

Topic Name: “**Presentation on Technical Disaster or Innovation**”

- Presentation on Technical Disaster or Innovation

Objective:

- To shift learning attitude of students from rote learning to understanding, analyzing designing and creating
- To prepare a presentation on any one Technical Disaster or Innovation with which some technical concepts, knowledge and information can be concluded
- To develop soft skills like self-learning, group behavior, group ethics, management skills and presentation skills as well as technical skills amongst students
- Students will understand and apply **Bloom’s Taxonomy (Lower Order Thinking Skills to Higher Order Thinking Skills)** in Engineering learning

Activity:

Total Days: 03

1<sup>st</sup> Day:

- Presentation of one Technical innovation and one Technical disaster to the students
- Providing steps to make the presentation
- Making of group of students[10 to 12 students per group] and allotment of topics (students can also search and decide the topic of presentation)
- Start gathering the information about the topic i.e. pdf documents, research papers, information on internet, videos, audios, animation etc.

2<sup>nd</sup> Day:

- Students should discuss in group, divide the given work, gather information, understand the concept and prepare presentation in the provided structure

3<sup>rd</sup> Day:

- Preparation of the presentation for half day

- Presentation by all the students of group in the provided structure of presentation

References:

- [1] Robert J Niewoehner, Captain, U.S. Navy, Ph.D., Craig E. Steidle, Rear Admiral, U.S. Navy (ret.), U.S. Naval Academy, “The Loss of the Space Shuttle Columbia: Portaging Leadership Lessons with a Critical Thinking Model”
- [2] Tufte, Edward R. *Visual Explanations*, (Graphics Press: Cheshire CT, 1997), pg. 45ff.
- [3] <http://www.inventor-strategies.com/latest-science-inventions.html>

Outcome:

- Students will have knowledge and skill to represent technical concepts which will help them in future technical presentations including Seminar, Active Learning Assignments, Project presentation etc.
- Students will be able to start changing their perspective of learning by introducing Higher order thinking skills like: Analyzing and Evaluating
- Development of soft skills like self-learning, group behavior, group ethics, management skills and presentation skills as well as technical skills amongst students
- Development of **Cognitive** (*knowledge*), **Affective** (*feelings or emotional areas*) and **Psychomotor** (*Manual skills*) domain amongst students.

Topics for reference:

**Topics for Invention:**

1. Sterilizing Spray
2. Three Dimensional Printing
3. Glass Nanobots Absorb Toxins
4. Water Drop Lens
5. Batteries That Operate With Any Liquid
6. 3D Printed Car
7. Car Gps Tracking
8. Air Into Water
9. Vein Identification
10. World's Fastest Motor

11. A House that Walks
12. Transparent Smartphones
13. Hollow Flashlight
14. Smartbox Technology
15. Electronic Pills - Collecting Data Inside The Body
16. Digital Pen
17. Instant Prints
18. Clean Water
19. Recycling Paper
20. Vertical Farming
21. Bionic Eye
22. NanoTube - Hair-Thin Loudspeakers
23. Solar Foil
24. Flying Robots
25. Military Robots
26. Nano Hummingbird

**Topics for Disasters:**

1. The Vasa sinking
2. The Hyatt Regency walkway collapse
3. The Eschede train derailment
4. The 1965 Northeast blackout
5. Patriot Missile Failure (due to calculation error from processor)
6. Tacoma Narrow Bridge Failure (due to wrong design)
7. Concorde 203 F BTSC crash (due to blow out of tire)
8. R101 Airship Disaster (due to fire)
9. Failure of Soviet Moon Rocket (due to some small mistakes)
10. Air India Express flight 812 Crash
11. Chernobyl Disaster
12. Columbia Space Shuttle Disaster
13. Wenzhou Train Collision
14. Machhu dam Disaster.
15. Failure of mars climate orbiter ( due to wrong unit conversion system)
16. US safety board determines DC Metro crash ( due to failure of track circuits and safety culture
17. Aloha Airlines Flight 243 (due to the quality of inspection and maintenance programs were deficient.)
18. Fukushima nuclear power plant disaster ( due to lack of governance)

19. Titanic disaster ( due to design compromisation for better facilities and aesthetic look )
20. The Banqiao Reservoir Dam Failure ( due to low standard construction & lack of communication of higher authorities)
21. The Space Shuttle Challenger ( due to o rings failure and ignored by the engineers)
22. Surat flood 2006
23. Northern Grid disturbance on 30July 2012 (Due to disobeying of order by SLDC)
24. Flixborough Disaster on 1st June 1974
25. Uttarakhand disaster 2013
26. Gulf of Mexico oil spill 2010
27. Three Mile Island accident (March 28, 1979 )
28. Sayano–Shushenskaya power station accident (August 17, 2009)
29. K-141 Kursk submarine Disaster of the Russian Navy (nuclear-powered cruise missile self-explosion due to leakage of hydrogen peroxide)
30. Mars Pathfinder Priority Inversion problem: 1 day Delay in Mission (1997)
31. Y2K(Year 2000 Computer Problem) Problem
32. The Iroquois Theatre Blaze - 1903 (Due to improper safety measures)
33. The Airbus saga: Crossed wires and a multibillion-euro delay - 2006 (Due to incompatible software issues)
34. Texas City Refinery Explosion - 2005 (Due to numerous failings in equipments and operator error)
35. DC - 10 Crash 1970's (Due to aviation faulty maintenance measures)
36. Piper Alpha Oil Rig Disaster - 1988 (Due to lapses in safety inspection and procedures)
37. 2006 Kolkata Leather Factory Fire
38. 2011 Nairobi Pipe Line Fire
39. Costa Concordia Disaster
40. Minamata Chisso Disaster
41. De la Concorde Overpass Collapse
42. The explosion of the Ariane 5 (1996)
43. The Ashtabula Creek Bridge wreck
44. Mariner Bugs Out (1962)
45. The Bhopal Disaster