense of belonging—may further enhance explanatory precision.

From a contextual perspective, these findings carry important implications for secondary education systems, particularly in developing educational contexts. Policy efforts frequently prioritize infrastructural investment as a primary mechanism for improving educational quality. While adequate facilities are essential, the present findings suggest that infrastructural improvements must be coupled with motivationally supportive pedagogical practices to meaningfully enhance student satisfaction. This insight aligns with recent global education policy discussions emphasizing the importance of psychosocial learning environments in post-pandemic recovery strategies (OECD, 2021; UNESCO, 2022).

The study makes three primary theoretical contributions. First, it integrates psychosocial and physical environmental factors within a unified motivational mediation model. Second, it empirically distinguishes between partial and full mediation pathways, demonstrating that environmental dimensions operate through different psychological mechanisms. Third, it advances current literature by positioning learning satisfaction as a motivationally mediated evaluative construct rather than a purely contextual outcome.

Nevertheless, several limitations warrant consideration. The cross-sectional design limits causal inference and prevents examination of temporal dynamics. Longitudinal studies are needed to test whether motivational mediation remains



stable over time. Additionally, reliance on self-report measures may introduce perceptual bias, although procedural safeguards were implemented. Future research could incorporate multi-level designs to examine classroom-level climate effects or explore additional mediators such as autonomy support or academic resilience.

CONCLUSION

This study advances understanding of how learning environments shape students' evaluative educational experiences by demonstrating that environmental quality operates through motivational mechanisms. The findings show that academic climate and classroom facilities do not contribute equally to learning satisfaction. While psychosocial academic climate exerts both direct and motivationally mediated effects, classroom facilities influence satisfaction exclusively through learning motivation. These differentiated pathways highlight that students' satisfaction is not merely a reflection of environmental conditions but a psychologically filtered appraisal shaped by motivational engagement.

Theoretically, this study contributes to the integration of environmental and motivational frameworks in secondary education research. By empirically distinguishing between partial and full mediation effects, it refines existing models that often treat environmental factors as parallel predictors rather than components of a structured psychological process. The findings reinforce the proposition that environmental supports become consequential only when internalized as motivational resources. Thus, learning satisfaction emerges not as a passive response to context but as an active, motivation-driven evaluation of learning experiences.

The results suggest that efforts to enhance student satisfaction should prioritize the cultivation of supportive academic climates that strengthen relational trust, fairness, and instructional responsiveness. Although investment in classroom infrastructure remains important, such improvements are unlikely to yield meaningful gains in satisfaction unless they simultaneously enhance students' motivational engagement. Educational leaders and policymakers should therefore align environmental development with strategies that activate students' intrinsic and identified motivation.

In the broader context of global educational reform and post-pandemic recovery, these findings underscore the importance of psychological mechanisms in shaping sustainable learning experiences. As educational systems increasingly focus on student well-being and engagement, understanding how environmental conditions are transformed into motivational meaning becomes critical. Future research should extend this model longitudinally, incorporate multi-level perspectives, and examine additional mediators such as academic self-efficacy or sense of belonging to further refine the explanatory framework.

Ultimately, this study demonstrates that improving educational environments is not solely a matter of structural enhancement but of fostering motivationally meaningful learning contexts. The pathway to greater learning satisfaction lies not only in what schools provide, but in how students experience and internalize those provisions.



REFERENCES

- Ahmad, I., Rauf, M., Zeb, A., & Khan, W. (2022). Impact of school facilities on student motivation and satisfaction. *Journal of Education and Educational Development*, 9(2), 210–225. <https://doi.org/10.22555/joed.v9i2.714>
- Aldridge, J. M., McChesney, K., & Afari, E. (2021). Relationships between school climate and student outcomes: The role of teacher self-efficacy and job satisfaction. *Learning Environments Research*, 24, 1–18. <https://doi.org/10.1007/s10984-020-09325-w>
- Barrett, P., Davies, F., Zhang, Y., & Barrett, L. (2019). The impact of classroom design on pupils' learning. *Building and Environment*, 89, 118–133. <https://doi.org/10.1016/j.buildenv.2015.02.013>
- Broadbent, J., & Fuller-Tyszkiewicz, M. (2020). Profiles in learning satisfaction and academic performance. *Educational Psychology*, 40(5), 678–692. <https://doi.org/10.1080/01443410.2019.1696941>
- Burić, I., & Kim, L. E. (2021). Teacher support and student motivation: The mediating role of engagement. *Learning and Instruction*, 72, 101442. <https://doi.org/10.1016/j.learninstruc.2020.101442>
- Byers, T., Mahat, M., & Imms, W. (2021). Learning environments and student engagement: A comparative study. *Learning Environments Research*, 24, 153–170. <https://doi.org/10.1007/s10984-021-09360-5>
- Cobo-Rendón, R., Martínez, M. E., & García, P. (2024). Perception of the learning climate and its prediction of multidimensional wellbeing of students. *Frontiers in Education*, 9, 1456878. <https://doi.org/10.3389/educ.2024.1456878>
- Eccles, J. S., & Wigfield, A. (2020). From expectancy-value theory to situated expectancy-value theory: A developmental, social cognitive, and sociocultural perspective. *Contemporary Educational Psychology*, 61, 101859. <https://doi.org/10.1016/j.cedpsych.2020.101859>
- Fauth, B., Decristan, J., Rieser, S., Klieme, E., & Büttner, G. (2020). Student ratings of teaching quality and student motivation: Testing mediation models. *Learning and Instruction*, 65, 101302. <https://doi.org/10.1016/j.learninstruc.2019.101302>
- Huang, Y., & Hsu, C.-C. (2021). Expectation–performance discrepancies and student satisfaction. *Studies in Educational Evaluation*, 70, 101005. <https://doi.org/10.1016/j.stueduc.2021.101005>
- Imms, W., & Mahat, M. (2021). What evidence supports flexible learning environments? A systematic review of learning space research. *Educational Research Review*, 33, 100391. <https://doi.org/10.1016/j.edurev.2021.100391>
- Lazarides, R., Dicke, T., & Eccles, J. S. (2020). Classroom context and motivation: A longitudinal study. *Journal of Educational Psychology*, 112(1), 1–17. <https://doi.org/10.1037/edu0000378>
- Mahat, M., Byers, T., & Imms, W. (2022). The role of learning space design in shaping student engagement. *Learning Environments Research*, 25, 1–20. <https://doi.org/10.1007/s10984-021-09382-z>



- OECD. (2021). *The state of school education: One year into the COVID-19 pandemic*. OECD Publishing. <https://doi.org/10.1787/201dde84-en>
- Opdenakker, M. C. (2021). Need-supportive and need-thwarting teacher behavior: Their importance to student motivation and engagement. *Educational Psychology Review*, 33, 1241–1275. <https://doi.org/10.1007/s10648-020-09545-6>
- Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *American Psychologist*, 75(6), 725–739. <https://doi.org/10.1037/amp0000611>
- UNESCO. (2022). *Reimagining education: A new social contract for education*. UNESCO Publishing.
- Wang, M.-T., & Degol, J. L. (2020). School climate: A review of the construct, measurement, and impact on student outcomes. *Educational Psychologist*, 55(2), 78–96. <https://doi.org/10.1080/00461520.2020.1722149>
- Zhang, Y., & Barrett, P. (2021). Classroom environment and student outcomes: A systematic review. *Learning Environments Research*, 24, 397–426. <https://doi.org/10.1007/s10984-021-09360-5>

