The Case for a National Degree

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ABSTRACT

The "Blue Book" for several years was seen as one of the key unifying factors behind the success of the National Advisory Committee on Computing Qualifications (NACCQ). The "Blue Book" offered a uniform set of well-prescribed and relevant computing qualifications that were common to all polytechnics. The commonality between Polytechnics and combined strength offered by the common approach was attractive to students, employers and educators, and could have been viewed as a threat by other tertiary providers.

The move by the majority of polytechnics towards degree offerings and the introduction of the National Qualifications framework has altered the position of the "Blue Book" as a unifying factor among polytechnics. Several institutes no longer offer "Blue Book" courses, and many now only offer the Certificate course. While there is some commonality with degree offerings accorded by the adoption of the Bachelor of Information Technology from Waikato by several polytechnics, there has been little done to develop and promote a National, polytechnic wide computing degree.

This paper looks at the New Zealand polytechnic computing scene, including the degree offerings and considers the case for the development of a National Computing degree in an environment of increased competition for computing students.

1.   INTRODUCTION

It is now fifteen years since the Certificate of Business Computing (CBC) was designed and for more than a decade the CBC, the Advanced Diploma in Business Computing (ACBC) and the National Diploma in Business Computing (NDBC) formed the basis of a unified approach to computing qualifications among the New Zealand polytechnics. These three "Blue Book" qualifications, named after the paper donated by Telecom for the covers, survived the advent of the National Qualifications Framework and the introduction of computing Unit Standards. An apparent reluctance by the National Qualifications Authority to define the concept of a National Degree and the desire by individual polytechnics to offer degree level computing qualifications has seen the strength of the "Blue Book" qualifications being eroded by

a proliferation of individual polytechnic computing degrees.

This paper traces the history of computing qualifications within the polytechnic sector, compares the current degree offerings and investigates areas of commonality. The paper also considers the case for and against a National Degree proposal, and concludes with recommendations for ensuring a unified and coordinated approach for polytechnic computing as it moves into the new millennium.

2. THE BLUE BOOK

The first nationally recognized computing qualification offered by the polytechnic sector was the New Zealand Certificate in Data Processing (NZCDP), a qualification controlled by the Authority for Advanced Vocational Awards (AAVA) which was introduced in the late 1960s. Until 1985 the NZCDP formed the basis for computing courses being offered at polytechnics throughout the country.

A rapidly changing computing environment and a growing demand for suitably qualified computing graduates brought about the need to review the NZCDP, which resulted in the formation of the first of the "Blue Book" courses, the CBC in 1986. The CBC was radically different to the NZCDP, introducing the concepts of modular delivery and assessments based on mastery. The new qualification gained immediate support from industry, who were largely responsible for the funding the early development. By 1990 a further two computing qualifications had been developed, the ACBC and the NDBC, offering a vocational three year full-time degree equivalent programme in computing in New Zealand Polytechnics (Young and Joyce, 1998).

The review of the NZCDP, and the introduction of the CBC brought about the establishment of a national advisory committee, consisting of industry and polytechnic representatives, which became known as the National Advisory Committee on Computing Qualifications (NACCQ). The NACCQ under the auspices of Information Technology Education Authority (ITEA) helped establish the CBC as the principle computing qualification among polytechnics and encouraged the establishment of

Local Advisory Committees (LAC), the membership of which were largely industry based, to advise accredited institutions on the delivery of the CBC at the local level.

NACCQ has actively supported the "Blue Book" qualifications since their introduction, setting up a working group to monitor and continually update the qualifications. The working group monitors and runs the national moderation process, updates prescriptions, constantly monitors the structure, vets proposals for new modules and writes new modules where they are required as new areas of computing and technology emerge (Young and Joyce, 1998). The "Blue Book" qualifications have been very popular, with 23 polytechnics offering one of more the three qualifications at some time. The adoption of degree level computing programmes has seen a gradual erosion of the popularity of the CBC, the ACBC, which has been renamed the Diploma in Business Computing (DipBC) and the NDBC. Today the CBC is offered at 18 polytechnics, the DipBC is offered at 15 polytechnics and the NDBC is offered at only 7 polytechnics.

3. THE NATIONAL QUALIFICA-TIONS FRAMEWORK

In 1990 the New Zealand Qualifications Authority (NZQA) launched the National Qualifications Framework (NQF), developing Unit Standards across the educational and training spectrum, in consultation with specialists from education and industry (Framework White paper, 1999). The initial work in the computing field saw the establishment of a number of Unit Standards at levels 1 to 4 on the Framework and the introduction of level 2 and level 3 National Certificates in Computing. The Polytechnic sector assisted with the development process, providing expertise at writing panels and being involved alongside industry representatives as the qualifications were developed and introduced.

A "sunset" clause in the Introductory Computing Certificate (ICC), the pre CBC qualification, meant that Polytechnics had to either adopt the new qualifications or offer an ICC like qualification as a local certificate. Initially fifteen polytechnics changed to the new qualifications, of these ten have since changed back to an ICC like course.

The Framework levels were extended into levels

5 – 8, and once again the polytechnic sector were instrumental in assisting the unit writer with the development of Unit Standards. At the time, the Polytechnic sector expressed concern about the suitability of the Unit Standards assessment practices for higher-level learning.

Other than the occasional computing Unit Standard being included within a non-computing level 5 qualification, the higher level unit standards have not found acceptance within the Polytechnic sector. The same cannot be said for private tertiary providers. The more successful private providers have turned to the higher level computing Unit Standards, offering specialized level 5 and 6 Diploma courses in multimedia and computer support. The number of providers assessing against level 5 – 8 Unit Standards has increased steadily over the last four years. Currently eight private providers are offering qualifications based on higher-level Unit Standards, and three of these offer qualifications at multiple sites. These providers are providing increased competition to the Polytechnic sector, particularly in the CBC, NDBC and degree area. It is interesting to note that most private providers have concentrated on providing specialized one year courses as an alternative to the three year general computing degree, building on the growing numbers of students who have been attracted by low-cost or free courses at levels 1 – 4.

4. DEGREE DEVELOPMENT

Until 1993, the polytechnic sector wholeheartedly adopted the "Blue Book" qualifications. Cooperation between institutions was strong and the focus of meetings, including the NACCQ conferences, was based on the common goal of delivering high quality courses to CBC, ACBC and NCDB students. Students benefited from this cooperative approach, as they could transfer between institutes without the need to prove subject area equivalence. Smaller polytechnics also benefited, knowing that if they delivered one of the lower level courses, there was always a path to higher study provided by a larger institution.

By 1993, pressure was mounting on polytechnics to consider offering degree courses in computing. NACCQ considered the possibility of taking the content of the "Blue Book" and developing a degree programme that all polytechnics could adopt. The concept of a national degree was launched, but seeking an agreed definition of what constituted a national degree from NZQA proved a frustrating and iterative process. Even today, no definition has been published, and circumstances have lead to the national degree initiative being abandoned.

Towards the end of 1993, Manawatu Polytechnic became the first polytechnic within New Zealand to gain approval to offer a three year degree course in computing. The move towards offering degree level courses in computing, followed similar initiatives in other departmental areas such as nursing and business, and addressed the perceived need for higher level qualifications. The Manawatu degree, while being distinctly different from the NDBC, had its roots in the "Blue Book" with similar content and structure. Manawatu Polytechnic was followed closely by Waikato Polytechnic, who gained approval for a Bachelor of Information Technology degree, early in 1994. Once again the "Blue Book" strongly influenced the content and structure of the degree. Since 1994 a further thirteen polytechnics have been granted approval to offer computing degrees. Another two polytechnics offer computing as a major within a commerce degree.

The remainder of this paper, presents the findings of a survey, conducted to collect information about the various polytechnic degree offerings, and to gauge the support for a national degree in computing.

5. THE CURRENT SITUATION

The writer conducted an email based survey of the polytechnic sector, in an attempt to establish the differences and similarities between degrees being offered. Of the twenty three polytechnics surveyed, seventeen responded. Information about polytechnics who did not respond was gathered from their polytechnic web site and the Ministry of Education web site.

Of the twenty three polytechnics, fourteen offer computing degrees and one polytechnic is in the process of seeking accreditation. Another two polytechnics do not offer a specialized computing degree, but do offer an information systems major within a business degree. Six polytechnics do not

offer degree courses in computing.

The names of the degree courses vary. The most commonly adopted name is the Bachelor of Information Technology. Other names include the Bachelor of Computing Systems, the Bachelor of Applied Information Systems and the Bachelor of Business Computing.

Several polytechnics have purchased a degree from another polytechnic and have been accredited to offer the degree in a modified format at their own polytechnic. The Waikato degree being the most popular, with six polytechnics indicating that they were offering a degree, which is a derivative of the Waikato degree. The Unitec degree is also being offered at more than one site, with one polytechnic accredited to offer it and another polytechnic in the process of gaining accreditation. All of those who have been granted accreditation to offer the Waikato degree explained that they had made significant alterations to both content and structure, and that they had stamped their own flavour on their degree.

The number of credits required to graduate with a degree, appeared to fit one of two categories. Most of those who had adopted a Waikato style degree required 54 credits to graduate, while the majority of other polytechnics had adopted the NZQA 360 credit model. The number of credits per paper reflected the total credits for the qualification, however some institutes did mention that they were looking at a uniform credit value across all degrees at the institute. The number of papers also varied, with paper numbers ranging between 12 and 33. The average number of papers required was approximately 24.

In terms of majors, both of the Business degrees have Information Systems as a major, for the computing degrees only one other polytechnic offered distinct majors. Of the polytechnics offering degrees only five did not have streams of specialization.

The move towards offering Masters programmes has already commenced, two institutes already offer Masters porgrammes and a further two indicated that they were investigating their options in terms of Masters study.

The average number of students per institute, studying towards a computing degree was 92 students. With the exception of those institutes that have CBC and DBC as feeder courses, student numbers decline as they progress through the degree. From the information gathered it would appear that polytechnics are currently producing more than 150 computing degree graduates per year.

Polytechnic degrees are assessed using both competency and graded assessment techniques. Of those that responded, thirteen used an A – E grading scale, while three used competency based assessment. It was interesting to note that two of those that used competency based assessment made special note of the fact.

All except one of the respondents indicated that they undertook external moderation of assessments. A number of institutes exchanged materials with other polytechnics while some indicated a move towards moderating using Universities.

The impact of degree programmes is evident when the number of polytechnics offering the "Blue Book" qualifications is considered. As degrees have been introduced the support for CBC, DBC and NDBC has diminished. Eighteen of the twenty three polytechnics offer CBC, fifteen offer DBC, and only 9 offer the NDBC. The "Blue Book" is in danger of becoming the domain of those institutes that do not offer a full three year degree, which are the smaller polytechnics who may not have the critical mass in terms of size to support a degree course.

When questioned about support for a national degree concept, six respondents indicated support, four indicated that they were not sure and four were opposed to the idea. It was interesting to note that in general the smaller polytechnics supported the proposal and the larger polytechnics were opposed. Those that explained why they rejected the proposal emphasized issues such as local differences, the need for flexibility and the need to allow for different approaches to the subject of computing.

An investigation of Ministry of Education materials concerning polytechnic degrees, suggested that there are a number of similarities among the different degree offerings. In the qualification aim descriptions

almost all institutes mentioned the requirement to prepare students for employment and the desire to produce graduates who were work ready. Most programmes appear to have a common collection of core papers or modules, that are deemed essential. These include programming, operating systems, hardware, data, business communications, business applications and data communications.

6. THE CASE FOR A NATIONAL DEGREE

While support for a national degree is not particularly strong, with 42% of respondents indicating support, the case for and against a national degree proposal merits discussion. In an environment of increasing competition for student numbers, any proposal that may offer a competitive edge should examined.

The primary reasons for supporting a national degree would appear to be similar to the reasons behind the development of the higher level "Blue Book" qualifications. A national degree would provide polytechnics with a united front for computing education offering a shared and common approach within which polytechnics could cooperate in the development of teaching and assessment materials. The current national moderation scheme adopted by the "Blue Book" programmes could be extended into a national degree progamme, offering a simplified means of quality assurance for assessment materials.

Smaller polytechnics who do not have a population base bigger enough to support a full degree course could elect to offer only part of the degree. A smaller polytechnic could offer first year papers and provide a feeder into a larger institute. Larger polytechnics could elect to specialize in subject areas, one could become the center for excellence in perhaps games programming and graphics while another could specialize in Jade programming or graphics and Web design. Such specializations would enable a local flavour to be developed and could lead to branding of an individual polytechnic's degree programme.

Such an approach would provide immediate benefit to students, offering a qualification pathway that is independent of the polytechnic, allowing movement between centers of excellence for different subject areas and eliminating the need to negotiate cross credits. Students from smaller centers would be able to study lower level papers at their local institute and move to larger institute to complete the qualification.

Employers, once properly informed about degree content, would know what skills a polytechnic degree graduate could be expected to possess. If course content was targeted to cater for industry based certification pathways, employers would be able to hire employees with both academic and industry qualifications.

Lecturing staff would not have to operate in isolation if a national degree was adopted. Development of teaching materials could be shared, and staff could also move between institutions knowing that their subject knowledge was immediately transferable.

The parties who would have most to loose if the polytechnic sector was to adopt a national degree, would be the providers who operate in competition and do not have the combined resources that the polytechnics could muster. Private providers and universities would miss out on the benefits that the polytechnics could obtain from joint marketing and promotion.

7. THE CASE AGAINST A NATIONAL DEGREE

Opposition to a national degree concept, at 28%, is significantly lower than the level of support. The arguments provided by the institutes who oppose a national degree present a convincing case.

The opponents suggest that the time for a national approach to degree study has passed. Too many institutes have invested large amounts of money and time gaining accreditation for their own qualifications, and they would be reluctant to change. It was pointed out that during the accreditation process, NZQA insisted on localized content and sought specific evidence of features that made the degree unique to the institute that was offering it.

Having gained approval to offer a degree, institutes have invested more time and money in developing materials and establishing procedures to ensure successful delivery. In addition to the development and delivery costs, significant investments have been branding the degree and emphasizing localized content.

Another argument against a national degree relates to individual ownership and the flexibility that it provides. Local degrees are seen as being easy to modify and able to be changed to cater for industry changes and to meet local industry requirements.

Stair casing to other qualifications is also an area of concern to those institutes offering higher level qualifications. Post graduate courses may have been designed to build on the content of the local degree. The same can be said for lower level feeder programmes, that may have been developed to meet the entry requirements of the degree programme.

Perhaps the biggest obstacle to a national degree relates to the difficulties that would need to be faced defining a national degree and obtaining approval to offer one. NACCQ has tried unsuccessfully in the past to get NZQA to define what a national degree may look like. Current NZQA policy, appears to provide a barrier to the likelihood of national degree acceptance, as degree accreditation panels seek to encourage ownership and local industry participation. Even if a national degree could be defined, issues relating to ownership would have to be addressed. The issue of ownership is currently an area of concern for many national qualifications, including the "Blue Book" qualifications.

8. CONCLUSIONS

The case presented against a national degree would suggest that any attempt to gain national degree approval would have a rocky path to negotiate. If a national degree was approved, it is likely that it would not receive wholehearted acceptance by the polytechnic sector.

There are however many advantages that could be gained from the adoption of a national degree approach, particularly for students and smaller institutes.

Perhaps the best path for the future lies in an approach that builds on the similarities of existing degree structures. Since most degrees have similar core requirements at the lower levels and similar themes at the higher levels, perhaps core papers could be developed and offered across all degrees. These core papers should where possible be tied closely to existing CBC and DBC courses, allowing simplified cross crediting and a transparent path for students wishing to transfer between institutes. Such an approach would provide a solution for smaller institutes who cannot justify the development of a degree programme.

Another approach that could be adopted, may be to build on the fact that the Waikato degree forms the basis for seven of the existing degrees. NACCQ could purchase the rights to offer the degree to other institutes, providing a skeleton on which institutes could build a degree programme.

In the past NACCQ has talked about creating a pool of materials relating to specific degree topic areas, and mention has been made to simplify the cross crediting mechanism for students transferring between institutes. These two activities need to be formalized and possibly become the area of responsibility for one of the NACCQ working parties.

Whatever approach is adopted, polytechnics need to investigate options that will encourage and foster the cooperation between institutes in relation to degree programmes, as more and more polytechnics move towards degree programmes and away from the "Blue Book" qualifications. The unifying factors built around cooperation and common focus need to be rekindled if NACCQ wishes to maintain its current identity as the National Advisory Committee on Computing Qualifications for the polytechnic sector.

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