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Research Paper

Level of Critical Thinking in relation to Academic Achievement of Senior Secondary Students of Dibrugarh District of Assam

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ABSTRACT

The present study aims to assess the level of critical thinking among senior secondary students and its relation to their academic achievement. In this study descriptive survey method was used. In order to collect the data Critical Thinking Scale (CTS-SLHP) developed by Prof. Hemant Lata Sharma and Priyamvada consisting of 85 items was employed. A sample of 101 Class XI students was selected using simple random sampling. For data analysis, statistical measures such as Mean, Standard Deviation and t-test were applied. The findings revealed that majority of the students demonstrated average level of critical thinking. Furthermore, a statistically significant difference was found in critical thinking levels between male and female students. The study also shows a significant positive relationship between critical thinking and academic achievement.

Keywords: *Critical Thinking, Academic Achievement, Senior Secondary Students, Descriptive Survey Method, Dibrugarh District.*

Education provides us knowledge and serves as key tool to move towards growth and sound thinking. Senior secondary phase of learning is one of the crucial stages of developing thinking ability and various types of skill. Critical thinking is a fundamental component of students' academic success. Critical thinking refers to the application of advanced intellectual skills such as logical reasoning, analytical processing, problem-solving, comprehension, scientific reasoning, creativity, and informed decision-making. In contemporary usage, critical thinking is largely interpreted as reasoning, and reasoning-centered thinking is often referred to commonsensical thinking **(Sarigoz, 2012)**. Critical thinking encompasses both deductive and inductive reasoning as well as the creative, analytical, and context-driven application of these skills to practical problem-solving **(Iyer, 2019).** To navigate the rapidly changing landscape of the 21st century, critical thinking must be promoted through conscious learning and the implementation of instructional methods that explicitly support its development **(Viado and Department 2023).** The application of critical thinking in education can facilitate students' comprehension of and engagement in analytical discourse and problem-solving activities **(Alhowail and Albaqami ,2024).** It is defined as a cognitive skill that involves the ability to interpret, infer, analyse, evaluate and conclude to make decisions **(Facione, 2011).**

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Significance of the Study

Critical thinking is an essential skill for senior secondary students as it plays a crucial role in shaping their academic success, personal development and future readiness. According to **Facione (1990),** critical thinking involves purposeful, self-regulatory judgment, which is necessary for effective learning and problem-solving. At this stage, students face complex concepts and diverse perspectives that demand deeper analysis and independent reasoning **(Paul and Elder, 2006).** Developing critical thinking skills enables them to engage with content more meaningfully, solve real-world problems, and become independent learners. Moreover, as they prepare for higher education and professional pathways, the ability to think critically empowers them to navigate challenges, evaluate information critically, and contribute responsibly to society. **Kuhn (1999)** emphasizes that critical thinking helps students make informed decisions and enhances their ability to evaluate arguments and evidence.

Critical Thinking has been one of the tools used in our daily life to solve some problems because it involves logical reasoning, interpreting, analyzing and evaluating information to enable one take reliable and valid decisions (**Chukwuyenum, 2013).** The study conducted by **(Tashtoush, M. A. et. al. 2025)** found that Artificial Intelligence Techniques can help to improve critical thinking skills and development of critical thinking is influenced by factors such as gender, GPA, and family background **(Alhowail and Albaqami 2024).**

Marthaliakirana, et al. (2022) and Lapuz and Fulgencio (2020) found in their study that Problem-Based Learning helps improve critical thinking. Studies also found that the use of critical thinking aspects on a module has a positive impact on students' academic achievement **(Wicaksana, et. al 2020).** Further (**Fitriani, et. al 2020)** found that enhancing critical thinking skills are associated with improved academic outcomes.

From the existing literature it can be observed that critical thinking plays a significant role in educational development. It is also observed that no prior studies have specifically addressed critical thinking levels among senior secondary students in Dibrugarh district of Assam. Therefore, the present study addresses that gap by exploring levels of critical thinking among senior secondary students and their correlation with academic achievement.

Objectives of the Study

1. To find out the level of Critical Thinking of senior secondary students of Dibrugarh District.
2. To find out level of Critical Thinking of senior secondary students of Dibrugarh district with regards to Gender.
3. To find out relationship between Critical Thinking and Academic Achievement of senior secondary students of Dibrugarh District.

Hypothesis

- **$H_0$1:** There exists no significant difference in level of Critical thinking among senior secondary students with regards to Gender.
- **Ho2:** There exists no significant difference between critical Thinking and academic achievement of senior secondary students.

RESEARCH METHODOLOGY

In the present study, descriptive cum survey method was used to measure the level of Critical Thinking among senior secondary students of Dibrugarh District.

Sample and sampling procedure of the study

The sample of the present study consisted of 101senior secondary students. The sample included 52 male and 49 female senior secondary students studying in class XI affiliated to CBSE Board. The researcher has selected the participants using simple random sampling from CBSE affiliated schools in Dibrugarh District of Assam.

Tools used in this study

For the present study the researcher has used the standardized tool Critical Thinking Scale (CTS-SLHP) developed by Prof. Hemant Lata Sharma and Priyamvada consisting of 85 items. The tool was developed to measure the level of critical thinking of students ranging from 14 to 18 years.

Statistical Techniques

In the present study, the data were analysed using statistical techniques such as percentage analysis and t-test.

RESULT AND DISCUSSION

To achieve the objectives of the present study percentage analysis has been utilized to assess the level of critical thinking and to compare the difference in critical thinking between male and female independent sample t-test was employed. Further, to explore the relationship between critical thinking and academic achievement, Pearson's correlation was applied. Objective wise analysis is presented below.

Objective 1: To find out the level of Critical Thinking of senior secondary students of Dibrugarh District.

Table no. 1. Showing levels of critical Thinking and percentage of students at each level

Range	Level of Critical Thinking	N	Percentage (%)
380 & above	Extremely High	12	11.88
349 to 379	High	13	12.87
320 to 348	Above Average	28	27.73
280 to 319	Average	40	39.60
254 to 279	Below Average	7	6.93
231 to 253	Low	1	0.99
230 & below	Extremely Low	0	0
Total		101	100

Fig. no.1. Showing levels of critical Thinking and percentage of students at each level

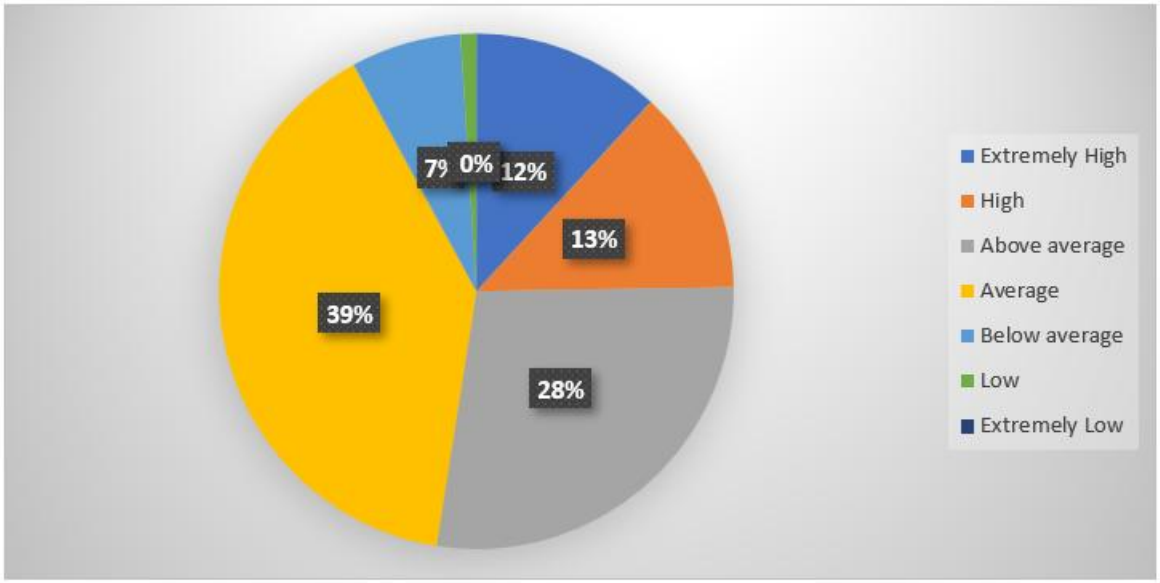


Table no. 1 and Fig. no.1 shows that 11.88% of the senior secondary students have extremely high level of critical thinking ,12.87% of the students have high level, 27.73% have above average level, 39.60% average level, 6.93% students have below average and .99% of the students have low level of critical thinking.

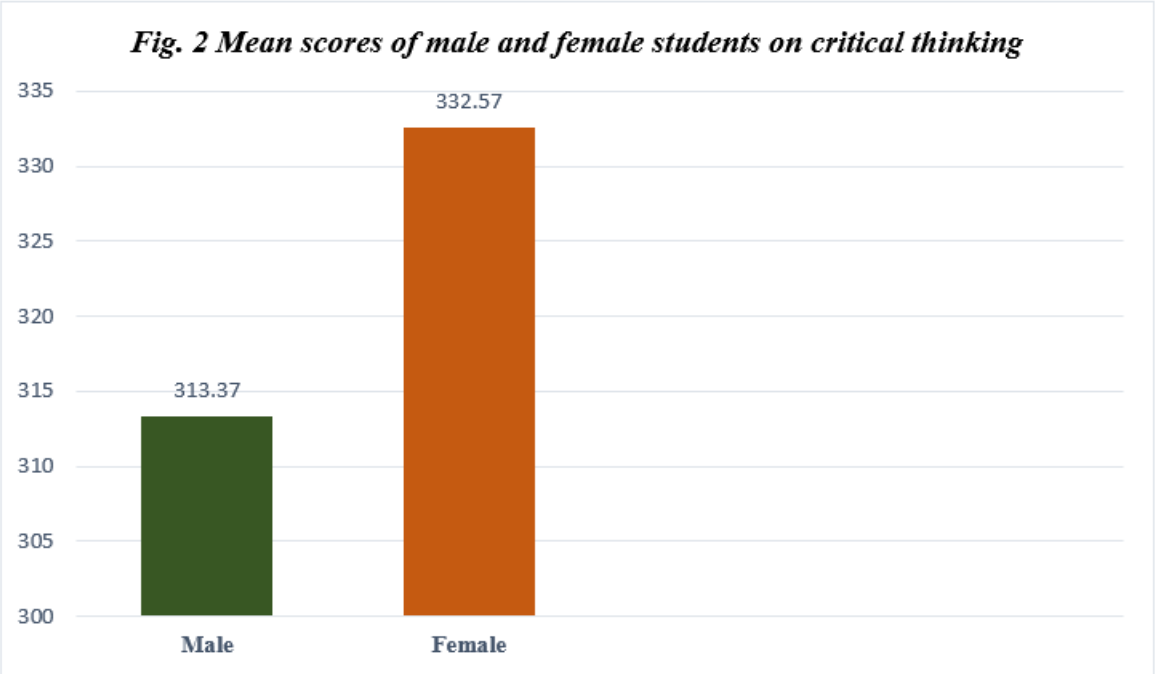
Therefore, it was seen that majority of the students (39.60%) have average level of critical thinking.

Objective 2: To find out level of Critical Thinking of senior secondary students of Dibrugarh district with regards to Gender.

$H_0$1: There exists no significant difference in level of Critical thinking among senior secondary students with regards to Gender.

Table no. 2 Showing N, Mean, SD, Sed, df, t-value, level of significance of critical thinking among senior secondary students of with regards to Gender

Gender	N	M	SD	df	t-value	Level of significance	Remarks
Male	52	313.37	41.67				Significant
Female	49	332.57	36.25	99	2.47	0.05	difference



Interpretation

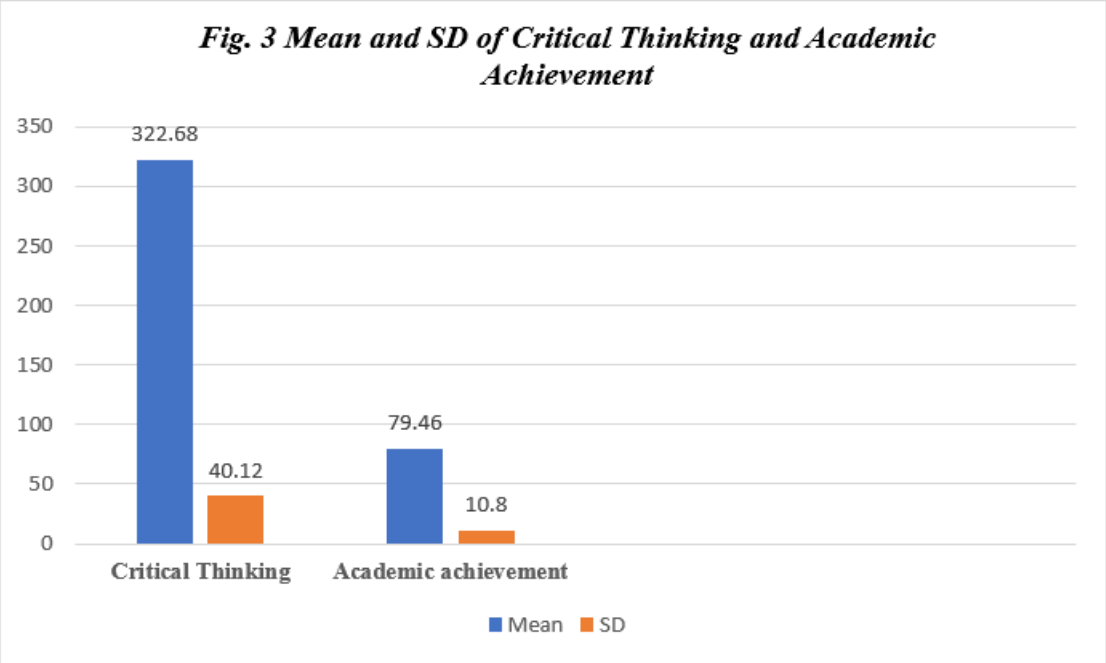
Table no. 2 and Fig. 2 shows that the calculated t-value 2.47 is greater than the critical t-value (1.984) at the 0.05 significance level with 99 (df) degrees of freedom. Therefore, the null hypothesis *"There exists no significant difference in level of Critical thinking of senior secondary students with regards to Gender"* is rejected. This can be stated that critical thinking scores between male and female students is statistically significant. Further, it was observed that mean scores of female students (332.57) is greater than the male students (313.37). Therefore, it can be concluded that female students show significantly higher critical Thinking compared to male students.

Objective 3: To find out relationship between Critical Thinking and academic achievement of senior secondary students of Dibrugarh District.

Ho2: There exists no significant difference between critical Thinking and academic achievement of senior secondary students.

Table no. 3 Showing Mean, SD, Correlation® and p-value (Significance) of Critical Thinking and Academic Achievement

Variable	N	Mean	SD	Correlation®	p-value (Significance)
Critical Thinking	101	322.68	40.12	.291	0.003
Academic achievement	101	79.46	10.80		



Interpretation

Table no. 3 and Fig.3 shows the descriptive statistics for critical thinking and academic achievement of students along with the Pearson correlation result. The correlation analysis shows a significant positive correlation between critical thinking and academic achievement ($r=0.291$, $p=0.003$). As the p-value is less than 0.05, the result is statistically significant and the formulated hypothesis *"There exists no significant difference between critical Thinking and academic achievement of senior secondary students"* is rejected. This indicates that students with better critical thinking tend to achieve higher academic performance.

CONCLUSION

The present study revealed that majority of the students have average level of critical thinking. This is consistent with the findings of **(Pandey and Pandey 2019)**. It was also found that there is significant difference in level of Critical thinking between male and female senior secondary students. The study further revealed that female students demonstrated significantly higher critical thinking than male students. The present study also highlighted significant difference between critical Thinking and academic achievement. This finding is consistent with the findings of **Shahzadi and Khan (2020)** and **Akpur, U. (2020).** This consistency suggests that critical thinking plays a crucial role in academic performance of the students and factors such as of collaborative teaching methods and active classroom engagement **(Alhowail and Albaqami 2024)**, problem-based learning **(Lapuz and Fulgencio, 2020**) should be emphasized to develop critical thinking of students. The study found positive correlation between critical thinking and academic achievement; therefore, it can be concluded that students with better critical thinking perform better academically.

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Conflict of Interest

The author(s) declared no conflict of interest.

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