Communications Skills for Engineers in Multicultural Environments

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ABSTRACT: *Increasingly engineers must function in multidisciplinary teams comprising of a variety of differently trained people with different terminologies and communication styles. Globalization adds but just one more dimension to this. As most business and engineering activities involve multicultural interaction, it is very important to have skills and competencies for effective communication. These skills include:*

- *Pacing and leading through variety of means.*
- *Use of effective language patterns*
- *Ability to use different perceptual positions and perspectives.*
- *Detection of thinking patterns and presenting accordingly*

Use of these skills will serve engineers in:

- *Project management*
- *Problem solving*
- *Persuasion*
- *Creativity*

This paper presents observations and findings from a training program designed for engineering graduates. We will address these in the context of case studies:

- *Designing a complete communications skills program for engineers*
- *Issues of skill mastery, knowledge gain, and personal responsibility*
- *Incorporating in 'self' to enable language learning and communication.*

1 INTRODUCTION

People interact with the world according to 'the maps of the world' they have. These maps are created throughout the early stages of our lives. Our parents, the society we live in, the people we interact with all have a contribution to the formation of these maps. Through the interaction we basically use 3 mechanisms to create the maps; we generalize, delete or distort the information. As a result the map of the world we created helps us to interpret the information we receive. It also helps us to create and reinforce our values and beliefs based on the experiences we have.

Since education systems, cultural presuppositions, values and beliefs vary throughout the world, the diversity of maps of the world is unlimited. Although on one hand the diversity contributes to the creative potential, the lack of communication of different maps prevents the potential to be used effectively. When in multicultural environments engineers miss the opportunity to communicate, the knowledge, skills, and ideas cannot be exchanged. As a result the resources are used inappropriately, projects are either incomplete or unsuccessful, and lack of communication skills becomes a prime barrier for engineers to do their jobs and utilize their true potential.

2 COMMUNICATIONS SKILLS TRAINING PROGRAMS

Inclusion of a training program covering effective communication skills in engineering education can be an opportunity to overcome the undesired results. An effective communications skills program may cover the following topics:

1. Pacing and leading skills: The first step of effective communication is to create rapport between people. In order to create rapport, it is important to pace the other person's language, rhythm, body posture and state. Once the rapport is established through pacing, then the 'dance' of the relationship can

be established and leading will be easier for achievement of the goals. Especially for people working in multicultural environments the establishment of rapport is the key for a solid foundation in teamwork.

2. Thinking programs: How people approach to problems depends very much on the programs they have running in their minds. Different cultural values and beliefs play a key role in creation of the thinking programs. Therefore the use of the knowledge in the thinking programs brings a lot of benefit. Once they learn about different thinking patterns, it will be easier to understand how they approach to the problems. By pacing to the way of thinking, persuasion and communication opportunities will emerge.

3. Effective language use: Depending on the perception channel people use (visual, auditory, kinesthetic, and olfactory), the language reflects the way the problems are perceived. Although it sounds like people use same language even within the same culture, research shows that different perceptual channels have different vocabulary. As engineers become more aware of the different vocabulary used for describing the same problem, they become more responsive in understanding the reasons of different expressions and will be prepared to act accordingly and creatively.

4. Genuine listening: In order for the above skills to be available, listening is the prime competence. It is comprised of not only hearing, but observational and calibration skills. This will help engineers to put aside their prejudices and presumptions listening openly for understanding the message sent. Use of listening skills results in decrease of misunderstandings, miscommunication and effective project management.

5. Perspectives: The ability to look at issues from the other person's perspective is an invaluable skill. By accepting and understanding another perspective brings in richness to the experience an engineer will have. The use of this competence will increase the understanding of the map of the world and result in decreased misunderstandings and effective exchange of messages.

3 PROGRAM DESIGN AND OBSERVATIONS

We have developed a program for graduates of engineering schools. The participants were mixed group of engineers from computer sciences and electrical engineers. They had working experience varying between 3 months to 2 years. The main issues they were reporting before the program were about lack of communication and presentation skills resulting in:

- Inaccurate use of resources like money, time and material
- Loss of motivation due to lack of understanding
- Missed opportunities of collaboration
- Increased misunderstandings and conflicts
- Increase in unfinished or unsuccessful projects.

The program developed was comprised of 3 modules of 2 days of training in the course of 5 weeks. It included topic presentations, role playing, case studies and several activities. They were also given assignments between modules to apply their learning to their working environments.

Immediate reporting from the participants was very positive and enthusiastic. Participants of the workshop reported the following changes in their relationships at work:

- Increased clarity in their expression
- Improved listening
- Decrease in misunderstandings
- Better tools for conflict resolution
- Improved skills for problem solving
- Easiness in understanding the other parties view
- Increase in appreciation of differences
- Increased ability to create and hold space for creativity

In terms of their performance as engineers the following are reported:

- Increase in fulfillment of goals
- Improved leadership skills
- Better opportunities of self-actualization as engineering professionals.
- Increase in overall work satisfaction
- Less need for error correction and problem solving activities
- Increase in utilization of collaboration opportunities.

4 CONCLUSIONS

Globalization brings lots of opportunities to exchange knowledge and skills. Learning from one another is becoming a great tool for continuous education. The engineering education programs have been emphasizing a lot of disciplines and structures for the learning of the content. Addition of communication skills training programs to the portfolio of curriculum will have a huge impact in not only empowering the graduates to be more competent in the use of their engineering skills, but will enable them to interact with colleagues in a more productive way. The appropriate utilization of resources, success in project management and credibility of the profession will inevitably follow.

As different perspectives and experiences merge, engineers will be able to lead the world into a better place for creativity, better applications of technology and effective utilization of limited resources.

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