What It Takes to be a Good Engineer

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Ir. Mohd Khir Muhammad is a Council Member and currently serves in the Excomm. He is the past chairman of the IEM southern branch.

I HAVE been an academic and practising engineer since I graduated with an engineering degree in the 1980s. In recent years, I have been regularly invited to give talks and share my experience with enthusiastic engineering students at universities and eager young engineers as part of their career development.

The most common questions asked by these young people are about their future in the engineering field, the role of engineers, what to expect as engineers and what it takes to be a good engineer.

I remind them that engineers have played important roles in many of the great inventions and technology in the world today.

Everything from space flights, ocean exploration and great structures on earth require the work of an engineer.

Therefore, to be a good engineer, one must possess certain qualities and skills.

A good engineer must have a vast amount of technical knowledge and be competent in a specific engineering discipline.

Traditional engineering disciplines are civil, electrical, mechanical and chemical engineering.

But in modern practice, with emerging technology in areas such as aerospace, micro-electronics, nanotechnology, biomedical among others, engineering is becoming multi-disciplinary.

There are more specialised engineering disciplines than before and all require specific technical knowledge and competency.

However, engineering is based on mathematics and science and if one has a strong foundation in these subjects, it certainly helps.

If people ask me what engineers do, I would say a great portion of our work is solving problems.

So a good engineer must be able to think logically to figure out where the problem stems from and quickly find a solution.

Thus, having problem-solving skills together with the ability to think logically is important.

Creativity is another important quality. A good engineer must be able to think of new and innovative ways to develop new systems while making existing things work more efficiently.

By nature, an engineer should be inquisitive and must have excellent analytical skills to continually examine things and think of ways to help things work better.

They are trained to give attention to detail because the slightest error may cause an entire structure to collapse. So, every detail must be reviewed thoroughly when doing a project.

A good engineer must have excellent communication skills to be able to effectively interact with others. Engineers sometimes have to translate complex technical language into simple language that can be understood by non-technical clients.

Besides written and verbal, they must also have listening skills.

We tend to only listen to the views of bosses and in meetings we hardly create the opportunity for subordinates to speak and offer ideas.

A good engineer must also listen and encourage subordinates, such as technicians, to give suggestions.

They sometimes can provide good solutions to engineering problems.

Currently, in some areas of engineering, changes in technology are happening rapidly, for example in computing and micro-electronics.

To stay on top in the industry, an engineer must keep abreast of new technology, research innovation and ideas.

Therefore, a life-long learning activity or continuing education is important for engineers to improve their knowledge, skills and competency.

But all that being said, I believe the most important aspect in life as an engineer is to be able to enjoy and love every second of whatever you are doing and to have pride in your work.

If you are a technically competent and disciplined person, dedicated and systematic in doing things, and ever willing to work hard, you will be not only good but also a great engineer! ■

Editor's Note: This same article has been published as letters to editors in The New Straits Times and The Star.