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Relationship Between School Facilities Satisfaction and Academic Motivation Among Secondary School Students in Karak District

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Abstract

School facilities form an important part of the physical and instructional environment in which secondary students learn, participate, develop academic confidence, and pursue educational goals. This study examined the relationship between students' satisfaction with school facilities and their academic motivation in government secondary schools in District Karak, Khyber Pakhtunkhwa, Pakistan. A quantitative, cross-sectional correlational design was employed within a positivist/post-positivist orientation. The population comprised 12,872 Grade 9 and Grade 10 students enrolled in 85 government high schools. A proportionate stratified random sample was drawn, and 371 complete questionnaires from 216 male and 155 female students were included in the final analysis. Data were collected using a researcher-developed 40-item School Facilities Satisfaction Questionnaire and a 25-item Academic Motivation Questionnaire, both using five-point Likert-type scales. Descriptive statistics and Pearson product–moment correlation were used. Overall school facilities satisfaction was moderate (M = 3.07, SD = 0.56), with classroom condition and space highest (M = 3.26, SD = 0.81) and electricity and technological facilities lowest (M = 2.89, SD = 0.82). Overall academic motivation was moderate (M = 3.43, SD = 0.57); academic aspiration was high (M = 3.77, SD = 0.79), whereas academic self-efficacy was lowest (M = 3.21, SD = 0.84). School facilities satisfaction was positively and significantly associated with academic motivation, $r(369) = .513$, $p < .001$, with approximately 26.3% shared variance. All eight facility dimensions were significantly positively associated with overall academic motivation, and overall facilities satisfaction was significantly related to all five motivation dimensions. The findings suggest that educational infrastructure should be considered in terms of functionality, accessibility, comfort, safety, maintenance, and students' actual experience. Because the design is correlational and cross-sectional, the findings indicate association rather than causation.

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Introduction

The quality of the physical school environment is an important dimension of educational quality. Classrooms, furniture, lighting, ventilation, electricity, sanitation, libraries, laboratories, recreational areas, and safety arrangements provide the material conditions

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through which teaching and learning take place. Contemporary learning-environment research increasingly distinguishes between the existence of infrastructure and its adequacy, functionality, accessibility, maintenance, and usefulness to students. A school may officially possess a library or laboratory while students experience limited access, outdated resources, poor maintenance, or insufficient opportunities to use them. Student perceptions therefore provide an important complement to administrative inventories and technical assessments.

The educational importance of facilities extends beyond physical comfort. Learning environments can influence students' opportunities to participate, practice skills, collaborate, access information, and experience competence. Environmental conditions may also communicate institutional expectations and levels of support. Research reviewed in the thesis indicates that physical and learning environments are related to school climate, engagement, satisfaction, and educational outcomes, although such relationships are embedded within broader systems involving teachers, peers, families, leadership, curriculum, prior achievement, and socioeconomic conditions.

Academic motivation is similarly multidimensional. It includes students' interest and enjoyment in learning, externally valued reasons for studying, confidence in academic abilities, goal-directed behaviour, and aspirations for further education. Self-determination theory emphasizes autonomy, competence, and relatedness, while self-efficacy theory highlights beliefs about one's capability to organize and execute actions required for performance. School facilities may indirectly support these processes by providing usable spaces, learning resources, practical opportunities, reliable utilities, and safe environments.

The secondary-school stage is particularly important because Grade 9 and Grade 10 students face increasing curriculum demands, examinations, subject specialization, and decisions concerning further education. In Pakistan, these demands occur alongside differences in school infrastructure and access to educational resources across localities. District Karak includes rural communities in which students' everyday experiences of classrooms, water and sanitation, electricity, technology, libraries, laboratories, and recreation may differ substantially across schools.

Problem Statement

Educational authorities may know whether facilities are officially provided, but administrative records do not necessarily show whether students consider them sufficient, accessible, functional, comfortable, safe, well maintained, or useful for learning. At the same time, schools may observe differences in effort, engagement, confidence, persistence, and aspirations without systematic evidence about whether the physical learning environment is related to these motivational experiences. The thesis identifies limited context-specific quantitative evidence concerning school facilities satisfaction and academic motivation among government secondary-school students in District Karak. Therefore, the present study examined students' satisfaction with school facilities, their academic motivation, and the statistical relationship between these constructs.

Purpose and Objectives

The purpose was to examine the relationship between school facilities satisfaction and academic motivation among secondary-school students in District Karak. The study objectives were: (a) to assess the level of satisfaction with school facilities; (b) to measure the

level of academic motivation; and (c) to examine the relationship between school facilities satisfaction and academic motivation.

Research Questions

1. What is the level of students' satisfaction with school facilities among secondary-school students in District Karak?
2. What is the level of academic motivation among secondary-school students in District Karak?
3. Is there a statistically significant relationship between school facilities satisfaction and academic motivation?

Hypotheses

H_0: There is no statistically significant relationship between school facilities satisfaction and academic motivation among secondary-school students in District Karak.

H_1: There is a statistically significant positive relationship between school facilities satisfaction and academic motivation among secondary-school students in District Karak.

Conceptual and Theoretical Framework

School facilities satisfaction was conceptualized as students' evaluative judgment of the sufficiency, functionality, comfort, accessibility, safety, condition, and educational usefulness of facilities experienced at school. Eight dimensions were examined: classroom condition and space; furniture, lighting, and ventilation; drinking water and sanitation; electricity and technological facilities; library and learning resources; science laboratory facilities; safety, cleanliness, and the general school environment; and playground and recreational facilities. Academic motivation comprised intrinsic motivation, extrinsic motivation, academic self-efficacy, goal orientation, and academic aspiration. The expected relationship was positive. The framework draws particularly on self-determination theory, self-efficacy theory, and learning-environment research. The proposed relationship represents association rather than causation.

Literature Review

School Facilities as a Multidimensional Learning Environment

School facilities include physical spaces, utilities, equipment, services, and material resources that make teaching, learning, health, safety, administration, and co-curricular activity possible. This includes classrooms, furniture, laboratories, libraries, water, sanitation, electricity, playgrounds, and safety arrangements. Educational value depends on more than presence: functionality, maintenance, access, quality, user experience, and pedagogical use determine whether facilities support learning. Classroom conditions, furniture, lighting, ventilation, temperature, and noise control can influence comfort and engagement. Libraries and laboratories can extend learning through independent reading, inquiry, practical work, and access to resources. Electricity and technology can expand information access when equipment, connectivity, teacher capacity, and student access are reliable.

School Facilities Satisfaction

School facilities satisfaction differs from an inventory of available resources. It represents students' evaluations of whether facilities meet their expectations and support everyday learning. Students may judge the same facility differently because of access, frequency of use, classroom assignment, personal expectations, and previous experiences. Student satisfaction

is therefore a useful user-experience indicator that should complement technical inspection and administrative monitoring. A student-centred assessment can identify gaps between nominal provision and actual educational use—for example, a laboratory may exist but provide few practical opportunities, or a library may exist but contain insufficient resources.

Academic Motivation

Academic motivation concerns processes that initiate, direct, and sustain academic engagement. Intrinsic motivation reflects interest and enjoyment; extrinsic motivation reflects grades, rewards, recognition, and expectations; academic self-efficacy concerns confidence in handling academic tasks; goal orientation concerns setting and monitoring goals; and academic aspiration concerns plans for continued education and future qualifications. Self-determination theory proposes that environments supporting autonomy, competence, and relatedness are conducive to adaptive motivation. School facilities do not determine these psychological processes, but they can create or constrain opportunities for competence, participation, and meaningful learning.

Facilities and Motivation: Research Gap

The thesis literature review indicates that learning environments are related to student satisfaction, engagement, achievement, and motivational processes. However, infrastructure should not be treated deterministically. Motivation is also shaped by instructional practices, teacher relationships, family support, peers, prior achievement, self-efficacy, and socioeconomic circumstances. Existing Pakistani studies often emphasize achievement, attendance, broad school climate, or general infrastructure indices. Less attention has been given to students' satisfaction with specific facility dimensions and its association with multidimensional academic motivation in rural Khyber Pakhtunkhwa. The present study addresses this gap through district-level evidence from government secondary schools in District Karak.

Method

Research Approach and Design

A quantitative approach was used because the study sought to measure students' perceptions numerically and test an association between two composite constructs. The study was situated mainly within a positivist paradigm with post-positivist recognition that educational measurements are imperfect. A cross-sectional descriptive-correlational design was employed. The descriptive component estimated levels of school facilities satisfaction and academic motivation; the correlational component examined the direction and strength of their linear association. No facilities were manipulated, and data were collected once; therefore, the design does not establish causal relationships.

Population and Sampling

The population consisted of 12,872 Grade 9 and Grade 10 students in 85 government high schools in District Karak, including 7,506 male and 5,366 female students. Proportionate stratified random sampling was used. The planned sample comprised 374 students. A total of 371 complete and usable questionnaires were included in the final analysis: 216 male and 155 female students. The thesis reports a 99.20% response rate.

Gender	Schools	Students	%
Male	56	7,506	58.31
Female	29	5,366	41.69

Total	85	12,872	100.00

Instruments

Data were collected using a demographic information sheet, a researcher-developed 40-item School Facilities Satisfaction Questionnaire (SFSQ), and a researcher-developed 25-item Academic Motivation Questionnaire (AMQ). Both used five-point Likert-type response categories. The SFSQ contained eight five-item dimensions; items 4, 10, 15, 20, 25, 30, 35, and 40 were reverse scored so higher scores consistently indicated greater satisfaction. The AMQ contained five five-item dimensions and required no reverse scoring.

Instrument	Dimensions	Items	Possible total score
School Facilities Satisfaction Questionnaire	8	40	40–200
Academic Motivation Questionnaire	5	25	25–125

Validity and Pilot Testing

Face and content review was conducted by experts in educational psychology, educational research, measurement and evaluation, and secondary education. Review addressed clarity, relevance, cultural appropriateness, organization, instructions, response options, and congruence with the intended constructs. A pilot study with 50 secondary-school students similar to the target group but outside the main sampling frame was used to evaluate item clarity, response options, administration time, coding feasibility, and preliminary internal consistency.

Reliability

SFSQ dimension	**α**
Classroom Condition and Space	.88
Furniture, Lighting, and Ventilation	.89
Drinking Water and Sanitation	.91
Electricity and Technological Facilities	.86
Library and Learning Resources	.80
Science Laboratory Facilities	.90
Safety, Cleanliness, and General Environment	.92
Playground and Recreational Facilities	.88
Average dimension-wise reliability	.88
AMQ dimension	**α**
Intrinsic Motivation	.91
Extrinsic Motivation	.88
Academic Self-Efficacy	.89
Goal Orientation	.92
Academic Aspiration	.86
Average dimension-wise reliability	.89

The pilot coefficients indicate good to excellent internal consistency. Reliability was treated as evidence of score consistency, not as proof of construct validity or unidimensionality.

Data Collection, Ethics, and Analysis

Permission was obtained from relevant district education authorities and heads of selected government high schools. Students were informed that participation was voluntary, responses were confidential, questionnaires were not examinations, and names should not be written. Consent and assent procedures for minors were followed as reported in the thesis. SPSS was used. Frequencies and percentages summarized demographics; means and standard deviations described variables; and Pearson product–moment correlation examined relationships. Scores were interpreted descriptively as low (1.00–2.33), moderate (2.34–3.67), or high (3.68–5.00). Data were screened for errors, missingness, unusual responses, approximate linearity, and influential outliers. Statistical significance was evaluated at $\alpha = .05$.

Results

School Facilities Satisfaction

Dimension	M	SD	Level
Classroom Condition and Space	3.26	.81	Moderate
Furniture, Lighting, and Ventilation	3.14	.85	Moderate
Drinking Water and Sanitation	3.09	.79	Moderate
Electricity and Technological Facilities	2.89	.82	Moderate
Library and Learning Resources	3.01	.84	Moderate
Science Laboratory Facilities	2.93	.85	Moderate
Safety, Cleanliness, and General Environment	3.24	.80	Moderate
Playground and Recreational Facilities	2.99	.82	Moderate
Overall Satisfaction	3.07	.56	Moderate

Overall school facilities satisfaction was moderate (M = 3.07, SD = 0.56). Classroom condition and space was highest, while electricity and technological facilities was lowest. The results indicate that basic learning conditions were more positively experienced than specialized, digital, practical, and recreational resources.

Academic Motivation

Dimension	M	SD	Level
Intrinsic Motivation	3.33	.82	Moderate
Extrinsic Motivation	3.45	.83	Moderate

Academic Self-Efficacy	3.21	.84	Moderate
Goal Orientation	3.41	.83	Moderate
Academic Aspiration	3.77	.79	High
Overall Motivation	3.43	.57	Moderate

Overall academic motivation was moderate (M = 3.43, SD = 0.57). Academic aspiration was high and the only high-rated dimension. Academic self-efficacy was lowest, suggesting that students' aspirations for future education were stronger than their confidence in managing difficult academic tasks.

Overall Relationship

Variables	N	r	p
Facilities satisfaction × academic motivation	371	.513	< .001

School facilities satisfaction was positively and significantly associated with academic motivation, $r(369) = .513$, $p < .001$. The squared correlation, $r^2 = .263$, indicates approximately 26.3% shared variance. This is statistical overlap, not the percentage of motivation caused by facilities. The null hypothesis was rejected and the alternative hypothesis was supported.

Facility Dimensions and Overall Motivation

Facility dimension	r	p
Classroom Condition and Space	.366	< .001
Furniture, Lighting, and Ventilation	.382	< .001
Drinking Water and Sanitation	.374	< .001
Electricity and Technological Facilities	.352	< .001
Library and Learning Resources	.328	< .001
Science Laboratory Facilities	.364	< .001
Safety, Cleanliness, and General Environment	.286	< .001
Playground and Recreational Facilities	.352	< .001

All eight facility dimensions were positively and significantly related to overall academic motivation. Furniture, lighting, and ventilation showed the strongest association (r = .382), followed by drinking water and sanitation (r = .374). Safety, cleanliness, and the general environment had the weakest relationship (r = .286), although it remained statistically significant.

Overall Facilities Satisfaction and Motivation Dimensions

Motivation dimension	r	p
Intrinsic Motivation	.339	< .001
Extrinsic Motivation	.362	< .001
Academic Self-Efficacy	.342	< .001
Goal Orientation	.364	< .001
Academic Aspiration	.392	< .001

Overall facilities satisfaction was positively and significantly related to all five motivation dimensions. Academic aspiration had the strongest association (r = .392), followed by goal orientation (r = .364), extrinsic motivation (r = .362), self-efficacy (r = .342), and intrinsic motivation (r = .339).

Dimension-Wise Correlation Matrix

Facility	Intrinsic	Extrinsic	Self-efficacy	Goal	Aspiration
Classroom	.230***	.270***	.256***	.279***	.246***
Furniture/light/ventilation	.289***	.242***	.235***	.279***	.298***
Water/sanitation	.265***	.248***	.274***	.223***	.305***
Electricity/technology	.208***	.278***	.193***	.232***	.325***
Library/resources	.197***	.211***	.208***	.255***	.280***
Laboratory	.204***	.284***	.246***	.292***	.250***
Safety/cleanliness	.205***	.215***	.194***	.170***	.221***
Playground/recreation	.259***	.233***	.266***	.256***	.219***

Note. N = 371. ***p < .001. All 40 dimension-level correlations were positive and statistically significant; coefficients ranged from .170 to .325. The largest specific association was between electricity and technological facilities and academic aspiration (r = .325, p < .001).

Discussion

The first major finding was that students reported moderate satisfaction with school facilities. Classroom condition and space and safety, cleanliness, and the general environment received comparatively stronger ratings, while electricity and technology, laboratories, and recreation were weaker. This pattern suggests that the schools provided a basic physical environment for routine instruction but had more pronounced limitations in specialized, digital, practical, and recreational resources. The finding is consistent with a functional interpretation of school facilities: the educational value of infrastructure depends on whether students can actually use it effectively.

The relatively low rating for electricity and technological facilities is particularly important in contemporary education. Technology can support information access, digital literacy, communication, interactive learning, and exposure to educational and career opportunities, but only when electricity, equipment, connectivity, teacher competence, and student access are reliable. Similarly, a laboratory provides limited educational value if equipment and materials are unavailable or if students have few opportunities for hands-on work. The findings therefore support a shift from counting facilities toward evaluating functionality and use.

The second major finding was moderate overall academic motivation alongside high academic aspiration. Students expressed strong intentions to continue education and obtain higher qualifications, yet their academic self-efficacy was comparatively low. This gap suggests that ambition may exceed students' confidence in completing challenging lessons, assignments, and examinations. High aspirations can provide an important foundation, but schools need to connect aspirations with mastery experiences, constructive feedback, manageable challenges, career guidance, and effective learning strategies.

The central finding was a statistically significant positive association between school facilities satisfaction and academic motivation, $r = .513$, $p < .001$. This result is consistent with the theoretical expectation that supportive learning environments are associated with stronger motivational experiences. Comfortable and functional classrooms may reduce physical barriers to concentration; libraries and laboratories may expand learning opportunities; and safe, accessible facilities may communicate institutional support and create conditions in which students can participate more effectively.

The dimension-level results provide additional insight. Furniture, lighting, and ventilation had the strongest association with overall motivation, possibly because these conditions are experienced continuously during classroom learning. Drinking water and sanitation also showed a relatively strong association, highlighting the role of comfort, dignity, health, and basic usability. The relationship between electricity and technology and academic aspiration was particularly notable at the dimension level. This may reflect the connection between digital resources and students' perceptions of educational and career opportunities, although correlational design prevents causal interpretation.

The relationship with intrinsic motivation was somewhat weaker than the relationship with academic aspiration, goal orientation, and extrinsic motivation. This may indicate that physical facilities are more closely related to perceived opportunity, future goals, and external academic conditions than to enjoyment and curiosity, which may depend more heavily on curriculum, teaching methods, instructional relationships, and individual interests. The overall pattern reinforces the idea that facilities are one component of an educational ecology rather than an independent determinant of motivation.

Educational and Policy Implications

District authorities should evaluate facilities not only by existence but also by condition, functionality, accessibility, maintenance, student use, and educational usefulness. Electricity and technological facilities deserve priority, together with teacher capacity to integrate technology. Laboratories should provide functional equipment, materials, safety, and regular practical opportunities. Libraries should be assessed by resource quality, access, use, and reading conditions. Basic WASH, cleanliness, safety, and timely repairs should be maintained continuously. Recreational spaces should be safe, usable, and connected with meaningful physical activity opportunities.

At the instructional level, teachers should use students' high educational aspirations as a basis for strengthening self-efficacy through mastery experiences, scaffolding, constructive feedback, revision opportunities, and manageable challenges. Career guidance, scholarship information, subject guidance, and transition planning can help translate aspirations into realistic educational pathways. School improvement should therefore integrate infrastructure

with teacher development, supportive pedagogy, feedback, student support, and family engagement.

Limitations

Several limitations should be considered. First, the cross-sectional correlational design does not establish causality or temporal order. Second, both constructs were measured through student self-report and may therefore be influenced by social desirability, temporary feelings, expectations, and differences in interpretation. Third, the sample was restricted to Grade 9 and Grade 10 students in government secondary schools in District Karak, limiting generalization to private schools, other educational levels, districts, and provinces. Fourth, students were nested within schools, but the reported analysis did not adjust for school-level clustering. Fifth, the study did not triangulate student perceptions with technical inspections, teacher/principal reports, parent perspectives, or administrative records. Finally, the researcher-developed instruments require additional validation through larger samples, confirmatory factor analysis, measurement invariance, and comparison with objective facility indicators.

Conclusion

The study concludes that students in District Karak reported moderate satisfaction with school facilities and moderate overall academic motivation. Classroom condition and space was the strongest facility dimension, whereas electricity and technological facilities was weakest. Academic aspiration was high, but academic self-efficacy was comparatively low, indicating a gap between future educational ambition and confidence in managing challenging academic tasks. School facilities satisfaction was positively and significantly associated with academic motivation, and the association extended across all eight facility dimensions and all five motivation dimensions. The findings support a student-centred view of school infrastructure in which safe, comfortable, functional, accessible, and resourceful facilities are meaningful parts of the educational ecology. They do not demonstrate that facilities cause motivation; rather, they show that students' perceptions of their school environment and their motivational experiences are statistically related.

Recommendations for Future Research

• Conduct longitudinal studies to examine changes in facilities satisfaction and academic motivation over time.

• Use multilevel modelling to account for students nested within schools.

• Combine student questionnaires with technical inspections, administrative records, teacher reports, and school-leader assessments.

• Conduct confirmatory factor analysis and measurement-invariance studies to further validate the SFSQ and AMQ.

• Compare rural and urban schools, government and private schools, and male and female students.

• Examine whether facilities satisfaction is associated with achievement, attendance, engagement, belonging, or retention through motivational processes.

• Evaluate infrastructure interventions before and after implementation to examine whether improvements are followed by changes in motivation.

References

Barrett, P., Davies, F., Zhang, Y., & Barrett, L. (2015). The impact of classroom design on pupils' learning: Results of a holistic, multi-level analysis. Building and Environment, 89, 118–133.

DeVellis, R. F., & Thorpe, C. T. (2021). Scale development: Theory and applications (5th ed.). SAGE.

Field, A. (2018). Discovering statistics using IBM SPSS Statistics (5th ed.). SAGE.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. Review of Educational Research, 74(1), 59–109.

García-Rodríguez, M. P., Conde-Vélez, S., Delgado-García, M., & Carmona-Márquez, J. (2024). Learning environments in compulsory secondary education: Validation of the physical, learning, teaching and motivational scales. Learning Environments Research, 27, 53–75. https://doi.org/10.1007/s10984-023-09464-y

Howard, J. L., Bureau, J. S., Guay, F., Chong, J. X. Y., & Ryan, R. M. (2021). Student motivation and associated outcomes: A meta-analysis from self-determination theory. Perspectives on Psychological Science, 16(6), 1300–1323.

Khattab, N. (2015). Students' aspirations, expectations and school achievement: What really matters? British Educational Research Journal, 41(5), 731–748.

Nawaz, S., Ud Din, M. N., Wahab, A., & Khan, A. (2025). The impact of artificial intelligence (AI) on the analytical ability skills (AAS) of graduate students at Kohat University of Science and Technology (KUST) Kohat. International Journal of Multicultural Education, 27(2), 38–49 DOI10.5281/zenodo.18312239

Nawaz, S., ud Din, N., & Wahab, A. (2025). Exploring the impact of AI-ChatGPT on creativity skills of postgraduate students at KUST Kohat. ASSAJ, 3(01), 916-928.

Qadeer, A., Shahid, S. H., & Ullah, N. (2024). Students' satisfaction and academic achievement nexus using physical facilities and classroom environment in secondary schools. Journal of Asian Development Studies, 13(2), 1595–1608. https://doi.org/10.62345/jads.2024.13.2.125

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective. Contemporary Educational Psychology, 61, 101860.

Schober, P., Boer, C., & Schwarte, L. A. (2018). Correlation coefficients: Appropriate use and interpretation. Anesthesia & Analgesia, 126(5), 1763–1768.

Uline, C., & Tschannen-Moran, M. (2008). The walls speak: The interplay of quality facilities, school climate, and student achievement. Journal of Educational Administration, 46(1), 55–73.

Verner-Filion, J., Véronneau, M.-H., Vaillancourt, M.-C., & Mathys, C. (2023). Perceived school climate and school grades in secondary school students: The mediating effect of self-determined motivation. Contemporary Educational Psychology, 74, 102202.

Villarreal Arroyo, Y. P., Peñabaena-Niebles, R., & Berdugo Correa, C. (2023). Influence of environmental conditions on students' learning processes: A systematic review. Building and Environment, 231, 110051.

Wang, M.-T., & Degol, J. L. (2016). School climate: A review of the construct, measurement, and impact on student outcomes. Educational Psychology Review, 28, 315–352.