Structured Work Placements: Investigating cooperative education experiences for IT students.

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Abstract

This paper investigates the delivery of structured work placements under cooperative education in various academic disciplines and their applicability to information technology (IT) qualifications. Although information technology programmes in New Zealand do include industry projects and some limited work experience, there may be potential in the IT tertiary sector for a more structured work experience course performed under industry and academic supervision.

This paper looks at the advantages of an internship or work experience paper to the student, industry and to the tertiary provider. A proposed structure for such a course is outlined in the discussion with the distinctions drawn between the internship / work experience model and the industry projects model.

Examples are provided from other academic disciplines where structured work experience has had a long history informing the practitioner environment as well as providing valuable real-world experience to the trainee student. These examples from other disciplines are explored for any implications that can be drawn for the information technology education community.

In conclusion, the paper sums up where the Institute of Technology and Polytechnics (ITP) sector is with regard to IT industry projects and proposes the possibilities for structured IT industry work placements.

1 Introduction

As Carpenter (2003, p.201) outlines, internships or structured work placements form an important part of many programmes (IT and non-IT) by "providing on-the-job experiences to students prior to graduation." In the New Zealand Institute of Technology and Polytechnics (ITP) sector industry projects have grown increasingly important particularly within applied bachelors degrees. However, this paper contends that a structured work experience similar to the internships demonstrated in the Health sector may enhance or augment the traditional degree project.

This paper makes an argument for a significant work experience component with an ITP information technology degree and proposes an academic outline of what such a course could look like.

2 Co-operative education

Other academic areas outside of IT have utilized the concept of a formal structured work placement experience to enhance their students' work readiness and preparation for professional practice. For example, Health studies and Nursing students undergo a number of internships and structured work placement within a Nursing degree. A formal Memorandum of Understanding (MOU) is usually entered into between the tertiary institute and the local District Health Board (DHB) outlining arrangements between the ITP and the DHB. The MOU describes the hours worked by the student, the mentoring by teaching staff, the supervision by hospital staff, and the commercial arrangements between the ITP and the Health Board.

There are commercial considerations within any professional structured work placement because although the student may bring some value to the organization, there is considerable time and disruption experienced by the industry organization. Currently, ITP's pay a considerable annual fee to the DHB's for the provision of formal practicum periods throughout the year.

3 Justification

As Bridgeman (2003, p.211) asserts "the culmination of many information systems and information technology degrees is a capstone project" and this approach addresses "the need for students to be exposed to both industry and academic processes." Although there are many authentic learning experiences that ITP IT students experience from an industry project (some are weighty undertakings of up to 45 credits), and some work in groups (Mann, 2004), there are still some limitations of these. An IT Project generally does not give the student experience in: - taking specific instructions from an authority, experiencing the physical office environment of an IT company/ department, and the student cannot record the project as actual "industry experience". Typical degree IT projects may entail a sole student meeting a client, recording

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analysis and design details, then working largely alone designing and building a product such as a website, application, IT plan, or technical product, then delivering this to the client. Unless the student graduates and then works as an independent IT contractor, this project experience has not necessarily prepared the student for the rigour and team environment of the modern IT workplace.

Another disadvantage of the typical IT project is the lack of mentoring and technical knowledge passed from an actual IT professional working alongside the student in a master / apprentice fashion. A structured workplace course should have more opportunity for this mentoring both in a technical sense and in a business and political sense. Even the best of our IT students are limited in the professionalism of their finished IT product because of their isolation from professional peers, their limited experience and lack of access to corporate resources.

Other models of IT related co-operative education would include Hosking and Grundy's (2005) description of the ICT Innovation Academy at the University of Auckland where IT students, academics and industry practitioners are brought together to work on short-term projects.

4 The benefits of structured work placement

The benefits of significant work experience include a high satisfaction rating given by applied IT students as discovered by Schambach and Dirks (2002, p.1) "Most students described the (IT) internship as a great experience that had a major impact on their learning and on their understanding of real world issues and environments."

Both employers and students will perceive workplace experiences as more likely to enhance student work readiness and ability to gain permanent IT employment. Younger tertiary students can benefit from the disciplines of dressing appropriately, conforming to start times and durations and the personal communications disciplines of a real IT work environment.

The university or ITP can enhance their relationships with industry through the development of work experience courses and particularly supervising lecturers are able to visit IT work places and build communication channels to these organizations. This is increasingly important for NZ ITP's as the government increasingly will be requiring evidence of local needs for IT graduates under the new Tertiary Education Commission (TEC) charter.

The marketing of applied IT degrees can appeal to potential students who are concerned with attaining "work-readiness" in any programme they may undertake. Testimonials from students who have experienced internships will have a powerful effect on potential students in choosing an IT programme.

5 Potential Problems of Work Placements

Structured work experience courses would require more time to organize as, unlike a large district health board for nursing degree placements, the IT industry is scattered amongst many different corporate and non-profit organizations. This would also entail adaptable MOU's for different types of organisations. These potential administration difficulties may be offset by delegating the "coordinator" role to the students themselves and facilitating industry and student contacts through a well designed web enabled database which is available to enrolled students.

Another barrier to work placements would be the cost to the ITP, as it may be necessary to pay the employer for the supervision of the student. Given the fragmentation of the IT industry, with both vendors and internal IT departments, would there be enough willing participants in the work experience process? Additionally, there may be some general bureaucratic resistance within some ITP's that may make it difficult for industry participants to liaise flexibly and quickly with the ITP.

Carpenter (2003) discusses the issue of the internship experience losing its distinction when IT students engage in part-time work as well as take part in work placement schemes. This can lead to a blurring of the lines between part-time work (where the tertiary provider has no influence) and the formal internship experience.

6 Brief Proposed Course Description

This course is in proposal form and is not yet a reality at the Eastern Institute of Technology. However the authors would be interested in any information from other ITP's or Universities who are running or considering a similar course structure within their IT degree. This proposed course outline has some similarities to McQueen's (2005) description of a summer school workplace course sandwiched between the second and third year of a Bachelor of E-Commerce at Waikato University, NZ. This timing of the internship course was found to be less disruptive within the traditional three year degree structure.

The course is designed to provide an industry experience with a real organization involved in the student's area of expertise and interest. Students would seek out their own project or seek assistance which is approved by the course co-coordinator and they are then aligned with a staff member or mentor in that industry organization, for which they will assist or carry out duties. One of the distinguishing elements is that the student not only organises the industry sponsor but also has "the goal of entering into a mentoring relationship with a member of its staff." (McQueen, 2005, p.3).

6.1 Introduction to Course

The purpose of the structured workplace/internship placement includes linking the students learning to real world experiences, a chance to complete a "summer school" paper between their 2nd and 3rd year of study, allow industry liaison within a structured EFTS funded course, and operate with a minimum administration overhead from both lecturer and administration point of view over the summer break.

The course would run as a normal 14 week degree course and a minimum of 140 hours is to be completed by the student with the organization over this 14 week block. Although some variation to this could exist if a student wanted to do a less amount of time on placement and then be allocated a proportional amount of course credits.

Formal communication channels would be created between the institute, the employer and the student prior to the commencement of the placement. Although these would not have to be significant or over onerous they would establish the relationships. The culmination of the placement in entail a site visit by the institute for which the student will organize and arrange, meaning less administration than a traditional placement program that some other areas in tertiary education may have.

6.1 Course Assessment

As with many other work placement papers, this course will have a number of assessment items aimed at creating a positive experience for the student, employer and institution, with an overall grade awarded upon completion of the course.

Proposed assessment items

- Work placement proposal, including work objectives defined
- Weekly work placement journal - online
- Final report – work based report with employer contribution
- Self evaluation \ reflection journal – paper based
- Work site visit by course controller at end of placement

6.2 Learning outcomes

- Students will develop the ability to link classroom theoretical ideas with current workplace practice.
- Students will develop a greater understanding of their academic and work goals
- Students will develop workplace skills and develop new ones
- Students to develop greater maturity and appreciation.
- Students to develop techniques around good reflective practice

6.3 Course Timetable

- Decision to take the course (Feb - June)
- Preparation for finding the placement or liaising with the institute to help in this process if necessary (July - Sept)
- Confirm employer, submit brief proposal to course controller (October)
- Start placement following exams and submit first course discussion (November – January/February)

7 Alternative Proposed Course

Another suggested Internship course is to offer a "sandwich" degree option where a computing degree can be offered with a six month or one year additional work placement after their second year of study (Neill & Mulholland, 2003). This has the advantage of providing a longer period to absorb industry skills but does include issues of student funding while on the extended experience segment, and the longer time taken to complete the degree.

Employers may wish to make payment over such a time period to the students who undertake this "sandwich" option, although this would be an arrangement between themselves and the host employer.

Skok (1995) describes a 4 year "thick" sandwich BIT course at Kingston Business School in the United Kingdom, which has a one year industrial period, with 3 years of academic study. The success of this type of qualification requires careful attention to the alignment of academic courses with the large practical placement.

8 Conclusion

With the success of IT industry projects and their becoming the cornerstone of applied IT degrees in the NZ tertiary sector, there is still scope to enhance and augment the project concept with structured work placements.

IT academics can learn from other disciplines such as nursing, engineering and sports science where they have successfully launched their graduates with authentic industry experience because of the work placement schemes.

The apparent lack of truly structured, supervised internships in IT opens up this opportunity for the ITP sector especially in the face of diminishing student numbers and the competing available direct industry opportunities available to young people with no qualifications.

The authors believe that this type of course has the potential to add value to the traditional project and address some deficiencies in the project in preparing our IT graduates for integration into the IT workforce.

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