==========
Language in India www.languageinindia.com **ISSN 1930-2940 Vol. 21:10 October 2021**
==========

Teacher's Behaviour Towards Critical Thinking among Engineering Students in Classroom

Dr. Ritu Benjamin, Dr. Pranjali Sharma, and Dr. Manoj Dewangan
Shri Shankaracharya Institute of Professional Management & Technology, Raipur, India
Corresponding Author's email id – p.sharma@ssipmt.com
==========

Abstract

This study was conducted to find the Teacher's behaviour towards critical thinking in the students of engineering. A questionnaire with ten questions was created using response in 3-point Likert scale. It was administered to fifty teachers teaching in engineering colleges at Chhattisgarh state in India. Results show that they were regular in nurturing the critical thinking skills in their students.

Keywords: Engineering Students, Critical Thinking, Cognitive Languages, Teacher's Behaviour.

Introduction

Critical thinking term is rooted deeply in the history; if we go back thousand years, it was used as a process to verify the theories of philosophers. Shekhar Bhattacharjee said that today the one primary goal of higher education has always been to inculcate the habit of critical thinking among students, to raise them as responsible, evaluative human beings.

The engineers and engineering students today have sound technical knowledge. They sit in front of computer busy in coding their lives without any critical and analytical thinking. Today's demand from engineers is to have critical thinking which a process of rationalising things and situations is. The engineers need to develop their cognitive skills which include thinking, reading, learning, retaining information that ultimately help them to make decisions and solve problems.

Statement of Problem

It is important to find whether the engineering students have power to think critically. The teachers are a source who can enhance the critical thinking in engineering students, it is important to find whether teachers promote critical thinking among students in classroom.

Objectives

- To find out critical thinking skills in students
- To find whether teachers promote critical thinking in students in classroom

- To find out teachers behaviour towards critical thinking

Hypothesis

It is estimated that students do have attitude towards critical thinking, and the teachers, while teaching, boost the engineering students to think critically in classroom.

Literature Review

The concept of critical thinking can be traced thousands of years back. Philosophers considered it as a process which could reason out their theories. In the early twentieth century Dewey introduced it and according to him critical thinking was considered as reflective thought that was referred to as any belief or thought form of knowledge (Sanders & Moulenbelt, 2011). Paul in 1995, explained critical thinking as, "An intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from , or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action (Paul, Elder, & Bartell,1997:4)

At present time critical thinking can be defined as "The mental process of actively and skillfully perception, analysis, synthesis, and evaluation of collected information through observation, experience, and communication that leads to a decision for action (Papathanasiou, Kleisiaris, Fradelos & Kourkouta, 2014). Thus we can conclude that the skills of critical thinking are not only reflective thought but also applied and generative ones (Heard, Scoular, Duckworth, Ramalingam, & Teo, 2020).

As for the social empowerment and employability nowadays critical thinking is considered as main skill. Therefore it is the duty of teachers to develop certain teaching methods to enhance the critical thinking skills of the learners. Critical thinking is a human thinking skill which has to be developed in an individual learner hence it is the responsibility of teachers to work to improve the critical thinking in students (Kusuma, Gunarhadi, & Riyadi, 2018).

Critical thinking skills should be considered as important as other innovative skills especially with engineering students because they face various problems in their daily works. Hence teachers of engineering colleges should train their students to make reasonable judgments, to synthesize and apply the information (Kavanoz & Akbas, 2017).

Materials & Methodology

The research was conducted on fifty teachers teaching in various engineering colleges at Chhattisgarh state in India. Sample group was selected at random without considering age group, gender and experience. A questionnaire was designed with ten questions to find how teachers work upon the critical thinking aspect of their students in class teachings. Questionnaire was prepared on three point Likert scale parameter with options, always, sometimes and never. The questionnaire was made in Google form and the link was

forwarded to more than fifty teachers randomly working at various colleges of Chhattisgarh state in India. The responses were collected online which saved a lot of time.

Once first fifty responses were received the data received was analyzed.

The Questionnaire

A questionnaire was constructed with ten statements on three point Likert scale with options – always, sometimes and never. The statements were based on Teacher's psychology towards critical thinking in students of engineering in classroom teaching. All the statements were constructed in a way that they were always true in regards of positive attitude of teachers teaching in engineering colleges towards critical thinking in students.

Data Analysis

Gender -Though the data was collected irrespective of gender, here the information is quoted to see that data reflects the response of 52% males and 48% females. This information can be useful for further research

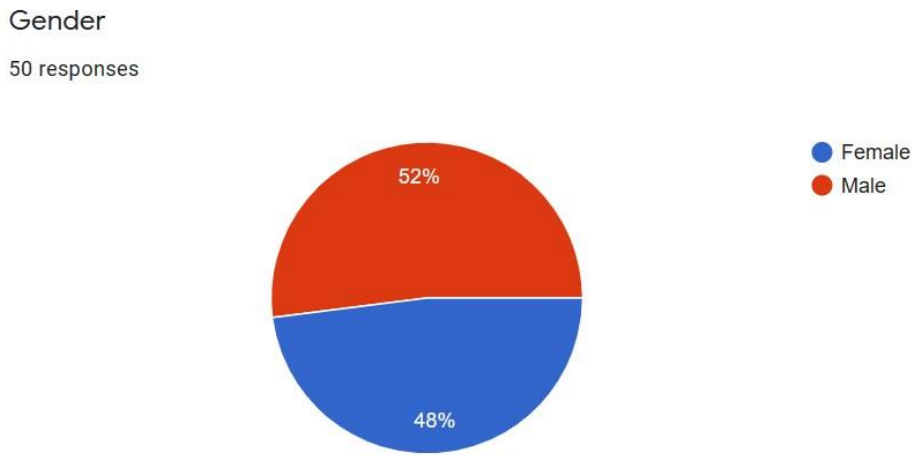

Figure 01

Age -The age group of responders was also not considered as a criterion for survey. It was seen from the data received that the responses were maximum- 54% were from the age group 25-40 years. 44% responses were received from the teachers above 40 years. Only 2% of the responders were below 25 years of age.

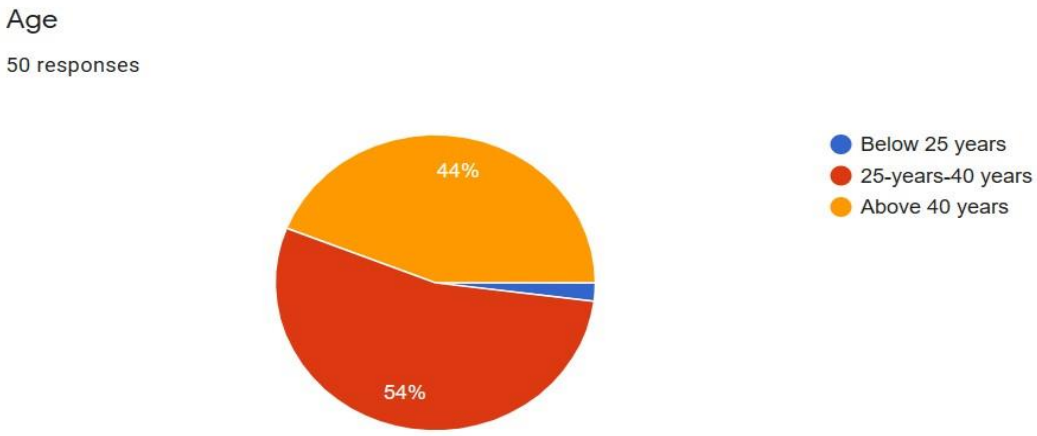

Figure 02

Work Experience -This factor was also not a criterion; the responses reflect the work experience of teachers of survey group.

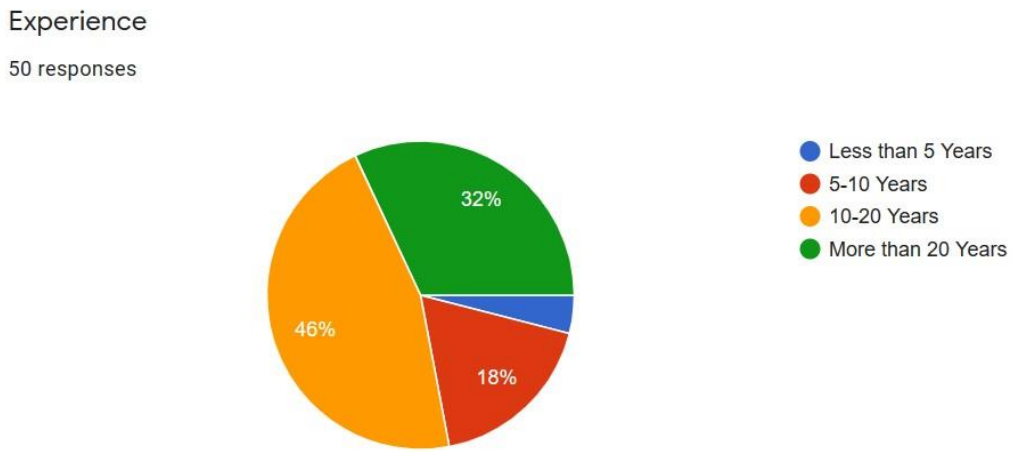

Figure 03

The responses were collected through Google form which is represented below.

S.No.	Statement	Responses-No. / Percentage Always	Sometimes	Never
1	I praise student' incorrect responses with supportive comments.	24/48%	24/48%	2/4%
2	I accept student' responses (opinion, view, perception, etc.) without judgement to encourage exploring possibilities	30/60%	15/30%	5/10%
3	I encourage students to answer open ended questions.	39/78%	11/22%	0/0%
4	I give time to students to think on answers.	35/70%	14/28%	1/2%
5	I encourage more than one student to share his opinion on same subject.	41/82%	9/18%	0/0%

6	I allow students to expand (with extra information) their answers.	31/62%	19/38%	0/0%
7	I give time to students to think about alternatives/point of view.	38/76%	11/22%	1/2%
8	I boost the student' morale by appreciation.	46/92%	4/8%	0/0%
9	I use cognitive languages (e.g. compare, classify, analyze, predict, etc.).	31/62%	18/36%	1/2%
10	I aid the students to be open minded in accepting situations and opinions.	45/90%	4/8%	1/2%

Table 1- Responses of sample group

Statement 1- Here the objective was to find weather the teachers support the students who take the courage to speak in the class but somehow come up with wrong answers. The statement was supported by 48% of the responders whereas the same number did it sometimes. Only 4% never supported wrong answers.

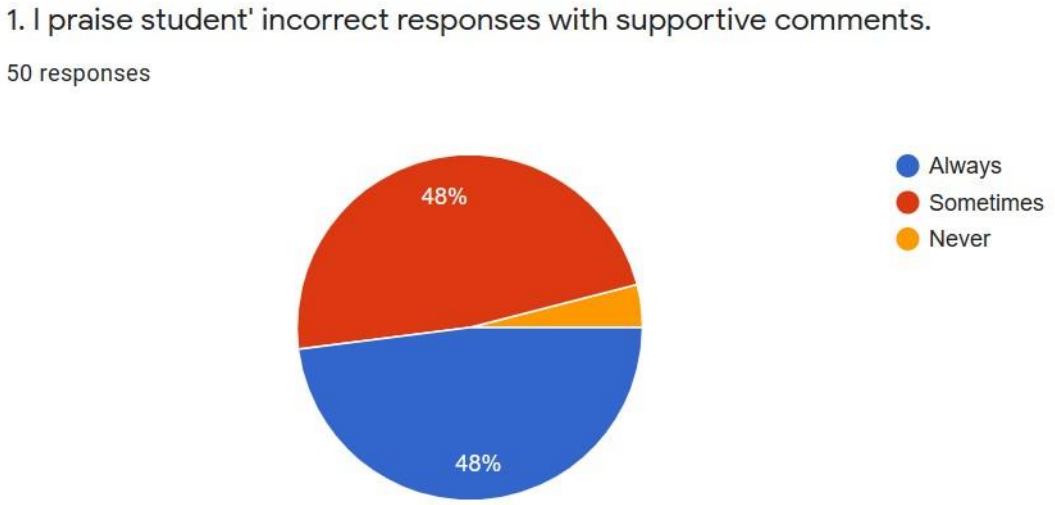

Figure 01

Statement 2 - In this statement the objective was to find if the teachers appreciate student's views and opinions in the class. In the responses 60% of the responders always appreciated student's views whereas 30% did sometimes and 10% never appreciated.

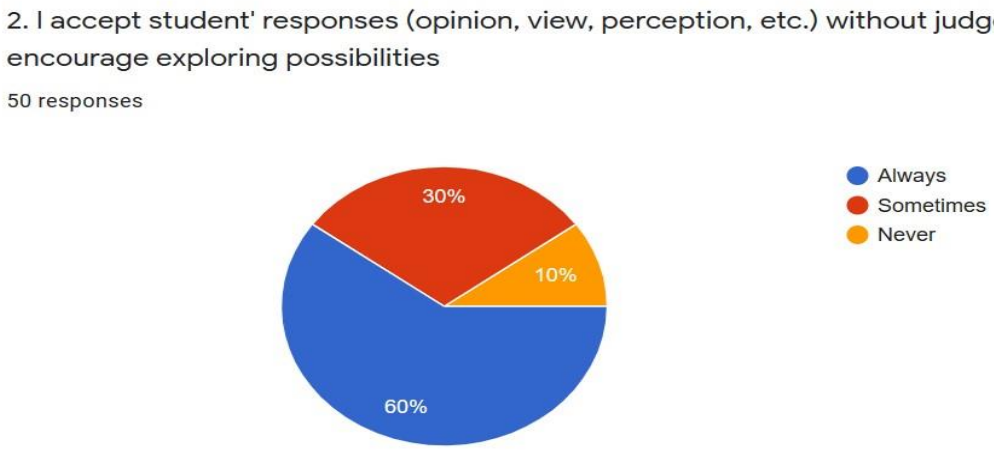

Figure 02

Statement 3 - Here the objective was to find whether the teachers encourage the students to answer and discuss open ended questions. The responses reveal that 78% responders always encourage, 22% did sometimes.

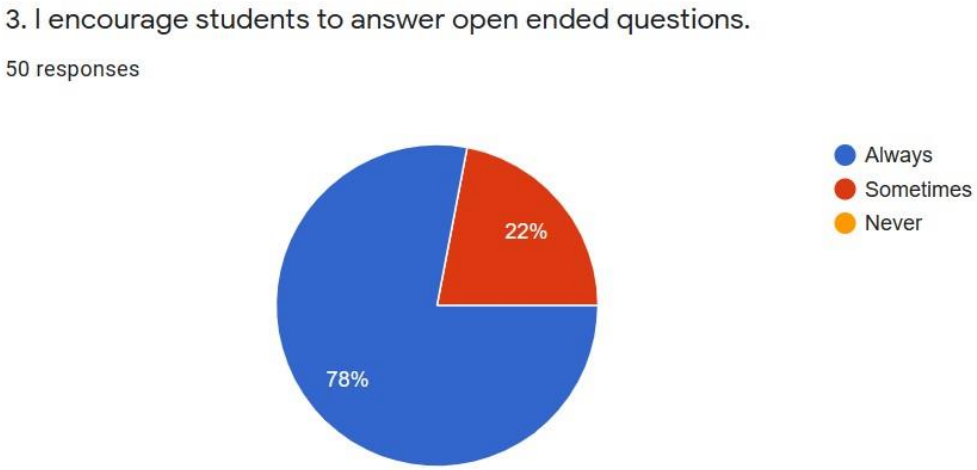

Figure 03

Statement 4 - The objective here was to find if the teachers give time to students to thin deeply. 70% always did, 28% did sometimes whereas 2% never gave time for critical thinking.

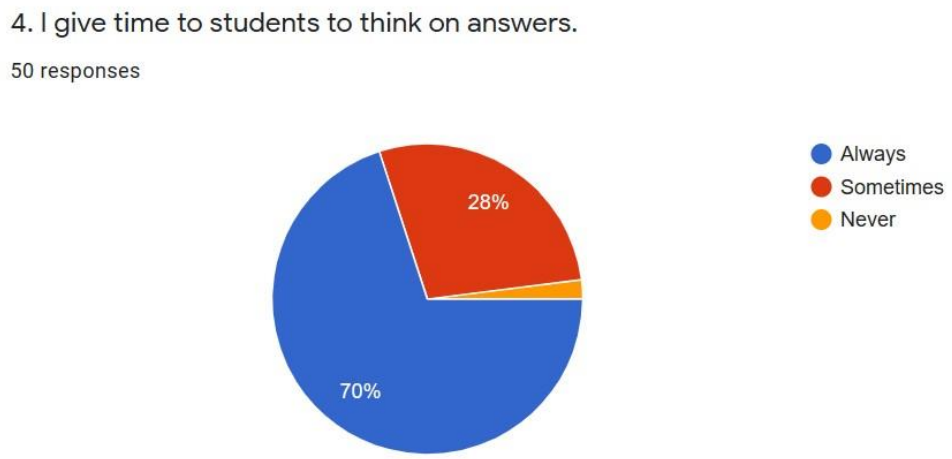

Figure 04

Statement 5 - This statement tried to find out whether the teachers accept opinion of more than one student on the same subject, as opinion varies with every individual. 82% of the teachers did always, 18% did sometimes.

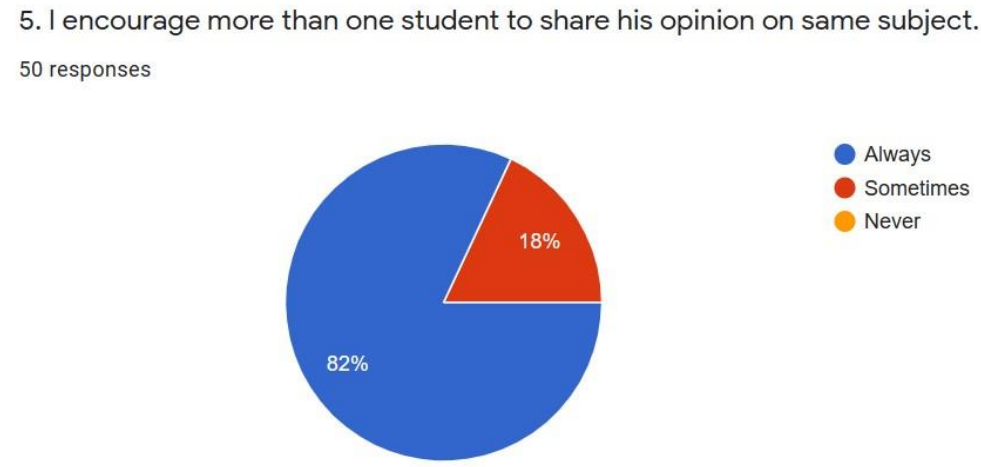

Figure 05

Statement 6 - Here the objective was to find whether teachers accept added information from the students on the subject taught. It is possible that student knows some more on the topic than others even teacher himself. 62% of the teachers did always, 38% did sometimes whereas none did never.

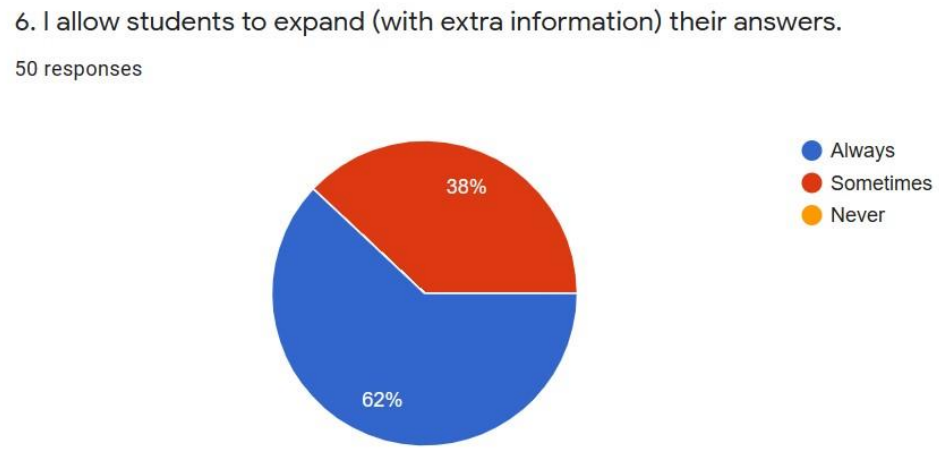

Figure 06

Statement 7 - This statement wanted to find whether teacher gives time to think for other alternatives if they do not have appropriate response. In the responses 76% of the responders always did it whereas 22% did sometimes and 2% never did it.

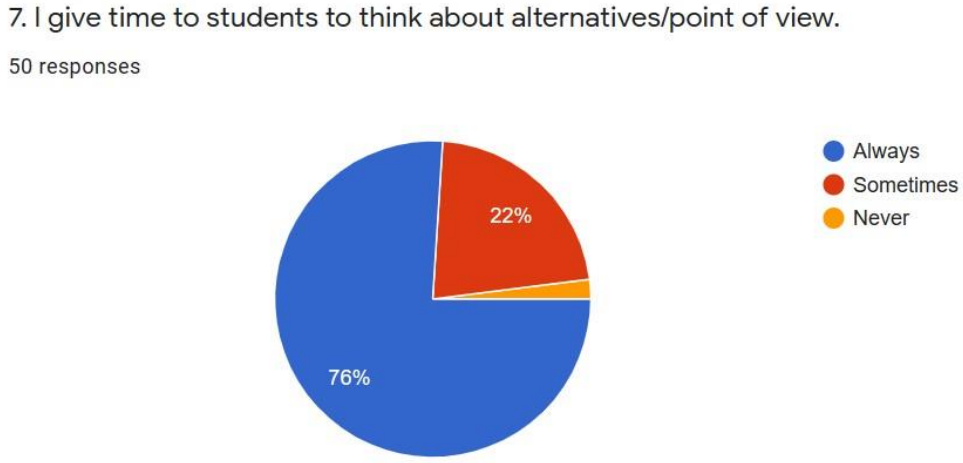

Figure 07

Statement 8 - This statement focused to find whether the teachers boost the morale of students to think critically. As the engineers need to develop critical thinking to find solution and to make decisions, hence this statement is very important. In response 92% always did and remaining 8% did it sometimes. This shows that every teacher try to boost students towards critical thinking.

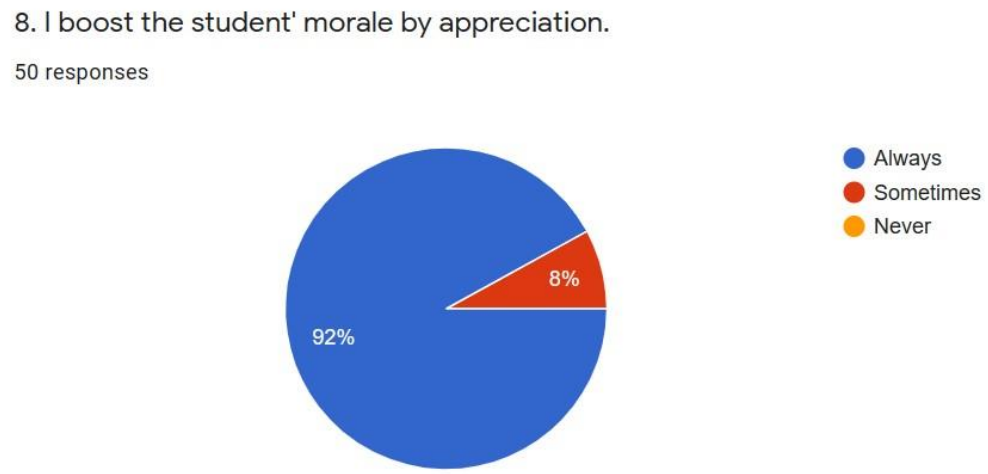

Figure 08

Statement 9 - Here the objective was to find whether the teachers use cognitive languages in their classroom teaching. Actually these domains are effective to boost and encourage students. 62% did it always, 36 % sometimes whereas 2% did it never in classroom teaching.

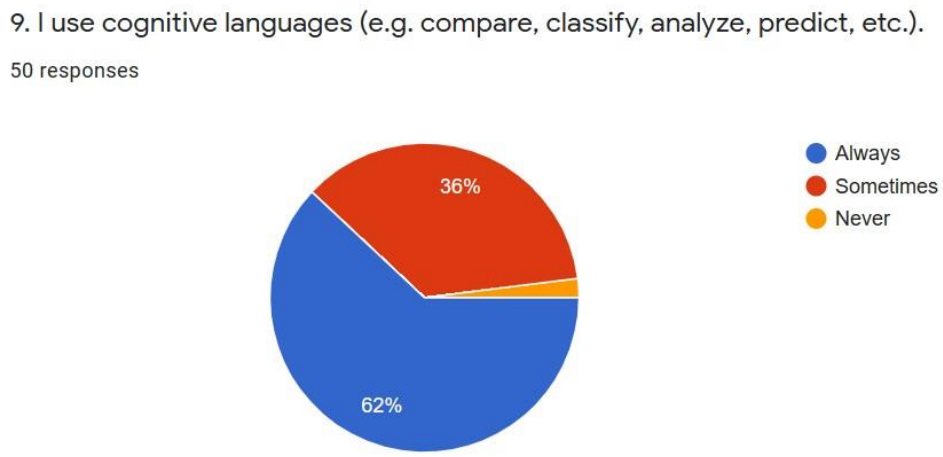

Figure 09

Statement 10 - This statement targets to find whether the teachers help students to accept criticism in the form of opinion and situations. 90% always did it, 8% did it sometimes and 2% never did it. This shows that teachers not only motivate students to think critically but also to accept criticism.

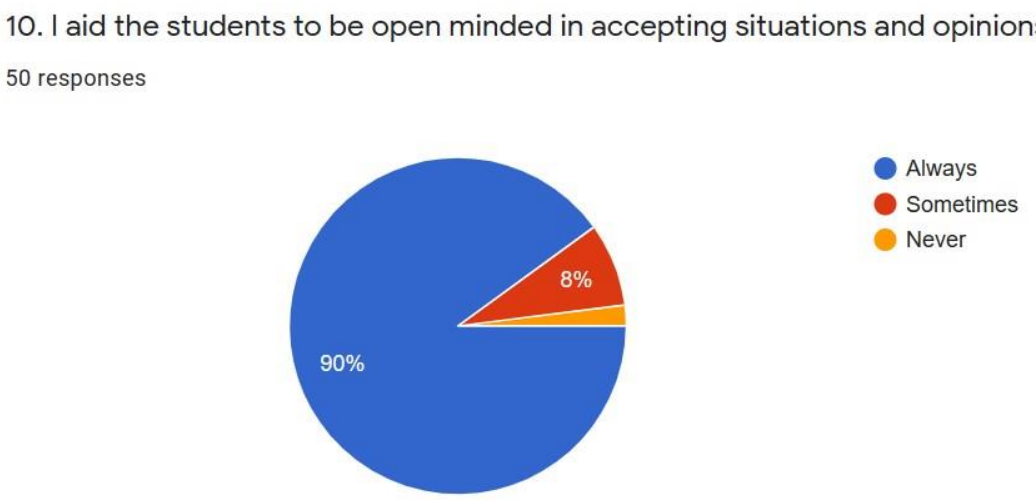

Figure 10

Result

The analyzed data clearly shows that teachers do their best to develop critical thinking in budding engineers, which is the demand of their profession. The Fig. shows that 72% teachers always did everything required to enhance critical thinking skills in their students, 26% did it sometimes and only 2% teachers never take pain to work on tis skill.

It could be said that majority of the teachers teaching to engineering undergraduate students work hard to enhance critical thinking among students.

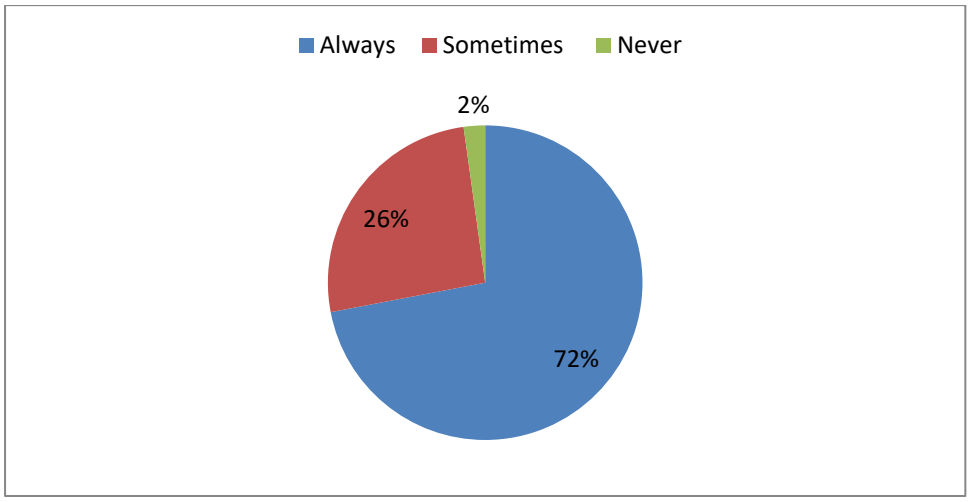

Figure 11

Conclusion

It is the demand of the employers and time that engineers should have developed critical thinking skills. As in their profession engineers have to make simple to complex decisions and have to resolve conflicts & problems they need to develop their critical thinking skills.

This research proves the hypothesis that the teachers at engineering college take pain and work with the students to help them develop critical thinking.

==========

References

Bhattacharjee, Shekhar(2020). https://yourstory.com/2020/10/critical-thinking-important-aspect-engineers-career/amp.

Heard, J. Scoular, C., Duckworth, D., Ramalingam, D., & Teo, I. (2020). *Critical Thinking: Definition and Structure. Australian Council for Educational Research. https://research.acer.edu.au/ar_misc/38.*

Kavanoz, S. & Akbaş S. (2017). *EFL Teachers' Conceptualizations and Instructional Practices of Critical Thinking. International Online Journal of Education and Teaching (IOJET), 4(4), 418-433. http://iojet.org/index.php/IOJET/article/view/251/180*

Kusuma, E.D., Gunarhadi, G., & Riyadi, R. (2018). *The Strategies to Improve Critical Thinking Skills through Problem-Based Quantum Learning Model at Primary School. International Journal of Multicultural and Multireligious Understanding (IJMMU), 5(4). DOI: http://dx.doi.org/10.18415/ ijmmu.v5i4.*

Papathanasiou, I. V., Kleisiaris, C.F., Fradelos, E.C., Kakou, K., & Kourkouta, L. (2014). *Critical Thinking: The Development of an Essential Skill for Nursing Students. Acta Information Medica, 22(4). Doi: 10.5455/aim.2014.22.283-286.*

Paul, R.W., Elder, L., & Bartell, T. (1997). *California Teacher Preparation for Instruction in Critical Thinking: Research Findings and Policy Recommendations. A Report Presented to California Commission on Teacher Credentialing, Sacramento. https://files.eric.ed.gov/fulltext/ ED437379.pdf*

Sanders, M. & Moulenbelt, J. (2011). *Defining Critical Thinking: How Far Have We Come? Inquiry Critical Thinking across the Disciplines, 26(1), 38-46.* https://doi.org/10.5840/inquiryctnews20112616

==========

Dr. Ritu Benjamin
Shri Shankaracharya Institute of Professional Management & Technology, Raipur, India

==========

	**Dr. Pranjali Sharma** Shri Shankaracharya Institute of Professional Management & Technology, Raipur, India Corresponding Author's email id – p.sharma@ssipmt.com
	**Dr. Manoj Dewangan** Shri Shankaracharya Institute of Professional Management & Technology, Raipur, India