

# **POST SCHOOL EDUCATION IN MATHEMATICS AND STATISTICS**

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## **CRITICAL SKILLS REPORT**

- An excellent and timely study and report
- Findings are dismal and of major concern
- Acceptance of recommendations are a necessary but hardly sufficient first step to address the emerging crisis
- Report identifies how the whole system is inter-connected — from primary school mathematics teaching to post graduate research

## **POST SCHOOL EDUCATION IN MATHEMATICS AND STATISTICS**

- Report makes the point that mathematics is either taught by non mathematicians or as a service
- Both approaches involve trade-offs competence vs context
- Debate on depth vs breadth requires mathematicians to demonstrate how the needs of the graduate are better met by their involvement
- Quality and commitment are cited as sometimes lacking in service teaching

## **MATHEMATICS IN THE WORKPLACE**

- Most people undertake post-school studies to get a job so the focus must be on the needs of employers
- Many employers do not know what they do not know
- Requirements can be active or tacit – direct or indirect users of mathematical techniques
- Most users take the formulaic approach rather than a research driven one

## **ACTIVE/DIRECT USERS**

- Report notes a wide range of industries and applications serviced Increasingly globalised, competitive and complex economy gives priority to risk analysis and management
- “Black box” approach common which might provide cheaper up-front cost but often sub-optimal outcomes Major users need more mathematicians to understand the contents of the “black box” and whether a better solution is available

## **TACIT/INDIRECT USERS**

- Virtually all other businesses can fall into this category
- Many would benefit from a greater understanding of what broader use of mathematical techniques could provide
- This requires people who know enough about mathematics see opportunities, not necessarily mathematicians
- Understanding what mathematics and statistics can provide needs to be a virtual “graduate attribute”

## **IMPACTS OF TECHNOLOGY**

- Perversely the sophistication of modern hardware and software has reduced the need for understanding of mathematics in most of the workforce
- Tradespeople, technicians, accountants etc can now purchase packages to do what they once did manually from fundamentals
- Problem arises when these people want to advance, where no off-the-shelf solution exists or their firms need a competitive edge

## **MATHEMATICS AND VOCATIONAL EDUCATION**

- Most TAFEs are also “further education” providers which means they offer courses on remedial mathematics
- TAFEs accept entry level skills have dropped but where this is a problem they provide their own remedies
- Loss of mathematical skills in entrants to TAFE not generally seen as a major issue due to the technology now available

## **NEXT STEPS**

- If there is a shortcoming in the Report it is the lack of recognition of what the mathematics community needs to do to help itself
- The Report sells the community short in terms of what is already being done but clearly more is needed
- Employers will not come to the mathematicians, they must demonstrate better to industry what they have to offer

## **“DEMAND FOR” VS “CAREERS IN”**

- The report mentions, although does not elaborate on, the need for a better articulation of career opportunities for mathematicians
- This is essential but needs to be accompanied by the mathematics community better educating potential users of the value of what they can offer
- Many of the problems identified will be better solved by emphasising increased demand rather than supply