

GIFTS – Getting Students to Make Fact-Based Presentations in a First Year Engineering Course

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INTRODUCTION

Employer feedback on engineering graduates highlights their proficiency of technical knowledge and hands-on training but also points out their lack of communication skills and lack of experience in presenting fact-based information. Many students do not have an opportunity to work on their presentation skills until they take higher-level engineering courses. Making effective presentations is imperative for students to be able to demonstrate their ideas and designs efficiently. Fundamentals of Engineering Design (FED101), an introductory first-year engineering course, is an opportunity for instructors to encourage students to research facts on various topics and present them in a formal setting to the class.

The authors did two coordinated activities in their FED101 courses to teach students the importance of presenting well while getting feedback from their peers and instructors. The first activity was presented by the student chapter of Toastmasters Club on campus. Toastmasters is an organization that operates clubs worldwide to help members improve their communication, public speaking and leadership skills. It served a dual purpose – 1) to encourage students to join this international club and 2) to help students understand how one can improve their presentation skills with minor adjustments. The second activity was a town hall meeting, a team-based activity where carefully chosen topics relating to current affairs were provided to students. Student teams were assigned randomly a “for” or “against” side for each topic. Each team made a short oral presentation followed by a rebuttal/argument on their topic. The goal of these activities was to encourage students to improve their oral communication skills, public speaking skills, and simultaneously motivating them to understand facts about trending topics and be able to present those facts in an effective manner.

IMPLEMENTATION

The town hall activity was assigned two weeks before it was scheduled, and Toastmasters Club presented one week before the activity such that the students had the opportunity to learn some tips and tricks to improve their oral communication skills and start to apply them the very next week. The town hall activity was structured to be carried out by choosing two groups for each topic where students were randomly assigned a topic from a pre-determined list. The

activity was split into three parts and each part was allotted 2 minutes.

Part 1- First group presents in favor of the topic: The first group presented their views by discussing facts and numbers to justify their stand. Emphasis was on presenting fact-based information regardless of their individual feelings about the topic that was assigned.

Part 2- Second group presents against the topic: The second group presented their views in conflict to the views of their opponent by discussing facts and numbers to justify their stand.

Part 3- Rebuttals/Discussion: At the end of the presentation, the audience and the groups discussed about the accuracy of the facts and further received constructive criticism and feedback from the audience.

Some examples of topics used included- Use of Drones, Net-Neutrality, Self-Driving Cars etc.

STUDENT FEEDBACK

An online survey was distributed to the students, to help gauge the effectiveness of the activity and possible ways to improve it for the next semester. The first part of the survey asked questions such as “The activity helped me work better in groups”, “The activity helped increase my understanding of engineering design process” and more. These questions had options to be rated from 1-5 (1- poor, 5- excellent). The second part of the survey was framed to understand the areas where students were able to improve/learn/explore themselves. Figure 1 summarizes the response.

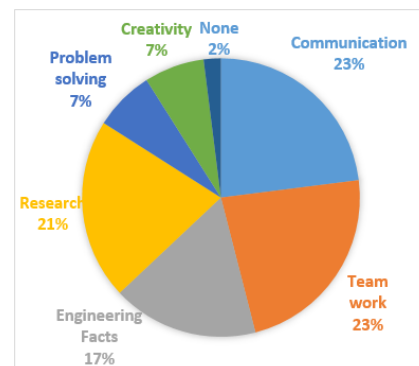


FIGURE 1
SUMMARY OF STUDENT RESPONSE (ACTIVITY HELPED ME IMPROVE...)