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# Teamwork skills for the workplace: are employers getting what they need?

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## INTRODUCTION

Over the last 30 years extensive research has been published in the area of collaborative learning. Almost all this research has come to positive conclusions about its academic benefits (Slavin, 1990; Johnson, Johnson & Stanne, 2000). Researchers have also identified benefits that are additional to higher academic achievement. Slavin and others suggest that experience in collaborative learning develops tolerant, multi-cultural awareness in students (Slavin & Madden, 1979); Kagan and others see collaborative learning as essential preparation for participating in a democratic society (Kagan, 1994). Another benefit of collaborative learning is preparation for the workforce. Fiechtner and Davis (1991) argue that there has been a marked trend in recent years for business decisions to be made in groups rather than by individuals along with a general movement in the business world towards more participative management styles. They add that the business environment is now so complex that the ability of any one person to cope with it has been greatly reduced; experience of group learning before graduation is therefore essential for students. Gokhale (1995) posits that modern advances in technology and changes in the organizational infrastructure put an increased emphasis on teamwork within the workforce. He concluded that individual learning and collaborative learning were equally effective in transmitting factual knowledge to students, but that collaborative learning fostered greater development of critical thinking through discussion, clarification of ideas, and evaluation of others' ideas, essential skills for the modern workplace. In New Zealand surveys carried out by universities confirm that New Zealand employers identify interpersonal communication and the ability to work well in teams as necessary skills for graduates.

This research reported here examines the specific teamwork skills that New Zealand employers expect from graduates of technical institutes and universities, and compares these expectations with tutor and student perceptions of the value of collaborative learning at tertiary level in developing these skills. It is exploratory research that aims to identify any areas that might need to be examined in more detail in a later research project. For the purposes of this project collaborative learning is defined as learning that takes place in a stable, formal group of two or more students who work together and share the workload equitably as they progress towards assessed learning outcomes. Questionnaires given to students and staff in this research used the term "group work" interchangeably with "collaborative learning" as group work is a more familiar term.

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## METHODOLOGY

In 2006, questionnaires consisting of 41 closed questions and 5 open questions on collaborative learning were distributed to 30 tutors and 200 students at the Wellington Institute of Technology and Whitireia Community Polytechnic. Some 20 tutors and 148 students returned the questionnaires which were then analyzed using descriptive statistics and SPSS™. Qualitative data were collated and analyzed for major themes and consistency with the quantitative data. In 2007, questionnaires on the perceived benefits of collaborative learning as preparation for the workplace were sent to 30 recent graduates from various tertiary institutions, and a range of employers and managers were surveyed or interviewed to establish the expectations of management. Seventeen graduate questionnaires and 18 management surveys were returned, and three managers were interviewed. All questionnaires, surveys and interviews were convenience samples.

## RESEARCH FINDINGS

### *2006 Tutor and Student Questionnaire*

The 2006 questionnaire showed that 95% of tutors and 79% of the students surveyed believed that working collaboratively with others would be useful experience when they joined the workforce. This finding was supported by the students' open-ended comments. When tutors and students were asked to rank the importance of seven outcomes of group work, tutors placed preparation for the workforce at the top, and students ranked it second.

Both tutors and students showed that they were positive about the social benefits of collaborative learning: the development of interpersonal skills, the development of intercultural skills and the ability to work in diverse groups, and the appreciation of different ways of solving problems. In the open-ended questions, however, students showed clearly that, although they thought they had developed these skills, they were often unable to operate effectively in a group. They were frequently unable to deal with personality clashes and conflict, and expressed anger and frustration with other team members who they felt did not 'pull their weight'.

### *2007 Graduate Questionnaire*

The 2007 questionnaires completed by 17 recent graduates tested these results and indicated that, as the researchers had suggested in 2006, the open-ended questions were a more appropriate indication of the skills developed (or not developed) in group work at tertiary level. Forty-one percent of recent graduates believed that they had learned interpersonal skills by working in groups at tertiary institutions, and 29% believed that they had learned conflict-solving skills. Seventy-one percent of the graduates believed that they had developed the ability to work in diverse groups in their tertiary study. This compares with the 62% of students in the 2006 survey who stated that they had learned intercultural skills as a result of working in cross-cultural groups. Seventy one percent of the graduates believed that they had developed accountability for work in a team by working in groups at their tertiary institution, and 59% believed they had developed skills in critical thinking, problem-solving and creativity. Fewer than 50% of the graduates believed they had developed team skills in time management (35%), professional and work ethics (29%) and assertiveness (29%). Comments on the overall usefulness of group work in developing teamwork skills

ranged from “minimal,” “OK, not amazing,” to “very useful,” with 76% of the comments being positive.

*2007 Employer Surveys and Interviews*

Employer surveys and interviews indicated that employers felt they required all the skills that were listed in the survey: time management, interpersonal skills, accountability for work in the team, ability to work with others, ability to meet deadlines, ability to work in diverse groups, verbal and written communication skills, conflict management skills, critical thinking skills, professional work ethic, and assertiveness. Several respondents said that they recruited specifically for these attributes and therefore made sure that any new graduates they employed had them. Teamwork skills were seen as essential in the modern business world: “The new world demands in business require a lot of interdependency on others. And tasks are now more complex than in the past, so a team that composes from different individual skills becomes more powerful than the individuals who are there. This is Synergy,” wrote one respondent. Another wrote: “Functional teams can be excellent; dysfunctional teams can be truly awful, destructive and negative.” An attribute identified by managers as often missing in new graduates was “work ethic” or the more general “right attitude.” This deficiency was also identified by graduates.

Some employer survey responses were also consistent with the graduate questionnaires in identifying interpersonal skills, time management skills, general communication skills and conflict management skills as attributes that new graduates sometimes lacked. These were considered important skills: one manager made the practical comment that, “if you can’t get on with people of a variety of natures and accommodate the differences then you’re going to be miserable.” “Assertiveness” was sometimes perceived by employers as an undesirable attribute. One respondent wrote, “I’m not particularly interested in assertiveness,” and several commented that the “ego” of new graduates sometimes got in the way of effective teamwork. One manager suggested that new graduates “park egos at the door.” A willingness to learn and to listen was identified as crucial. One respondent wrote that it is essential for team members to “manage the mix of being assertive enough to engage in debate, to question and raise issues, whilst understanding that it is not a free-for-all and that there are tasks to be completed.” When asked, “What can tertiary institutes do to prepare graduates for industry’s teamwork requirements?” some 50% of the employers suggested that on-job experience was the best teacher and should be incorporated as much as possible into student programs and into group tasks. Where this is not practicable employers suggested “real life” tasks be used in student group work, and some noted that these could possibly involve community projects.

## DISCUSSION

The generally positive attitude to the benefits of group work seems to be carried through from current students to new graduates and employers. This is consistent with overseas studies that show that collaborative learning prior to entry into the workplace is a useful preparation for effective team participation in the workplace. Satisfaction with cross-cultural groups, which the 2006 survey showed was particularly low among New Zealand European students and appeared to be a cause for concern, seems to have increased when students reached the workplace. The conclusion that the researchers came to in 2006 appears to be

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justified: the main cause for dissatisfaction with cross-cultural groups was probably the perceived unfairness of assessment; once the issue of assessment is removed students can see, in retrospect, the learning benefits of working in diverse groups. This reinforces the recommendation of the researchers' previous comments in 2006 that tutors must be trained in designing assessment systems that are perceived by students to be valid and reliable (see, Clark & Baker, 2006).

The open-ended answers in the 2006 student survey are reinforced by the findings from the 2007 graduate questionnaire, and the employer surveys and interviews. Students showed in 2006 that they were unable to deal with personality clashes, conflict and the problems of unmotivated members in their groups; in 2007 the majority of the graduates surveyed indicate that they had not developed conflict management skills and interpersonal skills in tertiary group work. Employers also identify both these areas as sometimes lacking in graduates. Again, perhaps the problem is assessment. One graduate wrote that at work "my pay was not docked if one of my team either under performed or failed to perform at all. Yet in a class environment I was penalized (others too) when members of our group did not complete their requirements. Why should my marks rely on another person (s) who 'can't be bothered'? In real life these people would be soon out of a job." The graduate went on to write: "I do think, though, that teamwork is important, and is a great skill to have. I feel this can be achieved without the need to rely on others to achieve marks or grades." Another graduate wrote that although the group tasks were intended to develop teamwork skills, they "got misdirected as too much focus was on individuals' marks/ performance, i.e., key performance indicators (KPIs) were set incorrectly. As in business they should be set for the entire team. KPIs drive behavior." The challenge to tutors is to design assessments that address both these concerns.

When these comments are considered alongside the number of comments from employers stating that the best preparation for team-work in the workplace is on-job experience, a possible conclusion is reached that tertiary institutions may not be using appropriate collaborative learning tasks for students and may be allowing assessment and design issues to detract from the overall benefits of group work. Anecdotally, a number of student group tasks are for projects that should perhaps be carried out individually; the only skills that students sometimes learn from these tasks is the questionable skill of dividing the work up among group members to be put together just before the assignment is handed in. Another consideration may be the number of overseas students currently in the New Zealand educational scene; perhaps this creates a situation that is very unlike the 'real workplace and creates problems that make the learning of teamwork skills difficult, if not impossible.

## CONCLUSIONS

This research project is a pilot only and therefore its conclusions need to be tested further in a more comprehensive project. The results indicate that tertiary group work is generally considered by tutors, students, and new graduates to be useful preparation for teamwork in the workplace, and that employers are generally satisfied with the skills graduates bring with them. It is particularly useful in preparing students to work with diverse groups.

They do indicate, however, that there are important gaps in the skills developed at tertiary level. If tertiary institutions are to give employers the graduates they need, there is a need to

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train tertiary teachers in the effective use of collaborative learning techniques. They need to be trained to design fair and valid group assessment tasks that reflect the wider world as much as possible, and to assess the elements of group performance that reinforce appropriate team behavior. Tutors need to be skilled in developing in students a professional work ethic that will carry over into the workplace.

This pilot study indicates that further research on how tertiary institutions might meet these challenges is justified.

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# Student's reflective learning journeys in sport cooperative education

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## BACKGROUND

Schön's (1983) notion of the 'reflective practitioner' is particularly applicable to the process of cooperative education (Coll & Eames, 2004; Martin & Leberman, 2005). He argued that reflective practice is a learned skill most effectively introduced through an experiential component (Schön, 1983, 1987, 1991). Reflection transforms experience and theory into knowledge (Roberts, 2002) and enhances the transfer of learning (Macaulay, 2000).

It is important to incorporate strategies within the design of cooperative education courses to facilitate reflection. Developing reflective practice involves organized collaboration and interactions between the students, academic supervisors, and employers to enhance the learning outcomes (Van Gyn, 1996). The process needs to be perceived to be safe, and provide structured opportunities and time to observe and reflect individually and with others (Richert, 1990).

## ISSUE

The issue addressed in this paper is that a wide range of strategies can be adopted within cooperative education programs to facilitate reflection. However an important question is whether the strategies utilized are related to the needs of the learner and the learning environment? Are the strategies presented here in the sport cooperatives appropriate and do they assist students to develop critical reflection skills?

## CONTEXT

This paper, set in a New Zealand context, will address the issues by providing an insight into student's 'reflective journeys' over the period of their work placement in their final year of a three-year sport degree program. Comments from student's reflective journals and final practicum evaluation reports from two cooperative education courses, the Sport Management Practicum (SMP) at Massey University, Palmerston North and the Sport and Recreation Cooperative (SRC) at AUT University, Auckland are utilized to illustrate the development of critical reflection skills and how this has impacted on the student learning experience.

The following is a brief outline of strategies that are utilized within both the SMP and SRC which aim to facilitate reflection both during and after the work place experience (for further detail on these strategies refer to Martin & Fleming, 2006).

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### *Learning Contract*

The students negotiate a learning contract with the host organization which is approved by the academic supervisor. The contract describes their work activities/project focus, their learning objectives and strategies to demonstrate how they will achieve and assess achievement of their objectives. It provides initial structure to the learning experience as well as highlighting the expectations of the students in terms of their own learning.

### *Reflective Journal*

The students in the SRC are required to keep a log book and journal throughout the whole period. The log book normally is just a list experiences and is useful for monitoring by the industry and academic supervisors and serves as a reminder for the students as to what they have actually done during their time on placement. In both the SRC and the SMP, students keep a reflective journal composed of a brief synopsis (diary type format) outlining the duties performed, work behavior and reflections on all activities that take place throughout the practicum experience. However, the journal entails more than just listing experiences; it includes revisiting feelings and re-evaluating the experience, as suggested by Boud, Cohen and Walker (1993).

The SMP students also submit a monthly summary report of their journal to their academic supervisor. The monthly reports are consistent with encouraging reflection-in-action and also provide an opportunity for the student to receive feedback from their supervisor on the development of their skills in reflective writing.

### *Academic Supervision*

Students are supported in their learning experience by an academic supervisor from within the university who provides one-on-one mentoring. The communication between student and academic supervisor is generally face-to-face, however, for students located at a distance from the university email and web site communication is used as an alternative. Encouraging the student to share their reflections with the academic supervisor is a valuable strategy for facilitating development of the skills required for the student to critically analyze and take meaning from their experiences.

### *Practicum Evaluation*

In the SRC, one of the strategies used to facilitate reflection is a reflective essay which allows the student to summarize their progress in terms of achieving their learning outcomes and comment on critical incidents. The essay is submitted after about one third of their total work hours and is a strategy consistent with encouraging reflection-in action. A reflective assessment, where students are expected to reflect on and critically analyze their whole co-op also forms part of the final report for both the SRC and SMP students. This critical evaluation focuses on the effectiveness of achieving objectives/tasks and utilizes performance criteria from the learning contract. It identifies key aspects of learning, strengths and weaknesses and areas for future professional development.

### *Self and Supervisor Evaluation*

Self and supervisor evaluations are tools which provide feedback on student performance but are also a valuable strategy for facilitating reflection. Formal written evaluations of

student performance are completed by the industry supervisor, and the student half way through the cooperative and then again on completion

## DISCUSSION

### *Developing Reflective Practice*

Encouraging structured reflection can enhance 'conscious reflective activity' (Roberts, 2002), where the learner relives the experience and makes connections between information and feelings produced by the experience. However the quality of the learning is not dependent on the quality of the experience, but on the quality of the process of reflection (Smith & Betts, 2000).

It was identified by some students that they had difficulty in initially understanding the value of the reflective process or the strategies used to facilitate reflection. Initially there may be resistance, as the purpose of the reflective process is questioned by the students. Appropriate support and guidance therefore is needed to assist students see the benefits of reflection in terms of their own learning. The following are two typical comments:

When first introduced to the skill I considered it a rather pointless and time wasting procedure. But through the guidance of my academic supervisor I have learnt to appreciate the skills worth. It has enabled me to identify specific problems and successes in my learning. I aim to continue to critically reflect in my future career as I have found it most beneficial to my personal development.

Learning to critically analyze is a hard skill to master, to be able to look at your own experiences and know what you need to improve on can be hard to undertake. This cooperative has provided the opportunity to improve these skills

The use of journal writing involving narrative description of tasks and reflective writing can be an effective reflective practice tool, although comments initially are often rambling, superficial, and focused on cataloguing activities. It often takes the student a period of time to become introspective and reflect on current experiences (Van Gyn, 1996). Students learnt how to translate their thoughts on to paper and then analyze or critique them. For example, one wrote:

I kept a diary and reflective journal to express my thoughts and feelings and to reflect on activities, responsibilities and certain situations. These records helped in the varying co-op assessment and presentations but also allowed me to track personal changes and improvements in the way I deal with situations. To reflect back on my work activities and the perceptions and attitudes I had towards them allowed me to read deeper into situations and experiences and identify areas of personal growth.

Encouraging journal writing attempted to ensure that when critical incidents occurred the learning opportunities from these experiences were not lost. Student comments highlighted that, "the journal provided a valuable record of my experiences and outcomes to look back on for future reference." However, some students found it quite challenging and a strategy

that was identified as helpful included the use of trigger questions to guide them with their writing, as illustrated by the following comment:

Although I have found it quite challenging to think/write positively it has also challenged me to write constructively. If I had not taken the opportunity to reflect on my experiences I would not be so open to self improvement. In my reflective journal I found it helpful to ask myself the questions: What were the objectives/ What were the outcomes? What went well and why? What went less well and why? What have I learned? What will I do differently next time?

Providing structured opportunities for reflection can be achieved through using appropriate assessment tasks. One student commented: "The assessments encouraged me to analyze, reflect and evaluate my experiences throughout my co-op which definitely helped in the further development of my critical analysis skills." The reflective essay undertaken part way through the SRC first semester was highlighted by many students as beneficial to the improvement and development of reflective skills.

During co-op 1 there was a lack of understanding of critical reflection and my journal keeping skills were less than satisfactory. It was the completion of my critical reflections assignment that forced me to become more familiar with critical analysis of experience. Following this a more structured approach to journal keeping was developed and a three step process of reflection was used. The first step was to state the situation, the second step was to state the feelings that resulted from the situation and the third step was to suggest strategies to avoid or improve the situation in the future.

#### *Supporting Student Learning*

A consistent theme identified from the analysis of the student reports was the contribution that academic supervisors make to facilitating and enhancing reflection. Effective supervision and appropriate feedback is a critical part of the learning experience. Students commented that discussing critical incidents with the supervisor was pivotal in the process of reflection.

Talking to my academic supervisor on how I felt and how I dealt with a situation helped me to improve the way I handled a situation the next time. The academic supervisors helped me to confront issues instead of avoiding them.

However, the following comment illustrates that it takes time for some students to establish an effective relationship with their supervisors and to gain the confidence to share their experiences so that the benefits can be achieved.

At the beginning of Co-op it was difficult to converse with my academic supervisor. At this stage I did not fully comprehend the process of critically reflecting on experiences and therefore did not wish to admit downfalls in my knowledge. As the cooperative advanced, more familiarity was developed between the academic supervisor and me. This resulted in greater confidence to discuss issues with my supervisor.

Overall the students felt that the reflective strategies utilized within the cooperatives had been beneficial to developing their professional growth and confidence as illustrated in the following comment:

Critical analysis and reflective thinking are important as no performance is ever perfect, though before co-op began I might have thought I did some things perfectly. A new way of thinking was initiated for me and I began to ask for feedback from others on my performance. Through this process I have become very receptive to feedback, I can accept feedback from others and use their feedback to improve my performance.

## CONCLUSIONS AND IMPLICATIONS

The findings illustrated that the critical reflection strategies were appropriate and enabled the student to process the experience and develop their learning, professional growth and confidence, as 'reflective practitioners' (Schön's, 1983). However it is acknowledged by many students that the reflective journey is not easy, and that effective academic supervision is critical in assisting the learner to engage in the reflective process. The development of student's reflection from 'noticing', or 'making sense' to 'making meaning' from their experiences with the benefit of time supports Leberman & Martin's (2004) findings in relation to Kolb's (1984) 'Experiential Learning Cycle' which involves reflection for action (technical-reflection - based on the academic component), reflection-in-action (practical reflection), and reflection-upon-action (critical reflection) (Boud et al., 1993; Schön, 1983).

Facilitated reflective practice involving the experiential component aims to provide opportunities to transfer the theoretical skills learnt to a real environment. Appropriate strategies, relevant to the needs of the learner, utilised within the structure of a cooperative education experience allows the student to develop effective skills in critical reflection so that learning is enhanced. Cooperative education coordinators need to provide appropriate supervision and support for students so that the students are able to understand the purpose and are able to develop the capabilities necessary to be a reflective practitioner.

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# The changing role of the lecturer in industry-orientated education

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## BACKGROUND

Most engineering and technology undergraduate degrees have independent academic courses during the 3-4 years of study (Cohen, 1996; Gomez-Rivas & Pincus, 1999; Patterson, 1994). Such courses are typically delivered by academic staff members, who normally have not industry experience or background. Over the duration of their study students work with their lecturers in an academic setting, and mainly focus on academic study. As a consequence they tend to lack an understanding of the requirements of industry based research and development.

Cooperative education seeks to build a bridge between universities and industries, and students are sent on work placements in relevant industries to develop practical skills for their future jobs (Loughborough University, 2007; University of Dayton, 2007). Most New Zealand engineering and technology undergraduate degrees are recognised by The Institution of Professional Engineers New Zealand (IPENZ) (Manukau Institute of Technology, 2006; University of Waikato, 2005), and these like traditional programs in engineering and technology reported in the literature have a requirement of 6 or 12 months of work placements. As an example, at the University of Waikato, Bachelor of Engineering students are required to complete 800 hours of work experience. The work experience comprises of two work placements, both of three months duration. The placements usually begin in mid- to late November, after the second and third year respectively (University of Waikato, 2006).

## PROGRAM

The courses in the Bachelor of Applied Technology (Electro-technology) at Unitec are different in that they are directly linked to industry, through focusing on industrial products and teaching and learning is through a project based philosophy (Qi & Cannan, 2004). As an example, the course on electronics technology in the Bachelor of Applied Technology is directly linked to industry, and the focus is on an industrial product such as a switch-mode power supply. Initially students receive a demonstration and the product enclosure is opened to investigate what is inside. The internal components of such devices then form the topics for study: this includes the mechanical design for the enclosure, electronic design including the PCB (Printed Circuit Board) and embedded software design. The focus for learning is product design, application and operation of electronic components and circuitry. The industrial product will be activated under simulated industry conditions where students will gain invaluable insight of design technology, operational procedure and programming techniques.

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Mathematics is not taught at Unitech in such degrees as an independent course of study, but instead is totally integrated into the compulsory technical courses. As an example, a course on electronics technology taught in the Bachelor of Applied Technology uses Fast Fourier Transform series to explore the electromagnetic interference in switch-mode power supplies(Qi & Cannan, 2005, 2006a).

Foundation knowledge and skills can be achieved within these studies and the students are well equipped to develop advanced knowledge and expertise required for their technology and industry project through a cooperative education agreement with industry in their final year. Instead of traditional work practices, students will focus on approved research topics with a technology and industry project and complete their projects through real world learning in an industry environment.(Qi & Cannan, 2006b)

### UNIQUE FEATURES

This program at Unitech offers students the opportunity to achieve their foundation knowledge and skills within each technical course studies. Figure 1 indicates the difference between traditional degree and the Unitech industry-orientated degree.

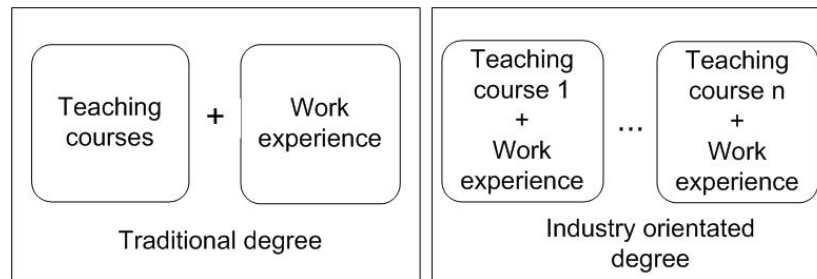


FIGURE 1  
Comparison to traditional degree with Unitech’s industry-orientated degree in engineering

Academic staff who teach in the Bachelor of Applied Technology have to have industry experience, with most staff members having at least five years industry work experience. All full time staff involved in the delivery of the degree are qualified in a particular science or engineering discipline, and are active researchers in their chosen disciplines. Through the appointment of lecturers, who hold full-time research and development positions in industry are employed on a part time basis to ensure that the academic program has current up-to-date knowledge and skills from an industry perspective as shown in Figure 2.

### DISCUSSION

We propose here that this model offers several advantages over traditional engineering programs. First, part-time staff members from industry bring up-to-date knowledge and skills from industry. Second, full-time academic staff have enhanced credibility with industry through stronger relationship with industry practitioners, which serves to strengthen research links. Third, staff get to know their students better, and are able to better

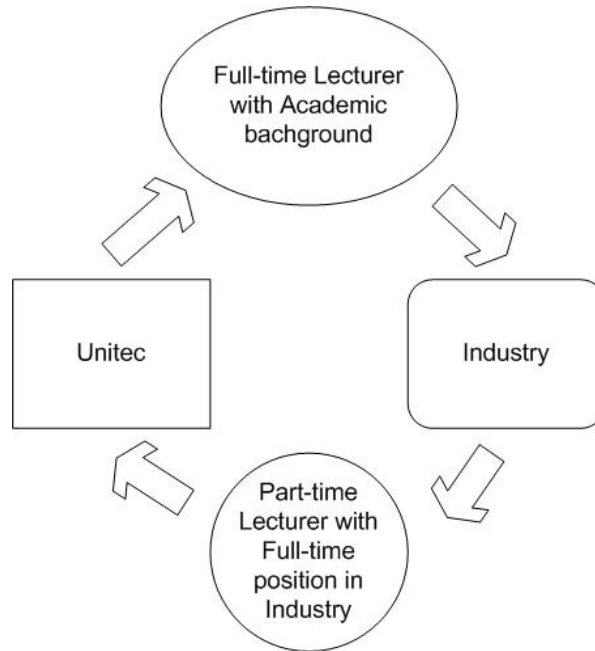


FIGURE 2

Staffing flow between School and industry for Unitec engineering students in the industry-oriented education programs

match suitable students with employers' requirements. As an example, a course in applied micro-controller engineering, a 24-credit NZQA level 6 paper within the Bachelor of Applied Technology, is delivered by a part-time lecturer from industry, together with a full-time tutorial assistant. The course coordinator has the responsibility of developing the teaching plan, pre- and post-moderation of assessment.

In this model, full-time academic staff are in charge of maintaining academic standards, while part-time staff from industry help by bringing in up-to-date knowledge from industry: the most important feature of this industry-orientated education approach. Additionally, academic staff are encouraged to work with industry on relevant, topical research. For example, when some students were sent to industry for project design, lecturers worked as the direct supervisor on the projects, and acted as a member of the project team. Given that the final grades for these student projects are decided by these lecturers, it is important that they are involved deeply in the research project.

#### IMPLICATIONS AND ISSUES

This model of delivery of the Bachelor degree in Applied Technology (Electrotechnology) at Unitec has unique advantages for all, being a tripartite agreement for students, staff and industry pre- and post-co-op. In New Zealand polytechnics, research by academic staff is a continuing issue, especially in the light of research assessment exercises such as the

performance-based research fund (PBRF). Therefore, industry-orientated research provides a useful way for staff who often do not have a PhD, of engaging in research.

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# **Addressing the weak link: enhancing the support for the sponsors of student placements in cooperative education**

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## INTRODUCTION

This paper presents the preliminary findings of an original and unpublished research project. The first phase of the project surveyed the sponsors of work-based learning regarding their experiences of the cooperative education process. It also sought their input regarding satisfaction levels with AUT's support of their role. The findings of this stage of the research were reported at the NZACE Conference in 2006. Phase two involves interviews with sponsors interested in continuing to offer student placements. These discussions will inform the enhancement of the School's support systems for sponsors, including the development of training materials.

## BACKGROUND

Cooperative education is undertaken by students majoring in social sciences or psychology in the final year of their studies at the School of Social Sciences in the Faculty of Applied Humanities, AUT University. The key outcome of the paper is to integrate the contents of students' degrees with learning through productive learning experiences in a field related to their academic, personal and career goals. This involves placing approximately 60 students annually in a diverse range of workplaces.

## JUSTIFICATION

As identified in the project's title, the central objective of the original research was to address what was perceived to be the weak link in the School of Social Sciences' cooperative education 'triangle'. Historically, no records had been kept regarding the organizations that had participated in the cooperative education (co-op) process so new sponsors had to be identified each year. In addition, it has always been the student who has worked on the essential relationship with sponsors in the workplace. Whilst the university-based academic supervisors offered advice and monitored the progress of their students, generally there was no direct contact between them or the co-op coordinator and the sponsors of the work-based learning. The findings of Phase One of the project confirmed that sponsors were challenged by this lonely and demanding role, and there was a strong indication that improvement was necessary in the School's support and communication.

Another goal was to build a pool of experienced and enthusiastic sponsors. The initial study enabled on-going contact with the participants and most confirmed their interest in continuing to contribute to the research as well as sponsoring social

sciences/psychology students in the future. In this manner, relationship building has begun and more permanent sources of work-based learning opportunities are being established. It was also hoped that the research would generate a more substantial acknowledgement from the School regarding the vital contribution of co-op sponsors to the enhancement of students' readiness for employment. The final objective was to involve experienced sponsors in the design of a preparatory training package for new comers to the role.

#### METHODOLOGY

A qualitative approach to data collection was chosen for the second phase of data collection to add breadth and depth to the information gathered in the previous survey. Prospective participants were sent an overview of the next phase of the research project and asked to return a reply form confirming their willingness to contribute. Telephone contact was made subsequently to establish the preferred timing and location of the interviews. To date, 12 face-to-face interviews have been conducted. They were approximately an hour in duration and, with two exceptions, occurred at the workplace of the interviewee. The discussions were based on a semi-structured interview schedule but some of the questions were open-ended to allow the exploration of additional and useful information (see Appendix).

The interviews were audio-taped and brief summaries of each were written to provide a context for the subsequent transcription. These summaries provide the information base for this preliminary discussion of the research findings which will inform the development of a draft action plan. On receipt of the full transcriptions, analysis of the data will involve the identification of themes which will be examined and provide the basis for a staged plan regarding the development of a training package and relationship strengthening strategies. Participants will receive a summary of the findings and have the opportunity to request a copy of the draft report. They will also be advised regarding access to an electronic copy of the final report.

#### PRELIMINARY FINDINGS

Sponsors from a wide range of agencies were interviewed. Some were from community-based organizations, two were from AUT University, and other sponsors came from businesses and government agencies. All had supervised student placements in 2005 and/or 2006.

The interview consisted of 14 questions. Information was gathered regarding the sponsor's organization, their role, length of service and the number of co-op students hosted in the past. The subsequent questions were designed to explore aspects of hosting student placements. These were: the characteristics of an effective sponsor, reasons for offering student placements from the perspectives of the sponsor and the organization, the challenges and rewards of sponsorship, the adequacy of students' preparedness on arrival to the workplace, how to enhance lines of communication with the School and the contents and preferred delivery of a training package. There were similar numbers of male and female sponsors. All

held senior positions in their organizations. Their roles were cross-cultural services manager, psychologist/research coordinator, equity policy advisor, talent-sourcer, private training establishment director, language school internship manager, childcare manager, broadcasting manager, social researcher, community project manager, peace studies coordinator and training officer for a rehabilitation program.

In terms of being an effective supervisor, desirable characteristics were identified as being a good listener, having patience and good time management. Good sponsors would be enthusiastic about the role, empathetic, available for regular meetings and creative in terms of ensuring that set tasks were significant and relevant to the student's achievement of their learning aims. Patterson (1997) concurs but adds technical expertise and being supportive of the student's integration in the organization. From the perspective of the organization, there are several reasons to support the sponsorship of an under-graduate social sciences or psychology student. They could offer creative thinking and fresh ideas. They could utilize their good research and information technology skills. The process enables future recruitment of promising graduates with relevant workplace experience. The involvement of students presents an innovative approach to meeting the staffing needs of the organization and also adds diversity. The arrangement is also cost effective as work completed by the vast majority of students was unpaid.

Most of the sponsors were happy and the co-op experience was seen as substantial and beneficial for all three partners (i.e., the host organization, the student and the university) and many felt that they too would have benefited from such a learning opportunity. Additional benefits were the possibility of forging connections with a tertiary education provider and the community. The question regarding the challenging aspects of sponsorship revealed some shortcomings which reflect the deleterious impact of the relative absence of monitoring processes and channels of communication with the School. For example, one student who was described as lacking motivation and initiative failed to complete the required 150 hours in the workplace. It was also reported that two students failed to produce the documentation related to their projects.

Another negative factor was the demands of students' multiple commitments such as work, study and assessments which impacted on their availability. Some sponsors commented that students should honor the time and resources made available to them by the employer and ensure that ample notification of absences is given. One sponsor explained the complexity of undertaking a research project in a medical context as an ethical commitment is required of students in terms of ensuring privacy and following protocols.

There was general agreement that the role of the sponsor is a time consuming task which is additional to their workload without any time allowance or resources. However, on balance, the co-op experience was perceived as worthwhile. Students were seen to grow in confidence, learn to fit into a professional workplace, confirm the applicability and value of their skills and knowledge and generally make considerable progress in their academic, professional and personal development.

The sponsors who attended their student's oral presentation which analyzed their work experience, were impressed by their composure as well as the depth of reflection and analysis of their work-based learning. In terms of the students' preparedness when meeting their prospective sponsor for the first time, sponsors asked that the students should be well informed about the organization in order to focus the potential learning opportunities. This is endorsed by Bartkus and Stull (2001) who identify this competency as being most crucial to the success of the co-op experience. They comment that a good match of student and placement is more likely to be achieved in this manner. Students should be clear as well as realistic about their goals and what they hope to achieve. It would be helpful if they had thought through what they had to offer the organization in terms of potential projects and how the placement would benefit both parties.

Some sponsors felt the learning aims in the learning contract were too abstract and that they would be better expressed as do-able tasks. The suggestion was made that the contract should be expressed in layman's terms and be adaptable to a variety of workplaces. It would also help if the suitability of the student for the placement had been given previous consideration in terms of their study background and personality. The sponsors were unanimous in their requests for enhanced communication with the School. This is also prioritized in the study by Chapman et al. (1999) which explored satisfaction level with a university's co-op service quality. Most sponsors felt that contact with their student's academic supervisor during the negotiation of the learning contract would be very helpful. Others recommended that sponsors be notified of the placement start dates and the interests of the students.

In addition to the sponsors evaluation of student performance (which the student appends to their 'reflective portfolio' assessment), it was suggested that it would be useful to create a simple form, possibly on-line, which would provide summative feedback regarding the student's performance, reliability and fulfillment of the required hours. There was one comment that feedback from students regarding the contribution of their sponsors would also be informative. This could include whether the student's needs were met, the work was challenging and how well supported they felt. There was also a general feeling that letters of acknowledgement should be sent to sponsors at the conclusion of the placements. There were numerous, constructive suggestions regarding the content of the training package for new sponsors. Most felt that a one-page student profile detailing the student's knowledge, skills and preferred career path would be more helpful than the generic and lengthy CV as the basis for initial discussions. A template for completion by the student regarding the dos and don'ts in the workplace was also felt to be useful. Others asked for a 'frequently asked questions' component as well as a diagram of the placement process giving key events for the sponsors, students and the School. An account of how students have benefited from their placements was also perceived as helpful. Regarding the preferred delivery of the training, most felt that face-to-face would be best though availability and workload issues may interfere. Some felt that a CD-ROM would be convenient whilst others lacked the necessary technology. There was general approval for the



creation of a co-op website to encourage the participation of new sponsors, showcase previous co-op experiences and successes as well as provide a conduit for communication with the School.

## CONCLUSION

Following the advice of Hurd and Hendy (1997), I have attempted here to discover more about the actuality of employers' co-op experiences. Undertaking the research has progressed the development of strong and mutually supportive relationships with sponsors as well as confirming the continuity of their involvement in the program (Lazarus & Oloroso, 2004). Much valuable information has been gathered about the strengths and weaknesses of the co-op experience from the perspectives of sponsors and students. This will guide refinements of the paper and associated resources and inform the establishment of more robust channels of communication and a training package.

Evans (2001) confirms that the quality of students' co-op experience reflects the interest and commitment of the sponsor. This study has confirmed the high level of enthusiasm and willingness of sponsors to maintain their level of involvement in and support for student placements. The link between the School of Social Sciences and co-op sponsors is now less frail than in the past, and hopefully the next stage of this study will further enhance the quality of the relationship and the co-op experience for all involved.

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APPENDIX  
Interview Schedule

1. Please describe the organization you work for
2. What is your role within the organization?
3. How long have you worked here?
4. How many times have you sponsored a co-op student?
5. Why has the responsibility of a student been allocated to you?
6. Please explain the reasons for choosing to sponsor from your point of view
7. What aspects of the sponsorship role have been the most challenging and rewarding?
8. What are the characteristics of an effective sponsor?
9. How could AUTs students be better prepared for their placements?
10. What would improve the quality and level of communication between sponsors and AUT during the placement?
11. Which of the following modes of delivery for an orientation for sponsors would you prefer: DVD, CD-ROM, face-to-face as part of a group?
12. What should the orientation program include in terms of information and materials?
13. Would a co-op website designed to assist sponsors be helpful and if so, what should it include?
14. Do you have any further advice regarding enhancing the co-op process and/or the sponsor's relationship with AUT?

# Faculty views on the influence of work placements on students' ability to do science graduate studies

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## BACKGROUND

### *Faculty Perspectives of Co-op*

A cornerstone of cooperative education is the triangular link between the three stakeholders; students, industry and educational institutions. Much research has been carried out on the benefits (perceived or real) for each of the stakeholder groups (see, e.g., Braunstein & Loken, 2004; Dressler & Keeling, 2004; Weisz & Chapman, 2004). Some authors have tried to include perceptions of academic faculty within the research scope (e.g., Burchell, Hodges & Rainsbury, 2001; Coll & Zegwaard, 2006; Harris, 1984; Pratt, 1974; Zegwaard & Hodges, 2003), however, most research has focused on benefits to educational institutions in general, rather than perceptions of individual faculty members.

Faculty perceptions of cooperative education can have an important influence on the functionality of the program. There have been reports by co-op practitioners indicating that faculty perceptions of cooperative education have not always been supportive and can even be antagonist (Heinemann, 1988; Sovilla & Varty, 2004; Van Gyn, Cutt, Loken & Ricks, 1997).

### *Sector Needs for Science and Engineering Graduates*

For the last several years, numerous governmental reports from the countries belonging to the Organization for Economic Cooperation and Development (OECD) have raised concern about declining numbers of science and engineering graduates (e.g., Koslow, 2005; Lovitts & Nelson, 2000; Roberts, 2001, 2002; Scott, 2003, 2005). The decline is expected to worsen with the expected high number of scientists and engineers with higher degrees (i.e., masters & PhDs) looking at retirement in the next 20 years or so (Gago, et al., 2004; MoRST, 1998). This decline is despite the European Community's goal to increase research and development to 3% of GDP (European Commission, 2002).

With a greater need for more scientists and declining graduate enrolments, there is a genuine need to develop mechanisms to encourage science students to carry on with postgraduate studies. Recent research has suggested that co-op placements can have a positive effect on students deciding whether or not to do postgraduate studies, often serving as a primary motivator (Zegwaard, McCurdy & Dalgety, under review). However, there is little known about faculty perceptions on how, or if, co-op placements are preparing students for postgraduate studies. Thus so far, this issue remains unexplored in the literature.

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## CONTEXT

Research was carried out at the University of Waikato, focusing on perspectives of faculty belonging to the School of Science and Engineering and the School of Computer Science and Mathematics. These schools have offered co-op placements in science since 1974, and recently expanded to include placements for a newly formed undergraduate engineering degree (Coll, 1996; Laslett & Zegwaard, 2004). Interaction with co-op students, including securing placements and on-placement support, is largely carried out by staff from the cooperative education unit (Coll, Lay & Zegwaard, 2002). Faculty members of both schools have mostly a peripheral involvement with co-op placements, their involvement being limited to marking of placement reports relevant to their area of expertise.

## AIMS OF THE STUDY

The study consists of five primary parts: value of co-op to university staff members; enhancement of student skills; study performance; assessment; and ability to do postgraduate studies. All parts focused on faculty members perceptions. Reported in this paper are the findings relevant to faculty perceptions of co-op students' ability to do postgraduate studies. The other parts are subject to other publications.

## METHODS

The data was collected using a 60-question survey instrument, with 15 questions being relevant to the scope of this paper. Participants were asked to rate statements using a 5 point Likert scale. The survey was presented thematically in sections. Demographic information was also gathered to filter for possible important external effects (e.g., faculty members with co-op degrees, previously employed by industry). A space was provided at the end of the survey for comments. The survey was sent via internal mail to all science and engineering academic staff and, with the aim of increasing the response rate, resent one month after the first mail-out. The survey was completed anonymously and returned via a third party. Response rate was 54% (n = 76). The data were analyzed using standard statistical packages on Microsoft Excel. The Likert data is ordinal data, however, to give a descriptive overview of the data, averages and standard deviations were used.

## RESULTS

The results are part of a wider research project, with results presented here focusing primarily on faculty views on how co-op placements prepare students for graduate research. In general, the results indicate faculty thought co-op developed useful skills not taught at university, however, held mixed views on how co-op placement could prepare students for graduate research. There is some indication perhaps a 'traditional' view, that co-op only prepares students for employment, exists among some faculty members, whilst others see it gives a wider base of knowledge useful for completing graduate research projects.

### *Perceptions of Relevant Research Skills Gained During Placement*

Co-op placements vary widely from research-based projects involving data analysis, description, and discussion, to contributing to ongoing routine monitoring program.

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TABLE 1  
Faculty ratings of the value of co-op in preparation for graduate study

Question	Estimated Mean <sup>b</sup>	Standard Deviation
Supervising co-ops allows me to identify potential graduate students	3.06	1.01
Co-op graduates are more valuable for MSc and/or PhD research	3.04	0.99
Non-co-ops and co-ops are equally suitable for graduate studies	3.82	0.86
There is no benefit in a student having done work placements for my graduate research program	2.60	0.94
Co-ops learn hard skills while on placement	3.90	0.77
Co-op 's learn soft skills while on placement	3.96	0.65
Co-ops do not learn much in the way of skills while on placement	2.05	0.86
Co-ops learn skills not taught at university	4.05	0.55
Placements and reports enable students to learn writing skills	3.66	0.84
Placements help develop useful skills whilst on placement	3.42	0.80
Placements help develop research skills	3.00	0.87
Placements help student focus career path	3.53	0.73
Co-op graduates are more employable	3.58	0.83
Co-op degrees train students for technical support positions	3.29	0.72
After completing a co-op degree, students typically seek employment rather than carry on with graduate studies	3.21	0.81
After completing a placement, co-op students are better prepared for graduate studies than non-co-op students	2.71	0.91
Student who have completed a co-op placement report are better prepared for graduate research write-up	3.11	0.99

<sup>a</sup> Likert scale where 1 = strongly disagree and 5 = strongly agree; *n*= 76; <sup>b</sup> Given the level of data means here are estimated rather than true means

Consequently, the level of skill development that may take place during placement will also vary widely. However, despite the range of placement types, students should learn some skills relevant to science research. The majority of faculty thought 'useful skills' were developed during co-op placements, and all faculty members thought overwhelming that co-op placement helps students learn skills not taught at university. However, generally faculty thought that co-op students were not better prepared for graduate studies than non-co-op. Some faculty commented that students who had completed co-op placements had broader perceptive and wider knowledge, perhaps giving a better prepared and more knowledge student for graduate studies. Conversely, some comments indicated that co-op placement could be irrelevant and even counterproductive to students moving on to do postgraduate studies.

#### *Perceptions of Placements Enhancement of Writing Ability*

It is crucially important that graduate students can report their research findings in written form (e.g., thesis, journal articles). However, past research has indicated that employers believe graduate writing ability is poor (Coll, Zegwaard & Hodges, 2002; Hodges & Burchell, 2003) and concerned has been expressed by faculty that student writing ability has declined over the years (Coll, et al., 2006; Zegwaard, et al., 2003).

As part of the work placement requirements, students are required to write a substantial report on the placement. The report focuses primarily on the project completed but also includes an overview of the organization and a reflection on the learning. The report is formally ('scientifically') written and is subjected to a cycle of academic review and revision before final submission (much like a masters thesis). Often the report is the largest report students complete during their undergraduate studies and the only piece of substantial assessment where academic feedback is given before submission.

The purpose of the placement report, apart from being an aspect of placement assessment, is to enhance formal writing skills as well as develop data analysis and interpretation skills. The majority of faculty (71%) thought that by having a cycle of review and revision, co-op student writing ability was enhanced. However, when asked if co-op placement had better prepares students for research write-up, only 38% of faculty perceived it did. There was no indication from comments why faculty has this perception and, therefore, this area will be one of the focus points of the face-to-face follow-up interviews.

#### *Perceptions of Co-op Graduates Career Destinations*

Generally, technical support positions do not require postgraduate qualifications (e.g., masters, PhD). Some literature, and some anecdotal evidence from within the institution, indicates that faculty perceive that co-op degrees only prepare students for employment and even directly feeds these students into industry, rather than having opportunity to complete graduate studies. When faculty views were gauged by asking them to indicating what co-op graduates are most likely to continue with, 29% thought employment only, whilst 43% thought both employment and graduate studies (e.g., masters degree). However, this question had a high level of no responses (24%), which may reflect an underlying issue that may need to be explored during follow-up interviews.

## CONCLUSIONS, IMPLICATIONS, AND FURTHER WORK

Generally, faculty views were broad and diverse. Most seem to have a favorable perception on the benefits students gain from co-op placements. However, generally faculty held mixed views about whether co-op placements and report write-up were teaching students skills that are required for research. Some faculty members indicated that co-op placements could be counterproductive in developing postgraduate students, however, others had a more positive view by indicating they thought co-op placements broadened student's perceptions and knowledge.

The research so far has established to some degree what perceptions faculty hold, however, raised further issues in need of clarification (e.g. writing skill development). Semi-structure interviews are required to explore and more fully understand why faculty holds these perceptions. By understanding these perceptions, it may be possible to develop tools or sources of information that could help develop perceptions more in tune with the aims of co-op. That understanding may then also help develop more efficient and well-supported co-op programs that are able to provide the much-needed readily prepared and motivated students for graduate science research.

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# Distance learning and teaching in cooperative education

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## BACKGROUND

The inclusion of distance students in cooperative education (co-op) brings together concepts that do not naturally fit in that the reflection required for most co-op programs is hard to achieve through distance learning. Many Co-op programs include distance students. These are students on-placement in a different city or country from the educational institution. Reflection and critical thinking are commonly used in programs to ensure that students gain the maximum benefit from the Co-op experience and achieve the learning outcomes for the course. Key conditions for fostering critical thinking in the model developed by Ennis (1987) are: clarity (focus, analysis and asking questions); basis (observation and information from other people and judging credibility); inference (deducing, making generalizations and making value judgments) and interaction (communication with other people).

Brookfield (2005) also identifies that observation and recognizing/challenging one's own thought processes are key factors in the development of critical thinking. "The importance of interaction and discussion among learners in promoting critical thinking skills" has long been emphasized by theorists and was used in a study investigating the quality of student's critical thinking by McLean (2005, p. 6).

This paper examines how the interactive conditions can be met through distance learning to encourage and develop critical thinking.

## PROGRAMME

AUT Co-op programs, in particular Bachelor of Business Co-op, are delivered by both on-campus and distance modes. The model used for the distance mode differs and is often managed as a separate community of academic supervisors and distance students.

## UNIQUE FEATURES

AUT uses an online learning tool (Blackboard) that has a number of features. Of particular interest for the development of critical thinking are the forums that can be used to draw students into reflective discussion. The methods by which this is achieved are discussed in the next section of this paper.

Discussion forums are used in conjunction with other methods to engage student learning. Announcements can be made to remind students of the tasks they have been set for the week. These announcements can also be sent by email to the student body as a group, helping to reinforce the message. Academic supervisors and their group of students participate in individual online groups with students posting progress reports thus allowing supervisors to monitor student development.

During 2003 a group of academic supervisors recorded snippets of advice on video about the different stages of the student co-op experience. This has been distributed to distance students using compact disks (CDs) that students can view at their leisure. The organization of the online site has been carefully planned to provide student coaching and staff participation throughout the learning period. In the next section discussion is given on how student and supervisor participation can be managed to assist interaction and aid the development of critical thinking.

#### DISCUSSION/ARGUMENT

“At first sight, distance learning might not seem a sympathetic context for experiential learning” (Thorpe, cited in Boud et al, 1997, p. 99). Distance courses have often been delivered via the provision of text material for students to read and learn. In this respect it can be simply the transfer of classroom teaching to written format (Walker, cited in Vrasidas & Glass, 2002). Stephenson (2002) suggests that even when online learning is used, this different medium often replicates classroom teaching.

Thorpe (cited in Boud et al., 1997) maintains that distance learning can undermine the development of reflection in that the provision of uniform course materials can be detrimental to encouraging independent thought. Without discussion or interpretation, acceptance of these materials may prevail. Students often feel a sense of being left to their own devices when first confronted with learning from a distance. A feeling of isolation can develop especially if students are in an unfamiliar city or country and are geographically dispersed. In a study on student attitudes towards distance learning, Valenta et al. (2001) reports that students perceived there were fewer opportunities for social interaction and less student participation in discussions. A sense of community is essential to student learning (Brown, 2005; Gronek, 2005; Walker, cited in Vrasidas & Glass, 2002) resulting in confidence and sharing of knowledge. Brown’s study found the community was defined by participants based on similarity of interests, academic discussion threads and personal communication.

An early case study by Bullen (1998) examined dialogue between 18 students using video conferencing and investigated how it contributed to their ability to think critically. As students were required to be at a particular place at a given time Bullen concluded that this constraint hampered the process and that the flexibility of online learning or a combination of practices could be more effective. AUTs experience in using Blackboard for a wide range of courses has shown that the set-up, student coaching and staff participation are essential to the success of discussions throughout the learning period.

The AUT Business cooperative education program has been monitored over a number of years and has shown the benefits of having social dialogue that reflects personal interests at the beginning of the course. The set-up of the course has been designed to draw students along a continuum from easy, social chat into more in-depth academic discussion. The initial forum allows students to introduce themselves, then describe their work placement and from there move into a more structured discussion of their work as required for an assessment. The willingness of students to participate can be seen by the number that undertake these introductory forums and the speed with which they do so. Student feedback shows that a sense of community has been achieved through these practices.

Student coaching begins at a very early stage through the practice of directing students to

respond to other student postings can develop a habit of both posting and responding. If this habit is not actively encouraged by staff and developed early in the course, online learning can easily become a repository for student postings or questions with an expectation that staff will provide the responses. An important inclusion is a socially-focused forum where students can chat about topics as if meeting face-to-face in a cafeteria or bar. This type of interaction assists in building a sense of belonging to a community. Critical thinking can be promoted in this way by guiding students to be motivated by their personal experiences yet to see a presented problem from different viewpoints and form their own opinion through discussion with their peers (Murchu & Muirhead, 2005). Exercises such as scenarios for discussion can do this if the discussion forum is specifically set up with key questions and examples such as suggestions to consider the issue behind the incident/s, consideration of different perspectives and assumptions that can easily be made.

Very general forum within specific or no guidelines early in the course will generally not yield high student participation and may bring unpredictable results demonstrating lack of thought. Later in the semester more general forums can be used after earlier directive ones, for example, a forum in which students develop their own critical thinking model following additional reading. The danger of all forums being directive is that students simply develop thought processes that reflect those of the supervisors and do not look for alternatives. Staff participation is important. Without this involvement it can seem to students as if staff are not monitoring and guiding their learning or checking the direction of discussion. Walker cited in Vrasidas and Glass (2002) comment about the 'is somebody there?' syndrome. This has been evident at times during staff monitoring of online participation.

Timing of response to postings is critical in facilitating student learning (Milulecky, 1998; Howland & Moore, 2002). Academic supervisors can be allocated specific days and discussion boards on which to respond. This also enables students to receive encouragement from multiple sources; from discipline experts as well as their own academic supervisor. Multiple sources are considered an important ingredient in promoting student participation and discussion (Cain, et al., 2003; Collison, et al., 2000). The academic supervisor is then more likely to be thought of as a facilitator who guides the student to self-directed learning and to seek the answer within the online community.

#### IMPLICATIONS AND ISSUES

The way in which online tools are used for distance learning is still evolving (Stephenson (2002). The encouragement of critical thinking has been achieved in the distance community as well as the on-campus student body of AUT Business co-op. For critical thinking and reflection a number of factors are important for establishing interaction including a sense of community. It is possible to develop that sense of community with distance students.

Carefully planned and monitored tasks can guide students into a depth of discussion which, if not monitored, can remain at a very superficial level. It is desirable to draw students along a continuum from easy, descriptive tasks to more complex, reflective ones. However it is important that the reflective exercises are not totally based on staff direction. Independent student thinking needs to be developed. Set-up of the activity, student coaching and staff participation are critical phases to be planned in this process. Future directions for research could consider, in more depth, the student point of view of distance learning; most current research being based on teacher observation of student behavior.

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# **The use of artifacts to facilitate reflective dialogue: Does this have implications for students' supervised work- based learning experiences?**

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## BACKGROUND

It is suggested that creative alternatives to overtly prescriptive approaches to reflection may have the potential to promote reflection and enhance students' knowledge, understanding and ongoing motivation to learn during supervised work-based learning experiences (Boud, 1999). As a means of fostering the development of students' individual construction of resilience and self understanding as growing teachers, this research explores pedagogies for promoting creative inquiry and its implications for students' work-based learning experiences. Artifacts are used to facilitate reflective discussion and the study draws on literature pertaining to adult education and early childhood education. Reflective practice is defined by Brookfield (1995, p. 214) as "stand(ing) outside ourselves and com(ing) to a clear idea understanding of what we do and who we are." While adult discourses view reflective practice as being at the heart of teacher growth (Brookfield, 1995; Palmer, 1998), becoming reflective requires more than knowing about it (Boud & Walker, 1998; Boud, 1999; Cowan, 2006; Fook, 2006; Haig, 1998; McIntosh & Webb, 2006; Wilkinson, 1999). Becoming reflective also requires an adherence to the concept of reflexivity – an acknowledgement of the impact that all participants' assumptions, values and beliefs have on the potential for collaborative group participation and decision-making (Brookfield, 1995; Haigh, 1998). Reflexivity is crucial to effective work-based learning (Solomon, Boud, Leontios, & Staron, 2001) and therefore collaborative group dialogue is a key component in this research. As this study progresses and data is analyzed and understood, we discuss how students' interpretations and subsequent 'theorizing' has guided the process and the findings.

## CONTEXT

Wilkenson (1999) stresses that professional growth through reflection, must be supplemented by educators who tackle the complexities of practice with their students in real settings. This research investigates an aspect of current practice, at a small private tertiary training institute with a group of 12, female, second year, Diploma of Teaching (early childhood education) students who undertake 15 weeks of supervised practicum during their second year. As their curriculum has a strong focus on applying concepts underpinning learning through play theory, to these practicum experiences, the students were very familiar with the symbolic use of creative resources. The artifacts chosen included children's story books, a favorite autobiography, a travel guide, a passport, children's toys children's art projects,

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photos, thank you cards, items of clothing/‘dress ups,’ a collection of music CDs, a swimming cap and mementos from home. In my role as practicum coordinator (the first author), I facilitate reflective practice and the development of students’ portfolios but I do not assess any of the year two students’ theoretical or practical work. Throughout this investigation, I was, however, mindful of the potential ethical issues in relation to use and misuse of power structures (Boud & Walker, 1998) related to research with ‘living subjects.’ I too needed to be seen (by the students) to be “co-creating ....a common commitment to learning” willing to ‘risk’ being exposed and scrutinized (hooks,<sup>1</sup> 1994, p. 21; Solomon, Boud, Lentios & Staron, 2001, p. 274-279). With this in mind I received feedback, on a focus group dialogue, from an independent observer<sup>2</sup> and ongoing feedback from a critical friend.<sup>3</sup>

#### RESEARCH AIM

To examine the validity of students having the freedom to choose artifacts, which had meaning to them, as props to begin reflective discussion in order to support and sustain responsive and reciprocal relationships during work-based learning experiences.

#### METHOD

A naturalistic, qualitative, paradigm was applied to this study. An interpretative pedagogy was used, in an endeavor to develop an understanding of the subjective world of human experiences and also in order to retain the integrity of the phenomena being investigated. Incorporation of student feedback was crucial to the integrity of the study (Kemmis, 1993). According to Noffke and Somekh (cited in Somekh & Lewin, 2005), “very few educational research projects look at issues from the standpoint of the students.”

This was a three-phase study: Phase One involved the students’ representational sharing of personal artifacts. After the artifact sharing, I developed preliminary interpretations of the students’ stories and categorized them into possible themes. Phase Two focused on being part of a community of active learners where the researcher, the students and the ‘observer’ collaborated in ongoing dialogue to yield deeper insight and understanding of the multiple realities (Titchen & Hobson, in Somekh & Lewin, 2005) pertaining to this preliminary analysis. This dialogue and subsequent written feedback from the students and the observer was used for further analysis and modification. Phase Three, which took place partway through a four-week practicum,<sup>4</sup> involved discussion of the modified phase two data and reflection on whether students’ participation in this investigation was beginning to have an impact on their current work-based placement. Student feedback was collated on large sheets of paper for further analysis and modification and they subsequently received a summary of the final paper.

#### RESULTS

Having ongoing opportunities to keep revisiting and continuing to practice reflection actively, as a collaborative learning community, appeared to be a key component of this investigation. Clearly, the initial artifact ‘unpacking’ was seen as important: “The first artifacts were the catalyst. They gave me a chance to let these guys in. It gave us a chance to connect with ourselves” (Bella<sup>5</sup>). Although the subsequent summarizing of data into themes was helpful for collation, analysis and developing a framework for dialogue; having their



expanded stories validated was more meaningful for the students. While there was genuine interest in the initial themes (Phase Two) and agreement on the modified themes (phase three), discussing students' respective narratives and their individual and collective growth became the main focus of the dialogue. Babette noted that: "It's important and powerful to see our comments written, in text, in the research." Bella felt that: "It gave me a feeling of ownership. To see on paper, my thoughts, ideas and feelings, which someone else has grasped and developed an understanding for, gave me a wonderful sense of pride - a self-esteem boost." Seeing their 'theorizing' at the center of learning, rather than on the periphery, in the students' view, not only opened them up to discovering themselves but also to discovering others (Gidron, Barak & Tuval, 2006), both in the college and in the work-based setting. Gertrude's comments reinforced this: "My biggest thought is my own personal growth - going from what I thought I was to the realization that this may not be what I portray....I own my feelings and understand not everyone will agree - this is ok, as I'm an individual....Discovering others is discovering yourself." Of equal importance, they felt, was having the time to reflect and revisit this experience and "deepen the dialogue" as individuals and as a community: "If we hadn't (been challenged) on our journey, all our thoughts, realizations, [sic] light bulbs, moments and understanding would just be stuff in our heads" (Bella). On reading the narratives, which had emerged from phase two, Alice exclaimed: "Surely that didn't come from my mouth!" But to her surprise (on reading her follow-up comments) she discovered it had! Elena saw the "talking (as) important." This links to "all the things we've done - it's everything." "We've kind of refined it" (Babette) "and blown it up, it's more deep" and "broader." (Grace). Anika reflected that: "(Not only do I now have) the freedom to be me, I can take on other people's stories." Lilly echoed these thoughts: "It's made me think of everyone else - I'm less judgmental." Madonna expanded on this: "(Having) no right or wrong way - no 'judgments'.... The discussion is bigger and better (and) you treat others as you want to be treated.... This experience has helped my confidence.... It was easy to write because it was me. Having time to clarify is important. I write what I think now - not what I think I'm meant to write".

As we engaged in deeper discussion, they felt they were not only developing a more complex understanding of their own community, but also transferring greater empathy and insight to "other communities" (Montuori, 2005, p. 389-390). By Phase Three they felt, they were starting to see work-based settings as comprising "whole people with lives - staff, children; parents" (Bella). Eva felt she "was thinking in action more ... of everyone in the (work-based) community" and Grace noted this "makes a difference to the mindset - I can see every person's emotions have an impact." Madonna felt: "Knowing who I am means I'm less judgmental, I see the whole picture. I don't see things at face value."

Jade felt her reflections "were deepened ...I'm more open- minded" and, like Anika, "opened up to dealing with challenges." Discovering one's authentic 'self' appeared to have opened these students to discovering others and as, Gertrude discovered: "Discovering others is discovering yourself." Through dialoguing with these students, I too was beginning to understand how the use of artifacts could facilitate more meaningful reflections, when used as vehicles for making "sense of the (work-based) world as a 'narratable' [sic] place" (Frank, 2002, p. 5). This process seemed to enhance the students' ability to be more open to multiple perspectives and to reflect in more creative, complex, empathetic and insightful ways with a diverse range of individuals in the work-based setting.

## CONCLUSIONS

Going beyond the mechanistic, seeing reflection as multifaceted, multidirectional interactions and having their stories visible and valued in the research appears to have empowered and motivated these students to reflect with more creativity and complexity on their work-based experiences. Of particular interest, to me, was how the dialogue had 'grown' from 'I' to encompass 'we' (as co-researchers) by Phase Three. In particular the students stressed: having the time and psychological safety to dialogue, "revisit" (Ministry of Education [MoE], 2004) and clarify was the key for them. Just as young children master group play skills through dialogue and playful exploration, in relation to "people places and things" (MoE, 1996, p. 14), we were collectively seeing ourselves as collaborative 'players,' contributing to mutually beneficial relationships, about real experiences, where all voices (admittedly, at times, some more than others) were heard, thus developing a point of connection about what we did know and willing to name and acknowledge what we did not know as well (Jones & Cooper, 2006). Hence, this research seems to suggest, that if adult students are to develop the ability to apply theory to work-based experiences, they first need opportunities to develop relationships in groups, where they feel safe to 'risk' playing with and revisiting tentative ideas that have meaning to them. The uncritical sharing and affirming of personal and professional histories, stories and experiences, free from prescriptive outcomes and formal assessment, empowered these students as reflective and reflexive individuals who have something interesting and worthwhile to contribute to work-based experiences.

## ENDNOTES:

<sup>1</sup> hooks is an African-American writer who uses lowercasing to signify that in her view the substance of her writing is more important than who she is.

<sup>2</sup> Dr Stephanie Feeney, from the University of Hawaii, who has been actively involved in work related to Ethics in early childhood and adult settings.

<sup>3</sup> Dr Elizabeth Jones, from Pacific Oaks College, Pasadena.

<sup>4</sup> This is part of practicum 'mentor time', where students return to college for reflective dialogue with tutors.

<sup>5</sup> Pseudonyms were used.

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# **What benefits are there in using an online program to coordinate cooperative education students on placement?**

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## INTRODUCTION

The use of technology in education is ever increasing as education providers work to integrate up to date tools and strategies into delivery, co-ordination and administration of programs. Hospitality and tourism programs are delivered in a manner of forms, face to face, paper based, internet delivery, teleconference, videoconference and using online educational programs such as blackboard. It is generally agreed that we are still in the experimental stage for creating internet learning environments and this coupled with low completion and effectiveness rates of e-learning make it evident that more needs to be learned about designing successful online environments, technically, pedagogically and personally (Sigala, 2001)

Today we are witnessing a new generation of technology which fundamentally changes the function of the tertiary education campus. These transformational changes replace the classroom with a multitude of learning forms and forums. Implications for cooperative education include the ability to study and work using on line study. The use of possible virtual work teams opens new opportunities for engagement among a variety of people at times and places once thought impractical. Another fundamental change is that co-operative projects will be more tightly tied to the studies of a particular course. It will have the advantage of linking study more closely to the work task. The students will be combining the theory and practical aspects of their study with the added advantage of a real life work placement to enhance the learning (Hall, 1999).

The 'webification' of instruction creates a learning environment that overcomes time and space barriers. The internet offers great flexibility to match the specific conditions of work within the tourism and hospitality sector. Integrated within the Bachelor of Applied Management is a semester of cooperative education placement. Students are required to enter the workplace and complete assessments and coursework as part of this program. Coupled with this is the need for academic supervision and co-ordination of the program to ensure support and assistance for the students. A large number of the students are placed nationally and internationally so there are the logistics of time and distance to consider.(Kasavana, 1999) Blackboard7 provides a web based program that the students can access anytime or place supporting their work placement.

The unique attributes of communication in e-learning environments are summarized by (Harasim, 2000) as follows:

1. *Many-to-many (group communication)* enables: motivational (socioaffective) benefits of working through problems with peers; active exchange: rich information environment; identification of new perspectives, multiplicity; opportunity to compare, discuss, modify and/or replace concepts (conceptual exchange); encouragement to work through differences and arrive at intellectual convergence.
2. *Time independence* supports: 24 hour access; users can respond immediately or reflect and compose a response at their convenience; ongoing, continuous knowledge building; participation by users at their best learning readiness time.
3. *Place independence* allows: access to the wealth of web resources (as well as peers and experts); shared interests, not just shared locations amongst participants.
4. *Text-based/media-enriched messaging* encourages and contributes to: verbalization and articulation of ideas; focus on message rather than on the messenger (reduced socio-physical discrimination); clear expression of ideas; rich database/web of ideas.
5. *Computer mediated environments* enable: searchable, transmissible and modifiable archived database; multiple passes through conference (discourse) transcript; building tools to exchange and organize ideas and support collaborative learning; building templates, scaffolds and educational supports.

Videoconferencing moves student learning from passive to integrated methods of instruction that allow and encourage regular student involvement. The students are able to visually discuss issues with the lecturer and other students using the videoconferencing option. (Stuart, 1999) An open discussion can be maintained with up to five or six different groups providing a visual, audible link regardless of distance. Videoconferencing as a new technology allows the student and institutions the ability to consistently co-ordinate and manage the program, and the students enrolled on it.

## METHODOLOGY

Interviews are an integral part of education research. There are a number of different approaches to the analysis of interviews including the work of Silverman, Freebody Baker and Briggs. There are three approaches to analyzing interviews (Silverman, 2001). The positivists have as a goal the creation of the pure interview which provides a mirror reflection of the social world, and the emotionalists who suggest that unstructured open ended interviewing can elicit authentic accounts of subjective experience. There is thirdly the radical social constructionists who suggest that no knowledge about a reality in the social world can be obtained from an interview. This approach advocates the view that narratives between interviewee and interviewer are context specific, invented to fit the demands of the interactive context of the interview and representing nothing more or less (Silverman, 2001).

Qualitative interviewers recognize the issue of how interviewees subjective view will influence the way they respond to the interviewer based on who the interviewer is, the social categories they belong to, age, class and gender. These issues may be reduced when groups

are studied with whom the interviewer has no membership. A strength of qualitative interviewing is the opportunity to collect and examine narrative accounts of social worlds. Silverman argues that while open ended interviews can be useful there is a need to justify moving away from naturally occurring data that surround us (Silverman, 2001).

In simple terms interviewing is a way of generating data about the social world by asking people to talk about their lives. In education interviews are integral in the administration, coordination, delivery and improvement of educational practice. Sociolinguist Charles Briggs argues that interviews shape the form and content of what is said. Particularly in active interviews meaning is not simply elicited it is actively communicatively assembled in the interview encounter (Briggs, 1986). In this case interviews are collaborative accomplishments in meaning making work.

In an educational setting an interview may take place between a teacher and a student, a manager and a staff member, a Principal and a staff member along with many other combinations. The issue of validity results if unbiased procedures are successfully applied. Douglas discusses the issue of creative interviewing as a set of techniques for moving beyond the simple words and sentences exchanged in the interview process. Douglas describes creative interviewing as using strategies and tactics of interaction to optimize cooperative mutual disclosure. Traditional approaches to interviews envision the subject behind participants as passive (Douglas, 1985). A closer look at traditional approaches shows that in actuality interview conversations indicate the interviewee is more than a vessel of answers. (Silverman, 2004)

In qualitative research the active interview is an interpersonal drama that is constantly engaged in the work of meaning making. The versions of meaningful experience that emerge from interviews are constituted in the interplay of 'hows' and 'whats' of interpretive practice. The concept of the active interview casts interview bias in a new light. All participants in an interview are implicated in making meaning. In an active interview the researcher can no longer be content to catalogue what is said in an interview, and the challenge is to carefully consider what is said in relation to how, where, when and by whom and to what end.

In this research project, structured interviews were conducted with two lecturers who have been involved with the coordination and supervision of cooperative education students. The interviews included structured questions which were taped and transcribed. The focus of the interviews was to assess the use of Blackboard 7, and other forms of technology in conjunction with the cooperative education student placements on the Bachelor of Applied Management program.

## RESULTS

Both lecturers agreed that there were advantages in adopting the use of Blackboard 7 into the coordination of CEP. One of the respondents commented that "especially if the students are not in the same city as us, they are able to communicate with lecturers and fellow

students.” This finding supports the notion that technology can transcend distance and time allows equal access to all users. Another comment that Blackboard 7 allows “everyone access” supports the notion that technology also provides consistency of material and equal ability to this material for all students. Both lecturers felt that Blackboard7 did rank at least a 7 -8 on a scale of 1-10 with 1 being poor and 10 being excellent. This finding strongly supports the use of Blackboard7 as a medium for coordination of CEP.

The features of the program were highlighted which included discussion boards which was seen as an excellent forum for students to discuss like issues and problems, allowing further engagement using the technology. The fact that other people “put their comments onto the discussion board,” encouraged students to be a part of this medium and was a point highlighted by one of the lecturers interviewed. Using the technology was an important theme taken from the interviews with the lecturers highlighting the need for “some type of training,” for both students and staff to gain maximum benefit from the technology.

Recommendations for improvement with the technology included incorporating videoconferencing, webcam and possibly Skype by the lecturers to allow more personal one on one contact. One lecturer commented: “The use of video conferencing could be a creative new way to communicate with students who may be wanting assistance with reports or even to have a link up to watch/sit in on the second year students who were doing their presentations to their employers.”

There was a concern that if the technology did not work there would be problems accessing the information. A fear of new technology was highlighted by one of the lecturers in their statement “Video conferencing as a teaching tool is just becoming more popular. Having just started down this track some of my observations are that although it appears to be very easy it is an incredibly nerve-wracking experience for the first couple of sessions. As you are on your own there was a sick pit in my stomach until I was connected and underway. It’s not the delivery that’s worrying it’s the actual technology itself particularly if you are not hugely technological.”

## DISCUSSION AND RECOMMENDATIONS

The two staff interviewed agreed that technology was essential in the effective placement of cooperative education students for the undergraduate degree program.

The both agreed that there was a need for communication and consistency with the supervision of the placements, and both staff commented on the benefits to be gained by incorporating a tool like Blackboard 7 into the process. There was comment made by both staff that student training was important prior to using Blackboard 7 for it to be fully beneficial to both students and supervisors. Respondent 2 commented on being nervous until the videoconferencing was up and running, which raises the question of fear of change and technology for users including students. According to Piaget (1977) the four processes of knowledge construction are as follows:



1. Assimilation; associate new events with prior knowledge and conceptions
2. Accommodation; change existing structures to new information
3. Equilibrium; balance internal understanding with external 'reality' (e.g. other's understanding), and
4. Disequilibrium; experience of a new event without achieving a state of equilibrium.

In short, people assimilate new knowledge by producing cognitive structures that are similar to the experiences they are engaged in. They then accommodate themselves to these newly developed knowledge structures and use them within their collection of experiences as they continue to interact with the environment. Their knowledge is not separate from, but is embedded within experiences and interpreted by the learner.

Email, teleconferencing and video conference were also discussed as being important tools for communicating with students with a suggestion of incorporating webcam into the technology. The psychological fear of using new technology was expressed by one of the respondents reinforcing the point that technology can be daunting for new users and confidence grows with repeated use and skill development in this area. What is evident is that both the respondents believe that there is certainly a place for technology in the cooperative education placement program as confirmed by the feedback. The main reason for this feedback is that technology such as Blackboard 7 can be accessed through the Internet by all students regardless of their location. The ability to add links, announcements, discussion boards, self marking tests, course documents and course information make this program an effective option for course supervisors and students alike.

The incorporation of videoconferencing is useful if the lecturer would like to speak to more than one student at a time, and also allows the option of group presentations. PowerPoint presentations by the student could be delivered through this mechanism to more than just the lecturer with a number of other participants able to also be involved. The benefit of webcam is that the lecturer and student are able to speak to each other as if they were in the same room, removing the isolation factor from the work placement. Bearing in mind that some of the students are placed as far afield as China and Hong Kong, these forms of technology would assist greatly in managing the isolation and distance issues.

#### SUMMARY

Based on the feedback from the respondents the students and coordinators do need to have specific training on how to use and deliver specific functions of both Blackboard7 and other technology such as video conferencing and webcam. The training should endeavor to provide user friendly tips regarding functions of the programs including, discussion boards.

Alongside this, students should be au fait with videoconferencing facilities as should the coordinators. The fear of technology is often greater than actually utilizing it. There is a strong positive response to the incorporation of Blackboard 7 into the coordination and supervision of cooperative education students on placement and this is supported by the feedback from both the lecturers. The suggestion of webcam would be very useful for the face to face interaction on an individual basis, and should be considered as a future

improvement. The incorporation of interactive technology into the development of relationships between students and lecturers is an integral part of adult learning in the 21st century. The combination of cooperative education, distance education and recent advances in technology now mean that students can be better prepared and monitored whilst completing their cooperative placement program. Technological advances add another dimension to learning and the transformational experience of moving from the classroom to the workplace (Stuart, 1999). The issues of time difference, and distance are no longer a challenge to the cooperative education lecturer/coordinator as technology removes these barriers but does present some new ones. The benefits do outweigh the disadvantages and the mode of delivery will in the foreseeable future include innovations like Blackboard 7, videoconferencing and webcam.

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APPENDIX

Interview transcript

- 1. Have there been any advantages in adopting the use Blackboard 7 in the co-ordination of CEP?**  
*Respondent 1:* Yes I think especially for students not in the same city as us. To use the discussion board and communicating with lecturers and fellow students. This would be an advantage for their method of learning. Being able to put power points, external links to other sites, course information, announcements and deadlines and also staff contact information.  
*Respondent 2:* Is a good way of ensuring that everyone has access to the same material at the same time. I knew I had communicated what I needed to and it was up to the individual students to get it. The students can access the material announcements from anywhere that has internet access e.g., Hong Kong/China and at anytime of the day or night. They could choose whether they wanted to print out something or not. The discussion board could be used as a good communication tool between everyone as well.
- 2. If yes explain these advantages and disadvantages**  
*Respondent 1:* Problems with technology for the students which can be an issue. Sometimes having problems logging in and accessing the information are the main issues. Mainly technical problems.  
*Respondent 2:* As above.
- 3. If no explain why this is so**  
*Respondent 2:* Nothing
- 4. What functions of Blackboard 7 are particularly useful in coordinating CEP students?**  
*Respondent 1:* Use it for class information and announcements and certainly the discussion boards and it helps students who are unsure about using this medium feel better about putting things on when they see that other people have made comments.  
*Respondent 2:* The announcements section to draw attention to a message etc. This way is often more guaranteed to get a student to contact you than the email they don't open
- 5. What improvements could be made to enhance Blackboard 7 as a tool for you as a CEP coordinator?**  
*Respondent 1:* Having some type of training to start off with and perhaps an online training tutorial to help them use all the functions  
*Respondent 2:* I probably didn't use it to the full capabilities. Student assignment was on it at start of course and the only other major things I did were to post some announcements so really what is there works fine. In the future with CEP it may become more frequently used and if there were any useful articles/ research papers they could be posted for informative reading
- 6. On a scale of 1-10, 1 being poor and 10 being outstanding where would you rate the Blackboard 7 as an educational tool for CEP students and programs?**  
*Respondent 1:* 8  
*Respondent 2:* is 7-8
- 7. What other forms of technology would assist in the coordination of CEP and why?**  
*Respondent 1:* Videoconferencing, especially students communicating from out of town and also the supervisor or manager where they are working could be involved and 3 way communication.  
*Respondent 2:* The use of video conferencing could be a creative new way to communicate with students who may be wanting assistance with reports or even to have a link up to watch/sit in on the 2<sup>nd</sup> year students who were doing their presentations to their employers. This could be very useful when there are several students who are overseas but either living near each other or even at several different locations. The contact becomes more personal than just using the email or blackboard to answer their questions. A web camera and skype could also provide the ability to make the co-ordination more personal.

8. **What benefits to the students would these technological inclusions provide?**

*Respondent 1:* Extra communication and the ability to keep in contact with the lecturer. To allow students to be placed in different destinations and still have consistent academic supervision and access to course information, materials and assessments

*Respondent 2:* The students would benefit equally from video conferencing because of the features that this can offer. They can present things using a PowerPoint or a camera image and can talk not just to the lecturer but also to others from the class. They can work on things together from any location.

9. **What benefits to the institution would these technological inclusions provide?**

*Respondent 1:* Ensure the students have communication with the lecturer and there is ongoing engagement with the institution whilst students are on placement. Make the course a better course and promote the course and get more students to complete the course. No limit on numbers because you don't have to go out to visit them all and allows the students to go back to their home countries or alternatively go abroad *Respondent 2:* The institution benefits in that the students get more opportunities and can offer positive comments outside of the course to others.

**Any other comments:**

*Respondent 1:* Might be useful to have webcam which would allow students to see the person at the other end and vice versa. Also perhaps students could have or be provided with a laptop to assist in these forms of technology. Definitely a way of being able to promote and enhance student learning.

*Respondent 2:* Video conferencing as a teaching tool is just becoming more popular. Having just started down this track some of my observations are that although it appears to be very easy it is an incredibly nerve wracking experience for the first couple of sessions. As you are on your own there was a sick pit in my stomach until I was connected and underway. It's not the delivery that's worrying it's the actual technology itself particularly if you are not hugely technological. Once teaching or talking it's just like being in a face to face class session and everything flows, you just have to remember which buttons to push to move the camera around etc. It is also a matter of being very organized as you can't just leave class/send on a coffee break if you forget something or don't have enough to do.

# A portfolio model of learning: reframing assessment practices in a business cooperative education course

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## INTRODUCTION

This paper examines a portfolio model of learning in the assessment of student workplace learning. Using an interpretivist framework, an holistic assessment model is outlined in the context of a co-operative education course within an undergraduate business degree. The model involves the key stakeholders contributing to student learning, development and assessment through a 'long conversation of informed dialogue'. In developing the model, attention is given to the prevailing positivist influences on assessment and the underlying assumptions made about 'truth' in learning. The paper argues that while *criterion referencing* may have progressed our assessment practices, positivist assumptions often underpin and limit our approaches to assessment in co-operative education. The model is presented within a social constructivist framework, arguing that cognitive and social development are key inter-connecting components of student's workplace learning and therefore must be recognised and incorporated into assessment.

## BACKGROUND

Assessment of student learning in co-operative education is considered to be a challenging issue. This is largely because the learning is situated in different workplace settings, and is influenced by a myriad of contextual variables (Hodges, 2004). How we might respond to these challenges depends upon the epistemological framework we use. Typically, our approach, embedded in *positivist* thinking, is to quantify expected learning outcomes by identifying and subsequently measuring specific performance criteria against a set of standards. However, an underlying assumption of positivist thinking is that there is an absolute or objective 'truth', that we can in fact pre-determine: what the standards are (or should be) in each workplace; what this means for the quality of work demanded from our students and; the way we subsequently assess against these standards. In effect, criterion-referenced assessment is often underpinned by positivist assumptions. However, this provides an inadequate framework for assessing learning in co-operative education. Essentially, positivism is both deterministic and reductionist in that it assumes that all phenomena, including human phenomena, can be predictable and subject to a single law or generalisation, which is "both repugnant and unfounded" (Lincoln & Guba, 1985, p. 27).

## ISSUE

A positivist approach in assessment will often lead us to focus on measuring what has already occurred and what is 'known' from that occurrence. This results in assessment

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practices that direct our attention exclusively to *current* learning and performance, while ignoring the impact such assessment may have on *future* learning. Boud (2000) argues that there is a need for assessment to focus on 'sustainability'. In effect, all assessment needs to do 'double duty' by ensuring a focus on current learning while also contributing to prospective learning (Boud & Falchikov, 2006).

A key challenge for educators is being able to meet the forces of public 'accountability' for *measurable* student outcomes, while at the same time enhancing students' current and prospective learning. While criterion-referenced assessment has helped us to move away from measuring student performance in relation to each other (through *norm-referencing*), it still makes assumptions of there being an objective truth, and that this can be determined through the clarity and detail of the criteria. This has tended to lead us towards a never ending search for the 'holy grail' of criteria objectivity, only to find ourselves lost in a 'black hole' of specificity and uncertainty. In complex situations involving multiple elements (such as that described in co-operative education placements) criterion referencing is considered to be problematic and inappropriate (Gipps, 1994). Indeed attempts to reduce the full range of skills and competencies utilized in a professional practice to pre-specified, observable work actions or behaviours has been argued to be educationally unsound (Biggs, 2003; Bowden & Marton, 1998).

#### DISCUSSION OF MODEL

So how might we understand (and assess) the 'truth' of what students learn (or should learn) in the workplace in a way that also contributes to future learning? Guba and Lincoln (1989) argue that 'truth' is something that is gained by "consensus among informed and sophisticated constructors, not of correspondence with an objective reality" (p. 44). According to Fish (1980), consensus in assessment is reached through a dialogical process involving the 'interpretive community'.

#### *Context for Intervention*

An interpretivist assessment model is presented here in the context of a pilot intervention in a co-operative education course within a business undergraduate degree. The Industry Based Learning (IBL) course requires students to undertake approximately 150 hours work related to their study major. Each semester up to 50 students enrol in the course. Student cohorts tend to incorporate a wide range of ages, ethnicities and culture, with a significant proportion having English as an additional language. Students are supported in finding appropriate work placements and these will range from small businesses to large organisations, in both the private, public and community sectors. In effect, there is considerable variability in the type, size and nature of the potentially 50 or so organisations in which the students are placed. Due to the difficulty in sourcing workplaces to host IBL students, Unitec does not insist that students be paid. Students are supported and mentored during the placement period by academic supervisor (approximately 15-25 supervisors may be allocated in any one semester). Before going out on placement students attend a number of preparatory workshops provided by the course coordinator. Similar, preparatory workshops are provided for any new academic supervisors.

Current practices involve three components. These include: students providing a set of personal learning goals (10% weighting); assessment of work performance using specified criteria and guidelines, involving the host employer, student and academic in a collaborative process (55% weighting); and students reflecting on their experiences by way of a *reflective essay* (worth 35%). The final grade is determined by an aggregation of weighted marks given for each assessment component (using an eleven point system from A+ to E).

Current practices are considered to be problematic for a number of reasons. These include: a lack of integration between the three elements described; questionable assumptions made about stakeholder understanding of the given criteria (and related performance standards);

potential for a conflict of interest to arise between the formative and summative elements; questionable *fairness* of the model given the variability in the work undertaken and the workplaces in which this occurs, the potential conflict when 'rewarding' performance between assessment and the employment relationship (especially if the student is working voluntarily, and the unequal 'power relationship' that may diminish the student 'voice' in the three-party collaborative assessment process; and questionable assumptions made about the level of precision accorded to performance in the 11-point grading system.

#### *Portfolio Learning and Assessment*

In response to the issues and concerns identified, assessment processes were changed and incorporated into a single 'portfolio of learning'. Portfolio assessment has been summarily described as "the evaluation of performance by means of a cumulative collection of student work" (Koretz, 1998, p. 309-334). Underlying this is the need for students to be involved in not only determining and collecting the evidence, but in also having some input into the criteria for selection and judging merit (Paulson, Paulson & St. Meyer, 1991).

The portfolio model adopted here is summarized in Figure 1. The model takes an holistic approach by making explicit connections between each of the learning outcomes, and between formative and summative methods. Each of the elements contained in the model is inter-connected, with each element informing one or more other elements. The other key feature of the model is that it is *evidence*-based. A brief description of the model follows.

The IBL portfolio requires students to produce evidence of their learning, measured against the course's four learning outcomes (see 'content' in Figure 1). Once a student secures their placement a 'learning agreement' is drawn up, which specifies the broad work objectives, together with the responsibilities of the three parties. Students are required to produce a number of personal and professional learning goals, similar to current practices. However, this now becomes a formative process, rather than a summative one. Use of student learning journals is now extended to include a focus on performance monitoring and the identification of strategies to enable students to answer the question 'how do I know that I am doing a good job?' The journal is used as a basis for the on-going 'long conversation' with the academic supervisor<sup>1</sup> a software tool<sup>2</sup> is made available to students, which can be used as a learning journal and as a portfolio.

Upon completion of the placement a similar three-party meeting is arranged to discuss the student's performance and development. However, this now becomes formative in nature, with no marks allocated. Its key purpose is to provide feedback to the student on their performance, as well as to identify areas for future development. The minimum performance expectation is that students produce "work of merit and make a value-added contribution to the organization with some further refinement". How this might be interpreted by each party, particularly the host employer, is the student's responsibility. This is achieved by the student employing a range of strategies, during the work period, to identify the performance expectations of them.

To meet the evidential requires for meeting the *critical reflection* outcome, students are expected to draw upon the information they have collected in their learning journals. The feedback from the collaborative assessment meeting also provides valuable information for the student. In effect, students are asked to demonstrate 'double-loop' learning by reflecting upon their earlier reflections (in their journals) and by reflecting upon the feedback they received at the collaborative assessment meeting. The final part of the portfolio requires students to develop a summary of the skills and competencies developed during their placement. This is used to assist development of an updated CV as well as to develop a new set of personal and professional learning goals.

A competency-based assessment grading system is used replacing the current 11-point system. Outcomes can be a 'merit pass', 'pass' or 'not yet competent'. By submitting their portfolios, students are indicating that they believe they have produced sufficient evidence for a 'pass'. Therefore, gathering evidence for the portfolio is in fact a self-assessment process. Criteria for a 'merit pass' is developed through a negotiated dialogue with students in class. When submitting their portfolio, students must indicate whether they believe they have produced sufficient evidence to meet the 'merit pass' criteria'.

Academics are assigned to *validate* the students' self assessment. To avoid a potential conflict of interest, 'validators' cannot validate their own students' portfolios. A key aspect of the validation process is that a validator does not have the final say, should they arrive at a different grade outcome to the student. Instead, any portfolios not 'validated' will be reviewed by a validation team (of three to four academics) who will each read the portfolios and enter into a dialogue before arriving at an agreed outcome. The latter process is there to strengthen the assessment process, recognizing that different *interpretations* of the evidence provided may well occur. If as a result of this dialogical process, there is disagreement with a student's self assessment, specific, detailed feedback will be provided to the student indicating where further evidence is required. Students are then given a four week period in which to produce the additional evidence.

## CONCLUSION

A different form of assessment is needed if students are to be prepared for the challenges and realities of work, and the need to manage their on-going personal and professional development. Performance should not ignore or be separated from learning or context. As Vygotsky (1978) reminds us, knowledge is a process not a product. The portfolio model described here is one response to the complexities and uncertainties inherent in the assessment of student learning in co-operative education. The model is premised on the



view that assessment of student learning in the workplace cannot be precisely measured. It is argued that performance should be seen as a constructed reality among informed people. The portfolio assessment model described in the IBL course enables students to construct their own reality of what they have learned supported by relevant evidence.

When considered against Lincoln and Guba's notion of 'trustworthiness' in naturalistic enquiries (1985), we believe there is evidence to support the model's adequacy. The model has *truth value* (i.e., is *credible*) in that the stakeholders are informed participants who, through continuous 'long conversations' have been actively involved in the construction of the student's learning. The model has *transferability (applicability)* in that the conditions and context of the learning can be adequately described to enable a third party to determine *contextual similarity*. The model also has *dependability* in that the assessment validation process is a form of internal moderation, which acts as an 'audit' of the evidence produced within the contextual parameters described in the portfolio. Finally, the model can be said to provide for *confirmability* of data through the evidential nature of the portfolio and the triangulation that occurs through the integrated nature of the formative and summative methods employed.

#### IMPLICATIONS

The portfolio model presented here involves the student taking responsibility for their own learning and development. A more overt connection is made between educational assessment and workplace performance review and development, with host employers and academics act in a mentoring and supporting role, thereby contributing to the student's preparedness for professional practice and on-going development. The portfolio assessment model also performs 'double duty', firstly by recognizing and enhancing formative feedback whilst at the same time providing evidence for summative achievement; and secondly by commenting on current performance and learning whilst also contributing feedback to enhance future learning. Our engagement with this model, in the context of our own education and business communities of practice, will hopefully encourage others to consider how portfolios may contribute to student preparedness for the world of work within their own contexts.

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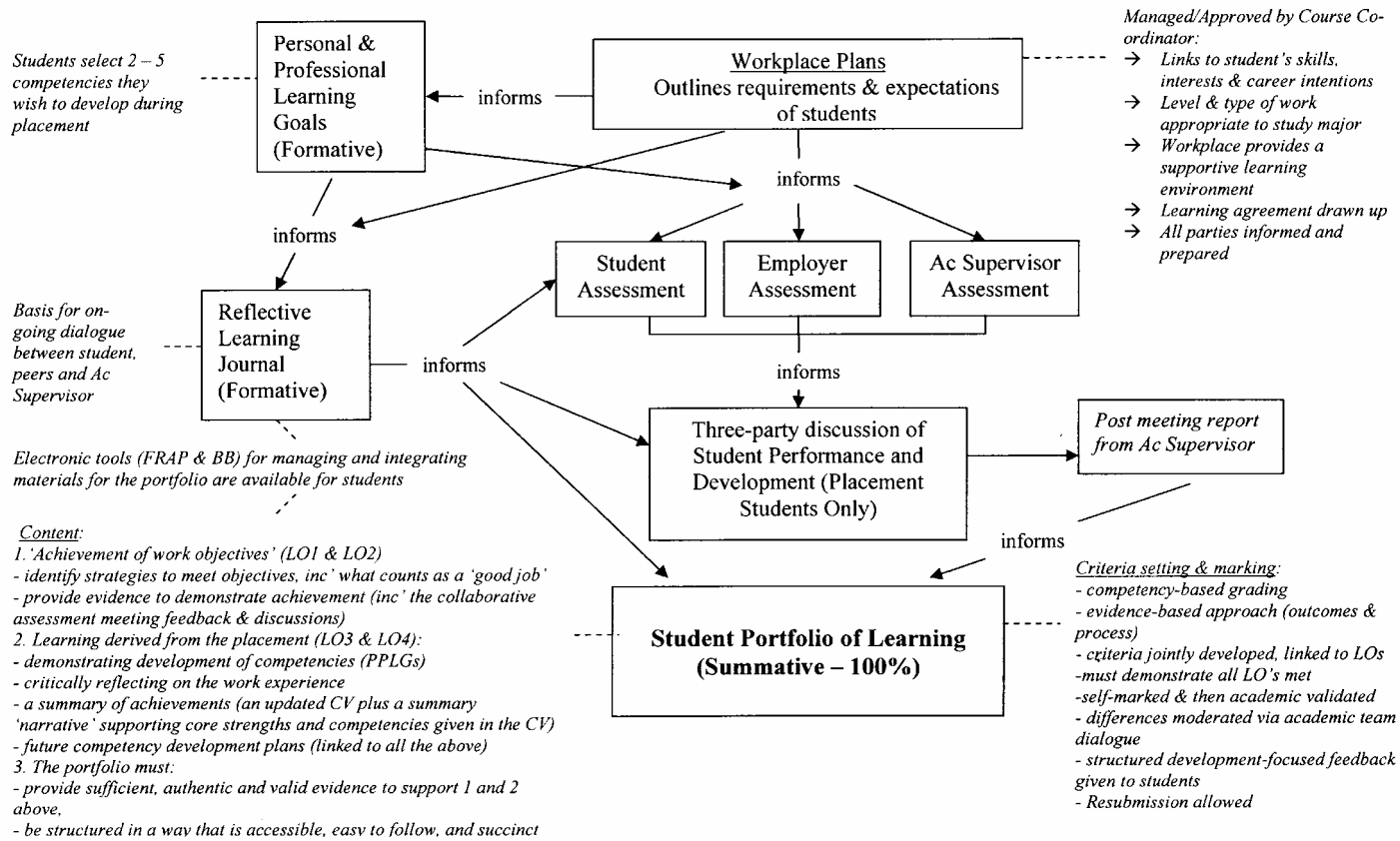
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ENDNOTES:

<sup>1</sup> Students are encouraged to keep a 'private' and 'public' version of their journal, only disclosing to the supervisor their 'public' version

<sup>2</sup> FRAP Challenge

FIGURE 1  
Industry-based learning portfolio assessment: an overview





# End-user computing: experiences of IT-literate graduates in a variety of organizational contexts: a research proposal

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## BACKGROUND

The use of software tools by non-information technology (IT) professionals is widespread and has an impact on decision-making within organizations (Burnett, Yang & Summet, 2002). This use of software tools, as opposed to 'standard' desktop applications, is commonly referred to as end-user computing (EUC). End-users utilize software tools for analysis and decision making, and during some phases of systems development. They may develop (mini-) systems for their own use, or for the use of their department or greater organization (Barker & Monday, 2000). There is a diverse range of activities in the realm of EUC. Generally, however, end-users are using software tools to get their jobs done (Myers & Burnett, 2004). Cooperative education students, majoring in IT or e-business are likely to work in end-user roles rather than strictly IT professional roles. End-user computing has been a focus of research and literature for at least 25 years, and is still of current interest (Downey, 2004; Powell & Moore, 2004). Using the extensive range of literature available, this paper will establish a relevant context for end-user computing, provide detail of the proposed research study, outline the methodology to be used for the research, and reflect on work in progress.

## CONTEXT

End-user computing (EUC) is just one of the terms used in the literature to describe the use of application development tools and application systems by users who are not IT (Information Technology) professionals. In reviewing the literature we find an array of terms related to EUC. These include EUD (end-user development) (Fischer, Giaccardi, Ye, Sutcliffe, & Mehandjiev, 2004; McGill, 2004), EUSE (end-user software engineering) (Segal, 2005; Myers & Burnett, 2004), UDAs (user developed applications) (McGill, 2004), and OEUC (organizational end-user computing) (Clarke, 2004). Figure 1, below, depicts these terms and their possible relationships. EUC remains the predominant focus in the literature (Downey, 2004; Powell & Moore, 2002; Shaw, Lee-Partridge & Ang, 2003).

The above describes the context of end-user computing in terms of the relevant literature. The context in terms of the subjects of interest for this paper is new graduates in the workplace. Specifically, Bachelor of Business graduates who majored in IT or e-business and have completed a one-semester cooperative education placement in a workplace. These graduates can be considered 'work-ready' and can be expected to be technologically literate. These graduates would be expected to have more familiarity with software tools than other end-users. The graduates of interest are not IT professionals, but end-user professionals with a greater understanding of software than graduates who have not majored in IT or e-business. The aims of this research are described more specifically in the following section.

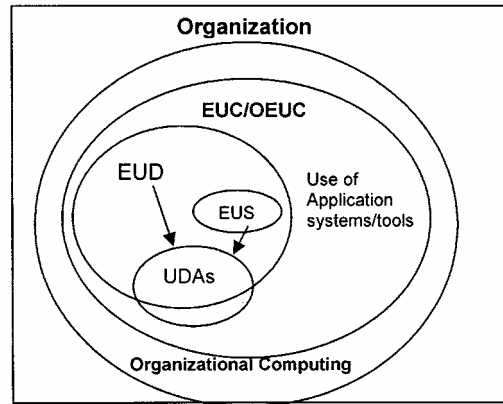


FIGURE 1  
End-user computing and subsets in organizations

#### AIMS

This paper proposes an interpretive research study based on the foundation of the EUC domain, and the subjects of interest, as explored above. The motivation for seeking this information is to gather detailed data about end-user activities, specifically in relation to software tools, level of skills required and training requirements. The research may, in turn, inform educators and organizations in which end-users play a significant role. Educators need to have current knowledge of what is happening in the workplace if they are to ensure that the curriculum delivered assists graduates in becoming employed (Davis, 2003; Petrova & Claxton, 2005) and in being optimally productive in the workplace. Organizations also need to understand the end-user activity if they are to effectively facilitate it, manage it, and profit from it (Barker, 1993).

Business graduates, with IT or e-business as a major, may be expected to have a degree of technological readiness. Does their formal education equip them adequately for the expectations of the workplace? Are the workplace expectations reasonable? We wish to investigate these aspects, and gather data about training in the workplace.

Having established what is meant by EUC in the context of this paper, and having established a frame of reference for the research, we propose a research study. A brief outline of the methodology to be used follows.

#### METHODS

End-user computing sits within the discipline of information systems (Downey, 2004). The information systems literature tells us that although positivist methods were predominant in the past, there has been increasing use of non-positivist methods in recent years (Mingers, 2001). An interpretive approach for this study is relevant given we are interested in understanding the organizational context in which end-users find themselves.

It is proposed that a small sample of Bachelor of Business graduates who have completed a 12 week cooperative education placement (co-op), in their last semester of study, be used as

the subjects of an empirical pilot study. This will consider the preparedness of these graduates, with majors in IT or e-business, their end-user computing skills, the extent of further training once in the workplace, the range of end-user computing tools which they were required to use. The use of questionnaires, to effectively select appropriate participants, and structured interviews to identify the issues around the use of software tools by IT-literate users new to organizations will be employed.

The pilot study will involve the graduates described above, and will include a variety of workplaces. It is intended though to take this study further. One option is to undertake a larger case study of graduate end-users within organizations, either one large organization or a number of smaller ones. The pilot study will test the validity of the survey and interview questions and will assist us to be prepared for the larger scale study. An interpretive case study, or case studies, is proposed. There is also scope for an action research study with the author being immersed in the organization. Surveys, case studies and action research are commonly used in IS research (Avison, 1996). The details of the larger study will be finalized once the pilot has been undertaken and verified.

## RESULTS

This paper describes a research proposal which has been approved by the relevant university ethics committee. An initial pilot study commenced during the latter part of 2006. A database of students who had completed co-op majoring in IT or e-business was used as the source of contact data for proposed participants. This was further narrowed down to include only those who had graduated. The ethics committee was particularly concerned that these be graduates rather than current students. Email was chosen as the means of the initial communications with the proposed participants. The results were disappointing. Out of a potential 40 participants, 11 email addresses 'bounced back' immediately. From the remainder, a total of two responses was received. Both of these students consented to being part of the study. However, this was clearly not substantial. The author has learnt a lot from this process. The availability of subjects and the importance of up-to-date contact data are obviously critical. Further sources of suitable contact data need to be investigated before this research can progress further. The consideration of institutional ethics procedures is also a critical part of preparation for research, and one which should not be underestimated in terms of its ability to influence the scope of the research. However, this was an initial pilot study and a more in-depth study is proposed.

## CONCLUSIONS AND IMPLICATIONS

This paper has outlined a proposed interpretive research study which is well supported by the extensive range of literature in end-user computing. The definition and context of end-user computing has been clearly defined. The primary areas of interest to the research study are the software tools that end-users work with, the skill levels of the end-users, and the level of training of the end-users. The literature also supports the interpretive methodology proposed here. There are many calls for further research, in the literature, which help to validate the appropriateness of the research study proposed here. Although the initial pilot study did not produce substantial data, the proposal in itself is valid and well founded. The scope of the pilot study is being reconsidered so that the pilot and thence the larger interpretive study can proceed.

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# **Ethical challenges from the real world: student experiences in cooperative education placements**

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Developing a moral business person is not easy. Universities and polytechnics have always undertaken some degree of responsibility for teaching ethics. Increasingly students are exposed to real world work issues when assigned to cooperative education placements. The workplace demands graduates not only consider ethical issues, but also requires them to consider ethical action. In this research project the author reviewed the ethical requirements of the Industry Based Learning course in the Bachelor of Business at Unitec, Auckland with a view to informing teaching and learning practice. The aim of the research was to evaluate student learning in ethical issues and learn more about student experiences and how delivery and student support mechanisms for students could be improved. The author examined student writing (learning journals and reflective essays) and interview text to explore student knowledge of ethical values, their decision making processes and their ability to take ethical action. Students were completely comfortable with the ethical values on which the research was based. They spoke articulately about the ethical issues they found in their placements. Students used a variety of decision making processes with mixed success. Most students reported feeling vulnerable in taking ethical action and that their emotions prevented them from acting as professionals in the workplace. Ethics is an essential part of business education for both professional and non professional graduates. In the Industry Based Learning course in the Bachelor of Business placements gave students a unique opportunity to explore their ethical understandings, to practice their reasoning skills and to experiment with taking ethical action in a guided and supported environment. As a result of the research the course coordinator introduced a variety of teaching and learning strategies to support students in their placements and prepare them for the changing and variable nature of the workplace.

## INTRODUCTION

Developing a moral business person is not easy. Universities and polytechnics have always undertaken some degree of responsibility for teaching ethics. Increasingly students are exposed to real world work issues when assigned to cooperative education placements. The workplace demands graduates not only consider ethical issues, but also requires them to consider ethical action. In the Industry Based Learning course in the Bachelor of Business at Unitec Institute of Technology course learning outcomes required student to have an awareness and understanding of ethical issues. A research project was undertaken to evaluate student learning in ethical issues and learn more about student experiences and how delivery and student support mechanisms could be improved.

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### THE PROFESSIONS, BUSINESS AND ETHICS

At Unitec Institute of Technology business students graduate into either a 'professional' or 'non-professional' role. Professions and professionals are distinguished from general business people by the specialty of their work. There is a widely accepted recognition of professionals' social obligation to apply their skills and wisdom for the general benefit of the community. Such skills and wisdom require the practice of independent judgment and adherence to codes of ethics (Clarke, 1997; Guy, 2003). Professions have high expectations of their members including recent graduates.

By contrast non-professionals are informal groups of business people who may share common interests but whose membership and activities are not government regulated. Non-professional business groups, such as finance, human resource management and marketing, may form associations to serve the interests of their members but usually lack the formal disciplinary procedures that all professions share. Some students in the Industry Based Learning course were training to work as professionals and others belonged to the non-professional occupations, such as marketing and human resources.

After graduation, graduates ethical education takes place in the businesses and organizations in which they work (Andrews, 2003; Jones, 1995; Lave, 1991b). Senior practitioners provide essential information to new practitioners, explaining the standards and expectations of the profession. Individual practitioners demonstrate the practice of the professionals work. For graduates and students, trying to understand their profession and their place within it, both senior and individual practitioners are highly influential. Graduates and students observe their colleagues and managers at work. These observations and the meaning made from them influence the graduates' own behavior in their current workplace and for many years in their professional work (Bockarie, 2002).

The Industry Based Learning course was required to respond to the needs of both professional and non-professional students. Students needed a clear understanding of the ethical standards which applied to their role.

### BUSINESS STUDENTS AND ETHICS

Developing the moral businessperson is not easy. However, universities and polytechnics have always undertaken some degree of responsibility for teaching ethics. Increasingly students are exposed to real world work issues by being assigned to cooperative education placements. In the workplace students have the opportunity to observe interactions between colleagues, and the management styles and decisions of their supervisors. From these observations students enlarge their ethical knowledge gained while studying for their degrees. The workplace demands graduates not only consider ethical issues, but also requires them to consider ethical action.

Faced with the need to act ethically students may be insecure or fearful. Daloz Parks (1993) explains that an interpersonal ethic of trustworthiness and mutual accountability is essential but not sufficient for ethical management and ethical action. Something more is needed. She suggests students need 'moral courage', to not only know what is good, but how to act. This requires attention to educating and training students to both reason and act within a social formation at work and in their communities.

New professionals and new business people need preparation for working life. They need to be able to act ethically and maintain their careers. Cooperative education placements are the opportunity to practice, to reflect and to be mentored. It is this mentoring that provides the training for future moral courage (Daloz Parks, 2000).

#### RESEARCH METHODOLOGY

The research project was designed to select a method of inquiry that not only made meaning of the students experiences but also, put the meaning in its place (Richardson, 2005). The challenge was to engage in a process which encouraged students understandings and knowledge to flow (Johnson, 2001). The research inquiry focused on finding 'deep learning' derived from real and personal experiences in which students' professional and personal beliefs were tested. In this context deep learning refers to learning with understanding as opposed to 'surface learning' which is a more temporary less developed learning (Boud, 1990). To capture these experiences were captured through meaningful conversations with students in which the emotional and spiritual aspects of ethical dilemmas could emerge. In-depth interviews with students provided the opportunity to learn the meanings of the participants' actions (Johnson, 2001).

The first stage of the research process was an extensive literature review, and this was followed by several drafts of interview questions. In the process of identifying common ethical values that participants could relate to and to stimulate discussion the researcher decided to select a small range of ethical values. These values were eventually taken from Mary Guy's 1990 book, *Ethical Decision Making in Everyday Work Situations*, and are ethical values acceptable across a range of occupations, nationalities and ethnic backgrounds. As Guy (1990) explains, these ethical values that are shared in both business and personal contexts, have survived the years and remain valuable to communities and individuals today. The 10 ethical values chosen were: accountability, honesty, fairness, pursuit of excellence, caring, loyalty, integrity, promise-keeping, respect for others, and responsible citizenship.

As part of the deep conversation interviews, each participant was asked to rank these values in order of importance to them. In this process the participants had to consider and place each value in personal context. This was a valuable exercise to focus the participants before moving on to the deeper, exploratory questions. The second set of questions asked the participants to explore an ethical dilemma they had encountered whilst on placement. The second set of questions, were exploratory in nature encouraging participants to talk about what had happened, to return to the physical and emotional environment of their placement. The research probed the participants not only what had happened but also how they had responded emotionally and what meaning they had made from the experience. The third set of questions focused on ethical decision making, exploring the thinking, and analytical processes of the participant when faced with the dilemma moving on to discuss whether the participant took action and how they felt about the outcome.

The participants were drawn from 35 placement students in the Industry Based Learning course in February to June, 2006. The participants were all business students studying the Bachelor of Business in the last or second to last semester of study. They were drawn from majors in accounting, finance, human resource management, marketing and operations

management. The students were personally selected to participate in the research on the basis of their ability to articulate their experiences clearly. Some 20 students were asked to participate in the research project and the first 10 students who indicated their willingness to engage in the research process were interviewed. The interviews took place over a two-week period. Each interview was transcribed; the script was then coded according to a pre-prepared topic guide. In the process of coding additional codes were added to the guide and some transcriptions were re-coded by the researcher 2-3 times.

The coded script was selected from the whole transcript, then sorted and grouped according to code. Significant portions of coded data were analyzed. Sub-parts and whole parts of all grouped data were reviewed and interpreted within the context of the three key exploratory areas of ethical knowledge, ethical decision-making and ethical action.

## DISCUSSION AND RESULTS

### *Ethical Knowledge*

Students were completely comfortable with the ethical values provided to them as part of the research. They spoke articulately about ethical issues they had observed in their placements. As an example of their ethical awareness, is it clear students are often disappointed in the behavior and ethical standards of others. One student told of an incident involving a colleague where she had expected loyalty: "As part of the management team I expected him to realize my authority was being publicly challenged and I had expected his support." When that support or loyalty did not eventuate she was left feeling unsupported and confused. One student acknowledged the situational nature of ethics, stating, "I have realized that my ethical stance has become more intense over the years due to the very nature of the work I am involved in."

### *Ethical Decision-Making*

Students need practical assistance and practice in managing ethical issues in the workplace. One our students encountered a colleague sneaking time off work for personal purposes. She stated, "she was absent for two and a half hours from picking up the table to sending it to her home and back to the office. It all happened within her working hours." However, our student was unable to raise this issue with her manager or workplace mentor. She found herself to be complicit to the action and was clearly uncomfortable.

Students worry about the impact of their ethical decision-making on their future careers. One student stated, "I did not want to put my career at XXX or my (Industry Based Learning) course in jeopardy." While students were concerned with the negative effects of unethical behavior on others, they were very concerned about the effects on themselves and their future careers.

One students explained their motivation for good ethical practice, she said "I have a valid need to ensure everything is 'squeaky clean and above board' in order to prove the criticizers wrong in their assumptions that unethical and immoral actions and decisions are taken daily by my XXXX, my colleagues and myself." Again this is a topic that can be discussed and explored with students prior to placement.

*Ethical Action*

Students felt vulnerable in taking ethical action at work due to the temporary nature of cooperative education placements. One student tried to take ethical action and then felt unsupported in the workplace. She stated, “When X didn’t support me in my stance I had felt very vulnerable in front of the group. Supervision is very important to students.”

Another aspect of work students found challenging was the unethical behavior of others in the workplace. Students were very aware of the negative impact of unethical behavior on others. One student encountered a very negative work colleague and stated “her behavior created a negative vibe.” Another student, who had described her work environment as “toxic”, stated, “you get discouraged and it’s hard to be in that environment all day.”

Emotions are difficult to manage and control. One student said she struggled to keep her emotions under control. She said, “I experienced immense feeling of self-disappointment as I had worked so hard on personal self-control to shed a previous fiery reputation.” Another student who felt she had lost control at work said, “I have now set myself a new personal goal which is to work on my emotions and learn to cope in an emotional situation.”

CONCLUSIONS

Clearly, students will encounter difficulties in the workplace and in cooperative education placements. Students can be supported by discussing with them the possibility of unethical action and preparing them for it. Ethical issues may arise in the placement or be apparent to them in the first few days. Either way, anticipating that there may be some issues at work and having some strategies for dealing with them will give students resilience.

There a number of challenges for staff teaching in the degree program. The first is to provide opportunities for students to engage in critical discourse, and room within this to explore their own ethical values. The second is the opportunity to practice ethical decision-making by using staff to encourage, celebrate and support students to take ethical action and demonstrate moral courage.

Workplace mentors and academic supervisors can support students by allowing them the space to make meaning of what they observe and consider. They can also prepare students for unethical situations so students can anticipate and prepare themselves.

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## Academic voices Part II: what are faculty saying about cooperative education?

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In most academic institutions successful cooperative education (co-op) degrees are well supported by faculty (Loken, 1997; Matson & Matson, 1995). Faculty influence co-op programs in many ways from support at Academic Advisory Board level to providing academic legitimacy (Grossman-Garber et al., 2001) and 'one-on-one' teaching, and discussion with students.

Internationally, co-op degrees vary widely in structure and faculty involvement (Loken, 1997). The University of Waikato offers two four-year co-op degrees: the Bachelor of Science (Technology) (BSc(Tech)), the and Bachelor of Engineering (BE). The BSc(Tech) includes 12 months work placement (Chapman, 1994) (Coll & Eames, 2000), typically three months at the end of year two and nine months at the end of the third year. The BE has two three-month placements at the end of second year and third year. Work placements are assessed by an employer evaluation, and a formal student report marked by an appointed faculty member. While we accept the support and recognize the contribution faculty make, do we actually know what academics think about cooperative education and their role in these programs? There is little reported work investigating faculty views on any aspect of cooperative education.

At the University of Waikato we surveyed Science and Engineering faculty views on cooperative education. The overarching question was: "What do faculty think about cooperative education generally?", and we have divided that question into more specific themes that address areas of interest.

### METHODS

Some 139 faculty members in the School of Science and Engineering and School of Computing and Mathematical Science at the University of Waikato were surveyed. The positions held by faculty include: senior tutor, lecturer, senior lecturer, associate professor and professor. Subject areas taught by faculty include; biological sciences, chemistry, Earth and ocean sciences, materials and process engineering, computer science, mathematics, physics and electronic engineering.

The survey was presented in a tick-box format with questions arranged in thematic groups (appendix). Participants were asked to respond to each question using a five point Likert Scale, (1 = 'strongly disagree' and 5 = 'strongly agree'). An additional 11 surveys were returned when participants were followed-up, and the final response rate was 57%.

Questions were grouped into themes to elicit generalized views of various aspects of co-op. Information gathered was analyzed for trends in opinions, and to highlight areas where more investigation was needed. Accumulated data relevant to this publication are

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summarized as an appendix. For clarity, these data have been reduced to three divisions, Disagree, Ambivalent and Agree, and converted to percentages.

In this paper the broad questions investigated include:

- How is cooperative education viewed by the individual faculty members and how do they perceive cooperative education is viewed at other university levels?
- In what ways is cooperative seen as beneficial to the university?
- In what ways has cooperative education impacted on you personally?
- What influence have cooperative education involvement had on your academic teaching?

## RESULTS AND DISCUSSION

### *How is Cooperative Education Viewed Individual Faculty and How Do They Think Cooperative Education is Viewed at Other University Levels?*

Some 78% of faculty believed that co-op is valuable, and 59% think that their department views co-op as valuable. About 61% think that their School finds co-op valuable. This may be because the older members of faculty often have a more cynical view university administration, including co-op. Because of their senior position they have greater voice within the departments and the School, creating a false impression of the degree of support within the department and School.

Only 49% think that the University as a whole views co-op as valuable. This relatively low perception of University support is perhaps due to the individual staff having little interaction with the higher levels of management within the University. While there is good interaction between individual staff and their departments and the School, only the department chairs and deans are involved with higher management in the University. Therefore general knowledge about university support for co-op (an indeed many other things) would probably be fairly limited.

### *In What Ways is Cooperative Seen as Beneficial to the University?*

Overall, faculty thought co-op was beneficial to the university. Some 86% of faculty saw co-op as being a useful recruitment tool, and 83% saw it as a good marketing tool. Overall 70% believed that university resources are well spent in supporting and promotion of co-op. But 59% thought work-integrated learning enhanced the University's reputation. Faculty perceived co-op as promoting links between university and research institutes (83%) and industry (92%), with 76% perceiving that there is greater interaction between the parties as a result of the links established. About 44% strongly agreed that links were made with industry, while only 29% strongly agreed that links were made with research institutes. This difference is likely due to the availability of funding through funding regimes such as TechNet and Technology in Industry Fellowships offered through Technology New Zealand that allow greater collaboration between faculty and industry, and the greater funding available to industries in general. It is more difficult to find funding for collaboration between faculty and research institutes, as research institutes are highly dependent on government grants.

However, only 50% see co-op as a useful alternative to the conventional BSc. Some 26% gave a positive response, and 58% were ambivalent when asked if co-op degrees assist in retaining



students. This may reflect concern from some faculty that placement students are more likely to go to work rather than take up a graduate degree, for example, a master of science (Zegwaard et al., Under Review). Perhaps related to this, is faculty responsibility, or lack of, towards promoting high degrees to their students. Lovitts and Nelson (2000) investigating attrition from PhD programs, found faculty perceived themselves as “active agents when students complete degrees and as passive onlookers when students depart” (i.e., non-completion).

*In What Ways Has Cooperative Education Impacted on You Personally?*

Faculty do not feel that involvement with co-op has enhanced their career, with only 17% positive, and 38% ambivalent. While they think that co-op does increase the links with outside institutions, they themselves do not think that they have increased opportunities for joint research ventures (18% agree), or better access to outside sources of funding (12% agree).

In some cases it is understandable that working with co-op degrees has not seen as having enhanced careers. Often younger faculty need to focus on their own research and publications to raise and maintain their research profile. Co-op students’ research work is more for the employer rather than the faculty member, and any resulting publications do not generally have a faculty member as an author. There is also some anecdotal evidence that academia views itself as doing ‘pure research’ that is for a higher purpose rather than for commercial purposes, and this view is being more fully investigated currently.

Despite the positive views on co-op promoting links with outside institutions, it is apparent that this has not flowed through to individual faculty members. This could be due to an inability or unwillingness to follow up and capitalize on those opportunities. Or it could be because faculty feel that they are separate from the learning community (i.e., industry and research institutes) that the students are involved with (Howard & England-Kennedy, 2001). In today’s research climate there is much more interaction and combined or joint research (Hagedoorn et al., 2000) carried out. Therefore it is somewhat surprising that faculty do not view co-op as promoting or assisting in that process.

*What Influence Has Involvement With Cooperative Education Had On Your Academic Teaching?*

Despite involvement with co-op students, faculty do not see this as an opportunity to identify potential graduate students (36% agree), and they do not see involvement with co-op degrees as having any impact on the content of their taught courses (26% agree).

These results follow the previous pattern, where it seems faculty are not able to utilize opportunities that arise from their involvement with co-op. Perhaps this is also linked back to the view that co-op students are more likely to go to work rather than go on to graduate studies (Zegwaard et al., Under Review)

Further interviews and discussions with faculty may reveal issues that prevent co-op impacting on course content. In many cases the faculty are leaders in their research fields, and would think therefore that they did not need to look to industry to contribute or require more knowledge from students than was already being taught. It may also be the case where the course content is in fact, perfectly adequate and well suited to science employers needs.

Earlier research (Hartley & Smith, 2000) indicates that greater impact on taught courses came from greater involvement with teaching faculty and aligning course assessment and outcomes with the academic course outcomes.

Previously faculty have used co-op placement examples in lectures and as part of 'real life' examples, and perhaps this an area that can be promoted by the co-op group to raise the profile of placements and the value of the learning for students.

Further breakdown of the data will be of interest to see if there are differences between the engineering faculty and science. Engineering is perhaps more industry-driven, and it might be expected that the influence of work placements along with student feedback and industry interactions would have more influence on course content.

#### CONCLUSIONS AND FUTURE RESEARCH DIRECTIONS

Cooperative education is generally well supported by faculty in the School of Science and Engineering at the University of Waikato. They perceive that it is valuable recruitment and marketing tool that is attractive for students and that it increases interaction between the university and research institutes and industry. However, some faculty believe that co-op does little to assist faculty careers and increase student retention from undergraduate to higher degrees. They also feel that cooperative education has little influence over taught course content. We think this is due to faculty being unable to utilize the opportunities that cooperative education presents as well not being pro-active in providing attractive graduate opportunities. Reasons for this will be investigated in follow-up interviews. We will also further explore the interaction between academia and research organizations and industry, including influence on course content and making use of placement experiences in taught courses. Addressing these areas and providing interventions for academics that will assist them in utilizing opportunities provided by co-op will further boost its profile within the School of Science and Engineering.

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## APPENDIX

Questions	Disagree (%)	Ambivalent (%)	Agree (%)
University views Co-op as valuable	6.6	35.5	43.4
School views Co-op as valuable	0.0	17.1	56.6
Department views Co-op as valuable	7.9	27.6	59.2
Personal views Co-op as valuable	5.2	11.8	77.6
A Co-op degree is a useful recruitment tool	1.3	11.8	85.5
Co-op is a useful marketing tool	3.9	13.2	82.9
Co-op degrees are a good alternative to a BSc	11.8	34.2	50.0
Co-op degrees enhance University's reputation	5.2	34.2	59.2
Co-op degrees enhance undergraduate student retention	10.5	57.9	26.3
Co-op degrees are a good investment of Uni resources	5.2	23.7	69.7
Cooperative education creates links with industry	2.6	5.3	92.1
Cooperative edn creates links with research institutes	3.9	13.2	82.8
Co-op student placements promote interaction university and industry	5.5	15.8	78.3
Involvement with Co-op has enhanced my Academic Career	36.2	38.2	17.1
Involvement with Co-op has helped me set up joint research ventures	39.5	36.8	18.4
Involvement with Co-op has helped me access sources of external funding	47.4	34.2	11.8
Involvement with Co-op helps me identify potential graduate students	27.7	30.3	35.5
Co-op degrees have little influence on university taught courses	26.3	27.6	47.1

# Improving co-op placement processes with technology

Mark LAY, Levinia PAKU

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In the School of Science and Engineering at the University of Waikato, Hamilton, Cooperative Education (Co-op) has been practiced for over 20 years for the BSc(Tech) and BE degrees. The Bachelor of Science and Technology (BSc(Tech)) began in 1984 and the engineering (BE) degree more recently in 2001. Both are four year degrees have between six to 12 months work placements. Since the introduction of the engineering degree, there has been a steady increase in engineering student numbers. To date, there are approximately 200 students enrolled. Growth in any program, although desirable, can be problematic. As stated by Varty (1980) "It becomes far more difficult as coordinator load increases in a maturing program." This is particularly true for placement coordinators at Waikato who have joint roles of placement administrators and academics that actively research. Therefore they have the formidable task of understanding industry, academia, ways students can develop their skills into professionals (Lazarus, & Oloroso, 2004), as well as being effective in time and information management, communicating between students, employers and themselves, whilst also giving career advice.

One of the ways in which growth can be managed is through improved telecommunications and technology. In the 21<sup>st</sup> century, technology and telecommunications is pervasive, constantly evolving and offering people a wider range of capabilities to make processes more efficient and rapid. For practitioners involved in the cooperative education, it becomes essential to adjust to new technologies to facilitate information management and communication with students. With this in mind, a suitable mechanism for communication and for managing a co-op program will be investigated over the next few years.

## TECHNOLOGY IN CO-OP

In the 1970s to 1980s when computer technology, email and internet were primitive, co-op programs were reliant on management strategies, such as Management by Objectives (MBO) (Downing, 1974). This was a structure based on goal setting, dependent on the practitioners to direct and drive the process, recognizing when MBOs have been achieved. Computers have become routinely used within cooperative education programs. However, transition to a 'paperless' placement process lead to large amounts of data being created during the placement process (Robinson, 1996). In the 1980s, Management Information Systems (MIS) were used to store placement related information and manage co-op related activities (Yuen, & Duo, 1989), Varty, 1980). Other educational programs later adapted this system and applied it to their programs to help organize and interpret data (Ramer, & Snowden, 1994).

Today, co-op practices frequently use e-portfolios and websites. Websites are abundant for co-op programs, nationally and internationally. Their purpose and functionality varies from institute to institute from providing information on their programs for the general public (e.g., Memorial University of Newfoundland, Canada), to more advanced systems that have

an interface for the student and the employer (e.g. Northeastern University, Boston). Portfolios or e-portfolios have numerous advantages to co-op placements. They allow for self-directed and reflective learning in the workplace (Grier, Denney & Clark, 2006) and is manageable and organized (Eames, 2006). Portfolios can provide an insight into student performance where learning progress can be tracked (Tillema, 2001), and identified through 'artifacts' (evidence that learning has occurred during the placement, see Knight, Hakel & Gromko, 2006). It is also a powerful tool for assessment (Sorensen, Tolsby & Holmfeld, 2002).

Regardless of the advantages that these applications offer, every website experiences problems (Sclater, Grierson, Ion & MacGregor, 2001) with limited student use, in terms of interacting and collaborating with each other (Sorensen et al. 2002). We have experienced similar grievances with the system used at Waikato, *Classforum*, the current e-learning system widely used at Waikato and by co-op. *Classforum* within co-op is used to provide students with information related to their course, a portal to communicate with other co-op students and placement coordinators and an area which allows them to reflect on learning. Despite efforts to get engineering students at Waikato to use this, it has been to no avail, as reflected in the survey where over 50% of the students surveyed showed a dislike for using the website for the placement process (Lay & Paku, 2007). We will investigate reasons for this in future studies. Even though students may not currently favor websites for the placement process due to negative experiences with *Classforum*, would this prevent them from using a tailored placement website in the future if it became routinely used in the placement process?

We have found that contacting students via email has previously been the best means of communication. However, with more young people owning a cellphone, communication by cell phone and text has become common. Some 65% of New Zealanders own a cell/mobile phone (Sullman & Baas, 2004) and globally, it's growth has overshadowed other digital technologies (Cameron, 2006). Co-op practitioners are calling cellphones in preference to landline phone calls (Mayo & MacAlister, 2004). This is also the case for Waikato engineering students where the survey reflected that students had more than 90% access to cell/mobile phones and texting. The use of cell/mobile phones was ranked second to email as a means of general contact throughout the placement process (Lay & Paku, 2007).

Most people use their cell phones for texting. This has been observed to be a form of mass communication (Grinter & Eldridge, 2003), in particular amongst young people who have taken up the technology faster than other age groups. Although texting is brief and informal, the benefits of quick contact and instant response makes it more convenient than email. Short message service (SMS), used for sending text messages from computers to cellphones, and texting is a non-invasive method of contact for sending reminders and quick messages. Since most students carry a cell phone, they are contactable at most times. With the availability of web to text services, texting could compliment a well managed placement process by providing a faster communication.

#### CONCLUSIONS/IMPLICATIONS

We encourage co-op practitioners to adopt new communication technologies, implement them into placement practices and develop them to cater for their student needs. Atchinson and Gottlieb (2004) state that practitioners should be innovative and develop their programs

to cater for changing factors such as technology. We will continue to investigate current technologies to meet the needs of our engineering students. We hope to develop and implement a program that will address the management and communication issues we face with increasing student numbers.

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# Investigating students preferred communication means

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At the University of Waikato, around 200 BSc(Tech) and BE students in the School of Science and Engineering are found work placements every year by the Cooperative Education Unit. The Unit consists of six part-time and full-time staff from a range of science and engineering disciplines. The BSc(Tech) program has been running for 20 years, but the BE program was only recently established and has rapidly increased in popularity, with over half of placement students enrolled in a BE in 2007. The placement process typically consists of regular meetings with students throughout the year to determine placement preferences, give career, CV and cover letter advice and interview practice, and notify students of placement opportunities and progress. This involves routinely communicating with students face to face and through email, telephone, cell-phone, text and post. We have found that although engineering students check their emails intermittently and are rarely at home to answer telephone calls, they are rarely without their cell-phone and can be contacted rapidly by calling or texting their cell-phone.

With current University funding preventing employment of more placement coordinators and the growth of engineering we are looking at more efficient methods of organizing placements and communicating with students without reducing the service provided.

We are currently investigating the feasibility of switching to an online website method to reduce the contact needed with each student and to make the placement process more efficient. We are also considering the effect of emerging technologies such as cellphones and internet on the placement process. Cellphone use is growing much faster than their fixed counterparts. Massoud and Gupta (2003) expect hand-held (mobile) device numbers to exceed the number of stationary terminals in the world. 65% of New Zealand's population own mobile phones (Sullman & Baas, 2004). The USA, New Zealand, Australia and the Scandinavian countries were the first to embrace the Net and still are leading with respect to usage of the internet (De Mooij 2000). As part of this investigation, we surveyed work placement students to ascertain their preferred means of communication for different stages in the placement process.

## METHODOLOGY

Ethical approval for the study was obtained from the School of Science and Engineering Ethics Committee. 42 BE students from mechanical, biochemical, and materials and processing majors in the Department of Engineering were surveyed using a questionnaire (Appendix 1). They were asked to rate methods of communication for different stages in the placement process using a 5-point Likert scale, where 1-2 was disliked, 3 was neutral, and 4-5 was favored. Stages of the placement process included pre-placement, job application, job notification, employment, and post placement. Methods of communication included face to face, email, cellphone, texting, telephone, post, and internet. We also asked whether the student preferred to find placements through work placement coordinators or deal directly

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with employers and what search criteria students would prefer to use when using an Internet job search database. Surveys were confidential and participants were asked to sign a form stating that they were happy to participate in the survey. Data was collated in a spreadsheet and analyzed. For convenience in data presentation respondents who answered 1 or 2 for a question were grouped under disliked, 3 under neutral, and 4 or 5 under favored.

## RESULTS

### *Placement Process Preferences*

There was a clear preference towards using placement coordinators to find work placements (Figure 1). Only 24% of students favored finding their own placement while 58% preferred having a placement coordinator finding them work. 20% more students favored applying for jobs through the placement coordinator than through an employer. Students appeared not to mind from whom they hear about their application status.

Student preferences for the placement process would be interesting to explore in future research. For example does their preference change as students gain more work experience and is this tied in with student confidence? Also, if students are more confident about finding and applying for jobs as they gain experience, should placement coordinators encourage them to find their second placement and focus on finding new students placements?

### *Access to Communication*

Students preferred method of contact is by cellphone and email. Over 90% of participants usually had access to cellphone and texting, 60-70% to email and internet (Figure 2). Students had least access to home/flat phone and mail. Students favored in descending order, email, cellphone, text and then face to face communication for generally keeping in contact (Figure 3). Least favored was home/flat phone, mail and internet.

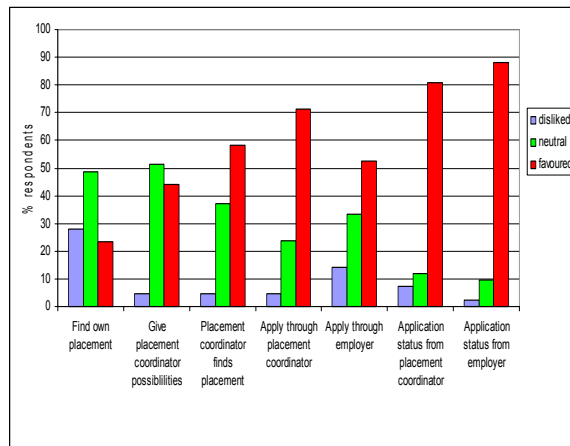


FIGURE 1  
Student preferences for finding placements, applying for jobs, and being notified of job application status

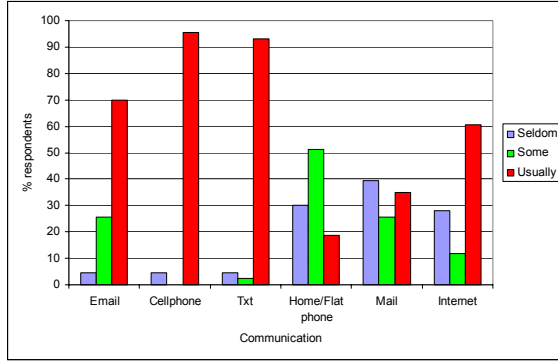


FIGURE 2  
Student access to communication

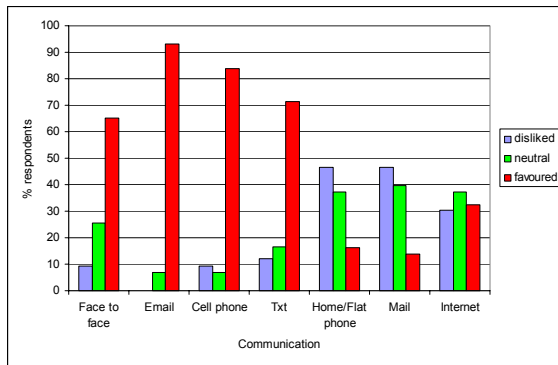


FIGURE 3  
Students' preferred method of contact

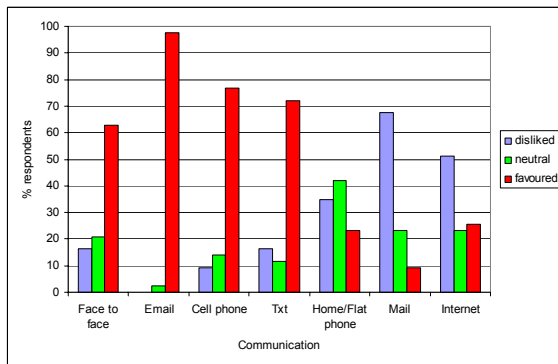


FIGURE 4  
Students preferred communication method for being notified of job opportunities

*Notification of Job Opportunities, Applying For Jobs and Application Status*

Email was most favored as a means of notifying students of placement opportunities, followed by cellphone, text and face to face (Figure 4). Mail and internet were least favored. There was a strong preference to using face-to-face communication or email for applying for jobs, either through the placement coordinator (Figure 5) or directly through the employer (Figure 6).

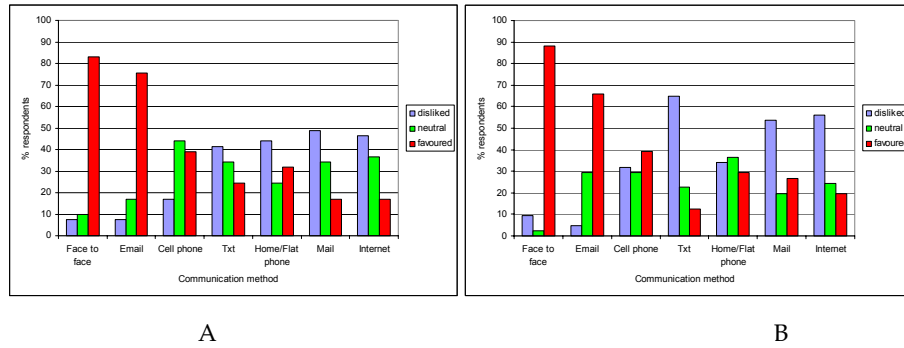


FIGURE 5  
Students preferred communication method for (A) applying for jobs through the placement coordinator and (B) through the employer

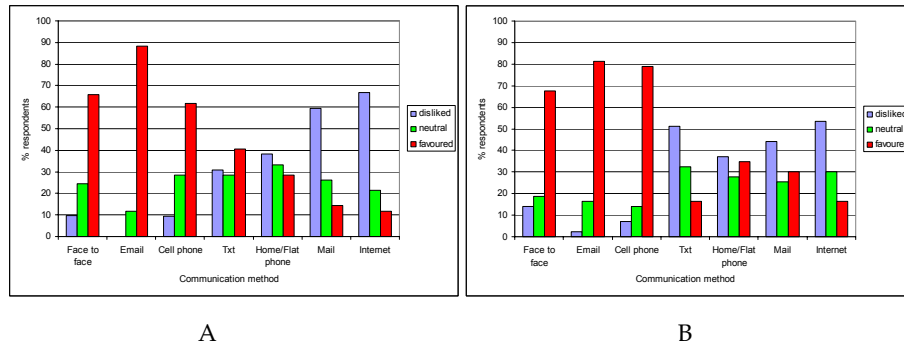


FIGURE 6  
Students preferred communication method for finding out about their application status through (A) the placement coordinator and (B) the employer

Students overall had a strong dislike for using text, mail and the internet for applying for jobs (Figure 5). Some 65% of students disliked text for applying for jobs through employers. Particularly surprising was student preference for face to face communication when applying for jobs through employers, as the normal process for applying for advertised jobs is mailing the employer a cover letter and CV. This could reflect past student experience where they might have routinely approached an employer in person enquiring about part time work. It

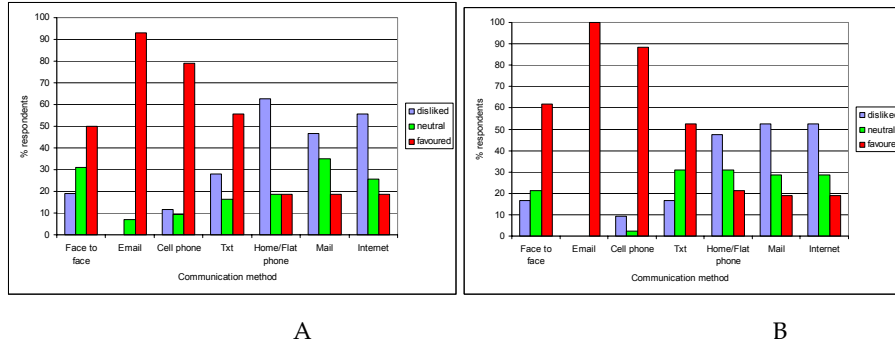


FIGURE 7  
Students preferred method of communication during (A) the work placement and (B) post placement

may also be because this generation of students expects everything to happen instantly (e.g. communication with cellphones and text). Visiting an employer and gauging their reaction allows them to ascertain quickly their chances of obtaining a job rather than having to wait for a reply through mail or email. Almost 90% of students preferred email as a means for the placement coordinator to notify them of their job application status (Figure 6). About 15% more students favored cellphone for being notified by the employer than by the coordinator. Again, the internet and mail were least preferred.

*Contact During and Post Placement*

Face to face communication was less favored during and post placement, with email and cellphone ranking highly as a preferred means of communication (Figure 7). This is probably because communication between the placement coordinator and students is not as necessary as when the placements are being organized. Home/flat phone was most disliked as a means of communication during placement because students are at work during the day.

*Website Search Criteria*

Most favored search criteria for looking for jobs was in ascending order location, discipline and type of work (Figure 8). Company as a search criteria was least liked probably because a company name generally does not give an indication of what a company does whereas discipline and type of work is more indicative of what work the job is likely to entail.

DISCUSSION AND CONCLUSIONS

Any system that is developed to make the placement process and monitoring more efficient would need to incorporate students preferred means of communication. Students favored more personal, instantaneous means of communication that they had ready access to such as face to face, email, and cell phone. Less personal means of communication such as the internet and mail were not favored, perhaps because the internet is very impersonal and mail is too slow. Engineering students showed a strong dislike to using internet for the placement process. This could be due to negative student experience with the internet system “Class Forum” used at the University to communicate with students and provide handouts and tutorials because they found it difficult to use.

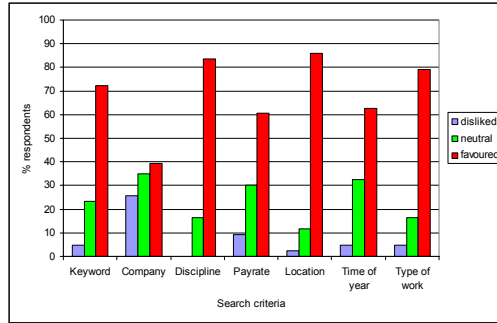


FIGURE 8  
Favored website job search criteria

It would be worthwhile investigating further why students dislike using the internet as a method for communication for all aspects of the placement process. Also we would need to answer whether or not students would use a website based system and would their bias against it negatively affect its effectiveness. This will be part of an ongoing study looking at using technology to improve the placement process.

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APPENDIX

Work Placement Questionnaire

1) Which degree are you doing?					
2) What major?					
3) Is this your first, second or third placement?					
4) How often do you check, carry, or have access to:					
	Never				Always
Email	1	2	3	4	5
Cell phone	1	2	3	4	5
Txt	1	2	3	4	5
Home/Flat phone	1	2	3	4	5
Mail	1	2	3	4	5
Website	1	2	3	4	5
5) What is the best method of contact?					
	Worst				Best
Face to face	1	2	3	4	5
Email	1	2	3	4	5
Cell phone	1	2	3	4	5
Txt	1	2	3	4	5
Home/Flat phone	1	2	3	4	5
Mail	1	2	3	4	5
Website	1	2	3	4	5
6) In looking for work placements do you prefer to:					
	Never				Always
Find your own job	1	2	3	4	5
Provide Placement coordinator with possible work placement prospects (for Placement coordinator to follow through with)	1	2	3	4	5
Have the Placement coordinator find the work placement for you	1	2	3	4	5
7) If you were to use an online website that contained a job database, would you prefer to search for a potential work placement by:					
	Never				Always
Keyword	1	2	3	4	5
Company	1	2	3	4	5
Discipline	1	2	3	4	5
Payrate	1	2	3	4	5
Location	1	2	3	4	5
Time of year	1	2	3	4	5
Type of work (e.g. labouring, research)	1	2	3	4	5
8) When a potential work placement becomes available, how do you prefer to be notified?					
	Never				Always
Face to face	1	2	3	4	5
Email	1	2	3	4	5
Cell phone	1	2	3	4	5
Txt	1	2	3	4	5
Home/Flat phone	1	2	3	4	5
Mail	1	2	3	4	5
Website	1	2	3	4	5

9) When applying for a work placement, do you prefer to:

	Never				Always
Apply through the Placement coordinator	1	2	3	4	5
Apply directly to employer	1	2	3	4	5

9a) If you were applying through the Placement coordinator, would you prefer to apply:

Face to face	1	2	3	4	5
Email	1	2	3	4	5
Cell phone	1	2	3	4	5
Txt	1	2	3	4	5
Home/Flat phone	1	2	3	4	5
Mail	1	2	3	4	5
Website	1	2	3	4	5

9b) If you were applying directly to the employer, would you prefer to apply:

Face to face	1	2	3	4	5
Email	1	2	3	4	5
Cell phone	1	2	3	4	5
Txt	1	2	3	4	5
Home/Flat phone	1	2	3	4	5
Mail	1	2	3	4	5
Website	1	2	3	4	5

10) You have applied for a work placement, how would you prefer to be notified at what stage the application is at, (e.g. preliminary selection for interview, final selection, and offer of employment)?

	Never				Always
From the Placement coordinator	1	2	3	4	5
From the employer	1	2	3	4	5

10a) If you were to be notified by the placement coordinator, would you prefer to be informed by:

Face to face	1	2	3	4	5
Email	1	2	3	4	5
Cell phone	1	2	3	4	5
Txt	1	2	3	4	5
Home/Flat phone	1	2	3	4	5
Mail	1	2	3	4	5
Website	1	2	3	4	5

10b) If you were notified by the employer, would you prefer to be informed by:

Face to face	1	2	3	4	5
Email	1	2	3	4	5
Cell phone	1	2	3	4	5
Txt	1	2	3	4	5
Home/Flat phone	1	2	3	4	5
Mail	1	2	3	4	5
Website	1	2	3	4	5

11) During the work placement, what is the best means of communication with you?

	Worst				Best
Face to face	1	2	3	4	5
Email	1	2	3	4	5
Cell phone	1	2	3	4	5
Txt	1	2	3	4	5
Home/Flat phone	1	2	3	4	5
Mail	1	2	3	4	5



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	1	2	3	4	5
Website					
12) After the work placement, what is the best means of communication with you?					
	Worst				Best
Face to face	1	2	3	4	5
Email	1	2	3	4	5
Cell phone	1	2	3	4	5
Txt	1	2	3	4	5
Home/Flat phone	1	2	3	4	5
Mail	1	2	3	4	5
Website	1	2	3	4	5