A blueprint for an actuarial education

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Presentation outline

- ***Presenter's perspective***
- ***On the wisdom of Presidents***
- ***Main features of a blueprint***
  - ***Actuary = knowledge + capabilities***
  - ***Recognising a whole degree***
  - ***Supervision: A principles-based approach***
  - ***Re-shaping actuarial education***
- ***Innovation: Problem Based Learning?***
- ***Scope: Current Parts I and II (focus of university actuarial education)***

Presenter's perspective

- ***Over 22 years teaching thousands of actuarial (and other) students at Macquarie University in Sydney***
- ***Teaching actuarial students face-to-face in Canada, USA, Kazakhstan, PRC, HK, Singapore, Malaysia (as well as Australia)***
- ***Teaching Actuarial Control Cycle students in many countries via Internet***
- ***SoA Course 7 Seminars 2001-2006***
- ***UK Profession's CA2 seminars 2006-08***
- ***Grad Dip Ed; Masters in Higher Ed***
- ***Research focus: student learning***

Wisdom of Presidents

- ***Acknowledgement: Presidential Address of Peter Clark (delivered in 2000 by then President of IoA)***
- ***Most of the Presidential quotes are taken from Peter Clark's Address***
- ***Clark's title: "Communication, Culture and Companionship"***

High priest and Delphic oracle?

"One still meets, I'm afraid, as an echo of the past, the suggestion that the actuary is a remote, academic and altogether superior person; a cross between a high priest, performing mysterious rites, and a Delphic oracle, speaking Greek, in riddles, and, even then, only upon receipt of a large fee. That out-of-date criticism of the profession will, I suggest, be killed very soon, by the spirit already described; it should be killed, not merely left to die."

A H Rowell (IoA Presidential Address, 1946)

What is this "spirit"?

"The newly-qualified actuary must be young. He should emerge stimulated by his course of training and examination, not exhausted by a long-drawn struggle; alive and alert enough to wish to contribute by his further studies to the vitality of the profession."

A H Rowell (IoA Presidential Address, 1946)

Exams and narrowness

"Too long a period devoted to exacting studies and examinations can narrow a man's mind rather than broaden it and, even worse, it can narrow a man's personality and outlook."

Ronald Skerman (IoA Presidential Address, 1970)

Communicating with whom?

"I spent a delightful three years in Oxford studying mathematics and, in the third year, specialised in abstruse pure mathematics. At the end of this process, this highly enjoyable process, I achieved a first class degree without having to string two English words together. I had demonstrated significant ability to communicate with the mathematical cognoscenti – no more and no less."

Peter Clark (IoA Presidential Address, 2000)

Generalist or specialist?

"If we are lured by the siren of generalism we may lose our distinctiveness. We need to reassert that the actuarial profession is a mathematical discipline. It is the rigour of mathematics and the immense potential of mathematical modelling which give flavour to the role of the actuary."

Chris Daykin (IoA Presidential Address, 1994)

A mere mathematician?

"An actuary then must be a mathematician, but a mere mathematician will be a very incompetent actuary."

Arthur Bailey (IoA Presidential Address, 1880)

"Only at the third stage can he claim to be a professional man"

"The first is when he is learning the meaning of the technical terms in order to be initiated into the mysteries of his profession. The second is when he has learned to use these freely and can thus freely exchange ideas with his professional colleagues. The third is when he has learned NOT to use them and can thus communicate freely with the layman."

Jim Pegler (IoA Presidential Address, 1968)

Only an actuary …

"As a profession we are apt to be accurate, cautious, consistent and reticent, and in these lies our strength; but if they do not leave enough room for impulse and imagination, they can be a weakness. The actuary who is only an actuary is not an actuary."

F M Redington (On receiving IoA Gold Medal, 1968)

Recognising actuarial capabilities

- ***Currently: curriculum focuses almost exclusively on (technical) knowledge***
- ***Knowledge is a necessary attribute for an actuary but it is not sufficient for a good actuarial practice***
- ***As several Presidents noted, a good actuary is more than a technician***
- ***Development of actuarial capabilities needs to be recognised as an ongoing process that can begin earlier than work experience***
- ***Many actuarial employers provide invaluable actuarial mentoring but the profession must ensure that all future actuaries develop the capabilities of good practice***

What are actuarial capabilities?

One version of the set of capabilities:

- ***Technical expertise***
- ***Problem solving***
- ***Critical evaluation***
- ***Flexibility***
- ***Creativity***
- ***Rigorous analysis***
- ***See "big picture"***
- ***Strategic approach***
- ***Integrity***
- ***Self-management***
- ***Interpersonal***
- ***Negotiation***
- ***Communication***
- ***Business acumen***

Adapted from Gribble (2003)

What are actuarial capabilities?

Another version of the set of capabilities:

- *Quantitative skills*
- *Markets & institutions*
- *Regulatory & industry environment*
- *Problem solving*
- *Attention to detail*
- *Business acumen*
- *Financial reporting*
- *Communication*
- *Leadership*
- *Advisory skills*
- *Proactive capacity*
- *Ethical behaviour*
- *Teamwork skills*
- *Innovative thinking*
- *Project management skills*
- *Risk management skills*
- *Aware of "big picture"*
- *Can take informed risks*

IAAust survey of employers (August, 2006)

What are actuarial capabilities?

- ***Also, consider this list – compiled by Moulton & Lowe (2005) – of "personal abilities" needed by engineers in the early part of their career:***

➢ ***Being willing to face and learn from errors and listen openly to feedback***

➢ ***Understanding personal strengths and limitations***

➢ ***Being confident to take calculated risks and take on new projects***

➢ ***Being able to remain calm under pressure or when things go wrong***

…… continued

What are actuarial capabilities?

- ***Having the ability to defer judgement and not to jump in too quickly to resolve a problem***
- ***A willingness to persevere when things are not working out as anticipated***
- ***Wanting to produce as good a job as possible***
- ***Being willing to take responsibility for projects, including how they turn out***
- ***An ability to make a hard decision***
- ***A willingness to pitch in and undertake menial tasks when needed***
- ***Having a sense of humour and being able to keep work in perspective***

Recognising a whole degree

- ***Currently**: IAAust awards exemptions from CT equivalent subjects individually*
- ***For example, a grade of a minimum level in a specified university subject earns an exemption from Subject CT5***
- ***Problem**: Creates actuarial degree programs with two classes of subject – exemption and non-exemption subjects*
- ***Implicit message: Learning in non-exemption subjects is not important to becoming an actuary and is not valued by the profession***
- ***Solution**: Recognise a whole degree*

Accrediting university programs

- ***A principles-based approach:***
- ***"IAAust's approach to supervision of university actuarial education is principles-based rather than relying on prescriptive rules. A principles-based approach is one that emphasises learning outcomes in setting educational requirements and expectations, but does not seek to specify or prescribe the exact manner in which those outcomes must be achieved."***

Accrediting university programs

- ***<u>Current approach</u>: Universities seeking accreditation are asked to demonstrate that their programs "cover" a minimum proportion of the knowledge-based syllabus***
- ***<u>Recommended approach</u>: Universities seeking accreditation are asked to demonstrate how their programs support development of the specified learning outcomes and how the achievement of those outcomes is assessed***

Accrediting university programs

- ***Current approach: Universities seeking accreditation are not asked to demonstrate the quality of their teaching***
- ***Recommended approach: Universities seeking accreditation are asked to demonstrate the teaching qualifications and expertise of their teaching staff and that minimum standards are met***

A student's perspective

- ***A 2009 Macquarie Uni Control Cycle student, commenting on excerpt from Presidential Address:***
- ***"Trevor Thompson expresses surprise that there are so few actuaries who are also entrepreneurs. I'm not at all surprised, at least for the ones who make it through the UK Part I exams – it seems to me that the exam process selects people with the ability to memorise detail, use calculators fast and accurately and take meticulous care in complicated calculations. These may well be good skills for actuaries to have (at least in the pre-computer days), but I would guess that they rarely come together with the skills of the entrepreneur."***

Forms of assessment

Some forms of assessment (not exhaustive):

- ***Case studies***
- ***Collaborative (group) projects***
- ***Essays***
- ***Exams (unseen)***
- ***Exams (seen/open book)***
- ***MC questions***
- ***Peer assessment***
- ***Portfolios***
- ***Practical projects***
- ***Presentations***
- ***Self-assessment***
- ***Short answer Qs***
- ***Simulations***
- ***Viva voce exams***

Adapted from Atherton (2005)

Shape of actuarial education

(using current IAAust program as an example)

Part IV: Work experience, professionalism, lifelong CPD

Part III: Investments, commercial practice, specialisations (life; GI; finance/inv; super/savings)

Part II: Actuarial Control Cycle (principles of actuarial financial management, links, "big picture", professionalism, etc)

Part I: Stats, fin maths, contingencies, fin econ, econ, finance, accounting, probability, modelling

Why re-shape actuarial education?

- *To be consistent with good pedagogy*
- *To improve quality of both core knowledge understanding and capability development*
- *To develop better individual lifelong learners*
- *To match professional education in other disciplines*
- *To produce a more diverse professional membership*
- *To provide starting actuarial students with a learning framework: "What an actuary does" (eg control cycle)*
- *To allow learners to re-visit control cycle (what an actuary does) from time to time, at increasing levels of sophistication*
- *Cyclic process, but within an upwards spiral!*

- ***To change the focus from convergent to divergent thinking***

IAAust could encourage innovation

- ***Several professional (eg medicine, law, engineering) and other university programs (eg management, business) have adopted a Problem Based Learning (PBL) approach***
- ***IAAust could encourage one or more accredited universities to test PBL (eg in Control Cycle subjects) with a view to evaluating its possibilities for actuarial education***
- ***PBL is well established across disciplines and countries***

What do you think?

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