

Educational Environment and Students' Academic Achievement: A Thematic Review of Study Habits and Problem-Solving Ability

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Academic achievement among secondary-school students is influenced by a combination of individual, behavioural, family, peer, and school-related factors. Among these, the educational environment, study habits, and problem-solving ability represent interconnected dimensions of the teaching-learning process. The present paper provides a thematic review of existing research on the relationship between educational environment and students' academic achievement, with particular emphasis on study habits and problem-solving ability as important learner-level processes. The review draws substantially on the literature contained in the attached thesis, particularly its review of educational environment, study habits, problem-solving ability, and academic achievement, and integrates this evidence with recent external research. The analysis does not treat the thesis's proposed sample or proposed statistical analysis as primary data for the present paper. Instead, previously reported findings are synthesized thematically. Five major themes emerge: educational environment as a foundation for learning; study habits as a behavioural pathway to achievement; problem-solving ability as a cognitive pathway to learning; interaction between educational environment and learner characteristics; and academic achievement as a multidimensional outcome. The reviewed evidence generally suggests that supportive educational environments can facilitate productive learning behaviours, while effective study habits and problem-solving capabilities are associated with stronger academic performance. However, the relationships are not uniformly significant across all contexts, indicating that academic achievement is a complex and multidimensional phenomenon. The paper proposes an integrated conceptual framework in which educational environment influences students' opportunities and learning

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conditions, which interact with study habits and problem-solving ability to shape academic achievement. The review highlights the need for longitudinal, multilevel, and mixed-method research to better explain these relationships among secondary-school students.

Keywords: Educational Environment; School Environment; Study Habits; Problem-Solving Ability; Academic Achievement; Secondary Education; Learning Behaviour; Students.

1. Introduction

Academic achievement is one of the most widely examined outcomes in school education because it reflects, at least partly, the extent to which students have acquired the knowledge, skills, and competencies expected from formal education. At the secondary-school level, academic achievement becomes particularly important because students face increasing curricular complexity, examination pressure, competition, and decisions concerning further education and career pathways.

Academic achievement, however, cannot be explained through individual intelligence or effort alone. Contemporary educational research identifies a broad range of personal and contextual determinants. A recent systematic review of determinants of academic achievement from middle to secondary education identified personal factors such as cognitive abilities, motivation, self-concept, stress, and problem-solving strategies alongside contextual factors including family, school conditions, school practices, and peer relationships.

The **educational environment** represents one of the most important contextual dimensions. It includes the physical, social, psychological, instructional, and interpersonal conditions in which students learn. A positive educational environment may involve supportive teacher–student relationships, appropriate learning resources, classroom discipline, participation, cooperation, safety, encouragement, and opportunities for intellectual development.

The importance of educational environment is supported by research examining school and classroom climate. A meta-analysis of 53 studies

concerning classroom climate and 37 studies concerning school climate found that both were significant correlates of academic achievement, with the relationship for school climate being of medium magnitude and that for classroom climate being smaller.

The attached thesis provides an especially relevant foundation for the present review. Its research framework focuses on the relationship between **educational environment, study habits, problem-solving ability, and academic achievement** among secondary-school students. The literature review is organized around these four dimensions and therefore provides a useful source base for developing a thematic synthesis.

A second important dimension is **study habits**. Study habits refer to recurring patterns of learning behaviour, including time management, concentration, reading, note-taking, revision, examination preparation, and organization of study. Research has frequently associated effective study habits with improved academic performance, although findings differ according to population and context. A 2021 systematic review characterized study habits as important behavioural patterns associated with academic performance.

Recent Indian research also illustrates the complexity of this relationship. Setia and Ranjan (2023), studying secondary students, found no significant overall relationship between study habits, school environment, and academic achievement, although specific dimensions such as note-taking, time management, punishment, and teacher acceptance were relevant. In contrast, research among senior-secondary students in

Tripura reported a strong positive association between study habits and academic performance, with $r = .68, p < .001$.

A third dimension is **problem-solving ability**. Problem-solving is a higher-order cognitive process involving the identification of problems, analysis of information, generation of alternatives, selection of strategies, and evaluation of solutions. It is relevant to academic achievement because school learning increasingly requires students to apply knowledge rather than simply recall information.

Evidence supports this connection. A study of secondary-school students in Central Kashmir reported a significant positive relationship between problem-solving ability and academic achievement and found problem-solving ability to be a significant predictor, with $R^2 = .178$. A meta-analysis of problem-based learning research similarly found substantial effects on problem-solving and high effects on academic achievement among K–12 learners.

The relationship among these constructs therefore warrants examination as an interconnected system rather than as isolated variables.

The central proposition of this paper is:

Educational Environment → Study Habits and Problem-Solving Ability → Academic Achievement

This pathway is conceptual rather than a claim of direct causality. The purpose of the present thematic review is to examine how existing literature supports, qualifies, or complicates this relationship.

2. Conceptual Foundations

2.1 Educational Environment

Educational environment refers to the overall conditions within which teaching and learning take place. It encompasses physical facilities, classroom climate, teacher behaviour, peer interaction, institutional practices, academic support, discipline, safety, participation, and psychological conditions.

Educational environment should therefore not be reduced to infrastructure. A school with modern facilities may still provide an unsupportive learning environment if students experience fear, weak teacher relationships, excessive punishment, or limited participation.

The literature increasingly treats school climate as a multidimensional construct. The meta-analysis by Erdem and Kaya (2024) demonstrated that school and classroom climate are significantly associated with academic achievement.

The attached thesis similarly treats educational environment as a major variable in relation to student learning processes and academic achievement.

2.2 Study Habits

Study habits represent relatively stable patterns through which students organize and regulate their learning.

Important dimensions include:

- time management;
- regularity of study;
- concentration;
- reading practices;
- note-taking;
- revision;
- examination preparation;
- organization of learning materials;
- self-monitoring; and
- management of distractions.

Study habits are particularly important because they are potentially modifiable. Unlike fixed cognitive characteristics, learning routines can be developed through guidance, practice, feedback, and appropriate educational support.

Research reviewed in the attached thesis includes several studies connecting study habits with academic achievement and related educational variables.

2.3 Problem-Solving Ability

Problem-solving ability involves the capacity to understand a problem, identify relevant information, develop possible strategies, implement an appropriate strategy, and evaluate the outcome.

In secondary education, problem-solving extends beyond mathematics and science. It is relevant to reading comprehension, social sciences, project work, decision-making, laboratory activities, and everyday learning challenges.

Recent systematic research emphasizes problem-solving as an important educational capability. A systematic review of problem-solving literature found continuing research interest across school levels and subject areas. Another review specifically examining secondary-school students identified problem-solving research across science, mathematics, chemistry, physics, creativity, and related areas.

2.4 Academic Achievement

Academic achievement generally refers to students demonstrated learning outcomes, often represented through examination marks, grades, standardized assessments, or achievement tests.

However, achievement should not be interpreted as the direct product of one variable. The recent systematic review by Costa et al. (2024) emphasizes the multidimensional nature of academic achievement and identifies personal, family, school, and peer-level determinants.

India's National Achievement Survey also illustrates this broader perspective. NAS 2021 assesses learning achievement across multiple grades and includes contextual variables, allowing educational performance to be examined alongside pedagogical and background factors.

3. Methodology: Thematic Review

3.1 Research Design

The present paper adopts a **thematic review design**.

The purpose is not to generate new empirical observations or statistically pool effect sizes. Instead, the paper identifies recurring

relationships and patterns across existing research and integrates them into an explanatory framework.

The literature was organized around four central constructs:

1. Educational environment
2. Study habits
3. Problem-solving ability
4. Academic achievement

The review also considered the interaction among these constructs.

3.2 Source Base

Two main sources of evidence were used.

First, the literature review contained in the attached thesis was examined because it directly addresses the four constructs under consideration. The thesis identifies educational environment, study habits, problem-solving ability, and academic achievement as central components of its research framework.

Second, recent external literature was examined to update and contextualize the thesis-based evidence, particularly research published from 2020 onwards. This included systematic reviews, meta-analyses, and empirical studies concerning school climate, study habits, problem-solving, and academic achievement.

3.3 Analytical Procedure

The literature was analyzed through thematic coding.

Studies were first grouped according to their primary construct. Findings were then compared to identify:

- consistent relationships;
- contradictory findings;
- possible explanatory mechanisms;
- contextual differences; and
- research gaps.

The analysis resulted in five major themes.

Importantly, the **600-student sample and proposed statistical procedures described in the attached thesis are not treated as data for the present review.** The thesis identifies a proposed sample of 600 secondary students and instruments including the School Environment Inventory, Study Habit Scale, Problem Solving Ability measure, and annual examination marks. These details belong to the original thesis research design and are not presented here as newly collected data.

4. Thematic Analysis

Theme 1: Educational Environment as a Foundation for Learning

The first theme concerns the educational environment as the foundation within which learning behaviour develops.

Students spend a substantial portion of their developmental years within schools. Consequently, school conditions influence not only academic instruction but also students' motivation, participation, relationships, emotional experiences, and learning routines.

The strongest recent evidence comes from meta-analytic research. Erdem and Kaya (2024) synthesized 53 studies on classroom climate and 37 studies on school climate. Their findings indicated a small relationship between classroom climate and achievement and a medium relationship between school climate and achievement.

This finding is important because it suggests that environmental influences are not necessarily limited to physical facilities. The broader climate of the school may have greater relevance.

The attached thesis literature similarly considers educational environment as a major dimension of secondary education and connects it with student-related learning variables.

Recent Indian research provides a more nuanced picture. Setia and Ranjan (2023) did not find a significant overall relationship between school environment and academic achievement in their sample of secondary students, although particular environmental dimensions were relevant.

Thus, the thematic conclusion is not that every positive school environment automatically produces higher achievement. Rather, **specific dimensions of the environment may matter differently depending on the learners, schools, and educational context.**

Theme 2: Study Habits as a Behavioural Pathway

The second theme concerns study habits as a behavioural mechanism through which educational conditions may translate into academic outcomes.

The attached thesis contains substantial literature on study habits. One reviewed study involving 900 secondary students reported a significant relationship between study habits and academic achievement.

Another study reviewed in the thesis reported that study habits were significantly associated with academic achievement and that female students performed better than male students on the relevant measures.

The thesis also reports a 2016 study involving 600 secondary students in Haryana in which study habits had a significant effect on academic achievement.

Recent external literature generally supports the importance of study habits while demonstrating contextual variation. Tiwari and Mishra (2023) reviewed research on urban and rural secondary-school students and emphasized time management, learning strategies, and self-regulation as important dimensions of study habits.

Similarly, Sharma and Kumar's research on secondary students in Delhi found a moderate positive relationship between study habits and school environment.

This finding is particularly relevant to the present framework because it connects the **environmental and behavioural dimensions.**

The relationship can therefore be conceptualized as:

Supportive educational environment → improved opportunities for productive study behaviour → stronger learning outcomes

Again, this is a conceptual pathway rather than a confirmed causal mechanism.

Theme 3: Problem-Solving Ability as a Cognitive Pathway

The third theme identifies problem-solving ability as an important cognitive pathway.

Problem-solving requires students to move beyond memorization and apply knowledge to unfamiliar situations. It therefore has potential relevance to academic performance in subjects requiring reasoning and application.

Research among secondary-school students has found positive relationships between problem-solving ability and academic achievement. Nazir's study, for example, reported a significant positive association and found problem-solving ability to be a significant predictor of academic achievement, explaining approximately 17.8% of the variance in the reported model.

The relationship is also supported indirectly by intervention research. Erdem's meta-analysis of problem-based learning examined 56 articles and 14 proceedings and found high effects on academic achievement and very high effects on problem-solving and thinking skills.

Sinha and Kapur's meta-analysis of 53 studies and 166 comparisons further found a moderate advantage for problem-solving followed by instruction over instruction followed by problem-solving under specified conditions.

The implication is that problem-solving is not merely an outcome of academic learning; under appropriate instructional conditions, it may also become a mechanism supporting learning.

Theme 4: Interaction Between Educational Environment, Study Habits and Problem-Solving

The fourth theme is the most important for the present paper because the three constructs should not be viewed independently.

Educational environment provides opportunities and constraints.

Study habits determine how students organize their learning effort.

Problem-solving ability determines how effectively students apply knowledge and respond to unfamiliar academic situations.

These processes interact.

A supportive school environment may encourage regular study, provide access to learning resources, reduce unnecessary stress, promote teacher support, and facilitate collaborative learning. Productive study habits may provide the consistency required for students to develop deeper understanding. Problem-solving ability may then help students apply this understanding in unfamiliar contexts.

The attached thesis itself brings these dimensions together by placing educational environment, study habits, problem-solving ability, and academic achievement within the same research framework.

Recent evidence also supports the importance of considering multiple determinants simultaneously. Costa et al. (2024), after screening 771 records and retaining 35 studies, organized determinants of academic achievement into personal and contextual levels, including problem-solving strategies, school conditions, family factors, and peer processes.

This supports an ecological rather than purely individual explanation of academic achievement.

Theme 5: Academic Achievement as a Multidimensional Outcome

The fifth theme concerns the complexity of academic achievement.

The reviewed literature does not support a simple model in which educational environment, study habits, or problem-solving ability independently determines achievement.

For example, Setia and Ranjan (2023) reported no significant overall relationship among study habits, school environment, and academic achievement in their sample, even though

particular dimensions of study habits and school environment were relevant.

Conversely, the Tripura study found a strong positive relationship between study habits and academic performance.

Similarly, the literature on problem-solving generally supports positive associations with achievement, but the strength of the relationship

depends on subject area, instructional method, learner characteristics, and context.

These differences do not necessarily indicate that one body of research is incorrect. Rather, they indicate that academic achievement is a **multidimensional outcome produced by interacting factors**.

Table 1. Selected Literature and Thematic Evidence

Study/source	Main variable(s)	Evidence/finding	Thematic contribution
Uploaded thesis – educational-environment literature	Educational environment	Examines school environment as a major contextual dimension of secondary education	Environment as learning context
Uploaded thesis – 900-student study	Study habits and academic achievement	Significant relationship reported between study habits and achievement	Study habits as behavioural pathway
Uploaded thesis – Saini (2010)	Study habits and achievement	Study habits and achievement examined among 600 Scheduled Caste students; relationship tested using correlation and related statistics	Contextual variation in study-habit effects
Uploaded thesis – 2016 Haryana study	Study habits, peer pressure, home environment, achievement	Study habits significantly related to academic achievement; home environment and peer-related factors also examined	Interaction of learner and context
Uploaded thesis – problem-solving literature	Problem-solving ability	Problem-solving examined in relation to learning and achievement-related outcomes	Cognitive pathway
Uploaded thesis – academic-achievement literature	Achievement, motivation, family/environment	Achievement associated with multiple personal and contextual factors	Achievement as multidimensional
Setia & Ranjan (2023)	Study habits, school environment, achievement	No significant overall relationship, although selected dimensions were relevant	Evidence of contextual variation
Sharma & Kumar (2024)	Study habits and school environment	Moderate positive relationship between study habits and school environment	Environment–learning behaviour link

Study/source	Main variable(s)	Evidence/finding	Thematic contribution
Tiwari & Mishra (2023)	Study habits and achievement	Review emphasizes time management, learning strategies and self-regulation	Behavioural determinants
Tripura et al.	Study habits and academic performance	Strong positive correlation, $r = .68$, $p < .001$	Study habits–achievement relationship
Nazir	Problem-solving and achievement	Significant positive relationship; $R^2 = .178$	Cognitive pathway
Erdem (2024)	Problem-based learning, problem-solving, achievement	High effects on achievement and very high effects on problem-solving/thinking outcomes	Instructional pathway
Erdem & Kaya (2024)	School/classroom climate and achievement	School climate showed a medium relationship and classroom climate a small relationship with achievement	Environmental influence
Costa et al. (2024)	Determinants of achievement	Personal and contextual determinants jointly explain academic achievement	Ecological perspective

Note: Findings from the uploaded thesis are treated as previously reported literature, not as primary data collected for the present paper.

5. Integrated Discussion and Conceptual Framework

The thematic evidence supports an integrated model of academic achievement.

The traditional interpretation of academic achievement often places the student at the centre and attributes performance to individual ability or effort. The reviewed evidence suggests a broader perspective.

The student operates within an educational environment.

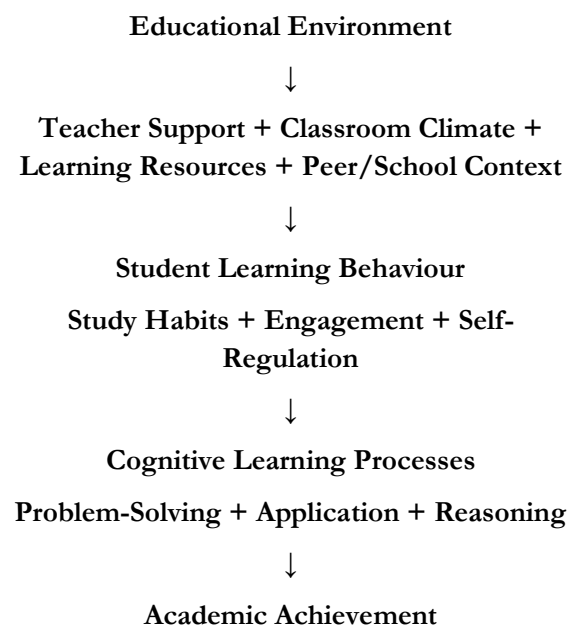
That environment influences the opportunities available for learning, interaction, participation, support, and engagement.

Students then develop and employ learning behaviours, including study habits.

At the same time, they employ cognitive strategies, including problem-solving.

These processes interact with personal, family, peer, and institutional factors and ultimately contribute to academic achievement.

The proposed conceptual framework is:



This model is consistent with the ecological interpretation of academic achievement

presented in the recent systematic review by Costa et al. (2024).

Table 2. Integrated Thematic Synthesis

Theme	Core relationship	Interpretation	Research implication
Educational environment	Environment ↔ learning conditions	School and classroom conditions shape opportunities for learning	Examine school and classroom dimensions separately
Study habits	Study habits → learning behaviour → achievement	Regularity, time management, concentration and self-regulation can support achievement	Study habits may act as a behavioural pathway
Problem-solving	Problem-solving → application of knowledge → achievement	Higher-order cognitive processes support academic learning	Examine subject-specific and general problem-solving
Environment × study habits	Environment ↔ study behaviour	Supportive conditions may facilitate productive learning routines	Test environmental variables as moderators/mediators
Environment × problem-solving	Environment → cognitive opportunity	Collaborative and inquiry-oriented environments can provide opportunities for problem-solving	Examine instructional climate and cognitive outcomes
Integrated outcome	Environment + habits + problem-solving → achievement	Academic achievement emerges from interacting personal and contextual factors	Multilevel and longitudinal designs are required

6. Research Gaps and Future Research Directions

The thematic synthesis identifies several important research gaps.

6.1 Limited Integrated Models

Many studies investigate educational environment, study habits, problem-solving, or achievement separately. Fewer studies examine all four constructs within a single explanatory framework.

Future studies should test whether study habits and problem-solving ability mediate the

relationship between educational environment and academic achievement.

6.2 Inconsistent Findings

The literature contains both significant and non-significant relationships.

For example, Setia and Ranjan (2023) found no significant overall relationship between study habits, school environment, and achievement, whereas other research has reported significant positive relationships.

Future research should therefore investigate why relationships differ across regions, school types,

socioeconomic backgrounds, subjects, and age groups.

6.3 Need for Longitudinal Research

Most available studies are cross-sectional. Such designs identify associations but cannot establish temporal direction.

Longitudinal studies could determine whether improvements in educational environment precede changes in study habits, problem-solving ability, and academic achievement.

6.4 Need for Multilevel Analysis

Students are nested within classrooms, classrooms within schools, and schools within broader communities.

Consequently, future studies should distinguish:

- student-level variables;
- classroom-level variables;
- school-level variables; and
- family/community-level variables.

Multilevel modelling could provide a more accurate explanation of educational outcomes.

6.5 Need for Objective and Multiple Measures

Academic achievement is often represented through examination scores, while study habits and educational environment are frequently measured through self-report questionnaires.

Future studies should combine:

- achievement-test scores;
- school records;
- classroom observations;
- teacher ratings;
- student questionnaires; and
- qualitative interviews.

Such triangulation would reduce dependence on a single source.

6.6 Need for Greater Attention to Problem-Solving

Although problem-solving is increasingly recognized as an important educational outcome, it is often treated as a subject-specific skill.

Future research should examine whether general problem-solving ability predicts achievement across multiple subjects or whether the relationship is primarily domain-specific.

6.7 Indian Secondary-School Context

There is a need for more large-scale research involving diverse Indian secondary-school populations.

Differences in school boards, urban/rural location, socioeconomic conditions, language of instruction, school management, digital access, and family background may influence the relationships among environment, study habits, problem-solving, and achievement.

7. Educational and Policy Implications

The findings have implications for teachers, schools, parents, and educational policymakers.

First, improving academic achievement should not rely exclusively on additional instructional hours or examination-oriented preparation. Schools should also develop supportive educational environments.

Second, students should receive explicit instruction in learning-to-learn skills. Time management, note-taking, revision, concentration, planning, and self-monitoring should be treated as teachable competencies rather than assumed abilities.

Third, problem-solving should be embedded across subjects. Students should be given opportunities to analyse problems, develop alternative solutions, justify their reasoning, and reflect on mistakes.

Fourth, teachers should receive professional development on classroom climate and learner engagement. The evidence on school and classroom climate suggests that the social and psychological environment of schooling is relevant to achievement.

Finally, parents and schools should work together. The literature reviewed in the attached thesis indicates that home environment, peer influences, study habits, and academic outcomes can interact.

8. Conclusion

Educational environment, study habits, problem-solving ability, and academic achievement represent interconnected dimensions of secondary education. The thematic review demonstrates that academic achievement cannot be adequately explained through a single student characteristic or a single school variable.

Educational environment provides the broader context within which students learn. A supportive environment can create opportunities for participation, interaction, concentration, motivation, and cognitive development. However, the relationship between environment and achievement is not uniformly strong across all studies, suggesting that the quality and specific dimensions of the environment matter.

Study habits represent an important behavioural dimension. The literature reviewed in the attached thesis includes multiple studies reporting relationships between study habits and academic achievement, while recent research similarly identifies time management, learning strategies, self-regulation, and other study behaviours as important factors.

Problem-solving ability represents a complementary cognitive dimension. Existing evidence generally indicates a positive relationship between problem-solving and academic achievement, while intervention research suggests that instructional approaches

designed around problem-solving can improve cognitive and achievement outcomes.

The central contribution of this thematic review is therefore an integrated interpretation:

Educational Environment → Study Habits and Problem-Solving Ability → Academic Achievement

This should not be interpreted as a simple causal chain. Academic achievement is influenced by multiple interacting personal and contextual factors, including motivation, cognitive ability, family background, peers, school conditions, stress, and educational practices.

The attached thesis is particularly valuable because its literature review already brings educational environment, study habits, problem-solving ability, and academic achievement into a common secondary-school research framework. The present paper reorganizes that evidence thematically and places it alongside recent research.

Future research should move beyond isolated correlational studies and employ longitudinal, mixed-method, multilevel, and mediation-based designs. In particular, research should examine whether study habits and problem-solving ability function as mechanisms through which educational environment contributes to academic achievement.

Ultimately, improving students' academic achievement requires attention not only to **what students learn**, but also to **where they learn, how they study, how they solve problems, and how the educational environment supports these processes**.

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