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Inculcating Critical Thinking among Engineering Graduates through Public Speaking Course

Pushp Lata¹

BITS, Pilani (Rajasthan)

Umesh Dhayani²

BITS, Pilani (Rajasthan)

Suman Luhach³

BITS, Pilani (Rajasthan)

Abstract

The present paper focuses on how a course on Public Speaking may help teachers foster among the students of varied disciplines the development of fair-mindedness, intellectual humility, intellectual perseverance, intellectual courage, intellectual autonomy, intellectual integrity, and confidence in reasoning which are required both in social and professional life. Public speaking course surely helps in containing as well as transcending the disciplinary decadence by using the constructive ways of involving critical thinking throughout the course structure. In order to see public speaking as a way to transform, the present study throws light on various assignments such as forum discussions, Just-a-minute presentation, Prop presentation and, case study discussions and group discussions etc. that are done in the course to scaffold critical thinking. The paper also highlights the key factors such as peer review, retrospection that contribute to the increase in critical thinking skills.

Keywords: *English Language Teaching; Critical Thinking, Public Speaking, Teacher Development, Intellectual autonomy*

¹ Associate Professor Dept. Humanities and Social Sciences Editor, BITS Pilani (RAJASTHAN).
E-mail: pushplatabits@gmail.com

² Assistant Professor Dept. Humanities and Social Sciences BITS, Pilani (RAJASTHAN)

³ Research Scholar Dept. Humanities and Social Sciences BITS, Pilani (RAJASTHAN)

Literature Survey

Critical Thinking is an integral part of education system. It is the product of education and training. It is a mental habit and power. It is an important factor contributing to quality education, as it is a method of thinking that questions any assumptions, beliefs and inferences made. It enables a person decide whether a claim is true, or false, or partly true or partly false. Critical thinking as a subject is traced back in Buddhist Kalama Sutta and Abhidharma in East whereas in Socratic philosophy in Ancient Greece. However, this concept became popular during mid-late 20th century. It has been defined by various thinkers and academicians. Facione (1986) defined critical thinking as “the ability to properly construct and evaluate arguments” (p.122). Nickerson, Perkins, and Smith (1985) proposed critical thinking “requires the ability to judge the plausibility of specific assertions, to weigh evidence, to assess the logical soundness of inference, to construct counter arguments and alternative hypotheses” (p.4-5). Across the globe many of the school and university curriculum and examination syllabi have begun to reflect a concern for inculcating critical thinking among students. The National Commission on Excellence, US, 1993, laid emphasis on critical thinking pedagogy and after the publication of America 2000, an Education Strategy, many colleges and universities revised their general education curricula towards inductive thinking and inquiry oriented strategies (Darling Hammond, 1993). Michael Scriven & Richard Paul have defined this term in their paper presented at the 8th Annual International Conference on Critical Thinking and Education Reform, Summer 1987 as following:

Critical thinking is the 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. In its exemplary form, it is based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness.

The National Curriculum Framework (NCF), New Delhi, 2005, places different demands and expectations on the teacher, which need to be addressed by both initial and continuing teacher education, it thereby highlights the need for providing appropriate opportunities to the student teacher: for content enrichment to generate understanding and knowledge, examine disciplinary knowledge and social realities, relate subject matter with the social milieu and develop critical thinking which will enable them generate knowledge and critical thinking and professional skills among their students later (2005, p.31). While discussing the increased importance of critical thinking Schamber and Mahoney (2006, p.104) have quoted Association of American Colleges and Universities (2002, p. 44) which held the view that thinking critically should be taught within a context that promotes “civic engagement in major policy decisions” and focuses on real life problems often involving contested values. However, there is a mixed opinion on how much critical thinking can be improved at the course level (Arburn, 1998; Forbes, 1997; Halpen, 1993, Tsui, 1998). Course success becomes the predictor for the improvement in critical thinking. It has been established that critical thinking and algebra skills have two strong predictors of achievement in introductory physics (McCammon, Golden and Wuensch(1988) and similarly in psychology the grades reflect the relative critical thinking skills possessed by students (Gadzella, Ginther, and Bryant, 1997). Benjamin Bloom who identified that there is more than one type of learning taking place in the classroom, came up with the concept of *taxonomy of learning behaviors*. He identified three major domains of educational activities- cognitive, affective and psychomotor. There are widely popular generic instruments for measuring critical thinking such as Watson- Glaser Critical Thinking Appraisal (Watson and Glaser, 1964, 1980) Cornell critical Thinking Skills Test (Ennis, Millman and Tomko, 1985) and California Critical Thinking Skills Test (Facione and Facione, 1994). But the question arises whether

critical thinking can be measured as a generic or domain specific construct which might be more predictive and amenable to change the course contents, its pedagogy and testing. The present study has been taken up with a view that Critical Thinking need not be taught as a separate course. It can be reasonably inculcated among students by carefully formulating the instructional plans to be adopted and the assignments to be used for assessment for Effective Public Speaking course in the classroom.

Need For Critical Thinking

While talking about the upcoming challenges to teaching the information- literate people who have learnt how to learn, James Appleberry (Brevik and Jones 1993, p.24) highlights the fact “The total sum of humankind knowledge doubled from 1750-1900 and it has been further projected that by the year 2020, knowledge will double every 73 days!” In this setting today’s students need an improved interface with this ever increasing information. Digital media - generated deluge of information becomes available in unfiltered and unauthentic formats. This information overload also results into frustration and anxiety which is termed as information fatigue syndrome (Wilson 2001, p.1) in medical science. The critical thinking skills are in fact, required to succeed in educational or professional life where solving problems and making decisions by forming reasoned judgments are important. However, the question arises how to enable the learners handle this inundated information is to teach the art of critical thinking which will enable them to sift, analyze, compare, contrast, synthesize or criticize the information. Cerise Oberman (1991, p.200) rightly points out, “Students unable to cope with the overwhelming number of choices available to them will be further disenfranchised from the information superstructure. Therefore, knowledge alone do not suffice today, learners are to be taught to be active participants in an information culture. Moreover, all the essential four language skills namely; reading, writing, speaking, and listening can all be done critically or uncritically. Therefore, students today in this knowledge driven era need to be equipped with broad knowledge base and to be trained to think through information critically. While stressing the need for fostering critical thinking Shapiro and Hughes (1996, p.32) discussed about it to be “more broadly as a new liberal art that extends from knowing how to use computers and access information to critical reflection on the nature of information itself.” It has been observed that in spite of conceptual knowledge people are not able to discern between what they know and what they don’t know or even to think firmly, independently and objectively. Students therefore, require critical thinking skills to expand perspectives, make comparisons and contrast, or draw conclusions. This paper hence, focuses on how courses like Public Speaking may help teachers foster among the students of varied disciplines the development of fair-mindedness, intellectual humility, intellectual perseverance, intellectual courage, intellectual autonomy, intellectual integrity, and confidence in reasoning which are required both in social and professional life. Thus, courses like Public speaking course surely help in containing as well as transcending the disciplinary decadence which is intensely being observed today, by using the constructive ways of integrating critical thinking throughout the course structure and pedagogy.

Research Hypothesis

H1

Attendance measure directly affects the students’ perception about the relevance of critical thinking in personal as well as in professional life.

H2

The nature of the assignments has the direct impact on fostering CT among students, as these are highly correlated.

Course Description

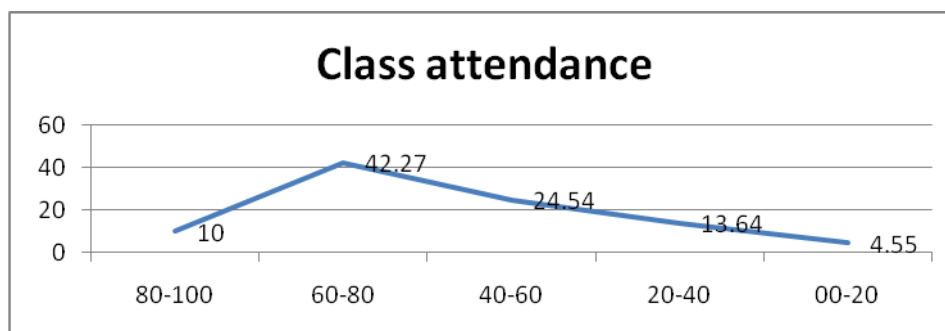
The three unit course with 50 students intake every semester, targets at developing effective public speaking skills among students. The course is heavily practice oriented and has been designed to develop the skills of speech through presenting papers, giving seminars, participating in group discussions and appearing at interviews, etc. Out of 42 class sessions, theory related to core concepts like body language, verbal features, combating nervousness, sizing up the audience, critical thinking, speakers' credibility, preparing and organizing speeches, preparing an outline, speeches on special occasions, wit and humor and persuasion was taught in 16 classes and remaining classes were devoted to class assignments, feedback on assignment performance, discussion and interaction on the video viewing related to the unit being taught and discussion over it. The course consisted of 8 class assignments, 2 home assignments included submission of recorded videos, 2 tests and one comprehensive examination.

Perception of Students about Critical Thinking

Question number 2 aimed at finding out the perception of the students about the importance of CT. 74.54% feel that critical thinking is important for successful personal life whereas 90.91% felt that CT is important for professional success. The figure suggests that the seriousness of their future professional settings like project appraisal, promotion, visibility, image etc. make the students realize the importance of critical thinking skills, whereas for them personal life is perhaps is not so challenging as there are already leading one.

Students' Perception about Effective Public Speaking course

Since critical thinking has been taught as a skill in the course curricula, which included knowing what is critical thinking, need for CT in personal and professional life, role of CT in successful public speaking, an awareness about all the three major strategies such as affective, micro cognitive, and macro cognitive. The discussion also included how CT can be integrated in various class assignments and how CT may help them perform better. Therefore, the questionnaire also included a question on whether the course helped the students develop their CT. In response to that 64.55 % of the total respondents felt that the course actually did help them enhance their CT whereas 28.18% said to some extent whereas 7.27 felt it did not help them improve their thinking skills. Therefore, an attempt has been made so as to see that whether there is any correlation between the specific attendance data of the students who have not found it useful.



It has been observed that these students have attended 20-40% classes and it is also possible that these students might have missed the classes on CT and also missed 2 or 3 assignments. Question number 6 also concentrated on analyzing students' perception about whether or not the learning of critical thinking, help them in honing their public speaking skills. 19.09% students felt that CT mostly improved their public speaking whereas 74.45% really felt that to some extent CT did help them enhance their public speaking.

Attendance, perception and performance

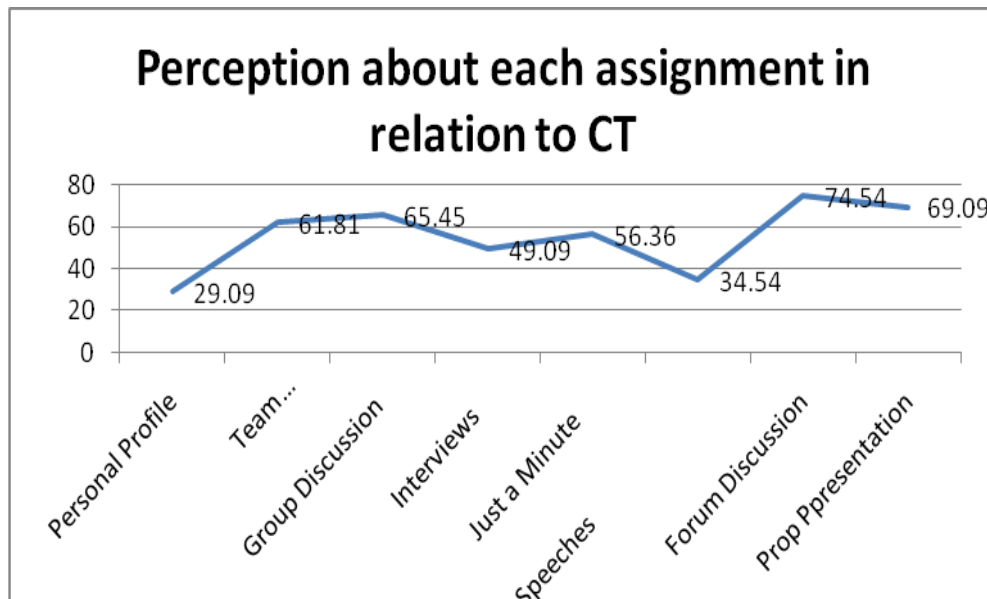
Attendance directly affects the students' perception about the relevance of critical thinking in personal as well as in professional life. It also impacts the performance as marks are kept for participation and interaction whenever students are asked to comment on the presenter's performance and also retrospect his/ her performance. Therefore, it is reflected the correlation between attendance and credit appear to be moderate and predictive. Credit thus, can be linked to attendance in this course in two ways: (i) Students earn credits through the class assignments which students are supposed to do. (ii) They earn credit for their participation in the class, which is possible only when they attend the classes. Hence, grade is linked directly or indirectly to attendance as likely increase in attendance reflects and magnifies its contribution to course grades and consequently an understanding of the relevance, importance and application of CT.

Assignments Analysis

There is no such thing as a 'one size fits all' in case of learning environment. Some people learn best when they see what is being taught, while others process information best auditory. Therefore, when we talk about learning of a skill, there could be many reasons like lectures, class

Assignments, discussions, tests etc. As discussed earlier the problem lies in focusing instruction always on technical know-how, rather than on critical thinking. The course under study teaches students to use the assignments as a tool to think through the problem under discussion and question the information available for logicity and completeness. So the question is who is a critical thinker. A critical thinker is one who is inquisitive about the issues and the problems rampant in the environment, who always remains well informed, who has confidence to reason or argue in the right perspective. An individual who thinks critically, often possess open-mindedness to divergent view points and in appraising reasoning. A critical thinker is always willing to review and revise views wherever change is warranted in approach or perspective. Working on their own is very important because they should feel and acknowledge the ownership of their opinion and ideas and be explicit about their own reasoning without influence from anyone else. As Klooster (2001, p.27) states, "No one can think critically for you." The assignments which are done in the course are thus, selected and designed in a way to help students conceptualize, think and evaluate the information related to task in hand, critically and generate new knowledge.

Against question number 4 the respondents were asked which of the elements (class interaction/ class assignments/ home assignments/ test) really helped them enhance their CT during the course.



63 respondents out of 110 (57.27%) felt that class assignments actually helped whereas only 32 respondents (29.09%) gave this credit to class room interaction, only 9 respondents to Home assignments and 6 respondents to tests. This is mainly due to the nature of the assignments and amount of time spent on each of the element. The follow up question which included all the 8 assignments done in the class were included and all the respondents were asked to mark for all the assignments done, did help in tracing the reason behind this response. It was observed that assignments such as team presentation, Group discussion, interviews, just a minute session, forum discussion and prop presentation scored very high and the possible reason is that all these assignments required students to conceptualize, discuss, brainstorm, assess, reasoning, compare and contrast, validate and think independently. On the other hand, personal profile and speeches on special occasion were the individual effort and these did not demand the high order thinking.

Pedagogy

In order to find out the role of the teacher in the class room students were asked to mark the teacher's conduct in the class room. 92.72% of the respondents were of the opinion that the teacher was very enthusiastic. However, in the follow up question where the respondents were asked to tick the most guiding factor for the learning of CT, 42.27% respondents felt the teacher's pedagogy was instrumental in their learning of CT. On the other hand 28.18% felt that its need in real life motivated them to concentrate on honing up their CT but there were 18.18% of the respondents felt that both pedagogy and need in combination helped them learn CT. However, it can be envisaged that the teacher plays a significant role in the learning and enhancing of CT by carefully crafting the pedagogical techniques and making the classes interactive.

Limitations

The study has two primary limitations: (a) It is essentially a perception study but an intervention study can be done to measure the qualitative improvement in Critical Thinking, (b) Instrument/ tools can be used to assess critical thinking. However, the modifiability of a variable may not be equivalent to its predictive potential.

Conclusion

The results of the study conclusively prove that Critical Thinking need not be taught as a separate course. It can be reasonably inculcated among students by carefully formulating the instructional plans to be adopted and the assignments to be used for assessment through a course like Effective Public Speaking. This is because of the direct impact of four independent parameters namely attendance, students' perception nature of assignments, and pedagogy, on inculcating Critical Thinking. Out of these independent variables pedagogy and nature of class assignments had the major impact. Teacher's enthusiasm, passion and style of teaching worked as a motivating factor for the students in learning the art of critical thinking.

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Appendix A

Dear student,

“The total sum of humankind knowledge has doubled from 1750-1900 and it has been further projected that “By the year 2020, knowledge will double every 73 days!” In this setting today’s students need an improved interface with this ever increasing information. And many a thinkers have proposed that to meet out this need critical thinking skills be fostered among students. Therefore, I wish to carry out a research to find out the need for critical thinking as is felt by students. Moreover, to determine whether the course in Public Speaking can help you sharpen your ability to think critically. For this purpose I have prepared a questionnaire and request you to fill it up and deposit it in the box which is kept for this purpose in my office.

I assure you the information provided by you, will be kept strictly confidential. I would also like to promise that valuable information given by you will be used to upgrade the course Effective Public Speaking that I offer.

Thanks for your valuable time and effort.

Questionnaire

Note: Please tick the relevant option.

1. What percentage of classes did you attend?

(a) 20-40	()	(c)60-80	()
(b) 40-60	()	(d)80-100	()

2. While doing the course on Effective Public Speaking, you were taught Critical thinking. According to you how important is CT in both professional and personal life?

	Personal Life	Professional Life
(a) Extremely important	()	()
(b) Important	()	()
(c) Not so Important	()	()
(d) Not at all important	()	()

3. Did the course help you develop your critical thinking skills?

(a) Yes	()
(b) To some extent	()
(c) Not at all	()

4. Do the following elements of the course help you develop your critical thinking?

(a) Classroom Interaction	()
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- (b) Class Assignments
- (c) Home assignments
- (d) Tests
5. Which of the following assignments helped you develop your CT? Please provide your opinion for all the assignments.
- | | |
|---|----------|
| a. Personal Profile | Yes / No |
| b. Team Presentation | Yes / No |
| c. Group Discussion | Yes / No |
| d. Interviews | Yes / No |
| e. Just a Minute | Yes / No |
| f. Speeches on Special Occasion (home to be video recorded) | Yes / No |
| g. Forum Discussion | Yes / No |
| h. Prop Presentation | Yes / No |
6. This course helped me in learning the role of critical thinking for improving public speaking skills.
- a. Fully
- b. Partially
- c. Not at all
7. Did the learning of the art of critical thinking help you improve your performance in other courses?
- a. Fully
- b. Partially
- c. Not at all
8. Which of the following was the most determinant factor for your learning and enhancing your knowledge and skill of critical thinking?
- a. Teaching material
- b. Teaching
- c. Need
- d. Teaching and need
9. How do you find your teacher in the classroom?
- a. Enthusiastic
- b. Dull
- c. Unclear
- d. Insouciant

10. Would you recommend other students the course, Effective Public Speaking for enhancing their ability of critical thinking?

a. Yes

b. No

11. Any other comment

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Thank you