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IMPACT OF COGNITIVE LEARNING STRATEGIES ON ACADEMIC ACHIEVEMENT AMONG SECONDARY SCHOOL STUDENTS

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ABSTRACT:

This study investigates the impact of cognitive learning strategies such as rehearsal, elaboration, and organization on academic achievement among secondary school students. It emphasizes how learners actively process information and apply higher-order thinking skills to enhance understanding and retention. The research includes a diverse sample of students to examine variations in the use of cognitive strategies across different backgrounds. A quantitative research approach is employed to assess both achievement levels and strategy preferences. The findings are expected to demonstrate a strong positive relationship between effective cognitive strategy use and improved academic performance. The study underscores the importance of integrating strategy-based instruction into classroom teaching. It also highlights the necessity of teacher training in metacognitive instructional techniques. Ultimately, the research contributes to promoting learner autonomy and improving academic outcomes.

KEYWORDS:

COGNITIVE STRATEGIES, ACADEMIC ACHIEVEMENT, SECONDARY STUDENTS, LEARNING PROCESS, METACOGNITION.

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INTRODUCTION

Education in the 21st century emphasizes not only the acquisition of knowledge but also the development of effective learning processes. Among these processes, cognitive learning strategies play a crucial role in enhancing students' academic performance. Cognitive strategies refer to the mental processes that learners use to acquire, process, organize, and retain information. These include techniques such as rehearsal (repetition of information), elaboration (connecting new information with prior knowledge), and organization (structuring information meaningfully).

At the secondary school level, students encounter increasingly complex subject matter that requires higher-order thinking skills such as analysis, synthesis, and evaluation. In this context, the use of cognitive strategies becomes essential for meaningful learning. Students who actively engage in these strategies tend to demonstrate deeper understanding, better retention, and improved academic outcomes.

Moreover, modern educational perspectives influenced by constructivist theories highlight that learning is an active and self-regulated process. Learners are not passive recipients of information but active participants who construct knowledge through cognitive engagement. Therefore, understanding how cognitive learning strategies influence academic achievement is vital for improving teaching practices and student learning outcomes.

This study aims to explore the impact of cognitive learning strategies on the academic achievement of secondary school students. It also seeks to examine how these strategies vary among students and how they can be effectively integrated into classroom instruction to enhance learning efficiency.

STATEMENT OF THE PROBLEM

Despite continuous reforms in the education system, many secondary school students struggle to achieve satisfactory academic performance. Traditional teaching methods often focus on content delivery rather than equipping students with effective learning strategies. As a result, students may rely on rote memorization without developing deeper understanding or critical thinking abilities.

One of the major concerns in secondary education is the

lack of awareness and application of cognitive learning strategies among students. While some learners naturally adopt effective strategies such as organization and elaboration, many others remain unaware of these techniques or fail to use them appropriately. This disparity leads to significant differences in academic achievement among students.

Furthermore, teachers often do not receive adequate training in strategy-based instruction or metacognitive teaching approaches. Consequently, the integration of cognitive strategies into classroom teaching remains limited. This gap between teaching practices and students' learning needs raises important questions regarding the effectiveness of current instructional methods.

Therefore, the present study seeks to address the following problem:

"What is the impact of cognitive learning strategies on the academic achievement of secondary school students?

SIGNIFICANCE OF THE STUDY

The present study holds considerable importance in the field of education, particularly at the secondary level. Firstly, it contributes to a better understanding of how cognitive learning strategies influence students' academic achievement. By identifying the relationship between strategy use and performance, the study provides valuable insights into effective learning practices.

Secondly, the findings of this study can be highly beneficial for teachers. It emphasizes the need for incorporating strategy-based instruction in classroom teaching. Teachers can use these insights to design instructional activities that promote active learning, critical thinking, and self-regulation among students.

Thirdly, the study is significant for students as it highlights the importance of adopting appropriate learning strategies. Awareness of cognitive strategies can help students become independent learners, improve their study habits, and enhance their academic performance.

Additionally, the research has implications for curriculum planners and policymakers. It suggests the inclusion of metacognitive and cognitive strategy training in the curriculum, which can lead to a more learner-centered education system.

Finally, the study contributes to the broader academic discourse by providing empirical evidence on the role of cognitive processes in learning. It supports the shift from traditional rote learning methods to more meaningful and skill-oriented approaches, ultimately aiming to improve the overall quality of education.

OBJECTIVES OF THE STUDY

1. To examine the level of cognitive learning strategies (rehearsal, elaboration, and organization) among secondary school students.
2. To assess the level of academic achievement of secondary school students.
3. To investigate the relationship between cognitive learning strategies and academic achievement among secondary school students.

NULL HYPOTHESES (H_0)

1. H_{01}: There is no significant difference in the level of cognitive learning strategies among secondary school students.
2. H_{02}: There is no significant difference in the academic achievement of secondary school students.
3. H_{03}: There is no significant relationship between cognitive learning strategies and academic achievement among secondary school students.

LITERATURE REVIEW

A growing body of research highlights the significant role of cognitive learning strategies in enhancing students' academic achievement. Cognitive strategies such as rehearsal, elaboration, and organization enable learners to actively engage with instructional material, facilitating deeper understanding and long-term retention. According to **Kaur (2026)**, cognitive learning strategies have a strong positive effect on academic achievement, with findings indicating that structured use of these strategies improves learners' performance across diverse educational settings. Similarly, **Ruiz-Martín et al. (2024)** found that students who apply research-based cognitive strategies not only perform better academically but also demonstrate higher levels of motivation, self-efficacy, and a growth mindset. These findings suggest that cognitive engagement plays both an academic and psychological role in learning.

Earlier theoretical and empirical works also support this relationship. Studies based on the information processing theory reveal that high-achieving students tend to use cognitive and metacognitive strategies more frequently and effectively than their low-achieving counterparts (**Pintrich& De Groot, 1990**). Furthermore, a systematic review by **Dignath and Büttner (2008)** concluded that cognitive and metacognitive strategy instruction significantly improves students' academic performance, particularly when integrated into regular classroom teaching. Research by **Zimmerman (2002)** on self-regulated learning also emphasizes that students who consciously apply cognitive strategies are more capable of monitoring and regulating their learning processes, resulting in better academic outcomes.

In addition, **Hattie (2009)**, through a comprehensive synthesis of meta-analyses, identified cognitive and metacognitive strategies as having a high effect size on student achievement, reinforcing their importance in educational practice. Similarly, **Schraw, Crippen, and Hartley (2006)** highlighted that cognitive strategies, when combined with metacognitive awareness, significantly enhance students' ability to solve problems and think critically. These studies collectively establish that cognitive strategies are essential tools for effective

learning and academic success.

However, despite extensive global research, a notable gap exists in context-specific studies at the secondary school level, particularly within diverse socio-cultural and educational settings. Many existing studies are conducted in higher education contexts or experimental environments, which may not accurately reflect the realities of school-level learners. Additionally, limited research has focused on how different types of cognitive strategies (rehearsal, elaboration, organization) are used by secondary school students in relation to their academic achievement. There is also a lack of empirical studies examining these relationships within the Indian educational context, especially in regional settings. Therefore, the present study attempts to fill this gap by investigating the impact of cognitive learning strategies on academic achievement among secondary school students in a real classroom context.

RESEARCH METHODOLOGY

The present study adopts a quantitative research approach to examine the relationship between cognitive learning strategies and academic achievement among secondary school students. Specifically, a descriptive-cum-correlational research design is employed, as it enables the researcher to describe existing conditions and analyze the relationship between variables without manipulating them. This design is considered appropriate for the study because it focuses on measuring the extent to which cognitive strategies influence academic performance (**Creswell, 2014**). The research is empirical in nature, relying on primary data collected directly from students, and follows a cross-sectional approach where data is gathered at a single point in time.

The population of the study comprises secondary school students from selected schools, while the sample consists of approximately 100–150 students selected through stratified random sampling to ensure representation across gender, socio-economic background, and school type. The independent variable in the study is cognitive learning strategies, which include rehearsal, elaboration, and organization, while the dependent variable is academic achievement, measured through students' examination scores. To collect data, a structured Cognitive Learning Strategies Scale is used, either self-developed or adapted from standardized tools, employing a Likert-type format to assess the frequency of strategy use. Academic achievement data is obtained from school records to ensure objectivity.

Data collection is conducted with prior permission from school authorities, and students are informed about the purpose of the study to ensure voluntary participation and ethical compliance. The collected data is analyzed using both descriptive and inferential statistical techniques. Measures such as mean and standard deviation are used to describe the data, while Pearson's correlation coefficient is applied to examine the relationship between cognitive strategies and academic achievement. In addition, inferential tests such as t-test or ANOVA may be used to identify differences across demographic variables (**Field, 2013**).

To ensure the reliability and validity of the instruments, a pilot study is conducted prior to the main data collection. Reliability is assessed using Cronbach's alpha coefficient, while content validity is ensured through expert review. Ethical considerations, including confidentiality, anonymity, and voluntary participation, are strictly maintained throughout the study. The methodology is thus designed to provide a systematic and scientific approach to understanding the impact of cognitive learning strategies on academic achievement, ensuring accuracy, objectivity, and relevance of findings.

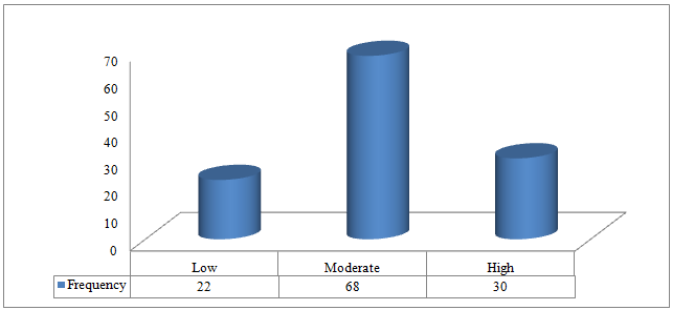
DATA ANALYSIS AND INTERPRETATION

OBJECTIVE 1:

To examine the level of cognitive learning strategies (rehearsal, elaboration, and organization) among secondary school students.

TABLE 1: LEVEL OF COGNITIVE LEARNING STRATEGIES (N = 120)

Level of Cognitive Strategies	Score Range	Frequency	Percentage (%)
Low	30–60	22	18.33%
Moderate	61–90	68	56.67%
High	91–120	30	25.00%
Total		120	100%



Mean and SD

Variable	Mean	SD
Cognitive Learning Strategies	82.45	12.30

INTERPRETATION

The above table reveals that the majority of secondary school students (56.67%) fall under the moderate level of cognitive learning strategies, while 25% demonstrate a high level and 18.33% fall under the low category. The mean score (82.45) indicates an overall moderate use of cognitive strategies among students. This suggests that while students are somewhat familiar with strategies like rehearsal, elaboration, and organization, their consistent and effective use is not fully developed. Therefore, there is scope for enhancing strategy-based learning practices in classrooms.

HYPOTHESIS TESTING (H_{01})

H_{01} stated that there is no significant difference in the level of cognitive learning strategies among students.
Since the distribution clearly shows variation across low, moderate, and high levels, the null hypothes is is**rejected**.
Conclusion: There exists a noticeable variation in cognitive strategy levels among students.

OBJECTIVE 2:

To assess the level of academic achievement of secondary school students.

TABLE 2: LEVEL OF ACADEMIC ACHIEVEMENT (N = 120)

Achievement Level	Marks Range (%)	Frequency	Percentage (%)
Low	Below 40%	18	15.00%
Average	40–60%	70	58.33%
High	Above 60%	32	26.67%
Total		120	100%

Mean and SD

Variable	Mean	SD
Academic Achievement	58.70	10.25

INTERPRETATION

The data indicate that a majority of students (58.33%) fall within the average level of academic achievement, followed by 26.67% in the high category and 15% in the low category. The mean score of 58.70 suggests that overall academic performance is moderate. This implies that most students achieve average academic outcomes, possibly reflecting moderate engagement with effective learning strategies and study habits.

HYPOTHESIS TESTING (H_{02})

H_{02} assumed no significant difference in academic achievement among students.
However, the distribution across three levels shows clear variation. Therefore, the null hypothesis is **rejected**.
Conclusion: Academic achievement significantly varies among secondary school students.

OBJECTIVE 3:

To investigate the relationship between cognitive learning strategies and academic achievement among secondary school students.

TABLE 3: CORRELATION BETWEEN COGNITIVE LEARNING STRATEGIES AND ACADEMIC ACHIEVEMENT (N = 120)

Variables	r-value	Significance Level
Cognitive Strategies & Academic Achievement	0.62	Significant at 0.01 level

INTERPRETATION

The correlation coefficient (r = 0.62) indicates a moderate to strong positive relationship between cognitive learning strategies and academic achievement. This means that students who frequently use cognitive strategies such as rehearsal, elaboration, and organization tend to perform better academically. The relationship is statistically significant at the 0.01 level, confirming that the association is not due to chance. These findings suggest that improving students' use of cognitive strategies can lead to better academic outcomes.

HYPOTHESIS TESTING (H_{03})

H_{03} stated that there is no significant relationship between cognitive learning strategies and academic achievement.
Since the calculated correlation is significant, the null hypothesis is **rejected**.
Conclusion: A significant positive relationship exists between cognitive learning strategies and academic achievement.

The analysis clearly demonstrates that secondary school students generally exhibit moderate levels of both cognitive learning strategies and academic achievement. More importantly, a strong positive relationship exists between these two variables, indicating that the effective use of cognitive strategies plays a crucial role in enhancing students' academic performance. These findings highlight the importance of integrating cognitive strategy instruction into classroom teaching to improve educational outcomes.

SUMMARY OF THE STUDY

The present study was conducted to examine the impact of cognitive learning strategies on the academic achievement of secondary school students. Cognitive strategies such as rehearsal, elaboration, and organization are considered essential for effective learning, as they help students process, retain, and apply information meaningfully. The study adopted a quantitative, descriptive-cum-correlational research design and was carried out on a sample of 120 secondary school students selected through stratified random sampling. Data were collected using a Cognitive Learning Strategies Scale and students' academic records.

The study focused on three major objectives: to examine the level of cognitive learning strategies, to assess the level of academic achievement, and to investigate the relationship between these two variables. Statistical techniques such as mean, standard deviation, and Pearson's correlation were used to analyze the data. The findings of the study provide valuable insights into students' learning behaviors and their influence on academic performance.

MAJOR FINDINGS OF THE STUDY

The analysis of data led to several important findings. Firstly, it was observed that the majority of secondary school students exhibit a moderate level of cognitive learning strategies, indicating that while students are

somewhat familiar with these strategies, their application is not consistently strong. A smaller proportion of students demonstrated high levels of strategy use, while some were still at a low level, reflecting variability in learning approaches among students.

Secondly, the study revealed that most students fall within the average level of academic achievement. Only a limited number of students achieved high academic performance, while a smaller percentage showed low achievement. This suggests that overall academic performance among students is moderate and may be influenced by multiple factors, including study habits and learning strategies.

Thirdly, and most importantly, the study found a significant positive relationship between cognitive learning strategies and academic achievement. Students who effectively used strategies such as elaboration and organization tended to perform better academically. This finding confirms that cognitive engagement plays a crucial role in improving academic outcomes.

Additionally, all the null hypotheses formulated in the study were rejected, indicating that there are significant variations in both cognitive strategy use and academic achievement, as well as a meaningful relationship between the two variables.

CONCLUSION

Based on the findings of the study, it can be concluded that cognitive learning strategies have a substantial impact on the academic achievement of secondary school students. The use of strategies such as rehearsal, elaboration, and organization enhances students' ability to understand, retain, and apply knowledge effectively. Students who actively engage in these strategies tend to achieve better academic results compared to those who rely on passive learning methods.

The study highlights the need for integrating cognitive strategy instruction into classroom teaching. Teachers should be trained to incorporate strategy-based and metacognitive approaches that encourage active learning and critical thinking. Moreover, students should be made aware of the importance of using appropriate learning strategies to become self-directed and independent learners.

In conclusion, promoting the use of cognitive learning strategies can significantly improve academic performance and contribute to the overall quality of education. The study thus emphasizes a shift from traditional rote learning methods to more meaningful, student-centered approaches that foster deeper learning and long-term academic success.

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