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Graduate Diploma in eCommerce Projects:

Nature and Challenges?

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Abstract

In the latter stages of the year 2000, Christchurch Polytechnic Institute of Technology (CPIT) developed a Graduate Diploma in eCommerce (Grad Dip eCommerce), which has been offered since the start of 2001. The content of the Grad Dip eCommerce was based on the work of a number of writers with much of it being connected to the Inter-related Role of the eCommerce Professional (Chan & Swatman, 2000) and the interdisciplinary nature of eCommerce (Turban, King, Lee, Warkentin and Chung, 2002).

This paper investigates the nature of the major projects that have been undertaken by students in the Grad Dip eCommerce at CPIT. The investigation focuses on the nature of the projects that have been completed, the results of the different types of projects that have been completed, and the country of origin of the students who completed the projects.

The paper concludes that the nature of the projects that students have completed in the intervening years does in fact reflect the original intention of the Grad Dip eCommerce, and goes on to identify a number of trends in the results achieved by the students based on the nature of their projects and their country of origin. Some of the challenges identified relate to the academic entry requirements of the Grad Dip eCommerce (which have since been resolved); the differences in educational approaches in the countries of origin of a number of the students when compared with New Zealand; and how to find appropriate projects for weaker students.

The results of this paper will be of use to other institutions considering the introduction of Graduate Diplomas in eCommerce or related fields.

Keywords

eCommerce, Student Projects, International Students

1. Introduction

The Graduate Diploma in eCommerce that was developed at Christchurch Polytechnic Institute of Technology (CPIT) in 2001 was based on models from a number of writers including Chan and Swatman (2000) and Turban et al. (2002) and reflected the need for eCommerce professionals to have a strong background in technology-related disciplines (for example web programming, database management systems) or business-related disciplines (for example strategic management, marketing), and that while specialising in one of these areas, there was also the need to have a good understanding of the other area, and very importantly, the need to have good communication and people skills.

In the years since 2001, 109 students have completed the 30-credit project, comprising 25% of the work for the Grad Dip eCommerce, and 12 others completed a 45-credit version of the same project. There has been a reasonably wide range of project types completed, with a wide range of grades being achieved.

This paper analyses the projects based on the nationality of the students who completed them, the nature of the project, the grades achieved, the academic level of the students when they first enrolled, and other issues that emerged in the management of the projects.

2. Background

The Grad Dip eCommerce requires students to complete 120 credits of study subject to completing:

- At least 80 credits of study at level 7 (3rd year degree level)
- BCEB300 - eBusiness Strategies (15 credits)
- BCIT241 - Web Site Development (8 credits)
- No more than 30 credits from outside the set of approved courses for the Grad Dip eCommerce
- BCCE330 - Cooperative Education Project (30 credits) or BCCE345 - Cooperative Education Project (45 credits)

Students are able to complete one of two specialisations (Web Programming or Business Strategies) or complete a generic version of the graduate diploma by completing a mixture of courses. The vast majority of students undertake their project (usually a BCCE330 worth 30 credits) in an area related to the specialisation they are studying towards.

The entry requirements for the Graduate Diploma in eCommerce have, until the start of 2006, been one of:

- A bachelors degree in any discipline
- A level six diploma in a computing or business-related subject

Note that a level six diploma in New Zealand is approximately the first two years of a three year bachelor's degree.

At the start of 2006, changing interpretations of the entry requirements for graduate diplomas from New Zealand Qualifications Authority and the New Zealand Ministry of Education mean that the entry requirements for the Graduate Diploma in eCommerce would need to have the level 6 diploma entry paths removed.

3. The Model for the Grad Dip eCommerce

The model that the Grad Dip eCommerce was based on reflected the need for eCommerce professionals to have a strong background in either technology or business-related subjects, with a good understanding of the other area, along with good communication and people skills.

Two of the models that the structure was based on included the interdisciplinary nature of eCommerce as described by Turban et al (2002) and reproduced in Table 1, and the Inter-Related Role of the eCommerce Professional as described by Chan and Swatman (2002) and reproduced in Figure 1.

Chan and Swatman's model clearly shows the three aspects needed to be an eCommerce professional, with People (communication and people skills), Electronics (technology-related subjects) and Commerce/Business (business-related subjects) being the three parts of the model. This model was in part used to determine the overall structure of the Grad Dip eCommerce in that it had two areas of specialisation (web programming and business strategies) and with all students being required to write reports, work in groups and make presentations as part of their course work and final project.

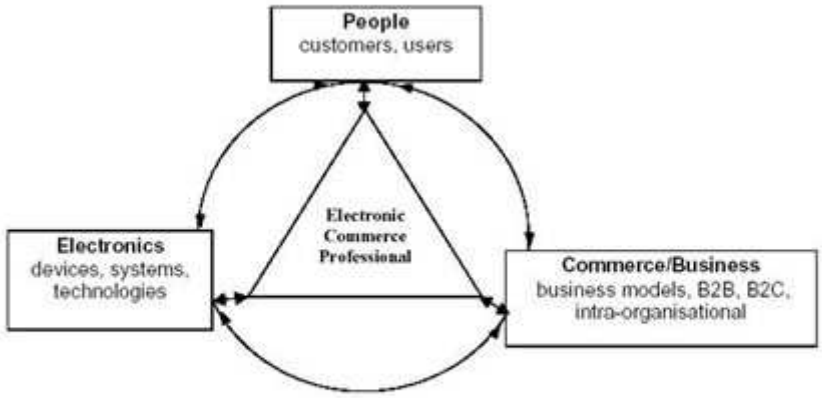

Figure 1. The Inter-Related Role of the eCommerce Professional (Chan & Swatman, 2000)

The model from Turban et al (2002) also shows a range of technology, business and communication/people-related disciplines. This model was in part used to identify the range of disciplines that were needed in both the technology and business-related parts of the Grad Dip eCommerce.

Table 1. The Disciplines Comprising the Interdisciplinary Nature of eCommerce (Turban et al, 2002)

Marketing	Online marketing strategies and relevant issues of offline marketing
Computer Sciences	Programming languages, multimedia and networks
Consumer Behaviour & Psychology	The behaviour of buyers and sellers in B2C eCommerce. The relationship between cultures and consumer attitude.
Finance	The role of finance markets and banks
Economics	The economic impact of eCommerce on firms and the application of micro and macro economic theories
Accounting & Auditing	Issues of auditing electronic transactions and the development of cost benefit analysis methodologies
Management Information Systems	Systems analysis, planning, implementation, security and payment systems
Management	New approaches to management that may be required due to the interdisciplinary nature of eCommerce
Business Law & Ethics	Legal issues related to intellectual property, contracts, jurisdiction and privacy and ethical issues surrounding the use of information

4. Projects Completed

From 2001 to 2005 there have been a total of 121 students enrolled in the project for the Grad Dip eCommerce, and Table 2 shows the number of 30 credit and 45 credit projects undertaken over the five years.

The students who completed these projects come from a wide variety of backgrounds, with the majority being international students from China. Table 3 shows the number of projects undertaken by each nationality of student.

Table 2. Summary of Grad Dip eCommerce Project Enrolments 2001-2005

Year	BCCE330 (30 credits)	BCCE345 (45 credits)	Total Projects
2001	5	-	5
2002	17	3	20
2003	14	-	14
2004	34	4	38
2005	39	5	44
Total	109	12	121

Table 3. Breakdown of Student Projects by Nationality

Nationality	Number	Percent
New Zealand	33	27.3%
China	61	50.4%
India	7	5.8%
Other Asian Countries	10	8.3%
Europe	9	7.4%
Middle East	1	0.8%
Total	**121**	**100.0%**

Many of the international students have found the adjustment to completing a project that was more self-directed and self-managed a daunting experience, particularly when the project was in some cases commenced one semester after arriving in New Zealand. Having students supervised in groups of three or four has dealt with this to an extent, as this enabled more contact with academic staff members.

This experience is consistent with that described by Baker and Nesbit (2006) where students completed the first two years of a three year degree in China and came to New Zealand to complete the third year. These particular students had only one semester to adjust to life in New Zealand, and were observed to have found it much harder to complete projects of this nature than students who had studied the first two years of the degree in New Zealand.

Table 4 shows a summary of projects by the nature of the project. There were 10 projects where the student did not complete the project, with a number of these being where the student made little progress towards creating a proposal. The two most frequent project types were Web Development (39.7% of all projects), where the vast majority were completed using PHP, and Web Site Evaluation (18.2%), where the students undertook to evaluate the web sites of organisations in a specific industry with respect to usability, design and issues relating to business and marketing strategy. Other common project types were those of market research and the development of internet marketing plans, which together made up just over 20% of all projects.

Table 4. Summary of projects by the nature of the project

Nature of Project	Number	Percent
Web Development	48	39.7%
Web Site Evaluation	22	18.2%
Market Research	14	11.6%
Internet Marketing Plan	11	9.1%
Mobile Application Development	7	5.8%
Business Planning	4	3.3%
Mobile Application Research	3	2.5%
Software Development	2	1.7%
Incomplete Projects	10	8.3%
Total	**121**	**100.0%**

Table 5 shows the summary of grades for all of the projects, indicating that there was a wide spread of grades achieved.

Table 5. Summary of Projects by Grade Achieved

Grade Achieved	Number	Percentage
A+	21	17.4%
A	11	9.1%
A-	10	8.3%
B+	21	17.4%
B	14	11.6%
B-	7	5.8%
C+	8	6.6%
C	17	14.0%
Fail	2	1.7%
Incomplete	10	8.3%
Total	**121**	**100.0%**

Given the high number of international students that have enrolled for the project since the start of the Graduate Diploma in eCommerce, it is worth exploring the variations of grades by nationality to determine if there is a pattern. Given the small numbers of students from most countries, this analysis only explores the differences between students from New Zealand and China. This data is shown in Table 6, along with percentage of each group who gained grades of A-, A or A+, the percentage who did not complete the project and the median grade for each group of students.

Table 6. Breakdown of Grades Achieved by Students from NZ and PR of China

Grade	New Zealand	PR of China
A+	15	-
A	7	-
A-	2	5
B+	1	17
B	-	10
B-	-	5
C+	1	6
C	-	15
Fail	-	2
Incomplete	7	1
Total	**33**	**61**
% A- to A+	72.7%	8.2%
% Incomplete	21.2%	1.6%
Median Grade	A	B

It is clear from this data that there is quite a difference in the grades achieved between the students from New Zealand and the students from China. In particular over 70% of students from New Zealand achieved grades of A- or higher, whereas less than 10% of students from China achieved grades of A- or higher. This is also reflected in the median grade for the students from New Zealand and Europe being A, and the median grade for the students from China being B.

It is also of note that a much greater percentage of New Zealand students were amongst the incomplete projects in comparison to students from China (21.2% of New Zealand students did not complete, compared with 1.6% of students from China).

Table 7 shows the breakdown of project types by nationality (New Zealand students compared with students from China), with the main pattern emerging being the lower proportions of students from China who undertake Web Development projects, and that all of the Web Site Evaluation projects that have been undertaken have been done by students from China. The Web Site Evaluation projects were created for weaker students who did not necessarily have the level of skills needed to complete a project to a high standard on web programming or Internet marketing.

Table 7. Breakdown of Project Types Students from NZ and PR of China

	New Zealand	**PR of China**
Web Development	18	18
Web Site Evaluation	-	22
Market Research	2	10
Internet Marketing Plan	3	5
Mobile ApplicationÂ Development	-	2
Business Planning	1	1
Mobile ApplicationÂ Research	-	2
Software Development	2	-
Did Not Start	7	1
Total	33	61
%Web Dev	54.5%	29.5%
%Web Site Eval	0.0%	36.1%

Table 8 shows and analysis of types of project completed by the grades achieved in those projects. In looking at the four types of projects that were most common (Web Development, Web Site Evaluation, Market Research and Internet Marketing Plan), and the median grades achieved in those projects, it becomes clear that students doing Web Development projects tend to get higher marks, with a median grade of A. The lowest median grades (B) were for the Web Site Evaluation and Market Research projects. As indicated above, the Web Site Evaluation projects were created in general for the weaker students, and lower grades could be expected for them.

Table 8. Breakdown of Project Types By Grade

	A+	A	A-	B+	B	B-	C+	C	Fail	INC	Total	Median Grade
Web Development	16	6	5	8	3	1	4	4	1	-	48	A-
Web Site Evaluation	-	-	3	6	3	2	1	6	1	-	22	B
Market Research	1	1	-	2	4	1	1	4	-	-	14	B
Internet Marketing Plan	2	2	1	2	1	1	1	1	-	-	11	B+
Mobile ApplicationÂ Development	-	-	1	2	3	1	-	-	-	-		B
Business Planning	1	1	-	1	-	1	-	-	-	-	4	A-
Mobile ApplicationÂ Research	1	-	-	-	-	-	-	2	-	-		C
Software Development	-	1	-	-	-	-	1	-	-	-	2	B
Did Not Start	-	-	-	-	-	-	-	-	-	10	10	-
Total	21	11	10	21	14	7	8	17	2	10	121	

5. Analysis and Discussion

In the first five years of the Grad Dip eCommerce there has been a significant increase in the number of student projects being completed, with less than 30% being completed by New Zealand students, and more than 50% being completed by students from China.

The nature of the projects range from reasonably technical projects (Web Development, Mobile Application Development and Software Development) which make up 57 of the 111 projects that were actually completed, with the more business-related projects (Web Site Evaluation, Market Research, Internet Marketing Plan, Business Planning and Mobile Application Research) making up the other 54 of the 111 projects that were actually completed. This balance between technical-related and business-related projects reflects the "Electronics" and "Commere/Business" components of the Inter-Related Role of the eCommerce Professional as described in Chan and Swatman (2000). With all of the projects generally requiring interaction with users (in the case of web development and related projects), or a focus on customers (in the case of many of the business-related projects, in particular the internet marketing-related projects), this reflects the "People" component of the model proposed by Chan and Swatman (2000).

A number of the components of the Interdisciplinary Nature of eCommerce as described in Turban et al (2002) are clearly prevalent in the nature of the projects that have been completed by the students. In particular:

- Marketing, with market research and internet marketing-related projects
- Computer Sciences and Management Information Systems, with

web development, mobile app development and software development projects
- Management, with business planning-related projects
- Business Law and Ethics, with all projects being required to be legally and ethically sound as part of their approval process

The aspects of Interdisciplinary Nature of eCommerce (Turban et al., 2002) that are not as obvious in the projects that have been completed are those of Accounting and Auditing and Economics. However 7 of the 9 aspects of the model are clearly prevalent in the nature of the projects that have been completed.

The grades that have been achieved across all of the projects have been widely spread, and on closer examination there are some patterns based on the nationality of the students, with students from New Zealand tending to do better than students from China. One explanation for this may be related to the cultural differences and educational differences between the two countries. Given that the students have only one semester of study at CPIT before undertaking their projects, and that much of this semester will include the students adjusting culturally, it is of little surprise that they do not do as well as students from New Zealand.

The use of web site evaluation projects by over one third (36%) of the students from China has enabled these students to, in general, complete some meaningful project work in the eCommerce arena without being hampered by the difficulties of finding meaningful projects in the industry.

Given that a number of international students gained entry to the Grad Dip eCommerce based on having completed the equivalent of a New Zealand Level 6 Diploma in a computing or business-related subject as opposed to having completed a degree in any discipline, it may be that there is a relationship between students who used this entry path and the students who ended up doing the web site evaluation projects. The extent to which these students who used level 6 diplomas as their entry to the qualification achieve at a different level in their projects when compared to other students is a matter for further research.

In early 2006 a directive from the New Zealand Ministry of Education that all graduate diplomas must have only degrees as their entry requirements could well see a number of these students no longer gaining admission to the Grad Dip eCommerce. A way forward to deal with this is to introduce a new qualification (but not a graduate diploma) that will allow these students to be enrolled, but where one of the main differences will be that the project would be a much more directed project than the one that is required for the Grad Dip eCommerce. This directed project approach has already been partially adopted by the use of the web site evaluation projects.

It may be that the use of directed projects such as these is still appropriate for students completing the Grad Dip eCommerce where the students are not able to undertake industry-based project due to having been in New Zealand for only one semester, provided that the nature and level of these projects is appropriate for a qualification of this level.

The much higher percentage of New Zealand students not completing their project may be due to the difference in fees paid between New Zealand students ($4,000 - $4,500 per year) and International students ($15,500 - $16,000 per year), with the higher fees being paid by the international students potentially meaning that they are more likely to complete the projects.

6. Conclusions

The projects that have been completed by the students in the Graduate Diploma in eCommerce have in general reflected the range of disciplines that were intended in the original design of the qualification.

Students coming to New Zealand from countries where the educational system and culture are quite different need more than one semester to adjust to different ways before being able to undertake significant industry-based projects. Where students are in this situation, the provision of more directed projects can give a valid project experience that is appropriate for the level of the qualification.

The nature of the projects in a Graduate Diploma qualification such as the Grad Dip eCommerce suggests that the entry requirement should in fact be a degree (as opposed to a diploma), and that if this was the case, there would be less need for the directed approach that has been used with the web site evaluation projects.

It would appear that the challenges of the academic entry requirement; the differences in educational approaches and finding appropriate projects for weaker students are able to be addressed by requiring degrees to be held by all students, and by making it possible for international students to complete non-industry based projects.

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