Generational Change and Engineering Education

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There are four Generations in the Australian Workforce today – the 'Builders', the 'Boomers', 'Generation X' and 'Generation Y'. The differences between these Generations are profound and a key issue for consideration in creating and maintaining a harmonious and productive team in any workplace or learning institution.

The transfer of knowledge and wisdom from older to younger generations is a longstanding fact of life and one which is done in many ways, both knowingly and unknowingly.

In today's technological world, there are some rites of passage involved for young people to be able to participate. There are basic tools of trade that need to be developed to the point where dialogue can be held between the Teacher and the Student.

In the technologically based world of Engineering, this inevitably means the study and mastering of increasingly complex mathematics and science throughout a child's education from 'K to 12'. These are truly 'empowering subjects' which build on accumulated knowledge and understanding in a manner which is not as imperative in the 'Arts'. For instance, basic arithmetic must be mastered ahead of algebra, geometry, trigonometry and calculus. The fundamentals of Physics and Chemistry need to be understood and locked into the students way of thinking. Bio-science too is becoming more and more important as we realise the need to protect and preserve our planet and its many life-forms.

Once these building blocks are in place, a student is ready for the Engineering Educator. That said though, the need for good communication skills, both written and verbal, must be recognised and addressed throughout a child's education. To not do so is to fail to learn from past mistakes and perpetuate the delivery of graduates who are unable to communicate their technically based work to those who must 'make it happen'.

The importance of these issues to Australia cannot be over emphasised. As a relatively small country in the increasingly technically based global marketplace, Australia has a significant handicap in both its small population base from which to draw its raw technical resources and in its sheer size and the tyrannies of distance.

Teachers from Kindergarten to Year 12 play a vital role in preparing the feedstock to Engineering Educators at the professional, para-professional and trade levels. The shortage of Maths and Science Teachers at secondary level is a current issue of national importance and one which is now being addressed as a matter of urgency, albeit often on a 'stopgap' basis.

This Paper will discuss the importance of Generational differences and change on the educative process from the viewpoints of both the Teacher and Student. It will suggest a basis for understanding these differences with a view to helping the ‘breaking down of the barriers’ to good communication between teachers and students.

The Paper will relate to Australia’s current national skills shortages in all layers of the Engineering Sector and will draw on the Authors relatively unique experience as an Australian Engineer in both a technical and social sense.