

USE OF CRITICAL THINKING SKILLS BY FRESHMAN YEAR STUDENTS IN COLLEGES OF HOOGHLY DISTRICT

Chayan Adak* Bijoy Krishna Panda Mukti Pada Sinha*****

1. Introduction

Around 500 B.C.E in ancient Greece, Socrates has portended to be first preceptor of critical thinking (Rozgay-Miller, 2009). Later on, philosopher John Dewey coined the term 'critical thinking' (CT) as a scientific attitude of mind to achieve an educational goal (Dewey, 1910). Also, he stated the term as 'reflective thinking' as an effective process to think carefully about an activity based on the reasons or grounds (Dewey, 1933). Many recent studies upon CT suggested that the concept of CT has been updated and gone far from its traditional one in the teaching-learning system (Irfaner, 2006). Thus, CT is a mean of a capability to dissect facts and experiences in an unbiased manner and the path to overcome the complexities and simplify to grasp information in life (Demirhan et al., 2011). It has grounded in the concept of rationality, which could be comprehended through the combination of epistemic rationality and instrumental rationality (Stanovich&Stanovich, 2010). The World Health Organization (WHO) identified critical thinking skill (CTS) as a key competency to solve higher level complexities in 1999. According to WHO, Critical thinking, the capability to think and imagine transparently which enables one to behave reflectively in problematic situations to solve the problems immediately and helps to create many ways to unravel a familiar problem. Critical thinking ability (CTA) is taken as a core life skill in this current research article.

On the other hand, it can be assumed that Undergraduate students of India are most of them fall under the later adolescent stage (18-21 years) of development which is the most important stage of growth and development (Vygotsky, 1931). Physiological as well as social and psychological changes did happen during this sensitive stage of development (Spear, 2000). It is the period when almost all the students started to enroll in higher education where students need to learn such skills like CT and take the responsibilities of the society. Along with the societal synthesis of educational aim including values, morality, democracy

* Ph.D. Scholar, Department of Education,, Jadavpur University, Kolkata.

** Assistant professor, Department of Education, Jadavpur University, Kolkata.

*** Professor, Department of Education, Jadavpur University, Kolkata.

and secularism, higher education system in India especially in West Bengal, has always purported to nurture leadership quality and critical thinking among its youngsters of which reflection we have seen in its glorious history of academic, political and scientific expedition. But, after the advent of technology-assisted ready-to-go facilities, young people have become so reluctant to engage their problem-solving abilities especially critical thinking skills in dealing with even simple problems which is making the entire generation dependent so deeply on the state-of-the art technologies than their own synthesizing minds. The present body of work gazed in the practice of critical thinking skills by students in West Bengal at the very onset of higher education i.e., freshman year of college.

2. Literature review

Sarigoz (2012) conducted a study to investigate critical thinking skill of high school students and the findings revealed that CTA of students varied between different school setups. Another study was done by Abdi (2012) to examine the relationship between CT and different thinking styles of students which was ended up with positive and significant correlation between CT and different thinking styles of students. A similar study was conducted by Abu-Dabat (2013), to find out the association between CTS and achievement among primary and secondary level of Arabic students. But the findings of the study could not find any statistical significant association between primary and secondary level student in respect to their CTA. Again, Santos (2017) designed a study to find out the relation between CT and science education and the study shown strong relationship between CT and science education. Belecina&Ocampo (2018) tried to investigate the effect of problematic situations on enhancing CTA of students and findings showed that CTS of students has improved after facing those problematic situations. Mahmoud (2012) tested the relation between learning styles and CT of the undergraduate nursing students in respect of academic performance in 2012. Results revealed no significant relationship between learning styles and CT of nursing students in respect of their academic performance. Ezeh (2017) was aimed to find the influence of adolescent peer status on CT and the study was ended up with significant influence of peer status on CTS.

It was highlighted in many research studies that academic performance and demographic identifiers did play variation in exercising critical thinking by young students. Few studies mentioned about the role of external factors like curriculum design, social reinforcements (Purvis, 2009), nature of habitat and internal factors like personal characteristics on critical thinking skill to a great extent. In view of the earlier literature analysis, it evoked in the researcher's mind that how well freshman year college students in West Bengal are equipped with and practice critical thinking while they enter the arena

of higher education which may potentially lead to a successful career and upbringing.

3. Objectives

Objectives of this present study were to see how far freshman year college students in Hooghly district practice critical thinking skills and to explore the variation in critical thinking skill among freshman year college students in terms of demographic identifiers viz. gender, habitat, medium of curricular instruction and stream of study.

4. Methodology

Cross-sectional survey framework was designed to assess the critical thinking skill among the freshman year college students of Hooghly district. Convenient sampling technique was used to collect relevant data. Entire freshman year college students of Hooghly district were considered as the population of the study whereas 300 freshman year students from various colleges of Hooghly district were selected as sample. CTS were observing as the dependent variable and gender, habitat, medium of instruction and higher education stream were considered as the independent variables of the study. As in the study the CTS considered as a core life skill therefore considered questions related to CTS directed by the developer acquired from the Life Skills Scale of Vranda. M. N (2009). Further, Reliability and Validity of the modified questionnaire were checked and assured by the researcher before implementation of the framed questionnaire. The data was analyzed through descriptive statistics in MS Excel and t-test was computed using IBM SPSS version 20 after ensuring the normality of data using one-sample K-S test (value = 0.85).

5. Results

Table 1: Showing mean wise distribution of overall CT

Variable	Level	N	Mean	SD
Gender	Male	168	34.35	2.342
	Female	132	33.36	2.713
Habitat	Rural	179	34.00	2.433
	Urban	121	33.79	2.732
Stream	Arts	185	33.35	2.336
	Science	115	34.83	2.636
Medium	Bengali	190	34.03	2.420
	English	110	33.73	2.776

Out of total 300 samples, Males and Females were 168 and 132, mean of them were 34.35 and 33.36 respectively. Students from Rural and Urban areas were 179 and 121, mean of them were 34.00 and 33.79 respectively. Students from Arts and Science streams were 185 and 115, mean of them were 33.35 and 34.83 respectively. Students from Bengali and English mediums were 190 and 110, mean of them were 34.03 and 33.73 respectively.

Figure 1: Showing mean wise distribution of data

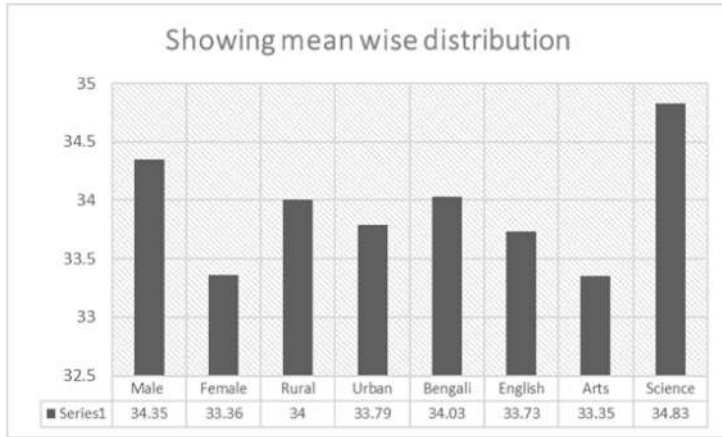


Table 2: Showing hypotheses testing in accordance to framed hypotheses statistically

Hypothesis	Variable Levels	Mean	t-value	df	Sig. (2-tailed)	Remarks*	Hypotheses testing (Null/H ₀) (0.05 level)
H ₀ : Male _{CT} = Female _{CT}	Male	34.35	3.380	298	0.001	*S (p<0.05)	Rejected
	Female	33.36					
H ₀ : Rural _{CT} = Urban _{CT}	Rural	34.00	0.686	298	0.493	*NS (p>0.05)	Failed to reject
	Urban	33.79					
H ₀ : Arts _{CT} = Science _{CT}	Arts	33.35	5.108	298	0.000	*S (p<0.05)	Rejected
	Science	34.83					
H ₀ : Bengali _{CT} = English _{CT}	Bengali	34.03	0.977	298	0.330	*NS (p>0.05)	Failed to reject
	English	33.73					

*S - Significant, *NS - Not Significant

Significant findings emerged through the present study would make to clarify our understanding about CTA of first-year undergraduate students in Hooghly district as follows-

Research question 1 - How far freshman year college students in Hooghly district use critical thinking skill in their daily activities?

Descriptive statistics yielded that out of total 300 samples, Males and Females were 168 and 132, mean of them were 34.35 and 33.36 respectively. Students from Rural and Urban areas were 179 and 121, mean of them were 34.00 and 33.79 respectively. Students from Arts and Science streams were 185 and 115, mean of them were 33.35 and 34.83 respectively. Students from Bengali and English mediums were 190 and 110, mean of them were 34.03 and 33.73 respectively.

Research question 2 - How different demographic identifiers affect freshman year college students' critical thinking skills in Hooghly district of West Bengal?

- F Male students appeared with greater mean score than their other counterpart and the found difference was statistically significant.
- F Students from rural areas had greater mean score than urban students in CTS scale but found difference was not statistically significant.
- F Arts streamed students scored lower mean than science streamed students, which was founded to be significant.
- F Students from Bengali medium showed greater mean score than students whose medium of instruction was English and also that difference was not to be found statistically significant.

6. Discussion

Modern technological innovations and massive upliftment in Information and Communication Technology (ICT) has made people's life easier in one side but on the other side it has made people's life complex as well. Nowadays, an individual has to simulate a role of a multi tasker and he/she has to perform various activities within a finite time. UNESCO stated in their 'Futures of Education' (2021) that artificial intelligence has been taking the place of human intelligence, that would be ended up in a major crisis on human resources. They have focused on accruing some specific skills which might help an individual to be adopted with the rapidly changing world. With this rapid material change, the human values are changing continuously so does the educational aims. These days high standard academic qualifications might useless if one hasn't capable with appropriate life skills (Dixit & Ahmed, 2013) and the ability to think and observe common as well as complex information and scenarios can create many different ways to process that information and solve the problem in a unique and proper way. Therefore, thinking divergently and critically has considered as a core life skill by WHO, which has to be acquired by every individual to cope with the modern life complexities. Present study was aiming to access the CTS of First-Year Undergraduate students in Hooghly district.

Statistical analysis revealed that male students appeared with greater mean score than their other counterpart, but other researchers did not find any relation of gender with dimensions of CT (Semic, 2010; Myers & Dyer, 2006; Bagheri&Ghanizadah, 2016). Some other studies revealed that females had more CTA than males (Walsh & Hardy, 1999; Zetriuslita et al., 2016), which was not similar with the result with current study. Another finding revealed through the study that was science streamed students possessed higher mean than arts streamed students, which was founded to be significant statistically. Similar result has been found in a study conducted by Santos (2017), which was aiming to reveal

the role of CT in science education and result appeared with a significant strong positive correlation between CT and science education. Again parallel finding suggested that attitude towards science education as a school subject was linked with CT (Yacoubian, 2015). Students from Bengali medium were founded with greater mean score on CT than English medium students in this current study. No handful research study was found to support or opposed this finding. Here it can be assumed that most of samples (190) were from Bengali medium therefore this result may look like that.

Finally, emerged findings concluded that critical thinking has showed different results from the perspective of different independent variables. Further it can be suggested the development of higher level of critical thinking is directed to higher level learning and problem solving. Though the study was a baseline survey on critical thinking of freshman year college students, it endeavored its best in line with the objectives.

References

1. Abdi, A. (2012). A study on the relationship of thinking styles of students and their critical thinking skill. *ELSEVIER*, 47, 1719 - 1723.
2. Abu-Dabat., Z. I. (2013). The Achievement and Development of Critical Thinking Skills in the Arabic Language of Adolescent Pupils with reference to The Primary Stage throughout Jordan. *International Journal of Humanities and Social Science.*, 3 No. 5, 155-162. Retrieved from <http://www.ijhssnet.com/>
3. Bagheri, F. &Ghanizadah, A. (2016).Critical thinking and gender differences in academic self-regulation in higher education. *Journal of Applied Linguistics and Language Research*, 3 (3), 133-145.
4. Belecina, R. R. &Ocampo, J. M. (2018).Effecting Change on Students' Critical Thinking in Problem Solving. *EDUCARE: International Journal for Educational Studies*, 10(2), 109-118.
5. Creswell, J. W. (2012). *Educational research- Planning, Conducting and Evaluating Qualitative and Quantitative Research* (4th Ed).PHI learning Pvt. Ltd, India.
6. Demirhan, E., Besoluk, ?, &Önder, I. (2011). The change in academic achievement and critical thinking disposition scores of pre-service science teaching over time. *Journal of educational scienc*, 403-6.
7. Dewey, J. (1910). *How We Think*. D.C. Heath, Boston.
8. Dewey, J. (1933). *How We Think: A Restatement of the Relation of Reflective Thinking to the Educative Process*. MA: D.C. Heath, Lexington.

9. Dixit, D. K. & Ahmed, M. S. (2013). Teacher Education and life skills development towards global living citizens. *Conflux journal of education*, 1 (2).66-69.
10. Ezeh, V. C. (2017). Influence of Adolescent Peer Status on Critical Thinking Test. *PSS: Journal on Psychology & Sociological Studies*, 1(1), 11-23.
11. Garrett, H. (1979). *Statistics in Psychology and education* (2nd Ed).Hyderabad: International Book Bureau, India.
12. Irfaner, S. (2006).Enhancing thinking skills in the classroom. *Humanity & Social Sciences Journal*, 1(1), 28-36.
13. Kothari, C. R. (1989). *Research Methodology - Methods and Techniques*. New age international limited, India.
14. Mahmoud, H. G. (2012). *Critical Thinking Dispositions and Learning Styles of Baccalaureate Nursing Students and its Relation to Their Achievement* .*International Journal of Learning & Development*, 2(1).
15. Mangal, S. K. (2014).*Statistics in Psychology and Education* (2nd Ed). New Delhi: PHI learning Pvt. Ltd, India.
16. Myers, Brian & Dyer, James. (2006). The Influence of Student Learning Style on Critical Thinking Skill. *Journal of Agricultural Education*.47. 10.5032/jae.2006.01043.
17. Rozgay-Miller, J.M. (2009).*Critical thinking and using modern information and communication technology* (Unpublished master's thesis).Sierra Nevada College, Incline Village, Nevada.
18. Santos, L. F. (2017). The Role of Critical Thinking in Science Education. *Journal of Education and Practice*, 8(20).
19. Sarigoz, O. (2012). Assessment of the high school student's critical thinking skill, *ELSEVIER*, 46, 5315 - 5319.
20. Semeric, N. (2010). The relationship between self-leadership and critical thinking. *African Journal of Business Management*, 4(8): 1639-1643.
21. Spear, L. (2000).The adolescent brain and age-related behavioral manifestations .*Neurosci Biobehav Rev.*; 24:417-63.
22. Vranda. M. N. (2009). Development and standardization of life skills scale. *Indian journal of social psychiatry*, 25(1-2), 17-28.
23. Vygotsky, L. (1931). The development of thinking and concept formation in adolescence.

24. Walsh, C. & Hardy, R. (1999). Dispositional differences in critical thinking related to gender and academic major. *Journal of Nursing Education*, 38, 149-155. 154-164.
25. Yacoubian, H. (2015). A Framework for Guiding Future Citizens to Think Critically About Nature of Science and Socioscientific Issues. *Canadian Journal of Science, Mathematics and Technology Education*. 15. 1-13. 10.1080/14926156.2015.1051671.
26. Zetriuslita, H. J., Ariawan, R., & Nufus, H. (2016). Students' Critical Thinking Ability: Description Based on Academic Level and Gender. *Journal of Education and Practice*, 7 (12).