A Whole-of-Programme Approach to Embedding Capabilities in the Curriculum

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Future Ready
Graduates

Contents

1. Introduction

Governments the world over require that universities prepare students for their futures. The talk is of employability and economic impact (Campbell, Cooper, Rueckert, & Smith, 2019; Divan, Knight, Bennett, & Bell, 2019). Universities have met this challenge in part by preparing graduate profiles, which comprise a list of attributes or capabilities they believe students will need for successful lives and careers (Small, Shacklock, & Marchant, 2018). The implication is that all degree programmes will provide opportunities to develop all attributes but coloured by disciplinary nuance. Although each university might suggest that their graduate profile is in some way unique there is a great deal of similarity between the graduate profiles of different institutions. Most universities' graduate profiles include capabilities such as critical thinking and problem solving which are familiar to academics and have been an implicit or explicit component of most degree programmes for decades. However, other capabilities deemed important in equipping students for their futures might be less familiar have not been explicitly taught in many degrees (See Table 1).

Table 1: Examples of SLICC Projects

Capability	University	Link
Independence	University of Auckland	https://www.auckland.ac.nz/en/students/forms-policies-and-guidelines/student-policies-and-guidelines/graduate-profile.html
Social and environmental responsibilities		
Lifelong learning	University of Otago	https://www.otago.ac.nz/courses/otago078325.html
Environmental literacy		
Self-motivation		
Globally aware	University of Canterbury	https://www.canterbury.ac.nz/study/graduate-profile/academics/what-are-the-graduate-attributes/
Active citizenship	Oxford Brookes University	https://www.brookes.ac.uk/ocsld/your-development/teaching-and-learning/graduate-attributes/
Self-awareness	University of Adelaide	https://www.adelaide.edu.au/learning/strategy/gradattributes/
Ethical competency		
Influence	University of Sydney	https://sydney.edu.au/education-portfolio/ei/teaching@sydney/graduate-qualities-important
Innovative	University of Cambridge	https://www.cambridgeinternational.org/why-choose-us/parents-and-students/in-class/the-cambridge-learner-attributes/

Study 1 in the Future Ready Grads Project revealed, that while few academics would argue with the desirability of developing the capabilities graduates will need in their futures, many are uncertain about exactly what they are, how they are to be taught, practiced, developed to graduate level and assessed. Additionally, if there is no reduction in the level and breadth of disciplinary knowledge graduates must attain, academics are left wondering, not only how they are to teach capabilities they have not previously taught, but how this can be done within programmes that are already full.

2. The case study

This brief case study describes part of a large scale initiative designed to meet the challenges described above. The overarching need was to move from a quasi-independent course design which focused largely on disciplinary content, to a collaborative whole of programme approach that effectively prepared students for their futures. This had to be done within the resource, motivational and time constraints of staff in such a way that students were well served, with graduate capabilities being systematically and progressively developed in all programmes.

The context is a research intensive university with a stable staffing at professorial level and high levels of internationality at all levels. The faculty has a relatively small number teaching only positions, occupied by people with industry experience and academics who prioritise teaching. Teaching has gained in profile in recent years but, at grass roots level, research activity is widely believed to be the real priority and the route to promotion and success.

Experience within the faculty had demonstrated that while offering face-to-face or on-line professional development could be a component of any change initiative, such measures would not reach the majority of staff. Optional seminars, workshops and events on teaching and learning in the faculty typically attracted a cohort of familiar faces but, in general, not the academics who struggle to teach, senior staff or influencers such as heads of department. Consequently, the team charged with effecting change developed a multi-faceted approach to academic development. (Interested readers can learn more about the process of designing multi-faceted strategic interventions by attending one of the Future Ready Grads workshops or by downloading the workshop materials.) The strategic interventions included: induction to teaching schemes, communication strategies, lobbying senior staff, developing policies, conducting reviews, offering just-in-time coaching, identifying champions, rewarding innovators and establishing communities of mutual interest. One additional strand of activity focused on the development of 'job aids' that would support staff in designing their courses and programmes. It is this strand that is described here.

This case has been written from the perspective of the small team of learning and teaching staff charged with bringing about change.

3. Job aids

Job aids or cognitive aids are designed to provide step by step guidance to enhance the performance of workers (Rossett & Schafer, 2012). They can be used alongside procedural performance during a task. They can also be used before or after a task to plan activities and make or review decisions. Some job aids serve as coaching and learning tools reducing the need for training and supporting workers in thinking through unfamiliar issues. Job aids take many forms ranging from simple paper-based checklist to online wizards to intelligent assistants (Paino & Rossett, 2008). They are thought to be most effective when tasks are performed infrequently, are complicated, risky and depend on the recollection of a great deal of information (Rossett & Shafer, 2012). Performance enhancements are thought to derive from reduction in cognitive load, reduced dependence on memory, increased focus on important dimensions and scaffolding (Fletcher, Bedwell, Frick, & Telford, 2018). Recent research has investigated job aid design and suggests that more detail can aid accuracy but increase time taken which can reduce uptake. Relatedly, the chunking of information is advocated so that aids are intuitive in their structure. Integration with tasks or decisions is often helpful and facilitates take-up (Fletcher et al., 2018; Kluge, Grauel, & Burkolter, 2013; Marshall, 2017). Level of trust and provenance is important in determining uptake too (Marshall, 2017).

Beginning with a literature review and informal meetings with staff, a number of performance challenges or problems were identified. In the sections that follow, each problem is described, the job aid introduced and the measures to promote uptake are explored. The job aids are described in sequence which implies a more orderly development process than was achieved. In reality all the job aids were developed concurrently and refined repeatedly over a period of approximately two years. Collectively, they have undoubtedly been useful. They serve to demystify the complex expectations of programme and course leaders regarding curriculum design. They also support the performance of time pressed academics as they review and prepare their courses. .

4. Job aids to support embedding capabilities in course design

Problem 1 The teaching of graduate profile capabilities was invisible.

For several years academics had been expected to prepare a set of learning outcomes for each course but had not specified which graduate capabilities the learning outcomes addressed. Thus programme design decision were difficult because it was almost impossible to discern from course outlines which capabilities were being developed in which courses.

The learning and teaching team made a small change to normal procedure, asking for **each learning outcome to be related to one or two graduate profile capabilities**. This simple measure made the contribution of each course more transparent – the aim was to aid decision making by ensuring that every teacher and every student in the school could see which capabilities were being addressed in each course. Potentially this could aid student choice and programme design. Originally, the learning and teaching team planned to include icons for the different capabilities to aid students' course choice but because of the difficulties described below this was not implemented.

The exercise had an immediate impact making it clear to staff that there was an imbalance in provision. Many courses had an intensive focus on conceptual growth but related to other graduate profile capabilities only tangentially. In some cases this was a true reflection of an imbalance in courses; in other cases a range of capabilities were being taught but were not recorded in course outlines rendering them invisible to anyone except students and teachers attending the courses.

Problem 2 - Learning outcomes were not always well written and teaching and assessments did not always align

An audit of learning outcomes revealed that not only was there an apparent neglect of capabilities other than developing conceptual understanding, there were three additional problems. Firstly, learning outcomes were sometimes difficult to understand, written in terms that someone might comprehend only after they had completed a course. Secondly, some learning outcomes were vague and could have applied equally to courses in many disciplines and at any level. Finally, some learning outcomes indicated that a capability would be taught but that capability did not reappear in lesson plans or assessments.

A job aid was developed to support the development of specific learning outcomes. Initially the job aids scaffolded staff in editing their existing learning outcomes to include a wider range of capabilities. This was not very successful. It proved to be more effective to begin with staff thinking about the

graduate profile capabilities and to reflect on the relevance of the course to each graduate profile capability and then craft new learning outcomes. The job aid was redesigned to reflect this process.

The course outline template was also redesigned to structure thinking about the alignment between learning outcomes, teaching and assessment. The new and compulsory template was designed and implemented over one semester. It soon became obvious that offering a template and a separate guide meant the majority of staff tended not to read the guide.

In an effort to achieve consistency across the faculty, a nominee from each department checked each revised course outline to make sure it complied with the guide. This was helpful, however, without the resources to supply a learning designer to each course and recognising that course design is often one of many priorities for busy academics it remains an ongoing effort.

Problem 3 – Staff were unclear about the constituent component within each capability and the performance levels required

Each programme had a graduate profile, that is, a list of capabilities students should be able to demonstrate on graduation. However, staff explained to the learning and teaching team that they were unclear about the sub-components of each capability and the level graduates should attain at each stage in a degree. This was apparent in course outlines. For example, most course descriptions included reference to developing critical thinking but it was impossible to determine exactly what staff meant by 'critical thinking'. There was no shared definition or expression of standards. Neither were concrete examples of teaching aspects of critical thinking apparent in the vast majority of courses. If teachers are unsure about what it is they should teach, then students cannot know what it is they are supposed to learn or do. Additionally, academics teaching subsequent courses will not know what to expect of their incoming students or what they need to progress to. Oliver (2013) reports that this is a problem shared by many and often goes unrecognised.

The job aid prepared to convey the levels and scope of each capability was in the form of generic/holistic rubrics which indicated the components or indicators of each capability and described performance at each stage in the degree. The rubric format is familiar to all teaching staff and the rubrics could be used to pitch learning outcomes, assessments, and course design at the right level. They could also be used to explain to students what they were going to learn to do in each course and what performance expectations were in place (See Table 2). Once introduced, the rubrics were well

received by staff although they were quite long and not embedded within the learning management system.

Table 2: An extract from the holistic rubrics job aid – A holistic rubric for the capability 'Solution Seeking' showing performance expectations at undergraduate (100 to 300) and postgraduate levels (700).

	Indicators	100	200	300	700
2.1	**Definition and explanation of the issue**	Describes the issue clearly, taking into account its immediate conceptual and practical contexts and boundaries.	Issue is defined and explained with interpretation of alternative perspectives, evidences, contexts and stakeholders.	**The issue is defined and explained** comprehensively with important influencing factors and contexts being considered. Implicit issues are identified, and their relationships to each other are explained.	The issue is defined in depth. Explanation shows a critical and comprehensive understanding of the underpinning theories and principles and any related or implicit issues.
2.2	**Selecting and using evidence**	Uses information/evidence from reliable sources. Distinguishes between assumptions, opinions and facts.	Information is gathered from relevant sources beyond those provided. Some analysis and evaluation of evidence is demonstrated.	**Identifies and** critically **evaluates important information and evidence** for accuracy, validity, and relevance.	Identifies evidence from highly reliable sources. May provide new data or information for consideration. Presents an accurate interpretation or questioning of evidence and information.
2.3	**Argument**	Acknowledgement of different sides of an issue/argument.	A structured argument is developed which takes into account the complexities of an issue, the evidence and/or alternative points of view.	**A coherent and evidence based argument is developed,** which takes into account the complexities of an issue, new and high quality sources of evidence and/or points of view.	Argument is based on a sound logic and comprehensive synthesis of valid and diverse perspectives or evidences. Shows a clear and sound line of reasoning to justify plans and proposals.
2.4	**Conclusions and related outcomes**	Conclusion is presented with reference to context, assumptions, data, and evidence.	Conclusion is logically tied to the argument and based on a view of evidence and information from different points of view.	**Conclusion** is logical and **reflects the issue and the student's argument.** Consequences and implications are detailed, considering relevant assumptions, contexts, data, and evidence.	Conclusions, consequences, and implications are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.

Problem 4 – There were duplications and gaps in programmes but there was no mechanism for seeing what they were.

Each major in the faculty offers students a choice of courses and students take eight courses in each year of study with multiple capabilities being developed over the 24 courses within a 3-year undergraduate degree. Programme leaders and courses' directors needed a simple way of seeing what aspects of capabilities were being taught where and to what level. They needed to be able check that, for example, oral communication skills were introduced and taught in the first year, that verbal skills were enhanced in the second year and finally honed to graduate level in the final year of an undergraduate degree. Multiple curriculum mapping tools were reviewed but they proved to be too

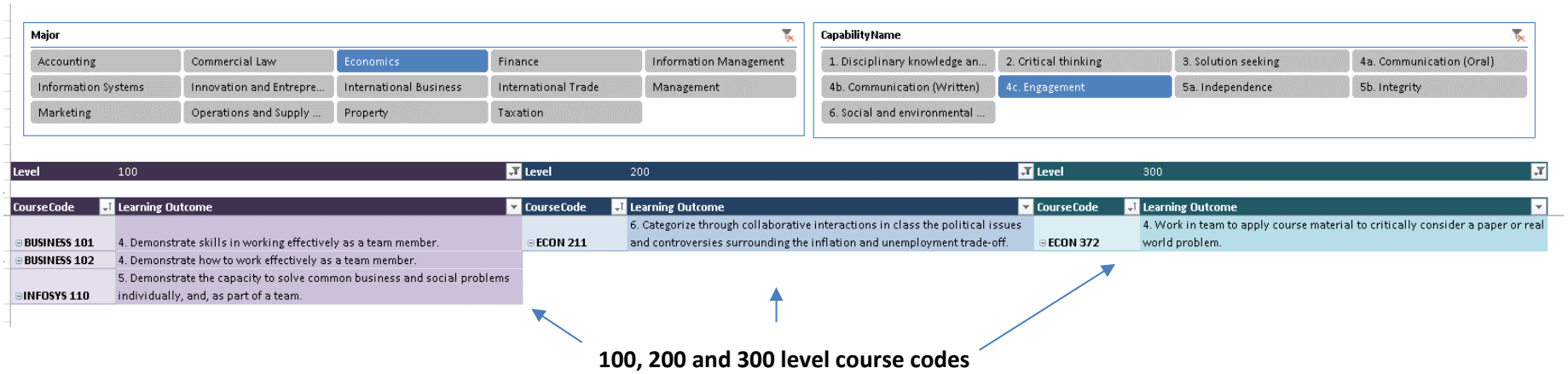
cumbersome and detailed. They were mostly designed for audit and accreditation purposes and were not intuitive to use, nor did they provide clear summary data. Programme leaders and courses' teachers needed an aid to decision making, ideally one that that could be automatically populated and operated independently by staff.

The Programme Learning Outcomes Tool (PLOT) was built in the year after it became clear that a commercial product was not available. A sample screen shot is below. PLOT enables any academic in the faculty to select a major and select a capability to see instantly which courses in the major contribute to that capability. The user can read the learning outcomes and so quickly ascertain exactly what is being taught. The tool is remarkably quick and easy to use and is popular with staff.

The tool's simplicity has caused some problems in that it reveals sometimes inconvenient truths about the depth of education in particular areas.

More information on PLOT can be obtained from s.geertshuis@auckland.ac.nz

Box 1: Screen shot showing courses and learning outcomes at all three undergraduate stages by Major in the PLOT

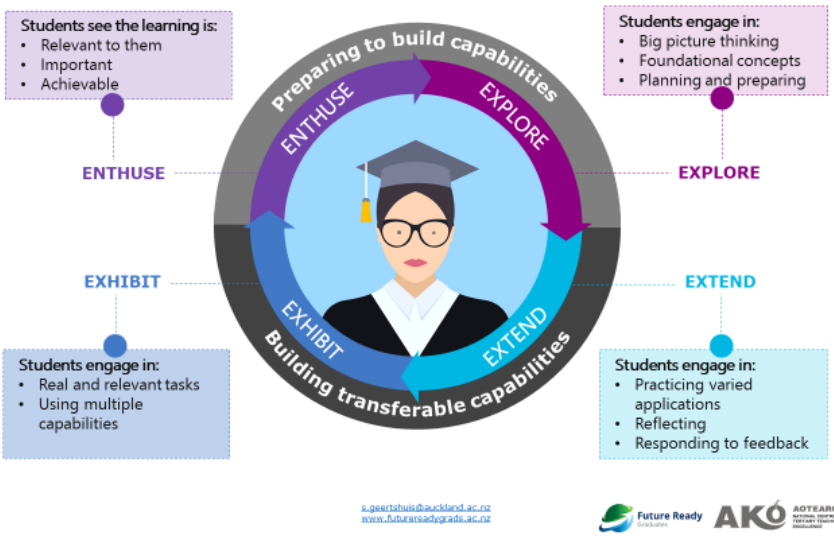


Problem 5 – Staff do not know how to teach the new capabilities

When the new graduate profile was introduced, staff indicated their concerns about their ability to teach the wider range of capabilities. They said they lacked expertise, time and resources. The faculty appointed capability specialists to develop online learning resources which staff could bring in to their courses. This is efficient for the introductory development of capabilities such as communication and collaboration which are much the same whatever the discipline. However, long deep learning requires integration within courses (Bridgstock & Jackson, 2019). Additionally, if education is to prepare students for their futures, then courses need to equip students with transformative capabilities that are robust, able to be transferred across contexts. There is, of course, no simple job aid that can achieve a shift from knowledge-intensive, traditional course design to a transformational teaching design however the Future Ready Grads project has developed a pedagogical framework to convey the archetypal features of such teaching. The framework, depicted below has been delivered to over 100 academics with very encouraging results. A suite of decision aids and self-review tools are available on the project website to support individuals, groups, and professional academic developers in applying the framework.

Successfully applying the framework does not seem to require an in-depth knowledge of pedagogy; the essence of the required knowledge is captured within the framework. Rather it requires teachers to adopt a particular mindset, and, unfortunately, invest something in pedagogical design that seems to be in seriously short supply, time.

Figure X. A pedagogical framework for developing future ready capabilities.



5. Conclusion

The job aids described here reflect a concerted attempt to accommodate the needs of academics who wish to teach well but are operating within multiple constraints. While it is safe to infer that the job aids were useful, it is difficult to make quantified claims for the impact these aids have had. They were delivered alongside a suite of other initiatives and it is impossible to disentangle the effects of job aids from the impact of the initiatives as a whole. Also, despite making claims for the utility of job aids it must also be noted that despite mammoth efforts on the part of the learning and teaching team, not all staff were reached.

This case describes only two or three years' work. Much more needs to be done if the faculty is to achieve its ambitions. Working to further refine and automate the job aids described here is likely to be an important strand within any strategic initiative.

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