Enhancing the Thinking Abilities of Engineering Learners

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Abstract—Teaching English for the learners pursuing a course in Engineering does not involve just the LSRW skills. As it is a course in ESP, more specifically, EST (English for Science and Technology), we as teachers are more concerned of equipping them with the skills required to face the challenges of their profession. The learners have to face a cut-throat competition as the number of learners pursuing a course in Engineering is increasing year by year and the companies rely on the professionals for an extra edge of human skills. The selection process for a job involves a screening test based on Group Discussions. These discussions test the soft skills or human skills of the candidates which are mainly based on their thinking abilities. A problem is given to them and they are asked to come to a common consensus as a team. The candidates are required to employ creative thinking, divergent thinking, logical reasoning, critical analysis etc. to perform effectively. Till the ir graduation, the learners are used to rote-learning from the (written) examination point of view. The learners should be explained the importance of thinking and brain storming at this stage. This paper is based on the study undertaken by the researcher to develop the thinking skills of the I year learners pursuing a course in Engineering.

Keywords—Interpersonal skills, logical reasoning, critical analysis, negotiation skills, persuasion skills

INTRODUCTION
Most of the engineering learners wish to join an MNC after completing their course. It has to be noted that human resource is gaining much prominence, especially in a corporate sector. Human behaviour in the form of execution of Interpersonal skills has gained prominence. The professionals need to think and analyse. All the mentioned skills involve thinking.

This paper stresses on the development of the following human skills of the learners.

1. Creative thinking
"Creative thinking involves imagining familiar things in a new light, digging below the surface to find previously undetected patterns, and finding connections among unrelated phenomena."
—Roger von Oech, Expect the unexpected

Creative thinking is thinking different from others. This leads to effective solving of problems in within limited time. Creative ideas are unique because different individuals may perceive different ideas.

Though creativity is essentially a divergent thinking process, yet here is a place for convergent thinking too.

Both the kinds of thinking are important to us in a problem-solving activity. The first step in solving a problem is to analyze the problem; secondly, we must generate possible solutions; thirdly we must choose and implement the best solution; and finally, we must evaluate the effectiveness of the solution. It is clear that this process reveals an alternation between the two kinds of thinking, convergent and divergent. When put into practice, both convergent and creative thinking operate together most of the time and are not really independent of each other. One has to make logical inferences, compare alternatives and choose the right alternative while solving problems, besides generating alternative solutions. For this reason creative thinking comprises alternating phases of divergent (imaginative) thinking and convergent thinking.

2. Logical reasoning.
"Change your thoughts, and you change the world."
—Norman Vincent Peale, Protestant preacher and author and creator of the theory of "positive thinking" (1898–1993)

Whatever the case, if one finds oneself facing logic problems, logic problems generally test:
• Common sense
• Ability to find and analyze best evidence.
• Ability to draw logical conclusions from evidence.
3. Critical analysis
The learners were explained the importance of positive and constructive criticism. It is important that an individual respects others positive traits and also overcomes his/her negative qualities. This helps in developing and maintaining healthy relationship with others, both in personal and professional life.

4. Assertive and persuasive Skills
If one keeps worrying about what others would say one is said to be passive by nature; that is, one cannot voice one’s own needs, cannot be happy and consequently one will have to lead a miserable life.

Assertive skill is one of the several abilities one needs to put to use in order to perform, succeed and as a result lead a happy life and to also see that others lead a happy life. It's a skill one needs to use in order to express one's opinions or desires strongly and confidently. It's also a skill that one employs to indicate that one respects others' rights and feelings. Assertive communication is direct, open and honest.

Persuasive communication can be an effective way to change the minds and behaviours of those with whom one disagrees. At times one may need to convince others to prove one’s stance.

5. Positive Thinking
We can complain because rose bushes have thorns, or rejoice because thorn bushes have roses. Most folks are about as happy as they make up their minds to be. — Abraham Lincoln

Positive thinking means approaching life’s challenges with a positive outlook. It does not necessarily mean avoiding or ignoring the bad things; instead, it involves making the most of potentially bad situations, trying to see the best in other people, and viewing yourself and your abilities in a positive light.

THE RESEARCH STUDY
No. of Sessions 2x5 = 10 hrs.
Venue: The English Language Lab.
No. of learners: 30

Procedure followed:
The learners were given introduction to soft skills through excerpts of literature and were explained the importance of developing their thinking abilities. They were assigned tasks in the form of role plays, group discussions and debates for the modules.

Module 1: Creative Thinking:
1. Creative thinking is thinking different from others. Creativity leads to innovative ideas.
   Step 1: The learners were asked to read the poem “The Earthen Goblet” by Harindranath Chatopadhyaya and were asked to bring out the element of creativity as perceived by the poet.
   Step 2: They were then divided into 4 groups of seven each and were asked to discuss the following tasks:
   • How to keep mischievous children quiet on a school bus?
   • How to design an attractive brochure for celebrating the silver Jubilee function of your college?
   • Give 5 different titles for creativity.
   • Which advertisement you have watched till date is more creative according to you? Give reasons to support your answer.

Module 2: Logical Reasoning
Step 1: They were first asked to read a short story “The Witness for the Prosecution” by Agatha Christie and enunciate the difference between emotional thinking and logical reasoning through the character portrayal of the protagonist, that is, the Public Prosecutor.
Step 2: The learners were given a simple question to be arranged in order:
A police officer arrives at the scene of a two-car accident. In what order should the officer do the following?
I. Interview witnesses.
II. Determine if anyone needs immediate medical attention.
III. Move the vehicles off of the roadway.
IV. Interview the drivers to find out what happened.
   a. II, IV, III, I
   b. II, IV, I, III
   c. II, III, I, IV
   d. IV, II, III, I
Step 2: They were then asked to discuss as a group and give a solution for the given problem. (enclosed)

Module 3: Critical Analysis
They were asked to critically analyse any book or movie of their choice.

Module 4: Assertive and Persuasive Skills
Step 1: They were asked to read an essay “To Know When to Say,” “It’s None of your Business” by Mark Mc Cormack to understand the importance of being assertive if the need arises.
Step 2: They were also asked to read a short story “The Avenger” by Anton Chekhov and were asked to write a short paragraph describing the persuasive techniques of the shop man.
Step 2: They were then given topics for debates. (enclosed)

Module 5: Positive Thinking
Step 1: They were first asked to read an essay from the collection of Sudha Murthy’s “Wise and Otherwise”. The title of the essay is “Think Positive, be Happy”.
Step 2: They were then asked to discuss as a group and give a solution for the following question:
You have just been transferred to the new position in a new part of your organization. Your new supervisor does not appear to like you very much. They seem to be giving you all dirty work and then avoiding you. The feedback you get from them is always negative.
WHAT DO YOU DO?
Alter: (how could you remove the source of stress?)
Avoid: (How could you get away from or avoid the source of stress?)
Accept: (How could you live with the stress?)
CONCLUSION
Introduction to soft skills through literature and cooperative learning methodology through group discussions have facilitated the learners to enhance their thinking abilities.

When all is said and done, human relationships are so complex and complicated that one will have to ultimately depend on one’s own ingenuity and experience to observe, analyse, judge, learn and become wise that is one should develop thinking and analysing abilities.

Topics for debates
1. City life is better than rural life
2. Daughters are more caring than sons
3. Money makes all the things.
4. Nuclear family is better than Joint family.
5. Indians are performing better – not India.
6. Our ancestors have lived a better life.
7. Wisdom does not come from degrees.
8. Social networking makes false friends.
9. Technology does not help in studies- it gets in the way of studying.

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Biography of Author(s)
Ms. T. Kranthi is pursuing her PhD from Rayalaseema University, Kurnool. She has 3 articles published in international journals and 1 article in a national journal and has presented papers at 7 international conferences. She has 20 years of experience I developing the English language skills of the engineering learners.