



# IMPACT OF CRITICAL THINKING ON STUDY SKILLS OF SECONDARY SCHOOL STUDENTS

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**Abstract:** This study aims to identify the impact of critical thinking on study skills of secondary school students through Ex-post facto method. The population of the research includes class IX students of Noida city. Mean, standard deviation, variance and t-test are the statistical techniques which helped in the analysis and interpretation of the result. It has been found that girls studying at secondary level have better mean scores on their reading text skills, preparing for test skills and time management skills as compared to boys. It can be said that secondary school students showing good critical thinking and poor critical thinking are different in terms of their reading text skills and students with good critical thinking have higher reading text skills as compared to students with poor critical thinking. It can also be concluded that boys and girls studying at secondary level are not different in terms of their critical thinking.

**Index Terms** - Critical thinking, study skill, secondary school.

## I. INTRODUCTION

Education is one of the basic needs of a person. It's a calculated strategy for helping people grow and flourish in all aspects of their being by obtaining the right set of skills, attitudes, and values. The term "thinking" encompasses various subsets and subtypes, including inductive, deductive, lateral, creative, convergent, divergent, and critical thinking. However, "critical thinking" is what truly important when it comes to selecting choices. Critical thinking is not a new concept, but in recent decades, the information overload has prompted a rush of urgency among educators to teach it to students of all ages and backgrounds.

Therefore, critical thinking entails going behind the surface and challenging the assumptions underlying the information being presented. It's a technique for determining if a given assertion is always true, sometimes true, partially true, or untrue. It's a fundamental part of just about any career path. It is a staple of secondary and tertiary education in every region of the world, and its importance to students only grows as they go through their academic careers. For this reason, critical thinking is essential in the classroom since it aids in the formation of the foundational ideas, principles, and theories that are essential to understanding the subject matter. Teachers who excel at their craft encourage students to think critically from the very beginning of their educational journey. The critical thinker's major role is to encourage students' introspection by posing questions that promote the kind of deep contemplation necessary for the development of new understanding. In this way, kids might form positive mental habits and approaches to learning. The assessments are structured similarly to encourage introspection and analysis.

Study abilities are essential skills for all fields of education, particularly advanced study, as identified by **Cottrell (2001)**. Skills in studying are connected to methods of thinking and, ultimately, to actions. Learning strategies, then, encompass both mental and physical abilities. Students can improve their existing study abilities through repeated practise.

According to the study conducted by **Gellin (2003)**, College students who engage in activities like interacting with faculty and peers, living on campus, and participating in college clubs or organisations improve their measured critical thinking skills by 0.14 standard as compared to other college students. **Walker (2003)** argued in favour of many instructional strategies that exist to foster thought, active learning and critical thinking in classrooms, some of which include case studies, discussion methods, written exercises, questioning techniques, and debates.

Using a longitudinal case study, **Miri et al. (2007)** demonstrated that higher order thinking tactics, such as dealing with real-world situations in class, encouraging open-ended class debates, and developing inquiry-oriented experiments, are effective in instilling critical thinking skills in students. **Abrami et al. (2008)** determined that critical thinking develops by exposing individuals to real-life challenges and other training criteria. **Blue et al. (2008)** showed that using a grading rubric for each assignment, along with peer review and assignment scaffolding, significantly increased students' critical thinking skills.

Two field experiments by **Helsdingen et al. (2010)** investigated the impact of critical thinking teaching on the acquisition and transfer of a complicated decision-making ability. The first study found that critical thinking teaching improved decision making during both training and testing. In the second trial, critical thinking instruction improved both choice outcomes and procedures, particularly the transfer to untrained problems. The findings show that critical thinking teaching increases decision-making strategy and grasp of domain-wide principles.

**Felicidad T. Villavicencio (2011)** revealed that teaching critical thinking to pupils improves their cognitive capabilities, making them less nervous and pessimistic, consequently increasing their academic performance. **Karmakar (2014)** argued that critical thinking abilities should be ingrained in students from the very start of their academic careers.

**Garcha & Kumar (2015)** investigated Cooperative Learning (the "Jigsaw" technique), and found that it improved students' critical thinking dispositions in secondary school. The findings demonstrated that critical thinking dispositions of students taught using the Jigsaw method of cooperative learning were much better than students taught using the standard method of teaching; Students' critical thinking attitudes did not differ by gender; no correlation between students' genders or groups (teaching technique) when it came to their critical thinking attitudes. Furthermore, **Roya Sherafat (2015)** found that critical thinking skills are strongly correlated with reasoning and the capacity to draw reasonable conclusions and has a positive impact on students' ability to succeed in the classroom.

**D. et al. (2016)** study showed that a strong link existed between how well private medical college students took notes, remembered things, and managed their time and how well they did in school.

In this way, researchers have focused on critical thinking dispositions and found a positive correlation between it and traits like confidence in one's own intelligence and ability, achievements, and approach to learning in response to new situations and challenges. Here, researchers tried to explore critical thinking and study skills of secondary school students and how much critical thinking affects study skills of the students.

## 1.1 Research Objectives

Following objectives were framed for the study:-

1. To study the status of critical thinking of secondary school students.
2. To explore study skills of secondary school students.
3. To compare critical thinking of boys and girls students studying at secondary level.
4. To compare study skills of boys and girls students studying at secondary level.
5. To study the impact of critical thinking on the study skills of secondary school students.

## 1.2 Research Hypotheses

Following hypotheses were framed for the study:-

**H<sub>01</sub>** - There is no significant difference in critical thinking of boys and girl students studying at secondary level.

**H<sub>02</sub>** - There is no significant difference in study skills of boys and girl students studying at secondary level.

**H<sub>03</sub>** - There is no significant difference in study skills of secondary level students showing good critical thinking and poor critical thinking.

## II. RESEARCH DESIGN

Depending upon the objectives of the study, **Ex-post facto research method** deemed appropriate and suitable and therefore, it is used in the present study. The population for the purpose of the present study consists of the total number of students of CBSE board secondary schools of Noida city. The sample of the study consisted of 70 students: 47 boys and 23 girls of 9<sup>th</sup> class selected through random cluster sampling technique.

Two standardized tools were used: Murthy Critical Thinking Scale (MCTS) developed by C.G. Venkatesha Murthy, (2015); and Study Skills Assessment Tool constructed by U. Vijayabanu and Rohit Prasanna Sri (2017).

## III. DATA ANALYSIS AND INTERPRETATIONS

It was found that there were 66 students having poor level of process of thinking, 4 students having average level of process of thinking and no student has good level of process of thinking. Similarly, there were 27 students having poor level of product of thinking, 24 students having average level of product of thinking and 19 students having good level of product of thinking. From this, it is clear that most of the secondary school students possess poor level of process of thinking as well as product of thinking. However, there are some students who possess good and average level of product of thinking.

When study skills were explored, most of the students were found at an average level of different dimensions of study skills and very few students were at poor level of different dimensions of study skills.

Table 1: Frequency of students present at each level of different dimensions of study skills in secondary level students

S.No.	Dimensions of study skills	No. of students		
		Good level (%)	Average level (%)	Poor level (%)
1	Reading text	18 (25.71)	44 (62.86)	8 (11.43)
2	Note taking	10 (14.28)	47 (67.14)	13 (18.57)
3	Studying	22 (31.42)	39 (55.71)	9 (12.86)
4	Memorizing	17 (24.28)	47 (67.14)	6 (8.57)
5	Preparing for test	14 (20)	51 (72.86)	5 (7.14)
6	Time management	10 (14.28)	42 (60)	18 (25.71)
7	Comprehension	14 (20)	49 (70)	7 (10)

Testing  $H_{01}$  - There is no significant difference in critical thinking of boys and girls students studying at secondary level.

Table 2: Scores of t-test on critical thinking of boys and girls students at secondary level

Group	N	Mean	Variance	t-value	Level of significance
Boys	47	3.32	4.40	1.88	Not significant at 0.05
Girls	23	4.35	5.15		

Table 2 indicates that t-value on critical thinking of boys and girls students at secondary level is 1.88 which is nonsignificant at 0.05 level of significance due to which hypothesis 1 was accepted and it can be interpreted that boys and girls students are not different in their critical thinking.

$H_{02}$ : There is no significant difference in study skills of boys and girls students studying at secondary level.

Table 3: Scores of t-test on study skills of boys and girls students at secondary level

Dimensions of study skills	No. of boy students	Mean score	No. of girl students	Mean score	t-value	Level of significance
Reading text	47	17.40	23	19.35	2.09	Significant at 0.05 level
Note taking	47	16.36	23	16.04	0.33	Non-significant at 0.05 level
Studying	47	18	23	18.87	0.81	Non-significant at 0.05 level
Memorizing	47	17.02	23	18.70	1.86	Non-significant at 0.05 level
Preparing for Test	47	16.19	23	18.56	2.68	Significant at 0.05 level
Time management	47	14.57	23	17.35	2.88	Significant at 0.05 level
Comprehension	47	17.17	23	17.56	0.42	Non-significant at 0.05 level

It can be seen from table 3 that t-values on note taking skills, studying skills, memorizing skills and comprehension skills of boys and girls students at secondary level are nonsignificant at 0.05 level of significance. Therefore, it can be interpreted that boys and girls students do not differ in their note taking skills, studying skills, memorizing skills and comprehension skills.

Table 3 also indicates that t-values on reading text skills, preparing for test skills and time management skills of boys and girls students at secondary level are significant at 0.05 level of significance. Therefore, it can be interpreted that boys and girls students are different in their reading text skills, preparing for tests skills and time management skills. Further, it can be said on the basis of the mean scores that girls have higher reading text skills, preparing for test skills and time management skills as compared to boys.

H<sub>0</sub>3: There is no significant difference in study skills of secondary level students showing good critical thinking and poor critical thinking.

Table 4: Scores of t-test on study skills of secondary level students showing good critical thinking and poor critical thinking

S.No	Dimensions of study skills	Mean score of good critical thinkers	Mean score of poor critical thinkers	t-value	Level of significance
1	Reading text	20.05	16.15	3.74	Significant at 0.05 level
2	Note taking	17	15.41	1.40	Non-significant at 0.05 level
3	Studying	18.95	17.33	1.30	Non-significant at 0.05 level
4	Memorizing	17.42	16.67	0.68	Non-significant at 0.05 level
5	Preparing for test	17.68	16.41	1.10	Non-significant at 0.05 level
6	Time management	15.84	15	0.67	Non-significant at 0.05 level
7	Comprehension	18.05	16.85	1.12	Non-significant at 0.05 level

It can be seen from table 4 that t-value on reading text skills of secondary level students showing good critical thinking and poor critical thinking is 3.74 which is significant at 0.05 level of significance. Therefore, it can be interpreted that students showing good critical thinking are different from the students showing poor critical thinking in terms of their reading text skills. Further, it can be said on the basis of the mean scores that

students showing good critical thinking have greater reading text skills as compared to the students showing poor critical thinking.

It can be also seen from Table 4 that t-values on note taking skills, studying skills, memorizing skills, preparing for tests skills, time management skills and comprehension skills of secondary level students showing good critical thinking and poor critical thinking are nonsignificant at 0.05 level of significance. Therefore, it can be interpreted that students showing good critical thinking are not different from the students showing poor critical thinking in terms of their note taking skills, studying skills, memorizing skills, preparing for test skills, time management skills and comprehension skills.

#### IV. FINDINGS

On the basis of analysis of data and interpretation of results, following findings were drawn:

1. Secondary school students are poor in terms of process of thinking and average in terms of product of thinking.
2. Secondary school students are mostly average on all the seven dimensions of study skills.
3. Boys and girls students studying at secondary level are not different in terms of their critical thinking.
4. Boys and girls students studying at secondary level are different in terms of their reading text skills, preparing for test skills and time management skills, in which girls have better mean scores on these skills as compared to boys.
5. Boys and girls students studying at secondary level are not different in terms of their note taking skills, studying skills, memorizing skills and comprehension skills.
6. Secondary school students showing good critical thinking and poor critical thinking are different in terms of their reading text skills in which students with good critical thinking have higher reading text skills as compared to students with poor critical thinking.
7. Secondary school students showing good critical thinking and poor critical thinking are not different in terms of their note taking skills, studying skills, memorizing skills, preparing for test skills, time management skills and comprehension skills.

#### V. EDUCATIONAL IMPLICATIONS

In accordance with the analysis done and interpretations made, it can be concluded that critical thinking and study skills play important role in students' life. Boys and girls do not differ in their critical thinking. There are three dimensions of study skills namely, reading text skills, preparing for test skills and time management skills, on which boys and girls students are different and girls scored better. Students showing good critical thinking are better in their reading text skills as compared to the students showing poor critical thinking. However, students showing good critical thinking are not significantly different from students showing poor critical thinking in terms of other dimensions of study skills.

The findings regarding the impact of critical thinking on study skills of secondary school students will be useful to different educationists, teachers and students also. The educational managers have to encourage critical thinking and so organise some workshop for reinforcing it. Include study skills and critical thinking training courses in education during school period to university. The school environment should provide such necessary study skills that enable youth to manage their own affairs.

The bond between critical thinking and study skills is strong. There is a strong need to understand the relationship between critical thinking ability and study skills so that we are able to make various interventions to cope with situations in which we are unable to adjust. There must be counselling cell in each school so that students would be able to maintain high level of critical thinking.

This study will help to know importance of critical thinking in one's life and need to frame different study skills in order to develop resilience power among school students. The need of pupils to develop their study skills is implicit in the case of autonomous study as an educational goal. Therefore, learner needs to employ study skills in order to learn efficiently and effectively.

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