

Embedding Graduate Qualities in Science Degrees

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DVC Education



Outline

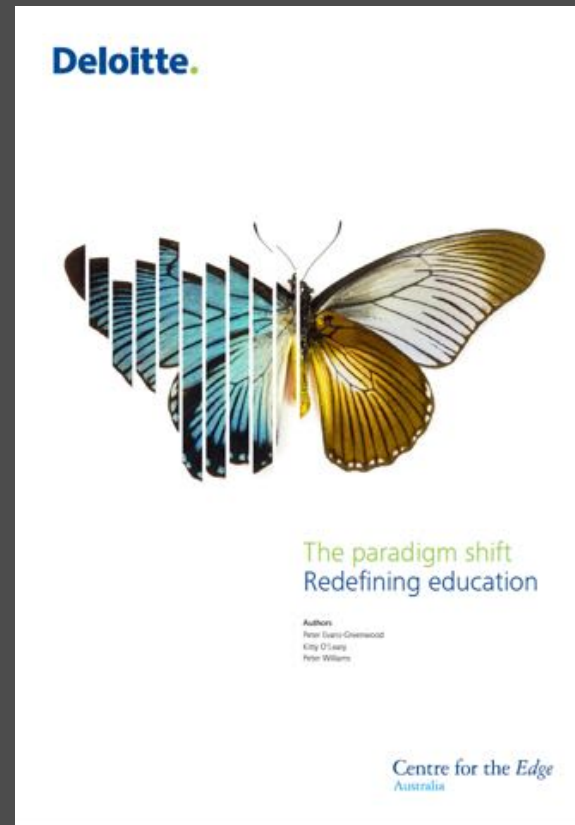
1. Context: a broader educational transformation
2. Graduate qualities
3. Embedding graduate qualities
4. Supporting the embedding
5. Assessment of graduate qualities

1. Context: a broader educational transformation

External drivers: a changing world



'... almost five million Australian jobs – around 40 per cent of the workforce – face the high probability of being replaced by computers in the next 10 to 15 years'

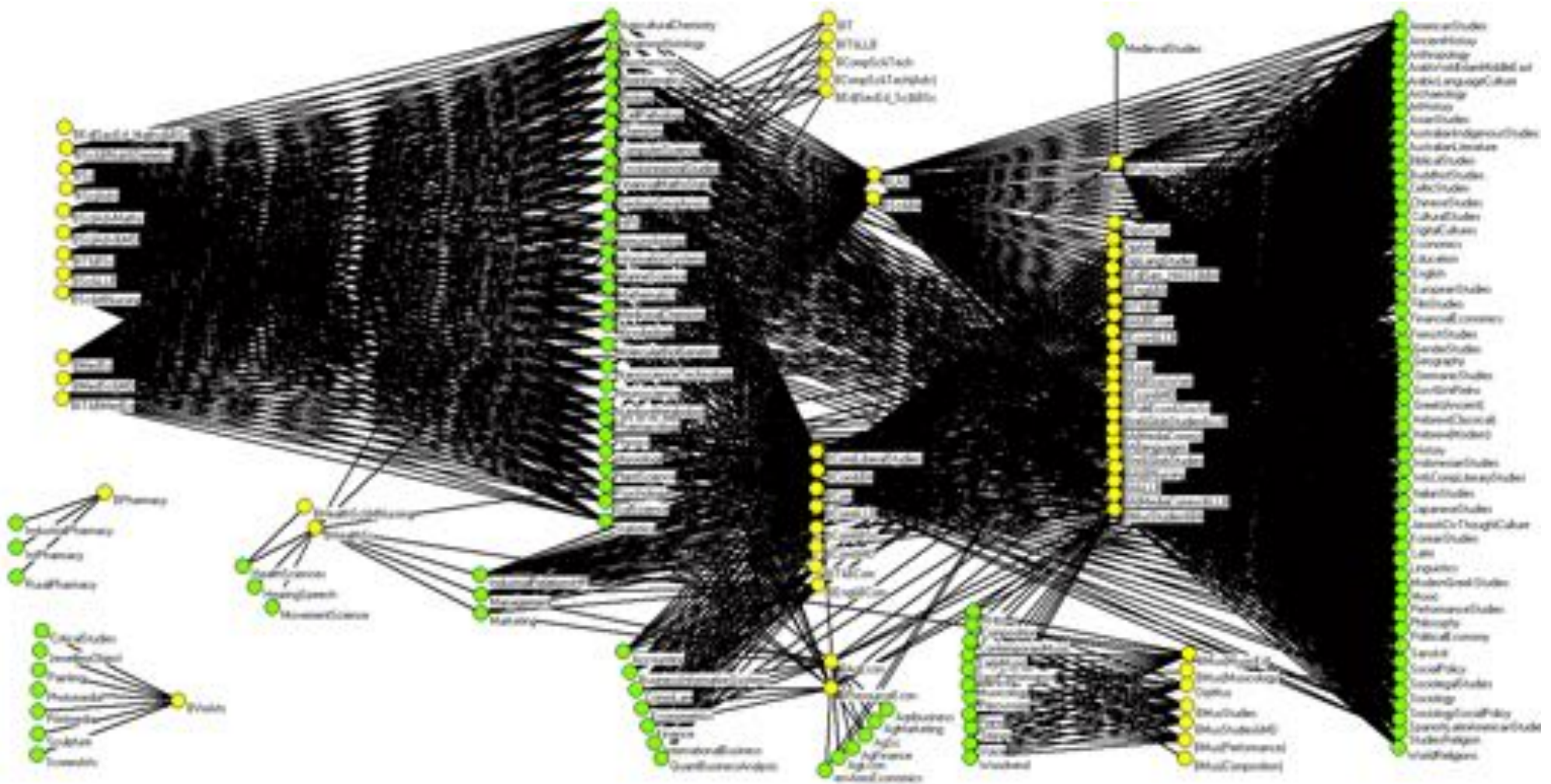


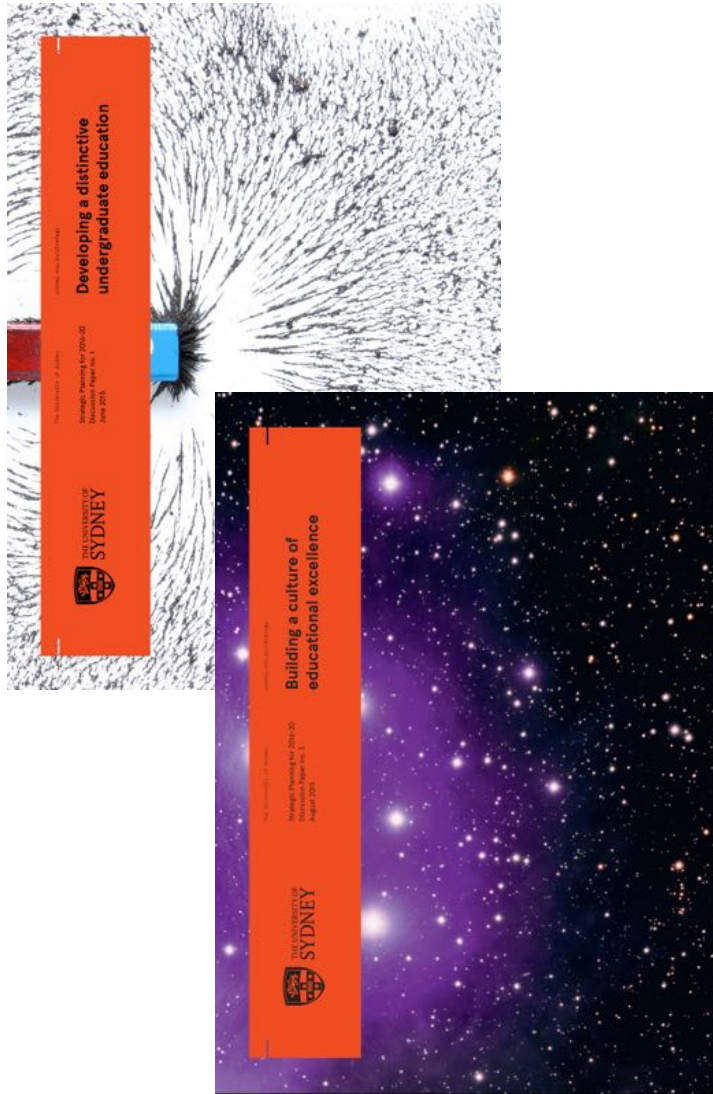
'Today, being educated increasingly means having the attitudes and behaviours that enable one to adapt quickly to changed circumstances'



' ...most interviewees felt that skills and training did not extend sufficiently beyond STEM to meet the needs of innovation in a rapidly changing world'

Internal drivers: current performance, current degree profile





See <http://sydney.edu.au/about-us/vision-and-values/strategy.html>

Two education strategies

Strategy 4: Transform the undergraduate curriculum

- *new graduate qualities and curriculum framework in all UG degrees*
- *new undergraduate degree and double degree architecture*
- *the Curriculum Development Fund*
- *University-wide approach to assessing graduate qualities*

Strategy 5: Transform the learning experience

- *interactive and collaborative learning designs to foster excellence and innovation*
- *new environments to enable flexible and interactive learning*
- *new professional learning and support environment*

2. Graduate Qualities

Qualities of the Sydney Bachelor graduate

Graduate qualities	Purpose
Depth of disciplinary expertise	To excel at applying and continuing to develop disciplinary expertise
Broader skills: <ul style="list-style-type: none"> critical thinking and problem solving communication (oral and written) information/digital literacy inventiveness 	To increase the impact of expertise, and to learn and respond effectively and creatively to novel problems
Cultural competence	To work productively, collaboratively and openly in diverse groups and across cultural boundaries
Interdisciplinary effectiveness	To work effectively in interdisciplinary (including inter-professional) settings and to build broader perspective, innovative vision, and more contextualised and systemic forms of understanding
An integrated professional, ethical and personal identity	To build integrity, confidence and personal resilience, and the capacities to manage challenge and uncertainty
Influence	To be effective in exercising professional and social responsibility and making a positive contribution to society

3. Embedding graduate qualities

We seek to embed the graduate qualities at three levels

- **Macro:** at course or stream level, by adopting:
 - course/stream level learning outcomes (graduate qualities + science-specific outcomes)
 - a common curriculum framework
- **Meso:** at program or major level, by ensuring:
 - appropriate program/major level learning outcomes
 - planned and sequential development of qualities (reflected in unit-level learning outcomes) across the curriculum
 - increasingly open and challenging integrative project opportunities
- **Micro:** at unit of study level, by:
 - adopting learning designs, activities, assessments aligned to unit learning outcomes
 - unit learning outcomes mapped to program/major and degree/stream learning outcomes

Curriculum Framework for every undergraduate degree

No.	Form	Curriculum component
1	Core	A major or specialisation in at least one field of study
2	Core	A structured approach to the development of knowledge and skills
3	Core	Collaborative and group-based learning activities and assessments
4	Core	Interdisciplinary learning experiences
5	Core	Authentic problems and assessments
6	Core	An open learning environment for extension of knowledge and skills
7	Core	Project-based learning
8	Opportunity	Opportunities to develop expertise across multiple fields of study
9	Opportunity	Opportunities for research
10	Opportunity	An open and connected learning environment, an academically rich co-curriculum
11	Opportunity	Opportunities to broaden cultural horizons
12	Opportunity	Opportunities for contribution and leadership

Curriculum features

- Major/specialisation
- Structured skill development
- Collaborative and group-based learning
- Interdisciplinary learning
- Authentic problems and assessment
- Open learning environment
- Project-based learning

Graduate qualities

- Depth of disciplinary expertise
- Broader skills
- Cultural competence
- Interdisciplinary effectiveness
- Integrated identity
- Influence

Curriculum opportunities

- Multiple majors
- Research
- Open, connected learning environment
- Broader cultural /global horizons
- Service and leadership

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At program/major level

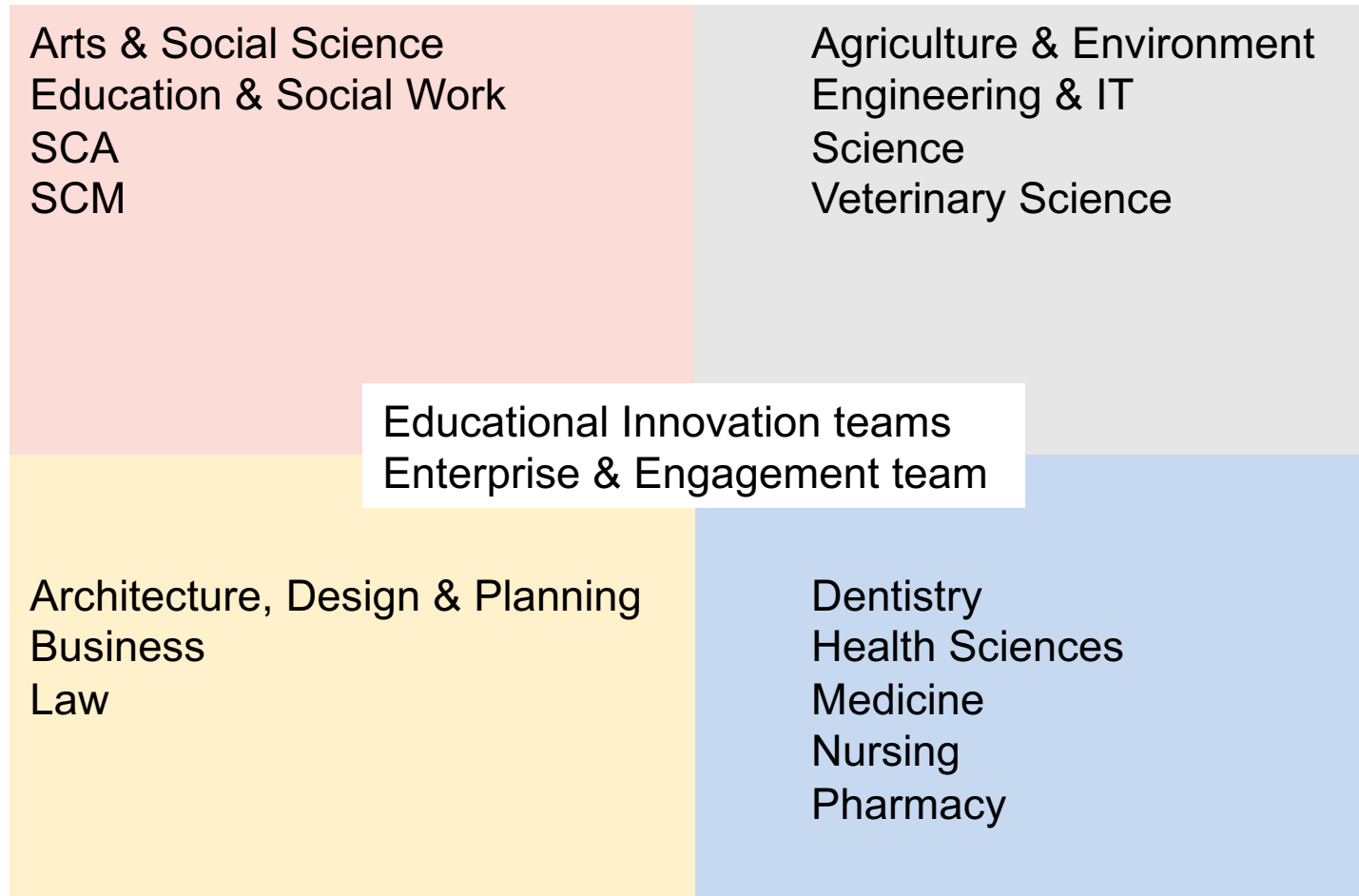
- Work with program/major design teams to ensure
 - appropriate program/major level learning outcomes
 - sequential development of qualities (reflected in unit-level learning outcomes) across the curriculum
 - increasingly open and challenging integrative project opportunities

At unit of study level

- Support for unit of study level teaching teams to:
 - include learning outcomes related to graduate qualities where appropriate and proposed by program/major teams
 - incorporate, re-use and adapt university-developed resources where relevant (e.g. from OLE)
 - create learning designs, activities, assessments aligned to unit outcomes
 - map unit learning outcomes to assessment tasks and to program/major and degree/stream learning outcomes

4. Supporting the embedding of graduate qualities

Hub-and-spoke support model for Educational Innovation (professional development, academic support, educational design) and Engagement (relationship management, coordination, academic support)



Faculty Compacts and Strategic Education Grants

- Faculty compacts, for agreed degree/stream and program/major embedding projects:
 - Teaching relief
 - Additional contract appointments (academic, professional)
 - Educationally-focussed 'enterprise and engagement' capacity
 - Project management
 - Educational design
- Strategic Education Grants, for competitive unit of study level projects:
 - Project-based units
 - Open Learning Environment modules
 - Sydney Research seminars
 - Quality improvement and innovation at unit level

Resources to support embedding: Cultural Competence

- 2011 DVC (Indigenous Strategy and Services) Prof Shane Houston
 - 2013? *Wingara Mura – Bunga Barrabagu* strategy
 - 2014 The Kinship Module (A/Prof Lyn Riley)
 - 2014 National Centre for Cultural Competence, Director: Prof Juanita Sherwood
 - 2014 Bowral projects: seeding cultural competence for education, research, organisational culture
 - 2015 Teaching and Learning Colloquium
 - 2015 OLT Citation A/Prof Jaime Gongora: innovative embedding of cultural competence in veterinary science curriculum
 - 2016 Cultural Competence online modules
 - 2016 Supporting Academics to Teach Cultural Competence
 - 2017 Aboriginal Sydney MOOC, Open Learning Environment
- } Launch of **Cultural Competence at Sydney today!**

Workshops to support embedding graduate qualities

- Series of workshops and forums, for example:

Communication skills

- Monday July 18, 2016
- Communication as a Graduate Quality – How can its development be embedded into curriculum?
- An all day forum featuring:
 - Keynote: Profs Jim Donohue & Julian Ingle, Queen Mary University of London – *Pedagogy, practices and language as a social semiotic: how meanings are made in university study and the implications for embedding language development across the curriculum*
 - Presentations by staff of embedding projects

5. Assessment of graduate qualities

Assessing cultural competence

1. Self-assessment by students (through extension of items in the Student Experience Survey)
2. A project to develop one or more formal approaches to the assessment of graduate qualities, for example:
 - Adopt a common assessment rubric for each quality across relevant tasks to include as part of the task assessment
 - Develop a more formal measurement instrument for the assessment of each quality, to be completed by students towards the end of their course
3. Undertake formal research on the predictive validity of each approach

Thank you

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SYDNEY

Option of a 4-year program: Bachelor of Science/Bachelor of Advanced Studies

Bachelor of Science

- Primary science major
- Core degree requirement (e.g. mathematics)
- Third year Project
- Third year interdisciplinary experience
- Open Learning Environment

Bachelor of Science/Bachelor of Advanced Studies

- As above, plus
- A second major from a broad shared pool of majors
- Advanced coursework in first major
- Substantial 4th year project (research, industry, community, entrepreneurship)
- Professional skills options