WHAT THEY DIDN'T TEACH YOU IN ENGINEERING SCHOOL

By: Marjorie Burren

If you're studying to be an engineer, you are probably spending a good deal of your time studying math and science, learning how to do surveys, analyze data, design complicated charts and graphs, etc. All of which are invaluable in doing your job as an engineer. If you have been out in the field as a PE, you probably studied all those things in school, and now have discovered that the "Real World" of engineering is more complex and varied beyond those engineering skills.

I have been working as a consultant in the Engineering/Architecture/Construction Management world for almost 20 years, and want to share with you some of the things you may not have learned in school. I hope these tips help you in the real world, whether you are there yet or not—and what an exciting world it is. Very few things we take for granted in life–cell phones, electricity, computers, and clean running water–would be here for our convenience without some good engineering.

DEVELOP YOUR SPEAKING SKILLS

I have asked many colleagues over the years how much of their time they spend speaking, either at a meeting, on the phone, presenting to a project to a client, or the community. Most all of them say between 60–70% of their time! So once you become a professional engineer, you are going to probably spend just as much of your time speaking about what you do, than actually doing it.

If you are in school, try to take any course you can that will improve your persuasive speaking skills – an acting course, a debate or rhetoric course, or just a regular speaking course. Or find an acting class in your area. Standing up to speak is a high source of anxiety for most people. You will have a leg up if you have developed your style. It will also help advance your career. If a company can't count on you to speak – with your colleagues, or a client, or to a community – it can impede your business development.

I teach at my local University's Design Studio, where our future architects are developing. Some comments I have received from my seminar participants include:

"One of the most memorable things you said was, "We are born very expressive, but with time we become smaller." I really needed to hear that. Thank you. And it's okay to not be a perfect presenter because a lot of people struggle with it, but that we can improve if we want to."

"We are always working so hard on the content itself that the presentation is an afterthought at best and not a consideration at all at worst…the biggest thing that I will be working on is what to do with my hands, I usually kept them clasped in front of me or behind me and didn't realize that I was sending undesirable messages to the audience."

Style: I often receive quotes that thank me for helping the speaker develop their style. How do you work on your style? It is very important that you develop a speaking style, one that suits your temperament. Not everyone is extroverted and outgoing; actually, most analytic types, like engineers, tend to be more introverted and less outgoing. It doesn't matter; you can still develop a good speaking style. Some tips:

- Work on your opening: that is the hardest part of any talk, it's that moment between sitting comfortably in your chair and suddenly standing up and being looked at. Try an opening that is a fun quote, a statistic, or something in the news that's recent and relevant to your topic. But it should launch you with a certain kind of energy.
- Don't stand behind a podium: it is a barrier between you and your audience.
- Be physical: speaking is more athletic than mental. Use your body, gesture to explain things.
- Design visuals that help you stay organized, but avoid too many words. An audience will get bored and they don't really help you as a speaker.
- Be creative: If you think of an interesting idea, or prop to use, try it out.
- Try to approach the speaking opportunity with anticipation, rather than dread.
- Practice, practice, practice: even experienced speakers who look like they're "winging it," probably aren't.

And remember: whenever you get up to speak, no one wants you to fail. They are hoping you will do well.

WORK AND PLAY WELL WITH OTHERS – WORK AS A TEAM

When I was a child, we were actually graded on how well we worked and played well with others. It seemed silly to me as a small child, but as an adult, I definitely realize how important it is.

If you are working on a project, whether it's designing or renovating a water treatment plant, improving a highway, or building a new bridge or transit system, you can be assured that you will be working as a team with people from different disciplines. Whatever the delivery method, they all involve some sort of collaboration. It has become apparent over time that the best ideas come from a collaboration of different disciplines. An architect should try to design an esthetically pleasing structure in conjunction with an engineer's sound principles, and then make sure that it can be built properly, that the construction manager knows the right materials are available, priced well, and takes into account the contracting climate.

No matter the delivery method, you will be working with people from different disciplines. Learn some of their language. What does it mean when an architect talks about "contextual design" or the "skin" of a building? Why do Construction Managers want to avoid "Change Orders?" Ask if you don't know. And try not to talk in engineering jargon. Avoid the "ize" words – minimize, maximize, optimize. Use simple clear language that everyone can understand. Rather than "implement strategies," try "this is how we'll approach it." Or, "here are our ideas…" And then give clear steps that

show how you will achieve your goals.

Always try to avoid acronyms - an EIS or a TBM or EAMS might mean one thing to one discipline, but perhaps something entirely different to another. No one is interested in how many acronyms you know. It doesn't make you sound smarter, it's only confusing. When you must use acronyms, always take a moment to let everyone know what they mean first, don't assume that everyone knows what you are talking about. "So our approach to a successful EIS, an "Environmental Impact Statement", will be…."

And remember–you are all there with one common goal: to deliver a superior project.

BEGIN WITH THE END IN MIND

We can all sometimes get so immersed in what we're doing that we forget that when it's completed, other people will have to use it, operate, and maintain it. Whether it's an office building, a bridge, or a power plant, start with the end in mind. As you're designing, ask for input from the end user. What things would they like included? How can you make their life easier?

The great 20th Century architect Frank Lloyd Wright established a School of Architecture. He taught his students not only how to design a beautiful functional building, but before they turned over a house to a client, they had to spend the night in it, and make sure everything was in place the way someone living there would want it. He felt that only by actually "living" in it , if only for a night, would you realize what may have been missing - a light switch in a certain location, a lock on the wrong side of the door, or some other difficulty that you could fix before asking the "end user," the people living in the house, to live there.

Wright also insisted that his students experience the lives of the people for whom they were designing. His clients were mostly wealthy, so he had his students engage in things like concerts, and elaborate dinner parties, which were part of their clients' life style. Try to envision yourself in the environment you are designing. How will it work for the end user? Does it fit their needs? Is it easily maintainable? And be prepared to help with the commissioning, when you actually turn the key over to the people who will be using it. Sometimes a manual can be long and dense; think about doing a presentation at the end to explain some of the intricacies of what you have done, and ideas to help them use these ideas efficiently.

LEARN ABOUT DIFFERENT CULTURES

People behave, and dress, differently in different parts of the USA – and the world. New Yorkers tend to dress formally in business, and are generally fast and assertive, so don't be too shy and passive around them. They will get impatient.

Southerners are polite, and one must always start with some sort of nicety – how is their family, comment on the weather, etc. before you dive into business.

Mid Westerners tend to be somewhat conservative, and respect solid values and sincerity. Don't go for the avant-garde approach in Iowa.

Folks on the West Coast are very environmentally conscious. Some firms in San Francisco are forbidden to use plastic bottles, so don't show up to a meeting there with plastic bottles on hand. They are also somewhat more laid back, and dress more casually as well. You might feel a bit out of place wearing a formal suit to a meeting in Los Angeles. But you would feel quite at home wearing one if you were presenting to a client in South America, or Europe, where they tend to be more formal in their business attire. These are generalities, but it's important to know your audience, and their cultural mores.

If you are fortunate enough to work for a company with global ties, you could find yourself invited to work on projects in different countries, or to attend corporate training functions at your company's global headquarters. Paying attention to language, idioms, dress, customs and culture is extremely important. Do some research before you arrive.

In the transportation industry, for example, most Project Managers and engineers work wherever the most interesting opportunities lie. Whether it's an airport in Singapore, or a new Rail System in England, there will come a time when it may be a good career move to work in another country.

Read up about that country. Learn some of their language, idioms and customs. In the UK, for example, they call a line a "queue," and a train a "tram." (And ice cream is "ices"). There were actually 2 versions of the Harry Potter series published, one in the original "British" English, the other "translated" into "American" English, so kids could understand it.

In Japan, and much of Asia, there is a custom of bowing, usually led by whomever is the highest ranking person in the room. Learn to follow their lead. If you are taken to a group dinner, eat whatever is put in front of you, politely. Even if only a small taste.

It is also accepted practice in Asia to bring a gift for your host, and they will probably give you a gift as well. (As opposed to the US, where public agencies have strict rules about the getting and receiving of gifts.) It needn't be extravagant; it is just a courtesy. They especially like something distinctively from the USA –

- A college Tee-shirt
- A photo book of the Grand Canyon
- A small piece of artwork or something hand crafted
- Something of interest specifically from your state.

I worked on a project in the Middle East, and the whole

team was given an "etiquette" briefing, so we didn't accidentally insult anyone in the room. For instance, throughout the Middle East, it is highly insulting to ever display the bottom of your shoe. A curse is to call someone "the licker of the bottom of your shoe." These are ancient cultures, and if you were walking around a market, you were walking on a dirty surface, and chances are whatever adhered to the bottom of your shoe was highly unsavory.

So if you are someone who habitually crosses your leg by laying your foot on the opposite knee, thereby exposing the bottom of your shoe to a room of people, in Saudi Arabia, for instance, you have effectively cursed and alienated everyone there.

A funny side note: Sadam Hussein was the President of Iraq during the administration of the First President George Bush. We were in an enemy situation with that country, and went to war for a period of time. The president always referred to him publicly as "Sad-Am," which means "the licker of the bottom of your shoe," a huge insult in that country. The real pronunciation of his name was "Sod-Um." President Bush was a sophisticated man; he probably knew how to pronounce his name correctly. He was insulting him publicly, in a possibly calculated fashion. Don't do it inadvertently, and then wonder why everyone in the room suddenly feels like an enemy.

COMMUNICATE, COMMUNICATE, COMMUNICATE!

If you are speaking in front of a multi-cultural group or a diverse group from different countries, speak especially slowly and clearly. Remember, they are translating what you are saying in their heads from English to whatever their native tongue (or regionalism, in this country), and that takes a few seconds. And keep your language clear, simple and accessible. Design and work with visuals that help illustrate your point, rather than fill the screen with boring words and incomprehensible phrases or acronyms.

Take all that wonderful knowledge you are absorbing in school, and now go out into the real world and prosper. And if you are already out there, a few useful tips like the ones I have written here will help you have a successful career.

About the Author...

Marjorie Burren is a graduate of Hunter College with multifaceted corporate experience. She has produced educational films for Harcourt Brace Jovanovich, and was a sales manager for Mattel Toys. She has been a corporate spokesperson for Digital, Liberty Mutual, and NYNEX, and is co-founder of the U.S. Improvisational Theater League. An experienced TV and radio actress, she has taught improvisational theatre in Boston, and has been a guest artist/lecturer at Emerson and Curry Colleges, ASU Graduate Studies Program, and the Thunderbird School of Management in Arizona. For the past 20 years, Marjorie has been coaching individuals and teams in sales and business presentations.