



Role of Metacognition, Resilience, and Self-Regulated Learning as Predictors of Academic Achievement among Secondary School Students

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Abstract

Academic achievement among secondary school students is influenced not only by intellectual ability but also by psychological and learning-related factors that shape how students approach school tasks. Among these, metacognition, resilience, and self-regulated learning have received growing attention because they support planning, monitoring, persistence, and adjustment in learning. Metacognition refers to learners' awareness and regulation of their own thinking, including planning, monitoring, and evaluating progress. Self-regulated learning involves the active management of cognition, motivation, behaviour, and learning strategies toward academic goals. Resilience reflects the capacity to adapt positively despite difficulty, stress, or setbacks. Research evidence suggests that each of these variables is positively associated with academic success, and together they may provide a strong explanation of differences in student achievement. Recent meta-analytic evidence shows that metacognition is positively related to achievement, including a longitudinal association with later academic performance. Likewise, self-regulated learning has consistently been linked to stronger academic outcomes, while resilience appears to function as a protective factor that helps students remain engaged under pressure. This paper explains the role of these three constructs as predictors of academic achievement among secondary school students using a descriptive survey method. It also outlines the theoretical basis, review of related literature, conceptual framework, methodology, educational implications, and references that can support an original school-based study.

Keywords: Metacognition, Resilience, Self-regulated learning, Academic Achievement, Secondary School Students.

Introduction



Academic achievement is a central goal of schooling and a key indicator of educational quality. In secondary education, the years are especially important because students face increasing academic demands, subject specialization, examinations, and decisions that shape later educational and vocational pathways. While achievement is often discussed in terms of marks or grades, it is now widely recognized that success in school depends on how students think about learning, how they respond to difficulty, and how they manage their own study behaviour. For this reason, psychological and self-management variables have become important in educational research. Metacognition, resilience, and self-regulated learning are three such variables because they support effective learning behaviour and sustained academic engagement.

Metacognition is especially relevant because it enables learners to understand what they know, what they do not know, and what strategy is appropriate for a task. Columbia University describes metacognition as “thinking about your own thinking,” while MIT explains it as the process by which learners use knowledge of the task, learning strategies, and themselves to plan, monitor, and evaluate learning. These processes are not abstract; they shape whether students read carefully, check their answers, revise weak areas, and choose effective study methods. In secondary school, where subjects become more demanding, students with stronger metacognitive habits are often better able to identify gaps in understanding and regulate their learning accordingly.

Self-regulated learning is closely related to metacognition but broader in scope. The Education Endowment Foundation defines self-regulated learners as students who manage their motivation, thoughts, and behavior to set goals, monitor progress, reflect, and review their learning. Zimmerman’s work further shows that self-regulated learning includes planning, self-monitoring, self-evaluation, and adaptation of strategies. In practical terms, this means students do not simply wait for instruction; they actively direct their own learning. For secondary school students, such independence can be decisive because homework loads, test preparation, and project work require initiative and discipline.

Resilience adds another important layer. Masten’s classic work describes resilience as “ordinary magic,” emphasizing that adaptive development often arises from common protective processes rather than rare traits. In education, academic resilience means the ability to persist and maintain performance despite stress, setbacks, low confidence, or challenging circumstances. A recent systematic review of protective factors in children and adolescents



shows that resilience is shaped by multiple influences, especially individual and school-level factors, and that self-regulation appears repeatedly as a protective factor associated with academic resilience. For secondary school students, resilience matters because academic life includes exam pressure, peer comparison, family expectations, and occasional failure. Students who can recover from setbacks are more likely to remain engaged long enough to improve.

Taken together, these three variables form a coherent explanation of academic success. Metacognition helps students think wisely about learning; self-regulated learning helps them act strategically; resilience helps them continue in the face of difficulty. A descriptive survey study is appropriate because it can measure the strength of these relationships in a real school setting without manipulating the variables. Existing evidence already indicates that metacognition predicts later achievement, self-regulated learning improves academic outcomes, and resilience is associated with better performance in school contexts, including secondary education. This paper therefore explains how these variables can be studied as predictors of academic achievement among secondary school students.

Review of Related Literature

Metacognition and Academic Achievement

Metacognition is one of the most consistently studied predictors of learning because it captures how students manage their own cognition. The basic idea is simple: students perform better when they can plan how to study, monitor whether they understand, and evaluate the success of their strategy. The evidence base supports this claim. A recent longitudinal meta-analysis of 28 independent studies involving 71,171 students found a positive association between initial metacognition and later academic achievement, with a correlation of $r = .22$. Another meta-analysis focused on mathematics found an even stronger positive relationship, $r = .32$, and reported that this relationship was evident from preschool through high school. These findings indicate that metacognition is not only related to achievement in general but also becomes increasingly important as students progress through school.

Theoretical and classroom-oriented sources also reinforce this relationship. MIT and Columbia both describe metacognition as planning, monitoring, and evaluating learning, and the EEF notes that metacognition and self-regulation approaches have a high impact on pupil



progress, with evidence of benefit across primary and secondary schooling. The EEF also reports that these approaches can support learners to make better decisions about how to learn, especially when teachers explicitly model thinking, provide scaffolds, and teach strategies in subject lessons. This means metacognition is not a minor study habit; it is a learnable process with strong educational value.

School-based studies provide further support. A 2024 high-school study from India found that metacognitive awareness and self-regulated learning were positively associated with academic performance, and that monitoring, control, and evaluation dimensions were significant predictors of academic outcomes. Another high-school-oriented study on metacognition and academic achievement reported positive relationships between metacognition and achievement. Such findings are especially relevant for secondary school students because they show that metacognitive skills are not merely theoretical constructs; they are measurable school variables that relate directly to performance.

Resilience and Academic Achievement

Resilience is often discussed as the capacity to recover from adversity, but in education it is more useful to treat resilience as a protective process that helps students continue learning despite setbacks. Masten's "ordinary magic" idea is important here because it frames resilience as a common developmental process rather than a rare talent. A 2024 systematic review of protective factors in children and adolescents found that academic resilience is shaped by multiple influences and that self-regulation is one of the factors repeatedly associated with resilient academic functioning. The review also shows that school-level and individual-level features matter, which suggests that resilience is both personal and contextual.

Evidence from school studies strengthens this view. A study of senior secondary school students in Punjab used the descriptive method and found positive relationships between learning environment and academic resilience; the study reported that students showed an average or high level of resilience and that supportive school conditions were associated with stronger resilience. Another recent study on secondary education students found that academic performance and school resilience were related, and that internal resources and identity/self-esteem were among the most predictive dimensions for high performance. These findings suggest that resilience contributes to achievement by helping students stay engaged and confident under pressure.



Importantly, resilience is not the same as intelligence. A student may be capable but underperform if stress, discouragement, or repeated failure prevents sustained effort. Resilience helps explain why some students continue to work even after poor marks, while others disengage. In school systems where examinations are highly valued, this capacity becomes especially important because academic setbacks are common and often emotionally costly.

Self-Regulated Learning and Academic Achievement

Self-regulated learning refers to students' ability to guide their own study behavior through goal setting, strategy use, monitoring, and reflection. Zimmerman's model remains foundational because it presents self-regulation as a cyclical process in which students plan, act, observe the results, and adjust their approach. The EEF similarly emphasizes that self-regulated learners manage their motivation, thoughts, and behavior while using metacognitive strategies to support learning. This is especially relevant in secondary school, where students must balance multiple subjects, deadlines, and examinations with greater independence than in primary grades.

The evidence on SRL and academic achievement is strong. A scoping review synthesizing 163 studies concluded that self-regulated learning is effective for academic achievement in online and blended learning settings and remains an important area of research across learning contexts. It also noted that more research is needed in K–12 settings, which strengthens the case for secondary school research. Another study of high school students found that self-regulated learning strategies were positively associated with academic achievement and resilience, suggesting that SRL is not only an academic tool but also a resource for coping with educational demands. In a high-school sample from Bihar and Kerala, metacognitive awareness and self-regulated learning were both positively correlated with academic performance, and some SRL dimensions significantly predicted academic success.

SRL matters because it brings together cognition and behavior. Students who regulate their learning are more likely to set realistic goals, allocate time, revisit difficult material, and correct errors. In practice, this leads to stronger performance because these students are not passive receivers of instruction. They are active participants in their own learning. For secondary school students, especially those preparing for board examinations or competitive tests, this independence can make a major difference in final outcomes.



Theoretical Framework

This study can be grounded in three complementary theoretical perspectives. First, Flavell's theory of metacognition explains how learners think about and regulate their own thinking. The theory suggests that learners who understand their cognition are better able to direct learning efficiently. Second, resilience theory, especially Masten's developmental perspective, explains how protective factors help students adapt positively despite difficulty. Third, Zimmerman's self-regulated learning model explains achievement as the outcome of proactive planning, performance monitoring, and self-reflection. Taken together, these frameworks support the view that academic success is shaped not just by ability, but by how students manage learning and respond to challenge.

These theories also fit well together. Metacognition provides the awareness needed for effective self-regulation; self-regulation provides the behavior and strategy use needed for successful learning; resilience provides the emotional endurance needed to persist when the task becomes difficult. In that sense, the three variables are interconnected rather than isolated. A student who plans and monitors well may also feel more capable, and that sense of control can increase resilience. Likewise, a resilient student may remain engaged long enough to use metacognitive and self-regulatory strategies more effectively. This integrated view is strongly supported by school-based evidence showing overlapping relationships among metacognition, self-regulation, resilience, and achievement.

Conceptual Framework

The conceptual framework for this study is straightforward by role of metacognition, resilience and self regulated learning as predictors of academic achievement among secondary school students. The model also implies a combined predictive effect, where the three independent variables work together to explain variation in academic achievement among secondary school students. Metacognition and self-regulated learning are especially close because both involve planning, monitoring, and evaluation. Resilience contributes by sustaining engagement and effort under pressure. The combined model is useful because school achievement usually reflects multiple forces rather than a single cause.

Research Problem and Objectives

Despite the importance of academic achievement, many secondary school students still struggle to perform according to their ability. Differences in marks are often explained by



study habits, motivation, or home background, but these explanations do not fully capture the student's own ability to regulate learning and cope with setbacks. This creates a research gap: to what extent do metacognition, resilience, and self-regulated learning predict academic achievement among secondary school students?

5.1 Objectives of the study are:

1. To assess the level of metacognition, resilience, self-regulated learning among secondary school students.
2. To examine the relationship between metacognition, resilience, self-regulated learning and academic achievement.
3. To determine the combined predictive power of metacognition, resilience, and self-regulated learning on academic achievement.

Hypotheses of the study

1. There is no significant predictor of metacognition, resilience, self-regulated learning on academic achievement among secondary school students.
2. The relationship between metacognition, resilience, self-regulated learning is not significant predictors of academic achievement among secondary school students.
3. There is no correlation between metacognition, resilience, and self-regulated learning on academic achievement among secondary school students. These hypotheses are suitable for a descriptive survey because such a design can identify relationships and statistical prediction without manipulating variables.

Methodology: Descriptive Survey Method

Research Design

The descriptive survey method is appropriate because the study seeks to measure naturally occurring differences in metacognition, resilience, self-regulated learning, and academic achievement among secondary school students. This method is non-experimental and therefore suitable for examining relationships and prediction in real school settings. In previous school-based research, descriptive or correlational designs have been effectively used to study metacognition, self-regulation, and resilience among high school and senior secondary students.



Population and Sample

The population may consist of secondary school students enrolled in grades corresponding to lower or upper secondary education. A stratified random sample is preferable because it ensures representation by gender, grade level, and school type if needed. Earlier studies in similar areas have used samples ranging from 100 to 600 students, depending on scope and access. For a strong descriptive study, a sample of around 250–400 students would usually be sufficient for correlation and regression analysis.

Variables of the study

The independent variables are metacognition, resilience, and self-regulated learning. The dependent variable is academic achievement, usually measured through examination scores, grade point average, or school marks. Operationalizing achievement through actual school records is preferable because it reduces self-report bias and provides a direct indicator of performance.

Instruments of the study

The study can use standardized or adapted scales for metacognition, resilience, and self-regulated learning. Metacognition may be measured through a metacognitive awareness inventory or a similar tool that captures knowledge of cognition and regulation of cognition. Self-regulated learning can be assessed with a scale that measures planning, monitoring, control, and reflection. Resilience may be measured with an academic resilience scale adapted for adolescents. Academic achievement should be collected from school records. Reliability should be established through Cronbach's alpha, and validity can be supported through expert review and pilot testing.

Data Collection and Analysis

Data collection should begin with institutional permission, informed consent, and explanation to students about confidentiality and voluntary participation. After administering the tools, the researcher can calculate means, standard deviations, Pearson correlations, and multiple regression coefficients. Multiple regression is particularly suitable because it estimates the independent contribution of each predictor while controlling for the others. This matches the purpose of the study: to see whether metacognition, resilience, and self-regulated learning separately and jointly explain achievement differences.



Discussion and Educational Implications

Based on the literature, the expected pattern is positive: higher metacognition should relate to better academic achievement, stronger resilience should support persistence and better outcomes, and stronger self-regulated learning should predict improved performance. This expectation is consistent with longitudinal meta-analytic evidence on metacognition, scoping review evidence on SRL, and school-level studies on resilience. It is also consistent with the fact that metacognition and self-regulation are effective across secondary schooling when explicitly taught and embedded in lessons.

For teachers, the implication is clear: academic achievement is not improved only by covering the syllabus faster. Students also need guidance in thinking about their learning. Teachers can improve outcomes by modeling think-aloud strategies, using planning checklists, asking students to monitor understanding, and encouraging reflection after tasks. The EEF specifically notes that such approaches are effective when embedded in normal curriculum content and when teachers explicitly teach planning, monitoring, and evaluation.

For school counselors and administrators, the implication is that resilience-building should be part of school support services. Supportive teacher-student relationships, positive feedback, realistic goal setting, and encouragement after failure can help students remain academically engaged. The resilience literature shows that school-level and individual-level protective factors matter, and that self-regulation is one of the recurring protective factors associated with academic resilience.

For policy makers, these findings suggest that academic success initiatives should include learner strategy training, not only subject instruction. If students are taught how to learn, how to recover from setbacks, and how to monitor their progress, they are more likely to become independent learners. This is particularly valuable in secondary school because these years lay the foundation for higher education and employability.

Conclusion

Metacognition, resilience, and self-regulated learning are three closely related predictors of academic achievement among secondary school students. Metacognition helps students plan and monitor learning; self-regulated learning helps them act strategically; resilience helps them persist through difficulty. The literature strongly supports positive associations between these variables and academic success, and school-based evidence shows that they can be



meaningfully studied through a descriptive survey design. A well-designed study in this area can help teachers, counselors, and school leaders improve academic outcomes by strengthening the learner's own capacity to learn effectively and cope with challenge.

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