Reflections on Developing Programmes of Study

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ABSTRACT

The Mandatory Review of Qualifications (MROQ) culminated in the New Zealand Qualifications Authority listing fourteen diploma and certificate qualifications in information and communication technology (ICT). After a process of consultation, the Department of Computing at Ara Institute of Canterbury (at that time still known as Christchurch Polytechnic Institute of Technology or CPIT) decided to offer seven of these qualifications. This paper outlines how the networking team within the Department developed programmes of study for three of the seven qualifications based on a conceptual framework, which was a vital tool in guiding, directing and forming this process.

Keywords: Programme, curriculum, qualifications, Mandatory Review of Qualifications, framework

1. INTRODUCTION

Last year, the New Zealand Qualifications Authority (NZQA) listed the Mandatory Review of Qualifications (MROQ) for Information and Communication Technology (ICT) Qualifications at levels 1-6 (New Zealand Qualifications Authority, 2015). The networking team at the Department of Computing at Ara Institute of Canterbury (at that time still known as Christchurch Polytechnic Institute of Technology or CPIT) were tasked with developing three programmes of study for the new qualifications. From the outset, members of the team acknowledged the need for a structured approach to the task and made use of a simple, straightforward framework. This involved articulating and agreeing to a set of guiding principles, a high-level view of programme design, the development of detailed documentation that included course descriptors, and then considering four key aspects of the design: articulation to the degree, transition arrangements, development of course material and finally resources required for implementation. This paper therefore outlines one team's approach to developing programmes of study that map to listed NZQA qualifications, rather than the theory and practice of curriculum development as such, what Yates (2005) calls "big picture thinking" and "everyday pragmatics," the specific choices made through and in individual courses, which were many and varied.

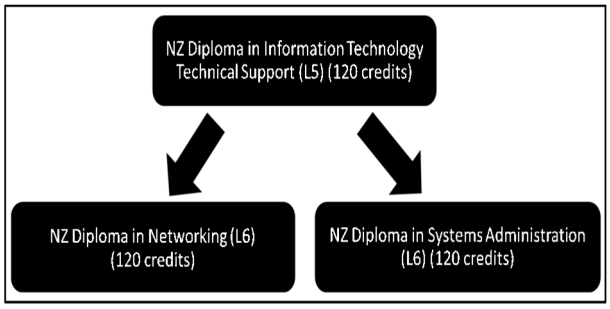
While most tertiary institutions have likely already developed their programmes of study, this paper may be useful to help shape their response not only to MROQ but to programme development, which by its nature has to change and adapt to developments in the field of study. As this paper shows, it is vital that academic staff work out a basic map of what needs to be done before embarking on programme development and making this explicit to all involved. This is especially useful in larger projects, where a number of people need to invest a significant amount of time and energy.

2. THE MANDATORY REVIEW OF QUALIFICATIONS

The NZQA initiated a review of qualifications in 2011 due to concerns about the clarity and relevance of qualifications, particularly in the area of vocational education. What came later to be known as the Mandatory Review of Qualifications (or MROQ) aimed "to reduce the duplication and proliferation of qualifications; to ensure the qualifications meet the overall needs of the particular sector and are useful, relevant and fit for purpose" (New Zealand Qualifications Authority, 2013). MROQ covered all certificates and diplomas at institutes of technology and polytechnics (ITPs) and private training establishments (PTEs), but specifically excluded degree programmes and qualifications offered by universities (New Zealand Qualifications Authority, 2013). Mandatory reviews occurred not only in computing but also other areas, including creative arts, business, general education and electro-technology. In computing, the National Qualifications Service (NQS) of NZQA worked in partnership with the (New Zealand) Institute of IT Professionals (IITP). The MROQ process considered a number of questions, including the needs of industry and key stake holders and in the end proposed a suite of fourteen qualifications, also referred to as the "landscape," so as to distinguish it from the programmes of study that ITPs and PTEs or their representatives would later develop (New Zealand Qualifications Authority, 2013).

As the networking team at Ara Institute are responsible for teaching courses covering networking, operating systems, technical support and systems administration, they were tasked with developing programmes of study for the following three new qualifications: the NZ Diploma in Information Technology Technical Support (L5) (Ref: 2596), the NZ Diploma in Networking (L6) (Ref: 2600) and the NZ Diploma in Systems Administration (L6) (Ref: 2601). (In the interests of brevity this document refers to these qualifications as DTEC, DNET and DSYS respectively.) Each of these programmes require one year of full-time study (120 credits, with the L5 (Level 5) DTEC programme being a prerequisite for both L6 (Level 6) programmes, the DNET and DSYS (see diagram 1).

Diagram 1



The team treated these three programmes as a unit as DTEC provides the foundation for what will be covered, both in DNET and DSYS, so students who start two years of study, comprising of the DTEC followed by either the DNET or DSYS should have a sense of logical progression between the

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L5 and either one of the L6 programmes. The two existing L6 Diplomas offered in the Department, one in networking and one in systems administration are being replaced by two new L6 Diplomas with a common first year. This most visible change from the current offering makes a great deal of sense because both networking and systems administration require largely the same base knowledge and skills.

3. PREPARING FOR CHANGE

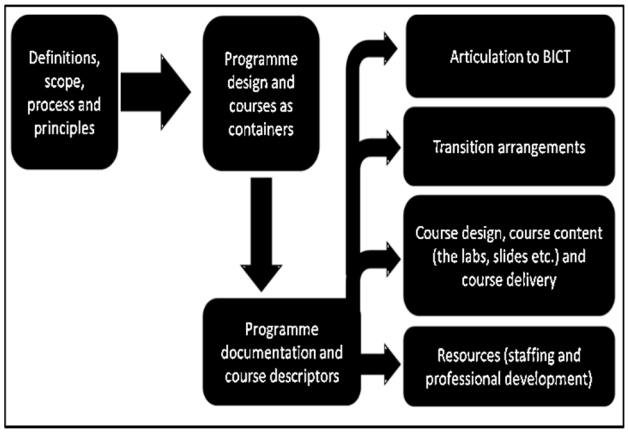
Due to a major restructure within Ara Institute (then CPIT), the area of networking within the Department of Engineering was moved to the Department of Computing. This included the Cisco IT Academy, which is the regional lead academy for the whole of New Zealand. This made it significantly easier to incorporate more networking into programmes within the Department of Computing, especially those making use of Cisco-developed course content. The networking team became the largest team within the Department because it now included academic staff previously part of the Department of Engineering, and the Department of Computing took over responsibility for a number of programmes in networking. While this was an overwhelmingly positive change on the whole, after examining the various programmes it became evident that duplication of effort and inefficiencies in terms of delivery did exist. Ironically, while the Department offered more courses than it needed to, students had unnecessarily limited choices in terms of the courses in which they could enrol.

This situation prompted a process of change within the older, existing programmes of study at the time, but it soon became apparent that another reason for change was that reducing the number of courses offered within the team would also make the transition to the new MROQ programmes of study easier and less complicated. Essentially, the new programmes represented a rationalisation or tightening of programmes being delivered, and this provided an additional impetus for reducing the number of courses within old programmes, especially ones that contained learning outcomes that would likely have no place in the new MROQ landscape, for instance Cabling. Some colleagues believed that change would occur anyway and that it was therefore unnecessary to make changes to existing programmes. In the end the team acknowledged that it needed to remove duplication and that it could better align the old programmes with the new programmes, without the risk of students not meeting the graduate profile of existing programmes.

4. A FRAMEWORK

The team approached the development of the three new programmes in a systematic, methodical way, starting with a definition of the scope, process and principles of the project and ending with working out a basic arrangement for working out the development of the actual course content (diagram 2). The first part of the framework aims to eliminate confusion and provide clarity by making sure that everyone understands what various terms mean, for instance the difference between a qualification and a programme of study or a course descriptor and course content. It also seeks to agree on who is to be involved and how programme development will proceed, and makes it clear to everyone how much time and energy is required. In this case, it was decided that four members of the larger networking team would design the three programmes of study, namely (Dr) Eduardo Correia (chair), Ian Patterson, Dave Bracken and Peter Edge as well as (Dr) Selena Chan of the Centre for Educational Development, and that they would meet once a week. Anyone, though, was welcome to attend meetings and certainly the results of meetings were communicated both to the larger team as a whole and to a Department steering committee charged with overseeing the development of all the new programmes of study. (From this point onwards, these five people will be referred to as "the team" because they represented the networking team as a whole.

The order of the different parts of the framework is important, and reflect high-level view of the project and increasing levels of detail. In order to design new programmes of study, it is important to define terms, outline the scope and possibly provide some guiding principles for the project as a whole. This improves the quality of discussion and reduces disagreement in terms of eliminating apparent but not real areas of difference. Programme documentation needs to be written, and as academic staff the main focus of this part of the framework are the course descriptors. The four remaining parts can be considered simultaneously: articulation to the degree, transitional arrangements, course design and course content, and resourcing. Some people wanted to discuss transition arrangements early on but without the metaphorical destination of the new programmes of study, how can one properly map a route to it?



5. GUIDING PRINCIPLES

At the outset, the team agreed on the following four guiding principles:

- All courses should continue to be worth 15 credits and preferably take place over a semester. This format is a standard part of other programmes in the Department and it was important that the new programmes would provide a good fit with the existing degree and graduate diploma programmes.
- Where possible the three new diplomas should comprise of courses that also form part of other existing level 7 programmes, if necessary making changes to these existing courses so that they fit the GPOs of the new MROQ qualifications, in order to help protect the operational viability of the Department.
- The combination of courses within each of the three new programmes should be based on the meaningfully integrated and cohesive student learning experience while continuing to reflect the strong industry focus of existing diplomas.
- Courses in the new programmes should each have course codes that are different to the course codes used in the degree, even though a number of classes will likely comprise of students from different programmes.

6. PROGRAMME DESIGN

The second stage of the project was based on a high-level view of the envisaged programmes of study and courses as containers of knowledge, skills and experience. This involved examining the GPOs of the new MROQ qualifications and mapping them, where possible, to existing degree courses offered within the Department. At this stage, the team were not concerned so much with individual learning outcomes as to what courses would provide the most appropriate place for the GPOs in the new NZQA listed qualifications. While it would have been possible to re-design entirely new courses, it was decided that where possible existing courses should be retained, and if necessary changed in order to make them meet the NZQA qualification requirements. The benefit of this approach was to

- Ensure greater levels of continuity between present and future programmes,
- Provide greater efficiencies in terms of delivery, including reasonable size classes.
- Ease articulation into the degree

Some degree courses needed to be changed in order to satisfy the requirements of the new qualifications but this did not compromise or change the existing degree graduate profile. The reason that this approach worked well at Ara Institute is that the philosophy and practice of existing programmes in terms of teaching and learning is already congruent with that of the new NZQA qualifications, in that they engage students and require them to be actively involved in their own learning. This is accepted as generally best practice and is one of the ten principles of the Teaching and Learning Research Programme (TLRP), a major UK research and development programme in the United Kingdom (Ashwin, Bond, Coate, et al, 2015).

The next step of the project was then to focus on detail at the course level, specifically documenting the learning outcomes and assessment of individual courses. The new qualifications have detailed GPOs but they do not specify how these should combine into courses, and in fact this was intentional, as the NZQA envisaged that different institutions could propose and implement different programmes of study, based on the employment needs in various regions, available resources and access to expertise. Each of these different programmes, though, would be meaningful to employers and other stakeholders throughout New Zealand because they all met the same basic requirements and shared the same graduate profile.

The team tackled courses in a particular order: first the L5 courses in existing programmes that could adapted so to match the GPOs of DTEC, see what was left over and then see what L5 courses would have to be created anew. Some courses did need to involve staff from other teams within the Department, for instance the programming team. It then examined the remaining GPOs and how they could best be accommodated in new courses. As a result in the DTEC, only two entirely new courses need to be developed: a course called "Programming Fundamentals" and "Database Systems." It is not that other courses have not needed to be changed, but it does mean that there is a great deal of continuity between courses in the old and new certificate and diploma programmes, making transition arrangements and articulation between them easier.

The next stage of the project involved creating the L6 programmes of study, namely the DNET and the DSYS. Again, the team looked at existing courses and found a number of them already mapped to the GPOs of the new qualifications and then also made some changes to some of them so that they could meet more GPOs, taking care to retain their logic and unity as areas of study. After this, the focus shifted to courses that would be new for the Department and those taught by other teams. To some extent, this process was iterative, since the team returned to completed courses and made further changes to ensure consistency, unity and coherence at the programme level because programme development is not simply putting together a number of courses that form a programme (Nicholls, 2002) but requires careful planning and design. Only then, will courses function both as discrete units of learning but also combine with other courses to make up a unified, cohesive programme of study.

Throughout, the team were conscious that overlap between degree and diploma programmes would ease articulation and transition while improving efficient course delivery. Once all the courses, with their learning outcomes and assessments had been worked out, a wide range of people looked at the transition arrangements, the time and nature of how the delivery of old programmes would end and the new programmes begin. These are largely, though not exclusively operational matters but everyone recognises when the Department changes from the existing to the new programmes, it is critical that this runs smoothly so as to not adversely affect student learning. At Ara, the team needed to be conscious of the fact that one of the old L6 programmes embedded a L4 certificate, and the Department would be offering both new L4 MROQ certificate qualifications (IT as a Tool and IT as a Profession).

7. IN HINDSIGHT

It is to be expected that replacing one set of certificate and diploma programmes of study with another is not easy or uncomplicated, especially using a team-based approach. The use of a framework in this context proved to be invaluable since it established a certain unity and order, and guided discussion and provided it with direction and context. When individuals started raising detailed questions to do with for example transition arrangements, other people could remind them of its place in the framework and that it would be dealt with at a later stage. It helped remove the element of emotion and personality from the process and helped focus the mind in the areas that really mattered and re-inforce the need to be organised and systematic.

Not everything went according to plan, though. It was difficult to adhere to the schedule of pre-specified milestones, due to extensive discussion around academic matters and seeking ways of resolving questions to do with course structure. This was complicated by differences in approach and philosophy between members of the team, those who had previously belonged to the Department of Engineering and those who had always belonged to the Department of Computing.

One of the guiding principles was abandoned, and only at the end of the process, namely the question of course codes. After discussion with members of the Department steering committee, it was agreed that having separate (diploma) course codes would place unnecessary additional administrative overhead and further complicate articulation from diploma programmes into the degree. In hindsight, though, this should never have been a guiding principle, since it was not foundational, but rather a detail of implementation.

8. RESOURCING

Developing programmes of study is quite different to developing the content of individual courses, for instance creating a specific lab or lesson plan for a class. As the quality of teaching and learning is important, this demands a significant investment of time and energy on the part of

academic staff, and as a result this aspect of programme delivery does need to be resourced. It has been proposed that the Department should consider placing courses into one of three categories:

- High-level resourcing. This is for a totally new course that needs to be completely developed from the ground up because it has never been offered before and for which there is little or no content in previous or existing courses. An example of this is the course in deployment technologies.
- Mid-level resourcing. This is for a course that has an equivalent existing course but needs significant re-development, for example DTEC503 Technical Support. This is where most disagreement among academic staff is likely to occur but fortunately only a few courses properly belong in this category.
- Low-level resourcing. This is for a course that requires less than significant amount of development because something like it is already offered. Many of the current Cisco-based courses are part of this category and require minimal change.

Resourcing is required especially for the first category above, some for the second and none for the third, as that can be considered "business as usual" for academic staff, who have to regularly update courses each year as a matter of course. This means that resourcing can be directed to areas where it is most needed.

9. CONCLUSION

Some theorists have argued that curriculum design is not treated seriously in higher education sector (Barnett & Coate, 2005). This is true in many cases but having to adhere to the requirements of a national qualification, while it does not guarantee programme design is carefully considered certainly does encourage it. The process of developing three programmes of study has been an opportunity to examine current programmes, even current practice, improve curricula, making them more relevant while removing weaknesses, omissions and duplication of effort. It involves looking at certain themes that flow from one course to another, themes that are larger than any one course or even one programme, but form an integral part of a particular programme, for instance virtualisation or cloud computing or scripting. Here the challenge is to deliver the greatest possible value to students and stakeholders, particularly industry, while ensuring that the new MROQ programmes not only meet the requirements of the new qualifications and improve the quality of teaching and learning in the Department, but also align with the broad strategic direction and values of the institution as a whole.

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