ISSN: 2584-0231(Online)
International Journal of Multidisciplinary Research in Arts, Science and Technology
© IJMRAST | Vol. 2 | Issue 5 | May 2024
Available online at: https://ijmrast.com
DOI: https://doi.org/10.61778/ijmrast.v2i5.55

Analysing Critical Thinking Competencies of Rajiv Gandhi University Students in Arunachal Pradesh: An Empirical Survey

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ABSTRACT:

Critical thinking skills falls under the 4Cs of 21st century skills. Critical thinking involves approaching problems by analysing the 'how' and 'why' of an issue. This cognitive ability enables one to compare evidence, assess assertions, to come to sound conclusions. The purpose of the study was to investigate university students' critical thinking competencies. In this study, descriptive survey method is used. Critical Thinking Scale by Sharma and Priyamvada (2022) was used to collect data. The study revealed no significant difference in the students critical thinking abilities between male and female, rural and urban, or from nuclear or mixed families.

Keywords*: Critical thinking, Skills, University*

1. Introduction

The purpose of education is more than just imparting of information only. It has a wider scope of enabling learners to acquire, integrate and construct knowledge. The modern education system prioritizes student-centred approach, where students are proactive learners, who participates in classroom activities enthusiastically, on different socio, political and economic matters. The use of such approaches in the classroom calls for problem-based learning, inquiry-based learning involving the techniques of questioning, discussion, debate, brainstorming to enable learners to construct knowledge independently and critically analyse social issues enabling them to propose realistic solutions or reforms towards the issue. The participation of learners in such classrooms stimulates the improvement of critical thinking among the learners. The process of thinking critically starts with students' own logical reasons to analyse the questions in hand then give a logical conclusion based on evidences **(Sharma and Priyamvada, 2022)**.

Critical thinking constitutes the cognitive ability of the application of logical and analytical abilities to effectively solve problems. It enables students to discover truth or discern the legitimacy of claims by distinguishing between facts and opinions and express one's ideas and views with a rational attitude. It thus,

enables learners acquire the ability to discover knowledge for themselves. By asking questions, learners develop a sense of engagement with the world around them. Subsequently, they will be able to assist in the dissemination of their information to their peers, enabling others in development of their critical thinking skills.

The **APA Delphi Report (1990)** provides with one of the most acceptable definition of critical thinking - **"**Critical thinking is the process of purposeful, self-regulatory judgement which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgement is based**" (Facione, 1990).**

Characteristics of critical thinking (Facione, 2015):

- Curiosity over different socio-political issues,
- Desire to acquire and remain well-informed,
- Readiness to apply critical thinking,
- Confidence in the methods of logical investigation,
- Belief in one's own capacity for reasoning,
- Willingness to consider different perspectives,
- Adaptability in considering different alternatives and opinions,
- Fair-mindedness in appraising reasoning,
- Integrity in confronting one's own biases, prejudices, stereotypes, or self- centred tendencies,
- Caution in suspending, forming, or modifying judgments,
- Readiness to re-evaluate and amend perspectives when sincere introspection indicates that change is justified.

Critical thinking involves the process of creating independent individual actors who can think separately and independently. It is the application of sound reasoning procedures and mental effort in order to solve problems. Thinking critically involves not only knowing the basics of logic and argumentation but also using that knowledge regularly **(Haber, 2020)**.

The National Education Policy (2020) also emphasizes on the development of critical thinking under the section ***Principles of Policy*** stating the need for creativity and critical thinking to be stipulated to cultivate rational decision- making and innovation in learners (pp. 5). The policy has recommended to reduce the curriculum content to make space for critical thinking focussing on key concepts, ideas, applications, and problem-solving (pp.12).

2. Literature review

The roots of critical thinking lies in the teaching practice and vision of Socrates. According to Socrates, knowledge and insight do not originate from individuals who possess power and occupy prominent positions. He emphasised the significance of posing deep questions that thoroughly examine our thoughts before accepting things as credible. The technique he employed to ask questions is now recognised as "Socratic Questioning" and is widely regarded as the most prominent teaching strategy. Subsequently, Plato, Aristotle and the Greek sceptics made similar argument that things are not always same as they actually are

but a well- trained mind can be able to break through the way things seems and the way they actually are. The **Advancement of Learning (1895**) by Francis Bacon is considered one of the earliest literature in critical thinking. He argued for the importance of knowledge acquired through study of the world. He established the foundation for modern science by prioritising the methods of gathering information **(Paul, et al. 1997). Dewey (1916)** promoted critical thinking in education Critical thinking is a reflective process that involves understanding the problem, observing conditions, rationally elaborating a conclusion, and experimental testing He underlined that the educational system must teach pupils critical thinking to prepare them for the world that is constantly in the state of evolution **(Saeger, 2014).** In his study of critical thinking**, Glaser (1941)** defined critical thinking as involving three things – the tendency to think thoughtfully about problems and subjects that are within the scope of one's experience; knowledge of logical reasoning inquiry methods, and the skills of putting the methods into practice.

There are some empirical studies have investigated the development of critical thinking skills and abilities. **O'Hare and McGuinness (2009)** found that third year students at an Irish University had significantly higher critical thinking scores than first year students. The authors speculated that going to university exerts an independent effect on the development of critical thinking. In a meta-analysis of eight studies between 1991 to 2000, **Gellin (2003)** in his study found that college students who interacted in the classroom learning with teachers and peers , lived on campus, and participated in different events of the college had higher critical thinking skills by 0.14 standard deviations compared to students who did not participate in such activities.

3. Significance of the study

It is impossible to separate the development of critical thinking skills from educational institutions **(Kim and Choi, 2018**), particularly from institutions of higher education **(Collier and Morgan, 2008),** which are empowered to address challenges related to the development of human resources through the implementation of teaching and learning content. As part of student's placement in esteemed workplace which is getting highly competitive, it is becoming increasingly important for the students to master the core skills like critical thinking. The researcher felt that a study on the critical thinking abilities of university students was necessary, given the underlying significance of the development of these skills among students from higher education institutions. The current study will be very important in the context of Arunachal Pradesh, as students in this state are disadvantaged than students in other states of India in terms of their geographic location and lack of resources.

4. Objectives of the study

The following are the objectives of the study:

1. To study the status of critical thinking among the students of Rajiv Gandhi University.
2. To study the status of cognitive and affective dispositions among the students of Rajiv Gandhi University.
3. To compare the status of critical thinking among the students of Rajiv Gandhi University with regard to gender.

4. To compare the status of critical thinking among the students of Rajiv Gandhi University with regard to locality.
5. To compare the status of critical thinking among the students of Rajiv Gandhi University with regard to type of family.

5. Hypotheses of the study

The hypotheses of the study are as follows

1. There exists significant mean difference in the level of critical thinking among the students of Rajiv Gandhi University with regard to gender.
2. There exists significant mean difference in the level of critical thinking among the students of Rajiv Gandhi University with regard to locality.
3. There exists significant mean difference in the level of critical thinking among the students of Rajiv Gandhi University with regard to type of family.

6. Research Method

In this study, descriptive survey method is used. The students of Rajiv Gandhi University constitute the population of the study. The sample of this research comprised of 80 Post graduate students from the Department of Education studying in Rajiv Gandhi University, Arunachal Pradesh. Purposive sampling technique is used in this study. The data was collected by using Critical Thinking Scale by **Sharma and Priyamvada (2022)** comprising of 85 items. This scale is based on "The Delphi Report, 1990" of critical thinking and its cognitive and affective dispositions. The dimensions of the scale are – Cognitive Dispositions and Affective Dispositions. The Cognitive Dispositions comprises the following sub - dimensions – Analysis, Inference, Evaluation and Self-regulation. Whereas, the Affective Dispositions comprises the sub-dimensions – Ethics and Values, Self-confidence, Inquisitiveness and Open mindedness.

7. Results and Discussions

Table 1

Test of Normal distribution of data

Tests of Normal Distribution			
Critical Thinking	**Kolmogorov-Smirnov[a]**		
	Statistic	df	Sig.
	.059	80	.200

Based on the Table 1, it was found that the p value of the critical thinking scores with the Kolmogorov-Smirnov test was > 0.05, which means that the data was normally distributed.

Objective 1: To study the status of critical thinking among the students of Rajiv Gandhi University.

Table 2

Status of Critical Thinking

Range	*Status of Critical Thinking*	*No. of students*	*Percentage*
380 & above	Extremely High	1	1%
349 to 379	High	12	15%
320 to 348	Above Average	30	38%
280 to 319	Average	31	39%
254 to 279	Below Average	5	6%
231 to 253	Low	1	1%
230 & below	Extremely Low	0	0%
	TOTAL	80	100%

The outcome of the study revealed that only 1% of students were found to exhibit extremely high critical thinking skills, 15% of students were found to have high critical thinking skills, 38% of students were found to have above average critical thinking skills, 31% at average level, 5% having critical thinking skills at below average level, and only 1% having low critical thinking skills.

Objective 2: To study the status of cognitive and affective dispositions among the students of Rajiv Gandhi University.

Table 3

Level of cognitive and affective dispositions

Cognitive Dispositions Range	*No. of students*	*Percentage*	*Affective Dispositions*	*No. of students*	*Percentage*	*Level of Critical Thinking*
160 & above	3	4%	216 & above	2	3%	Extremely High
148 to 159	12	15%	201 to 215	20	25%	High
136 to 147	20	25%	185 to 200	24	30%	Above Average
119 to 135	36	45%	164 to 184	24	30%	Average
106 to 118	9	11%	146 to 163	9	11%	Below Average
95 to 105	0	0%	132 to 145	1	1%	Low
94 & below	0	0%	131 &below	0	0%	Extremely Low

With regard to Cognitive dispositions, it was found that 4% of students exhibited extremely high cognitive dispositions, 15% of students exhibiting high cognitive dispositions, 25% students exhibiting cognitive dispositions at above average level, 45% at average level, 11% at below average level. With regard to affective dispositions, it was found that 3% of students exhibited extremely high affective dispositions, 25% of students exhibiting high affective dispositions, 30% of students exhibiting affective dispositions at Above average and average level, 11% of students at below average level and 1% of students exhibiting low affective dispositions.

Objective No. 3: To compare the status of critical thinking among the students of Rajiv Gandhi University with regard to gender.

H_0 1: There exists significant mean difference in the level of critical thinking among the students of Rajiv Gandhi University with regard to gender.

Table 4

Comparison in the status of critical thinking with regard to gender.

Gender	Number (N)	Mean	S.D	df	't' value	p value
Male	22	315.95	29.35	78	1.07	.290
Female	58	323.74	27. 89			

Table 4 revealed that [$t(78) = 1.07$, $p = .290$] in scores for Male (M = 315.95, SD = 29.35) and Female (M =323.74, SD =27.89), not significant at 0.05 level. T There exists significant mean difference in the level of critical thinking among the students of Rajiv Gandhi University with regard to gender is not sustained.

Objective No. 4: There exists significant mean difference in the level of critical thinking among the students of Rajiv Gandhi University with regard to locality.

H_0 2: There exists significant mean difference in the level of critical thinking among the students of Rajiv Gandhi University with regard to locality.

Table 5

Comparison in the status of critical thinking with regard to locality

Locality	Number (N)	Mean	S.D	df	't' value	p value
Rural	58	321.60	30.87	78	.002	.998
Urban	22	321.59	20.81			

Table 5 revealed that [$t(78) = .002$, $p = .998$] in scores for Rural (M = 321.6, SD = 30.87) and Urban (M =321.59, SD =20.81), not significant at 0.05 level. There exists significant mean difference in the level of critical thinking among the students of Rajiv Gandhi University with regard to locality is rejected.

Objective No. 5: To compare the status of critical thinking among the students of Rajiv Gandhi University with regard to type of family

H_0 3: There exists significant mean difference in the level of critical thinking among the students of Rajiv Gandhi University with regard to type of family

Table 6

Comparison in the status of critical thinking with regard to locality

Type of family	Number (N)	Mean	S.D	df	't' value	p value
Nuclear	51	317.22	28.14	78	1.86	.066
Joint	29	329.31	27.45			

Table 6 revealed that [$t(78) = 1.86$, $p = .066$] in scores for Nuclear family (M = 317.22, SD = 28.14) and Joint family (M =329.31, SD =27.45), not significant at 0.05 level. Thus, the formulated null hypothesis that "There exists significant mean difference in the level of critical thinking among the students of Rajiv Gandhi University with regard to type of family" is discarded.

8. Discussion

This study is in line with the findings of **Marni et, al. (2020)**, who found no significant difference in students' critical thinking skills with regard to gender. Several studies have shown that male students' critical thinking skills are higher than female students' critical thinking skills **(Atmatzidou & Demetriadis, 2016; Azar, 2010; Liu et al., 2019; Piaw, 2014; Preiss et al., 2013; Verawati et al., 2010).** However, the study contrasts the findings of **Tamam et al. (2021)**, in which female students were found to outperformed male students in critical thinking. In context of students belonging from Rajiv Gandhi University, situated in Arunachal Pradesh, the sample of the students constitutes from the region of Arunachal Pradesh and Assam. With regard to gender, the study did not find any significant difference among the students. It is therefore, deduced that the different agencies of the society like family, educational institutes, playing a key role in the enhancement of thinking skills provides for equal provisions, practices and environment to the students, thereby resulting in no significant difference in the critical thinking skills among the students. According to the ***Rajiv Gandhi University, Academic and Campus Development Report for Ministry of Education, Government of India*** **(2021)** – Rajiv Gandhi University, Arunachal Pradesh has facilitated for the use of creative learning techniques and methods by aligning with 'Bloom's Taxonomy' in and creating opportunities for "learning by doing" which helps in students comprehensive understanding of the concepts. The methods adopted are student-centric encompassing a wide range of activities and opportunities such as provision for offline-online classes, power point presentations, interactive lectures, role play, group discussions, seminars, industrial visits, field visits, project work, internship, workshops, training programs etc. The findings of the study with regard to critical thinking skills between students from rural and urban locality, it is found that there lies no significant difference between the critical thinking competencies of

rural and urban area. This finding is in contrast with the studies conducted by **Tanti et al. (2020)** in which urban students outperformed rural students in critical thinking skills, whereas, **Tamam et al. (2021)** in the study concluded that the rural students outperformed urban students in critical thinking skills. This observation may be attributed to the phenomenon of students of rural area migrating to urban areas or sending of children to schools situated in urban areas for better education. The advent of exposure to similar educational environment in terms of teachers, infrastructure, educational methods to all these students might contribute to no significant difference among the students with regard to critical thinking skill. With regard to type of family, no significant difference was found in critical thinking between the students from nuclear and joint family. This might be because the family environments in both nuclear and joint family be cordial for the growth of critical thinking skills among the students. The external factor like home environment also has influence on the development of cognitive capacities. So, a suitable, cordial and motivating family environment in both nuclear and joint family would yield in development of critical thinking competencies among the learners.

8. Conclusion

The study can serve as a reference for students at universities to learn the status of critical thinking skills that they possess. Teachers will be able to evaluate the pedagogy that is being used in the classroom with the assistance of the findings of the study concerning the status of critical thinking skills that cover both cognitive and affective dispositions. The study is also insightful to the administration of the university, who may contribute to the evaluation of the contents of the existing curriculum and the creation of the curriculum in a manner that encourages critical thinking in order to address the recommendations of NEP-2020 on higher cognitive skills.

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Cite this Article

***Aishorya Bharati, Dr. Nisanth PM, "Analysing Critical Thinking Competencies of Rajiv Gandhi University Students in Arunachal Pradesh: An Empirical Survey"**, International Journal of Multidisciplinary Research in Arts, Science and Technology (IJMRAST), ISSN: 2584-0231, Volume 2, Issue 5, pp. 01-09, May 2024.*

***Journal URL:** https://ijmrast.com/*

***DOI:** https://doi.org/10.61778/ijmrast.v2i5.55*