



## Presentation Skills For Engineers

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### INTRODUCTION

**P**resentation is a formal talk in which an idea, a new product or a piece of work is explained or shown to a group of people. A person who has presentation skills has the ability to communicate the ideas in his mind to others well. One of the learning outcomes for a person who graduates from a COREN-accredited engineering programme is "good oral and written communication skills" (COREN BMAS, 2014). An engineering graduate is expected to have the ability to communicate his findings and recommendations to both technical and nontechnical audiences. Trevelyan observed that the communication skills of an engineer is assessed using technical reports written and oral presentation made and he also reported that engineers typically spend 60 % of their time communicating with other people.

Hanker, a Senior Engineer at Boeing Vertol Company observed that the ability to communicate effectively is one of the most important skills a person in one of the engineering disciplines must

have for a fulfilling and successful career.

An engineer may need to make several important presentations in the course of his/her professional life. The level of success attained often depends on the quality of these presentations. Therefore, it is important for an engineer to acquire presentation skills. The importance of having good presentation skills is illustrated in the following quotations:

"A person can have the greatest idea in the world – completely different and novel – but if that person can't convince enough other people, it doesn't matter" - Gregory Berns

"As soon as you move one step up from the bottom, your effectiveness depends on your ability to reach others through the spoken and written word" - Peter Drucker

"The successful engineer brings ideas and people together" - Bastian Hello

### ENGINEERING OCCUPATIONS THAT DEPEND ON PRESENTATION SKILLS

There are some engineering occupations where presentation skills are required for the engineer to excel. One of such occupations is teaching at tertiary education level. Engineering lecturers need to have presentation skills to teach well or facilitate learning by the students. Research and Development Engineers also need to have presentation skills to get their research proposals funded and also to communicate their research findings to their audience. A Sales Engineer is a sales professional who has spent at least a few years as a practicing engineer and he or she usually gives technical sale presentations and answers technical questions. Therefore, a sales engineer is expected to have strong technical communication and persuasion skills.

The Forensic Engineer makes use of the tools and techniques of engineering sciences to resolve questions relating to civil, criminal, and regulatory issues. They need presentation skills when they provide support in lawsuits or they are asked to render expert opinions on the

matter under consideration.

Engineers in industry also need presentation skills when presenting proposals or their work to their employers, during presentation of papers at conferences and when they undertake postgraduate studies.

**CASE STUDY OF W. H. CARRIER- AN ENGINEER WHO HAD PRESENTATION SKILLS**

From an article on Willis Haviland Carrier, the father of Air conditioning, by Hirschfeld, three presentations that he made and the outcomes are given below:

1. After graduating from Cornell University in 1901 with the degree in Mechanical Engineering, Willis Haviland Carrier was employed as a draftsman-designer in Buffalo Forge Co. In his first year with the company, he read a paper at the annual sales meeting of the company in which he described a study he had done on mechanical draft.

The result of this presentation was that a formula for selecting draft fans for maximum boiler efficiency with minimum power consumption was adopted.

2. In his second year at Buffalo Forge Co., Carrier made a suggestion to his employers on establishing a Department of Experimental Engineering at the company to develop design criteria for specifying different kinds of heat transfer equipment.

Result: His suggestion was promptly accepted and the department established

became "the first full-scale research laboratory in the embryonic air conditioning industry" and Carrier's salary was doubled.

3. In 1911, Carrier presented a paper at the Annual Meeting of American Society of Mechanical Engineers (ASME) titled: "Rational Psychrometric Formulae: Their Relation to the Problems of Meteorology and of Air Conditioning." His biographer said Carrier "presented the most significant and epochal document ever prepared on air conditioning" and it has been referred to as the "Magna Carta of Psychrometrics".

As a result of this presentation, "engineers accepted the control of air as a branch of their profession", Carrier psychrometric chart was included in text books and air conditioning started to gain entry into first degree curriculum.

W. H. Carrier was a good example of an engineer who had presentation skills judging by the results obtained through his presentations.

**IMPROVING PRESENTATION SKILLS**

No matter what level of presentation skills an engineer has now, through planning, preparation and practice (3P's), it can be improved upon.

**Planning**

There is need to make adequate planning on some practical details well ahead of the time scheduled for the presentation. Such details include travel arrangement, accommodation, clothes to wear,

knowing the venue and equipment available for the presentation and interaction with the organizers of the event.

**Preparation**

There is need to define the purpose for the presentation i.e. what you want to communicate to the audience and what you want to achieve. In order to connect well with the people in the audience while making the presentation, there is need to find out relevant information about the audience at the preparatory stage.

Engineers need to always work on improving their use of English regularly as background preparation before they are invited to make presentations. Most of the courses taken by engineering students are mathematical and even most aspects of the practice of the profession involves calculations and this can cause the verbal communication skills of the engineer to be weak, if care is not taken.

It is good to start with preparing an outline for the presentation. Ideas should be arranged to flow. If possible prepare to make the presentation in a way people can remember with the use of mnemonics, acrostics, etc. Also, prepare to make the presentation entertaining where possible with the use of jokes, anecdotes and cartoons. If format has been given for preparing the power point slides by the organizers, it is good to follow it.

In preparing for the presentation, it is good to get information from the internet, read relevant books, academic journals, professional magazines, and have private

communication with experts identified on the subject matter of the presentation. Some newspapers publish speeches made at special occasions by experts in various fields. Press cuttings or newspaper clippings on various topics of engineering interest can be very useful.

Preparing like this will increase your confidence before the audience and reduce stage fright and help you to be able to answer as many questions as possible after the presentation. It is good to anticipate some questions that may come from the audience and prepare to answer them.

#### Practice

Practice involves doing rehearsal of your presentation many times before the actual presentation event. It was reported that the late Steve Jobs (former Apple CEO) who was one of the greatest communicators in the world, would begin preparation months in advance of making a presentation and this preparation included working with his team to fine tune his presentation and sometimes he practiced aloud alone in a room.

The different ways that have been suggested to practice making your presentation include:

- a. Setting up a video camera to record your mock presentation and play it back later to see areas where improvement can be made;
- b. Making the presentation before a mirror; and
- c. Practicing aloud in front of a friend, professional colleague, family members or an unbiased audience so that you can get a feedback.

#### EFFECTIVE DELIVERY OF THE PRESENTATION

It should be realized that making a presentation is a two-way communication, between the presenter and the audience, in which the presenter does most of the talking and it is important to connect with the audience through appropriate body language and eye contact.

Effort should be made not to exceed the time given for making the presentation by the organizers of the event.

It is not unusual to feel nervous while making a presentation especially at the beginning. This can be overcome by concentrating on the audience and the speech rather than on yourself. Most people in the audience may not know that the presenter is nervous and there is no need to draw attention to it by mentioning it or apologizing for it. It appears there is no cure for stage fright or tension felt before making a presentation, but it should be realized that the tension felt is beneficial rather than harmful as it helps the speaker to make a better presentation.

After you have been introduced and invited to the podium, make a smooth transition to the main body of the presentation by observing protocols briefly and acknowledging co-authors and sponsors of the work, if any.

The written version of the presentation may be distributed when you are about to start the presentation but you should concentrate on the power point slide version and avoid reading from the written version if you can help it.

While making the presentation, be yourself, speak naturally and do not speak too fast. Use the microphone in such a way that everyone in the audience can hear you well, i.e. loud enough and clear. Unless the audience is made up of only people who are specialists in the subject that is being discussed, there is need to simplify your presentation so that anyone with general engineering background can understand. Be active by moving around and using controlled gestures and above all be enthusiastic in making the presentation. Repeat the main points of the presentation in a creative way so that people can get the message being passed across without getting bored.

The questions asked by people in the audience should be answered briefly. The question and answer session should not be a time for long speeches. Give opportunity to people in the audience to make brief contribution where you cannot give a definitive answer to a question.

#### CONCLUSION

You do not have to be an orator to make good presentations. Everyone can improve on his or her presentation skills through planning, preparation and practice.

The importance of an engineer having presentation skills has been discussed and a case study of Willis Havilland carrier, an engineer who made effective presentations has been presented. An engineer who wants to have a successful and fulfilling career needs to have his or her presentation skills constantly refreshed.