MENTORING IN THE COOPERATIVE EDUCATION WORKPLACE: A REVIEW OF THE LITERATURE

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This paper reviews the literature exploring the mentoring relationship between students, their cooperative education workplace and their host supervisors. The literature review will focus on mentoring relationships generally, and consider the learning benefits from structured and informal mentoring. The literature review will form the basis of further research into "students'" and "host supervisors'" perceptions of the mentoring relationship, with a view to identifying key factors of a successful mentoring relationship.

When students enter the cooperative education workplace, they are hungry for a mentoring environment. This hunger is the same as that experienced by any degree or high school graduate entering the workforce for the first time. As young adults new to work, there is potential to develop a mentoring environment to provide models and guides. Mentoring is an intentional, mutually demanding and meaningful relationship between two people. The benefits of a mentoring relationship are the provision of support, challenge and vision. Support enables the development of constructive relationships, and encouragement to meet new challenges. Challenge is a new opportunity or threat facing the student, for challenge to be productive as a learning experience, it needs to be just within the students reach. Vision is a key component of the mentoring environment, providing students with a view of the future and their place within it.

For students encountering work culture and challenge for the first time, a mentoring environment can be crucial in finding work "flow". Flow tends to happen when the student is fully engaged in overcoming a challenge that is "just about manageable". When students reach a state of flow they are completely focused, with little room for distractions and irrelevancies. As Csikszentmihalyi (Csikszentmihalyi, 1997) explains: "When goals are clear, feedback relevant, and challenges and skills are in balance, attention becomes ordered and fully invested"(p. 31).

Introduction

"The proper aim of education is to promote significant learning. Significant learning entails development. Development means successively asking broader and deeper questions of the relationship between oneself and the world. This is as true for first graders as graduate students, for fledgling artists as greying accountants" (Daloz, 1986).

Successful mentoring relationships have long been recognised as central to student learning in cooperative education courses (Ricks, 1997).When students and the host supervisor (mentor) work shoulder to shoulder with colleagues in the workplace, one person stands out – the workplace mentor. This mentor has a significant influence on the activities, relationships, learning, development and often assessment of cooperative education students. These mentors have the opportunity to provide a creative and supportive environment for students to achieve

"peak performance" (Gilson, 2000). They play an important role in creating an environment for fostering significant learning experiences for students.

When students enter the cooperative education workplace, they are hungry for a mentoring environment. This hunger is the same as that experienced by any degree or high school graduate entering the workforce for the first time. As young adults first experience work, there is potential to develop a mentoring environment to provide models and guides. (Daloz Parks, 2001).

Benefits of mentoring in the workplace and cooperative education

Kram and Isabella (Kram, 1985), described the benefits of mentoring in an organisation. They identified increased productivity through performance planning, increased teamwork, and cost effectiveness in training, as the mentors undertook their role in addition to their usual duties. Improved recruitment programmes, which promote development, learning and support of new employees, provide an organisation with a talent pool. Another significant benefit was the opportunity for senior employees to share their knowledge and skills, and in the process "rethink" personal philosophies and methods. However, the greatest benefit from an organisational perspective was improvement in organisational performance from developing trained and competent employees. Cooperative education students often take up permanent positions in their host organisation, because during their placement, they have demonstrated skills useful to the organisation. The student's potential is recognised and valued by the organisation.

Evers, Rush and Berdrow (Evers, 1998), considered how to equip graduates with skills for lifelong learning and employability in the new millennium. They identified crucial competencies graduates will need in the future. These include the ability to "manage self", to "communicate", to "manage people and tasks" and to "mobilise innovation and change" (p.135). Mentors can provide feedback on each of these competencies, guiding the student to reflect on their successes and shortcomings. Ideally, students are developing lifelong skills that will benefit both the organisation and their own career development.

Stump and London (Stump, 1981), explored the crucial role of the mentor in career development. While they were not concerned with cooperative education, they drew attention to the link between mentorship and career success, development of leaders, early socialisation into the workplace and career progression. Applying these research findings to cooperative educations indicates early fostering of cooperative education students in the workplace may have long-term career benefits for them.

The benefits of a mentoring relationship are the provision of support, challenge and vision (Daloz, 1999). Support enables the development of constructive relationships, and encouragement to meet new challenges. Challenge is a new opportunity or threat facing the student. For challenge to be productive as a learning experience it needs to be just within the students reach. Vision is a key component of the mentoring environment providing students with a view of the future and their place within it. All three qualities are required to provide and environment for students to find "flow".

The mentoring relationship is an effective tool to assist students to cross the bridge from the classroom to the workplace. Mentors can coach students to become effective members of a

team, and provide opportunities to discover and strengthen weaknesses, learn from their mistakes and emulate a role model (Gibson, 1997).

Daloz Parks (Daloz Parks, 1993), considers mentoring an essential feature for "fostering moral courage". Young adults, often unsure of their own "meaning system", are vulnerable to influences of authority. She writes, "A mentor's function is to recognise and affirm the emerging competence of the young adult, while beckoning forth the promise of the young adult life and making accessible a viable and desirable pathway into the future" (p.50). Mentors are teachers of ethical values and decision-making; valuable skills for both the organisation and the student.

Types of mentoring relationships

In the workplace and in cooperative education there are many and varied mentoring models. Levinson (Darrow, 1978), identified the mentoring relationship where the mentor is both a "teacher" and a "sponsor", a "host" and "guide" (p.98). The mentor welcomes the "initiate" into a new work and social world. In the process, he identified the mentor as "acquainting him with its values, customs, resources, and cast of characters" (p.98) As Daloz (1999), explain, the role of the mentor is to "empower their students by helping to draw out and give form to what their students already know" (p. 206).

Crosby (1999) differentiated between a role model, sponsor and a mentor. The "role model" is not a formal relationship, and many role models may not know they are acting as a mentor. The "sponsor" provides degrees of guidance, but this role tends to be informal and has no emotional investment. He identified the "mentor" as having both "emotional investment" and a "mutually trusting relationship" with the mentee. The structure of the relationship is formal and guided, and has at the heart of it the interests of the mentee.

Murray and Owen (Murray, 1991), explored the benefits of formal mentoring relationships in the workplace. These formal structures, they found sought to develop skills and leadership abilities for mentees. "Facilitated mentoring" is used by organisations who want to foster "growth and development to happen and wants to know it has". Intrinsic in the mentoring experience is the focus "on problems and situations of concern to the mentee, as well as with their general progress" (Eraut, 1998).

As noted by Van Gyn and Ricks (Ricks, 1997), in many workplace and cooperative education settings, mentoring relationships are formalised by the assignment of mentees and mentors, giving the relationship formality and structure. However, the relationship is at heart "an intentional, mutually demanding and meaningful relationship between two people" (Daloz Parks, 2001). It is interesting to note that the relationship does not appear to need to be voluntary for it to be meaningful for all three parties, the organisation, the mentor and mentee.

Developing the adult learner

Galbraith (Galbraith, 1991), acknowledges adults and young adults new to work are highly pragmatic learners. "They have a strong need to apply what they have learned and to be competent in that application." Mentors and the host organisation provide that opportunity.

Stanley and Clinton (Clinton, 1992), refer to the work of Knowles (Knowles, 1980),who summarised the four principles of adult learners. He found that most adult learners have a

deep need for self-directed learning. Adults appreciate learning takes place through experience, and they need to accomplish tasks and solve problems in real life situations. Adults see the learning process as one in which they can raise their competence in order to reach their full potential. They have a real "desire" to apply tomorrow what they learnt today. Cooperative education students are anxious to demonstrate and test their new knowledge in the adult environment. Many are hampered by insecurity and fear of failure. The mentor plays an important role in building confidence and facing fear.

Coffield (Eraut, 1998), concluded that learning at work takes place where there are distinct activities undertaken by the learner. Effective mentoring enhances all of these activities. They include a phase of "induction and integration", where the mentee is socialised into the workplace. This process may be formal or informal, but establishes the boundaries of the mentee. The second phase is "exposure and osmosis", where learning takes place by peripheral participation and the supervisor is largely passive. The third phase is one of "self-directed learning", where the learner takes an active role, experiments and takes risks. This phase requires a positive and supportive mentor. The final stage, and the one that is of most interest, is the stage of active performance management. In a successful model, this process will facilitate and encourage learning. At worst, it will fail to recognise learning and discourage mentees.

Finding Transformational Mentoring

Van Gyn and Ricks (Ricks, 1997), adapted a model from Miller and Seller (Miller, 1985), to establish a conceptual framework for the classification of mentoring relationships, and identify transformational learning. Generally, there are three categories. At each stage, mentees are engaged in significant learning experiences. The first developmental stage of a mentoring relationship is "transmission", a process of modelling, and concrete explanation imparting learning skills, knowledge and values to the mentee. Characteristics of this stage include hierarchical and respectful formal relationships. Some mentoring relationships will remain as transmission relationships, but others will develop further to the second stage, "transaction".

The features of the transactional stage are addressing of dilemmas, dialogue between mentor and mentee, and reconstruction of knowledge and values. In this relationship, mentees learn a process of independent problem solving within their workplace. Many of these skills are transferable to other aspects of their life including social interactions. The significant quality of this relationship is equal participation between the mentor and mentee.

The third and most developed stage of mentoring is "transformation", where the mentee, with assistance from the mentor, creates a vision for their future, internalise their learning and participate in collaborative interaction in the workplace community. A strong feature of this developmental stage is the mentee's ability to engage in personal and social change. It is this aspect of the mentoring relationship, the transformational process, which deserves further study in cooperative education.

The relationship between the mentor at work and the counsellor are not dissimilar, as Summerfield (2002) notes, both are based on a relationship of trust. However, in the mentoring role, there is a third party, the organisation, whose needs must also be met. The mentoring relationship may not be entirely confidential, as an example, a mentee's developmental plan may be shared with managers and teams. However, a key aspect of the

relationship is that, although the outcome of the mentoring relationship may be shared, the conversation that preceded it may not. Both the mentoring relationship and counselling include elements of learning of new skills and behaviours.

Summerfield (Summerfield, 2002), observes two features of mentoring. The first is "acquisitorial", where the mentee acquires new or enhanced areas of knowledge, skill or behaviours, which he/she can use in a practical way. Secondly, there is "transformational" mentoring. This occurs when the mentee is working at a level or on a task that is challenging to them. In this process, the mentee may be "stretched", feeling vulnerable and insecure and needing emotional support and encouragement. A feature of transformational mentoring is movement by the mentee from previously held attitudes, beliefs and skills to new ones.

Mentoring relationships can be "synergistic" (Lick, 1999), a caring support system in which participants "genuinely and openly cooperate with each other to provide creative sharing, assistance and encouragement to build towards (our) common goals. (p.811). Transformational mentoring is more likely to occur in synergistic organisations, where openness, sharing, encouragement and trust are the norm.

Role of the mentor in transformational mentoring

Stanley and Clinton (Clinton, 1992), identified some essential characteristics of successful mentors. They "take a passionate interest in seeing young people grow", are a "good intuitive judge of potential", and "knew the importance to young people of crucial formative experiences." (p. 116)

Van Gyn and Ricks (1997) identifed the characteristics of an effective or ideal mentor as "wise and experienced with regard to the needs of the protégé, accepting of alternate views, flexible in their behaviour, patient and unbiased" (p.88). Stanley and Clinton identify the mentor as an "influence networker", bridging the mentee into the organisation, and a "resource linker", matching the needs of the mentee with the workplace organisation.

The research of Van Gyn and Ricks (1997) found three characteristics of a successful mentoring relationship. The mentor promotes the mentee as a whole person, responding to their intellectual, physical, social, emotional and moral development. Secondly, the mentee is the centre of the mentoring relationship. The mentor facilitates in a manner, which allows the mentee to explore choices, and make decisions. Thirdly, the mentor acknowledges the "uniqueness" of the mentee. (p. 93) There is no one "catch all" formula to apply to the mentoring relationship. This research demonstrates all mentees need to be developed as people having unique needs and backgrounds.

Gehrkes (Gehrkes, 1998), identifies the greatest gift for the mentor to offer a mentee is "a new and whole way of seeing things. This gift of wisdom….comes from having lived and thought deeply and it permeates all the mentor does with the protégé. It is, a way of thinking and living what is given …Through the gift of self as philosopher, the receiver, the protégé is awakened". (p. 192). Clearly, it is through the mentor's gifts and skills, that the transformational learning opportunity is opened to the mentee.

Transformational Mentoring and Flow

In their article on academic and industry supervisors, Jancauskas, Atchison, Murphy, and Rose (Jancauskas, 1999) concluded that the skills required of an industry supervisor in a cooperative education programme are not the same as those of an industry supervisor, or line supervisor. However, in our workplaces and communities, there is a range of effective mentoring relationships. Some of these relationships are formal and some informal, but training and experience in mentoring does not prevent effective mentoring from occurring. Mentors have a range of life skills they bring to the mentoring relationship, and these are not dependent on training.

Although it is clear that training new graduates and cooperative education students is a worthwhile activity for the organization. However, the focus of the organization remains on training employees in skills and knowledge to fulfil the tasks of the organisation. "Self-betterment" in a spiritual or philosophical sense is not the primary purpose of mentoring in organisations. However, there is evidence to suggest in the research of Csikszentmihalyi, that well trained people have a better understanding of their own role and capabilities, and experience more satisfaction with self.

For students encountering work culture and challenge for the first tim, a mentoring environment can be crucial in finding work "flow". As Csikszentmihalyi (1996), explains, flow tends to happen when the student is fully engaged in overcoming a challenge that is "just about manageable". (p. 30) When students reach a state of flow, they are completely focused, with little room for distractions and irrelevancies. Csikszentmihalyi (1996) found, "When goals are clear, feedback relevant, and challenges and skills are in balance, attention becomes ordered and fully invested." (p. 31)

Csikszentmihalyi identified nine stages of "flow".

1. *Clear goals are set every step of the way.*
   The goals are a "vision through a dark glass" (p. 115). Goals provide give vision of what can be achieved by the student in their placement. However, for students they will involve elements of unexplored territory.

2. *There is immediate feedback on one's actions.*
   The interesting aspect of feedback is that it is double sided. Although cooperative education students seek external feedback from their supervisors and colleagues, an essential aspect of their learning is for the student to feedback to themselves on their own performance. Students need to have self-critical skills to assess their own performance. Mentors can be valuable in helping students identify their own performance measures.

3. *There is a balance of challenges and skills.*
   Challenges stretch students, but not to breaking point. Wise mentors instinctively know the student's capabilities even if the student does not.

4. *Action and awareness are merged.*
   Students are unaware of distractions, as their thoughts and actions are in union.

5. *Distractions are excluded from consciousness.*
   The problem with distractions is that they stop "flow". Many creative people rely on a "buffer" to counter distractions, and the mentor may be useful in reducing distractions for the student to provide a productive environment.

6. *There is no worry about failure.*
   Students are so engaged in their activity and having success within it, that fear of failure disappears. Mentors who provide "soft landings" for mistakes and view them as learning experiences, reduce fear of failure.

7. *Self-consciousness disappears.*
   Creative students are completely absorbed by their activity, forgetting time, self and surroundings. They eagerly seek the next absorbing experience. Mentors encourage students to work as independent and self accountable adults.

8. *The sense of time becomes distorted.*
   Creative students spend large amounts of time on their activities, not through design, but because they are completely involved with them and lose track of hours and minutes. Mentors allow the "space" for students to fully engage in their activities.

9. *The activity becomes autotelic.*
   The "activity" becomes an end in itself. For cooperative education students, it means they are driven by need to solve a problem or create something new, rather than merely pass a course. Mentors empower students to become autotelic.

Summary

There are many different types of valuable and supportive mentoring relationships. They occur in the workplace, cooperative education, for career development and in social situations. The relationships may be formal, structured and hierarchical, but at heart they are all mutually beneficial and mentee centred relationships. Mentors undertake their role for many different reasons, and they are not always voluntary responsibilities. However, whether trained or untrained, people in all walks of life rise to the occasion to share their skills, and experiences with young people.

In cooperative education, mentors are a valuable resource, allowing the aims of significant learning, and optimum student performance to be achieved by students. In this process, with guidance, support and appropriate challenges students experience flow and transformational learning. The mentor provides an environment for student learning, fostering learning, and developing a unique person.

The next stage of research is to explore the perceptions of students, mentors and academics to find out how mentors create the environment for their students to experience "flow". The stories of mentors and mentees will be varied in nature and experience, but there will be some common characteristics that, once identified, will be invaluable to future mentors and mentees. The next stage of this research is to identify those characteristics and apply them to training mentors to achieve even better success in cooperative education placements.

References

Clinton, J. R. (1992). Connecting: The mentoring relationships you need to succeed in life.

Crosby, F. (1999). The Developing Literature on Developmental Relationships. In A. Murrell, Crosby, F. & Ely, R. (Ed.), *Mentoring Dilemmas*. New Jersey: Erlbaum.

Csikszentmihalyi, M. (1996). *Creativity: Flow and the Psychology and Discover of Invention*. New York: HarperCollins.

Csikszentmihalyi, M. (1997). *Finding Flow: The Psyhology of Engagement in Everyday Life*. USA: Basic Books.

Daloz, L. (1986). *Effective Teaching and Mentoring*. San Francisco: Jossey-Bass.

Daloz, L. (1999). *Mentors: Guiding the Journey of Adult Learners* (Vol. Jossey-Bass): San Francisco.

Daloz Parks, S. (1993). Is it too late? Young adults and the formation of professional ethics. In *Can Ethics Be Taught?* (pp. 13-65). USA: Harvard Business School.

Daloz Parks, S. (2001). *Big Questions Worthy Dreams*. San Francisco: Jossey-Bass.

Darrow, C., Klien, E., Levinson, M. & McKee, B. (1978). *Season's of a Man's Life*. New York: Knof.

Eraut, M., Alderton, J., Cole, G. & Senker, P. (1998). Chapter 4: Learning from other people at work. In F. Coffeild (Ed.), *Learning at Work*. Great Britain: The Policy Press.

Evers, F. T., Rush, J. C. & Berdrow, I. (1998). *The Bases of Competence: Skills for lifelong learning and employability*. San Francisco: Jossey-Bass.

Galbraith, M. (1991). Andragogy - Alternative Interpretations and Applications. In M. Galbraith (Ed.), *Facilitating Adult Learning: A transactional approach*. Florida: Krieger.

Gehrkes, N. (1998). Toward a Definition of Mentoring. *Theory into Practice, 27*(3), 190-194.

Gibson, L. K. A., D. L. (1997). Mentoring: A successful tool for developing co-op students. *Journal of Cooperative Education, 30*(3), 48-55.

Gilson, C. P., M. Roberts, K. and Weymes, E. (2000). *Peak Performance: Business lessons from the world's top sports organisations*. London: HarperCollins.

Jancauskas, E., Atchinson, M., Murphy, G. & Rose, P. (1999, 1999). *Unleashing the Potential of Work-Integrated Learning Through Professionally Trained Academic and Industry Supervisors.* Paper presented at the International Conference of Cooperative Education.

Knowles, M. (1980). *Self Directed Learning: A guide for learners and teachers*. New York: Cambridge Adult Education.

Kram, K. I., L. (1985). Mentoring Alternatives: The role of peer relationships in career development. *Academy of Management Journal*(28), Pp. 110-112.

Lick, D. W. (1999). *New Directions in Mentoring: Creating a culture of synergy*. London: Falmer.

Miller, J. P., & Seller, W. (1985). *Curriculum Perspectives and Practice*. New York: Longman.

Murray, M. O., M. (1991). *Beyond the Myths and Magic of Mentoring: How to facilitate an effective mentoring programme*. San Fransisco: Jossey- Bass.

Ricks, F. V. G., G. H. (1997). Mentoring Relationships as Learning Opportunities. *The Journal of Cooperative Education, 22 (3)*(Spring).

Stump, S. L., M. (1981). Management Promotions: Individual and organisational factors affecting the decision making process. *Academy of Management Reveiw*(6), Pp. 67-68.

Summerfield, J. (2002). Walking the thin line: coaching or counselling. *Training Journal,* 36-39.

Building a Virtual Classroom: The Construction Process

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Abstract

This paper explores the process of designing and building a virtual classroom using a 3D environment building tool. This is part of a larger project to create a virtual education environment to facilitate the communications interactions present in the teacher student matrix, while investigating the role of these interactions in the learning process.

There are many initiatives to enable virtual education through connection to online classrooms. For these to work effectively there needs to be more than readily accessible published material taking advantage of the speedy delivery afforded by the internet. The traditional campus facilitates many different types of communication. The classroom and computer laboratory, the cafeteria, the corridors, the libraries and study rooms all provide opportunities for communication interaction between students, between students and teachers, and between teachers. There are many opportunities for casual and formal communications.

Research investigating engagement associated with on-line gaming environments highlights the potential for these environments to be used for other purposes. Work in the field of knowledge management and knowledge representation highlights the role of discussion and interaction in the dissemination and acquisition of knowledge, emerging from intranet and virtual workgroup research. This work is applicable to online education and forms the basis for a new type of online education environment facilitating multiple interaction layers for the participants to create a compelling online learning environment.

Introduction

Taking learning outside the traditional classroom does not remove the necessity for student teacher communication or the need for student student communication. It does however make it harder to facilitate as the students and teachers are physically separated. The capstone student workplace project required as part fulfilment of the degree requirements for Bachelor the of Information Technology at Whitireia Community Polytechnic is designed to be a mediated experience for the students, an experience supervised and directed by a support team from the polytechnic that provides advice, supervision and assistance. Traditionally this has been supplied through face to face meetings with student teams and academic support people gathering together in either the workplace or at a polytechnic meeting room for regular weekly meetings. The gradual spread of our student projects further away from the polytechnic has introduced a requirement to facilitate the projects from a distance. Of the 2003 projects, two groups were working with clients located in other cities, three groups were working in the clients premises and four groups were working at the Whitireia Development Lab, in total 50% of the project teams were not located at the Whitireia Campus. In addition a

number of the groups that were located at the Whitireia Campus had members who preferred to work as virtual team members from home.

The internet as an asynchronous communications medium

The internet is evolving as a communications medium with new technologies integrating the concept of presence with the information publishing and interpersonal communication features commonly utilised. The standard browser based web provides for multimedia publishing of information using text, image, video and sound, primarily facilitating the storage of information for asynchronous communication as was defined in the original proposal document for a distributed hypertext structure for information management (Berners-Lee, 1989). The standard web browsing interface only promotes interaction between individual people and previously published material.

> *"It is an irony of the Web that although numerous people may be in the same virtual place at the same time, an important ingredient for social interaction, web users are never aware of others. In effect, they roam the web in solitude - lone wanderers in a deserted world." (Walker & Lambert, 1995, p. 9).*

The web also provides a means of asynchronous communication through the use of email. Email was created to send short messages from one user to another, its origin was evolutionary improvement of messaging programs used to send messages between users using a single computer. Ray Tomlinson "improved" these existing message programs to send messages between computers connected through ARPNET by improvements to the local inter-user mail program called SNDMSG. (Tomlinson, 2003). Email has since evolved into instant messaging programs that enable users to exchange short messages asynchronously and synchronously.

The internet as a synchronous communications medium

The provision of synchronous communication is split between standard browser based applications and single purpose chat browsers. Synchronous communication is still predominantly text based despite the emergence of a number of voice and video chat services, these have not become widespread as the technologies have remained proprietary.

Online gaming environments have evolved from first person computer games using the games program to connect to other computers running the same game through to the internet enabling synchronous communication between connected players. Presence has been successfully incorporated into these online games environments, facilitating a rich social interaction and the building of teams through multilayered communications structures. However the information sharing features of these environments are reduced in comparison with the standard browser based web. The challenge is to successfully merge the information sharing multimedia publishing features of the web with the communication interaction and presence found in 3D gaming environments.

The web has developed from an information publishing space to an interactive communication space. Conversation is fundamentally a social process, it is more than simply an intellectual endeavour, through conversation people create, develop, validate and share knowledge. When conversation takes place in a physical space the speakers notice the reactions of other people present (Erikson & Kellogg, 2001). Conversations in the webspace

are often unidirectional with audience reactions either disjointed in time and space or simply not available. Despite many creative efforts at designing chatrooms, discussion forums, e-mail systems and other similar applications, many of these frequently fail to offer rich and sustained dialogue amongst participants. (Hung & Chen, 2001).

Integrating Presence

The integration of the concept of presence has been proposed to address the failure of environments that facilitate sustained dialog. The concept of presence is a concept separate from emotional engagement and different from imagination. Presence is the feeling we get from attending perceptually to the present world (in both time and space) outside ourselves.

> *"Presence is the subjective sensation of being there in a mediated environment yielding a perceptual illusion of non-mediation"* *(Waterworth, & Waterworth, 2003)*

Presence in virtual environments has been classified into personal presence and co-presence, the perception of being there yourself and the perception that others are there with you (Casanueva & Blake, 2000). Presence integrates the additional perceptual information gained from being there with others, awareness, including additional state information, such as whether others are currently active or idle and the task they are currently engaged in. A simple example of awareness is when using an instant messaging client there is a "buddy list" which lists the user's "buddies" and their current state as online or offline.

The closer the mediated environment can facilitate the perceptual illusion of being in an external sharable world generating the sensation of being there and an illusion of non mediation the greater the opportunities for communities to form. This research project aims to create a virtual learning environment to support a virtual community of learners which will facilitate the creation of Zones of Proximal Development and promote interactions for learning to take place. Vygotsky proposed the Zone of Proximal Development as "the distance between actual development as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" and further proposed that for learning to take place it requires learners to apply knowledge to problems ,that are in advance of those that they can solve independently, through interaction with learning material, with more advanced peers and with teachers (Vygotsky, 1978). This has significant implications for learning environments to support collaboration as it is through these interactions that learning takes place and it is these interactions that need to be facilitated by the virtual education environment.

> *"A virtual classroom is both an instrumental group – in which students and instructors want to accomplish goals – and a community – in which students exchange emotional support, information, and a sense of belonging." (Hiltz & Wellman 1997 p46)*

Computer games are powerfully motivating digital environments and researchers have investigated how the motivational components of computer games may be integrated into instructional design (Bowman, 1982; Bracey, 1992; Driskell & Dywer, 1984). These studies were conducted before online gaming environments were created and ignore the social contexts of gaming and other more recent developments in gaming. These social contexts add an interpersonal communications perspective to computer games enhancing the potential of

the motivating aspects of the digital environment for educational purposes. The study of online video games has been used to inform the design and development of educational digital environments situating them in rich social contexts (Squire, 2003). The combination of powerfully motivating digital environments with a rich interpersonal communications medium provides an environment that has enormous potential for education and learning.

> "*Maximal presence arises from an optimal combination of form and content. The form must provide the means for a convincing perceptual illusion, but the content should be integrated with (and so attract attention to) the form for the illusion to happen convincingly.*"*(Waterworth, & Waterworth, 2003).*

Contemporary multiplayer online games utilise communicative and social aspects of computer mediated interaction. The interaction forms are actions that can be perceived by the players including interactions between players, and between players and the game software. These interaction forms are used to communicate actions to the players including the initiating user. The interaction forms enable awareness and auralisations within the game environment. (Manninen, 2003)

Even multiplayer online games have fundamental problems in supporting rich social activity. Bowman and Hodges (1999) point out that the current applications within the entertainment sector (i.e., computer games) do not usually require any complex interaction between the user and the system. Although the user may be interacting frequently, the interactions are mostly simple in nature. Application of the Habermas' (1984) Communicative Action Theory (CAT) framework has been used to identify the following categories of interaction manifestations.

> "*(1) avatar appearance, (2) facial expressions, (3) kinesics, (4) occulesics, (5) autonomous / AI, (6) non-verbal audio, (7) language-based communication, (8) spatial behavior, (9) physical contact, (10) environmental details, (11) chronemics and (12) olfactics*". *(Manninen, 2003).*

The use of Avatars to provision user embodiment within the virtual environment fulfills several functions, including the means of interaction with the world, the means of communication including awareness of others, the visual/social embodiment of the user and the means of sensing various attributes of the world. The choice of avatars needs to be broad to enable different users to choose representations they are happy with. The avatars should be able to convey gestures such as readiness to interact and the degree of presence in the environment for example if the user has been distracted by activity outside the virtual environment. The avatars also should show expression as people supplement verbal conversation with many voluntary and involuntary gestures and facial expressions which convey powerful emotional messages in the conversation. (Benford, Bowers, Fahlen, Greenhalgh & Snowdon 1997). Observations of social interaction within virtual environments have found that the lack of a number of important social cues can lead to frequent misunderstandings between users if there is no gesture based supplementation of the text chat. (Damer, Kekenes, & Hoffman 1996).

Software selection

There are a number of different software products available to create 3D online environments. These range from fully proprietary leased solutions to open standards based solutions. Some of the products available use special browsers and others are accessed through standard web browsers using plugins embedded in standard web pages. There are different levels of

customisation available in the products ranging from those that have a number of predefined objects that can be used for building and those that enable the builder to create their own objects. Some enable the use of third party products. There is a great deal of variety in the facilities for incorporating other media for information content and the methods of doing this. For the purpose of this project it was considered important that continuity of operation be ensured for the duration of the project, a period of at least the next three years, that costs be minimised and the software be freely available for individuals to contribute. The software needed to be robust and able to be used without technology interference through technical problems. The ability to include data storage using a database management system was essential to enable automation of the system. It was also important that the resulting environment be easily maintained and upgraded. A number of different solutions were investigated, before the selection of the final product.

The 3D world technology Adobe Atmosphere will be used to create the basis of the virtual education environment. This product enables the development of rich 3D environments with sophisticated graphics and lighting effects that can be embedded in standard web pages using a free plug-in. The worlds are built using Atmosphere builder software which is available for free 30 day trial download from Adobe. It is a relatively open system, the community server is available under an Open Source license to be hosted on any compatible internet server and the player is freely available, although with the public release the free builder license is limited to a 30 day trial.

Atmosphere worlds can be hosted on any server, worlds can be linked together using teleport links from within worlds, they can also be linked through standard URLs and they can be linked to standard web pages. The worlds can be customized to include automated actions and user initiated actions using Java Script, this enables considerable flexibility in behaviour and animations within the worlds. Live video and audio streams can be incorporated into the environment enabling voice and video presence. Atmosphere is unique in that it enables the builder to create 3D worlds that expand in all three dimensions vertically as well as horizontally and presents very sophisticated graphical environment (Dickey, 2003). The environment is published as a component of an ordinary webpage, this provides a very broad scope for the integration of information with the environment.

Avatars are used to represent people in the worlds, the avatar being used is identified by a URL pointing to the avatar file which is hosted on any web server. Avatars are Atmosphere sub-worlds, these can be created by anyone with access to the builder and as long as the files are hosted on the internet they can be used to represent people in the worlds. There are also third party products available to create avatars and objects to include in Atmosphere worlds. These are the 3D building products commonly used by computer game manufacturers. Avatars can be animated and often show body movements and gestures. This enables a great deal of flexibility for people to create and use individual representations of themselves and communicate using "body language", people can also create their own worlds as meeting es.

Other commonly used 3D environment software products were considered but were more limited in scope than the Adobe product. The main alternative considered was Active Worlds which enables building to occur only on one plane. Worlds can expand along the x and y axis but not vertically resulting in a low rise world spread out over the supplied plain. All building is created using supplied textures and objects, these are sound plus 3D objects such as waterfall, column and chair. The available avatars are supplied by Active Worlds and cannot

be created by the users. To build persistent structures in Active Worlds it is necessary to purchase "Real Estate" as it is not an open system.   The interface is a standalone combined browser builder and the worlds cannot be accessed through a standard webpage.   There is no ability to connect to a custom database for users or content as developers have no access to the player.

The other environments evaluated were Worlds.com which is marketed as a license to operate a world on the supplied servers. The Palace which is no longer supported but is available on an as is basis without the server. The servers are run by interest groups and are not freely available. VRML and Shockwave were also considered and discounted as the development task would be much larger. Games engines were considered but presented considerable cost overheads. Adobe Atmosphere was selected as it was the product that was the best match to the requirements offering the most flexibility.

Design

Building an application with this software is a new process as the software was first released in December 2003, and it embodies a new means of interaction using the web. In addition the development of systems for teaching is an area where it has been recognised that a long term participatory approach is essential owing to the level of personal control and "invisible" nature of teachers work plus the loose coupling to organisational workflow (Carroll, Chin, & Neale, 2000). The environment is similar to and incorporates many of the features found in a standard graphical user interfaces, a web based interface and of online multiplayer games. The process followed has been guided by proven usability design principles for Graphical User Interface design and web usability principles. The features of the 3D medium have been taken into account through the inclusion of the principles employed in the creation of online multi user games.

The ten main usability design principles developed by Neilsen (2001) and his colleagues are: visibility of system status, match between system and real world, user control and freedom, consistency and standards, help users recognize and recover form errors, error prevention, recognition rather than recall, flexibility and efficiency of use, aesthetic and minimalist design, help and documentation.

The user interaction in many virtual environments has been characterised as four universal interaction tasks. Navigation or the task of moving through the environment, includes the subtasks of wayfinding the cognitive component, and travel the motor component. Selection, which is the task of choosing one or more objects from a set and is often coupled with manipulation the specification of object properties such as position and orientation. Lastly System control defined as changing the system state or mode of interaction. (Bowman & Hodges 1999).

The principles of game design in 3D worlds include: third-person presentation, discovery and exploration, movement versus animation, player control, the use of maps, the use of "weenies", closed environments, constant positive feedback with sporadic negative feedback, complexity management and slow bullets (Clarke-Willson, 1998).   "Weenies" is a rather bizarre term coined by Walt Disney when designing massive 3D environments (theme parks). He suggested it was necessary to lead visitors though the environment the same way one trains a dog, by holding a wiener and leading the dog by the nose (Clarke-Willson, 1998. Disneyland incorporates obvious "weenies" such as Sleeping Beauty's Castle which

encourages visitors to travel from the main entrance to the central hub.   A user in a 3D environment should be able to navigate through obvious landmarks. The environment should lead the user through the environment.

Another dimension is the identification of the users needs, which involves identifying the main user activities followed by analysis of the tasks inherent in these activities. Preece (2000) identifies the following common activities in online communities: information dissemination, information exchange, discussion, support, entertainment, and social chit-chat.

Building the first environment

The first trial environment is a proof of concept demonstrating the technical features of the environment, the aim was to incorporate the possible media within one environment to investigate how they worked and to evaluate their potential from a learning teaching perspective. The metaphors chosen are a soapbox and a gallery. A gallery was chosen as one objective of this trial environment to showcase the different media available. Soapbox was chosen as the intention was to use this environment for demonstration purposes to introduce the product to people unfamiliar with this method of web based interaction.

The soapbox has been situated in the base of an amphitheatre with the gallery stepping up as an inverted stepped pyramid. The inverted stepped pyramid shape prevents avatars falling from the objects when gravity is operating on the avatar and losing their location in the environment. For this reason there are also walls that are not easily scaled while gravity is operating on an avatar. The center is open to enable visual navigation.

The gallery features different information media arranged around a level of the gallery, items which have sound associated are spaced to avoid overlaps with more than one audio track playing at once. Video is situated in corner alcoves, animations, text and image based information are scattered around to create a gallery effect, enabling people to browse by moving around in the environment discovering new features without losing their context. This environment has been evaluated using the synthesized heuristic principles for Graphical User Environments, Web Sites and Online multiplayer games.

This environment is designed for demonstration purposes and is being used to gather user reactions, design ideas and activity information to inform the development of the next iteration of the prototype education environment. Third year students have been invited to use it and to develop their own prototype environments. The information gathered will be integrated into a new prototype which will be evaluated through structured observation methods.

Through the development of a multi-user virtual environment for education I am seeking to promote awareness of other people participating at the same time, maximize the available communication channels and involvement of participants. This research project aims to provide opportunities for both casual and formal communication in the virtual multi-user environment to simulate those provided in a traditional campus.

References
Benford, S., Bowers, J., Fahlen, L.E., Greenhalgh, C., & Snowdon, D. (1997) *Embodiments,*

Avatars, Clones and Agents for Multi-User, Multi-Sensory Virtual Worlds. Multimedia Systems, 5.2 (1997), 93-104

Berners-Lee, T. (1989). *The Original Proposal of the WWW.* Published as HTML. [on-line] Available http://www.w3.org/History/1989/proposal.html

Bowman, D.A., & Hodges, L.F. (1999) *Formalizing the design, Evaluation and Application of Interaction Techniques for immersive virtual Environments*. Journal of Visual Languages and Computing, 10.1 (199), 37

Bowman, R.F. (1982). *A Pac-Man theory of motivation.* Tactical implications for classroom instruction. Educational Technology, 22(9), 14-17

Bracey, G.W. (1992). *The bright future of integrated learning systems.* Educational technology, 32(9), 60-62.

Carroll, J.M., Chin, G., Rosson, M.B. & Neale, D.C. (2000) *the Development of Cooperation: Five years of participatory design in the Virtual School.* In Human Computer Interaction in the new Millennium Editor Carroll J.M. 373-395.

Casanueva J. & Blake E. (2000) *The Effects of Group Collaboration on Presence in a Collaborative Virtual Environment*. EGVE'00 - 6th Eurographics Workshop on Virtual Environments, June 2000

Clarke-Willson, S. (1998) *Applying Game Design to Virtual Environments*. In Dodsworth, C. ed. Digital Illusion: Entertaining the Future with High Technology. ACM Press, New York, 1998, 229-239.

Damer, B., Kekenes, C., & Hoffman, T. (1996) *Inhabited Digital Spaces.* Computer Human Interaction, Proceedings, 1996.

Dickey, M.D. (2003). *3D Virtual worlds: An emerging technology for traditional and Distance learning.* Proceedings Ohio Learning Network; The Convergence of Learning and Technology – Windows on the Future. [on-line] Available http://www.oln.org/conferences/OLN2003/papers/Dickey3DVirtualWorlds.pdf

Driskell, J.E., Dwyer, D. J. (1984). *Microcomputer videogame based training.* Educational Technology, 24 (2), 11-15.

Erikson, T. & Kellogg, W.A. (2001) *Implementation: Social Translucence in Digital Systems*. In Human Computer Interaction in the new Millennium Editor Carroll J.M. 345-342.

Habermas, J. *The Theory of Communicative Action*, McCarthy, T, translator. Beacon Press, Boston, MA, 1984.

Hiltz, S.R. & Wellman, B. (1997). *Asynchronous learning networks as a virtual classroom*. Communications of the ACM, *40* (9) 44-49.

Hung,D.W.L. & Chen,D. (2001). Situated Cognition, Vygotskian Thought and Learning from the Communities of Practice Perspective: Implications for the Design of Web-Based ELearning.

Education Media International . 38,1, 4-12.

Manninen, T. (2003), *Interaction Forms and Communicative Actions in Multiplayer Games*. The International Journal of Computer Game Research 3(1) Available: http://www.gamestudies.org/0301/manninen

Nielsen, J. (2001) Ten usability Heuristics. [on-line] Available http://www.useit.com/papers/heuristic/heuristic_list.html

Preece, J. (2000). *Online Communities: Designing Usability, Supporting Sociability.* Chichester, UK: John Wiley & Sons.

Squire, K. (2003). *Video Games in Education.* To be Published International Journal of Simulations and Gaming. [on-line] Available http://Cms.mit.adu/games/education/

Tomlinson, R. (2003) The first network Email. [on-line] Available http://openmap.bbn.com/~tomlinso/ray/firstemailframe.html accessed March 2003.

Vygotsky, L.S. (1978). *Mind in Society: The development of higher psychological processes.* Cambridge, Mass.: Harvard University Press.

Walker, R.A., Lambert, P.E. (1995). *Designing Electronic Learning Environments to Support Communities of learners: A tertiary Approach.* [on-line] Available http://www.aare.edu.au/95pap/walkr95.220

Waterworth, J A and Waterworth, E L (2003). *The Core of Presence: Presence as Perceptual Illusion.* Presence-Connect, 3 (3), posted 24-07-2003. [on-line] Available http://presence.cs.ucl.ac.uk/presenceconnect/articles/Jul2003/jworthJul112 00314441/jworthJul11200314441.html

Student Industry Projects: Streamlining the Process for a Win-Win

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Abstract

Students in their third year of the Bachelor of Information Technology (BIT) degree are required to carry out a four hundred and twenty hour, industry based, capstone project (Clear, Goldweber, Young, Leidig & Scott 2001) to complete their under graduate degree. From an industry standpoint the project is a necessary requirement to prepare students for work in the "real world". From a students standpoint these projects are often frightening and frequently prove to push students well outside their comfort zone. While the results of the projects are excellent with over 80% of students gaining employment, many with industry partners involved in the projects, the process has yet to be perfected.

For the past two years we have managed a large number of students through their industry projects. Managing the workload for staff, students and industry partners for the projects is constantly reviewed to develop strategies for a better process and management of the projects each year is an improvement on the last.

Each project is assigned an academic support person, with each member of senior staff being responsible for up to four projects depending on other academic responsibilities. Four senior academic staff work as academic support people advising and assisting with resources for the project and project team management. Projects are sourced by the project coordinator or brought to the project coordinator by a student for consideration of suitability.

The projects have two primary components. The first is the project itself which will be the development of a computer application for industry. The second is the requirements we specify, components all students must complete for the project to meet academic criteria. These requirements are not necessarily the same.

This paper will highlight the challenges faced by the team in their efforts to achieve the best possible outcome, for the students, for the industry partners and from an academic perspective.

Introduction

This paper highlights the challenges faced by the Bachelor of Information Technology degree capstone project support team (ASP team) in their efforts to achieve the best possible outcomes for the students, for the industry partners and from an academic perspective. The three-year degree is designed to include a realistic industry experience for all graduates achieved through a compulsory module consisting of an industry based project usually worked on by a small group of students (2-3) during their final semester. The methods employed to streamline the process to create a win-win situation for both academia and industry are described, along with the aim of this process, which is to facilitate the completion of a major part of a student's degree. Through interpretive reflective discourse and participatory action research we believe we have improved the experience for all involved.

Purpose of the capstone project

The capstone project facilitates workplace learning, and provides situated learning benefits for students while under the guidance of the academic staff (Clear et al, 2001). The need for this experience is created because during their studies students complete assignments in a completely controlled environment where the topics, scenarios and tasks are tailored to assess the learning outcomes of the particular course giving the students little opportunity to experience the trials and pressures found within industry. . Live industry situations are rarely so predictable or as well defined. A study by Imel (1994) concludes that work experience is of this type is beneficial in that it can provide a point –of-entry into appropriate full-time employment. Our projects are a form of work experience.

Currently the BIT course is centered on software engineering practice. (Clear et al 2001). The primary goals of the capstone project are; to provide the student with a realistic example of work in their chosen field; to provide local employers with an indication of the work-readiness of our students and to provide the student with the best possible chance to obtain employment over and above that of any competitor. There are many other secondary course goals.

Stakeholder description

The projects involve five main stakeholder groups.

The student team is the primary stakeholder. Each individual student must have successfully completed a number of appropriate modules of learning during the first two years of the degree. The modules are designed to provide them with most of the skills needed to work successfully on a project.

Whitireia academic staff acting as Academic Support Persons (ASPs). They provide to the student team; technical support, encouragement, guidance and sometimes discipline. ASPs act individually and also as a team or committee. The ASPs may sometimes make difficult decisions on behalf of the group, such as: stopping a project, switching the client if they are ineffective, splitting up malfunctioning groups.

Whitireia management staff acting as managerial support. Their main purpose has evolved into that of supporting students by providing resources on request and removing barriers to student progress that are not able to be dealt with by the other stakeholders. This has meant items such as providing textbooks and additional training in unfamiliar programming languages and organising the external marking of some of the student's project documentation.

Clients are located by the Project Coordinator. They are expected to meet with the team at regular intervals and provide meaningful support in the form of clearly stated requirements. They are formally recruited at the beginning of each academic year and their responsibilities are clearly explained to them by the project coordinator. They are also clearly informed that there is no guarantee that a successful piece of software will be created by the team and that they will not be charged in any way for any working software they may receive as a result of the project process.

The Project Coordinator is an ASP who takes responsibility for overall management of the projects. This role involves identifying and organizing clients, projects, hardware and software support, and the marking of assessments.

Stakeholder challenges and benefits of the capstone experience

The projects, which our students undertake in their final year, provide them with exposure to real life situations, and include a variety of experiences using the skills acquired in a number of different modules. Most of the projects involve working in a team, which gives each student the opportunity to experience the dynamics, stress, and benefits of group work.

Personal networking is an important factor when students are ready to find employment (Imel,1994) and this is supported by Lloyd (2001) in a survey of graduates. The students gain exposure to industry with potentially valuable contacts, and in a few cases even the possibility of employment. The majority of our students have either never been in the work force, or have never worked in the IT industry. They are taught subjects largely in isolation without the integrative experience of a workplace software product process. This leads to some students remaining unclear about which area of the industry they would prefer to work in, for example design, implementation or development. The project tends to focus individual students into their various roles within the teams, thus allowing some exposure to the different areas. Both an ASP and the industry client supervise this exposure.

The lecturers acting as ASPs to the projects, are provided with vital information about the needs of the industry. For example, in 2003 there were a number of projects using new software, and this prompted the academic group to investigate the possibility of acquiring it to incorporate into the degree modules, so enabling both the academics and the modules offered, to keep up to date. This is a real issue in teaching Information Technology as technology and techniques change quickly.

Dealing with team conflict and client problems are often new and valuable experiences for academic staff. The exposure to such experiences can be incorporated into existing teaching practice. Where there is a close relationship between ASP, client and team (this usually occurs when the team works on the client site), the ASP can experience new technologies and other project artifacts in a realistic environment. Participating academics also become more aware of the content and purpose of parts of the modules that they do not teach. For example, student teams could not readily reconcile conflict between the requirements of traditional project management theory and newer systems development methods. This has lead to the addition of new topics into our prerequisite modules in order to modernise and bring them into line with current industry practice emanating from current academic research.

ASPs can network more effectively with local clients for the benefit of their own research studies and ultimately those of the institute. This has been useful for those who require research participants from the local software development community.

Another benefit to ASPs is that they find out what is 'hot' (and what is not) in technology. An example of this has occurred when we found that our chosen programming language was not required in any projects over the last two iterations. This has given the ASP team the incentive to implement curriculum change within our Faculty. We expect flow-on effects in improved student employment in the near future.

Another grounding experience for ASPs is an appreciation of the difference between an academic assignment in the controlled academic environment, and a commercial project in the 'real world'.

The benefits to the client group are threefold. The client benefits by the completion of a useful software product which may not have otherwise been possible due to time or financial constraints, by having the opportunity to assess the value of a student or student team for possible employment, and by gaining an insight into the value of courses provided by the Institute.

The benefits to the institute include the raising of the institute's profile when students work directly for clients, both in showing the value of the students produced by the institute, and showcasing the quality of their work. Smith (2000) discusses the problems caused by a changing IT industry leading to confusion on behalf of employers caused by the numerous qualifications offered in this area. This type of experience for clients helps them to clarify their own needs and understandings of the current academic and training environment from which their future employees may come.

Capstone process

Participatory action research is the method used by the academic team steering the IT capstone projects at Whitireia. Action research is defined as a deliberate, solution-oriented investigation, characterised by a spiral of cycles consisting of problem identification, systematic data collection, reflection and analysis, data-driven action taken, followed by problem redefinition (Kemmis & McTaggart, 1988). The action research method has a number of subtypes: participatory research, critical action research, classroom action research, action learning, action science, soft systems approaches, industrial action research and participatory action research (Kemmis & McTaggart, 2000). Key features of participatory action research involve:

> "a spiral of self-reflective cycles of, planning a change, acting and observing the process and consequences of the change, reflecting on these processes and consequences and then, replanning, acting and observing, reflecting, and so on…" (Kemmis & McTaggart, 2000, p. 595)

The delivery, management and assessment of the project module evolves over time. With each iteration (cycle) of delivery, the ASP committee adjusts the process. ASP's recommend changes based on their individual and collective experiences, problems faced and successful strategies for project development. The ASP group meets regularly during the year (weekly if possible) to discuss progress and problems they may be having with their assigned teams. Solutions are discussed and actioned, and records are kept of any ideas for possible future changes to the project process.

Reflection on outcomes, the project process, and the success of teams in the previous year is reported at a special ASP committee meeting early in each new year. Management staff are invited to participate or provide written recommendations for improvement. After discussing improvements, any changes are recorded in the new version of the student project handbook. Changes may include; assessment, team formation, dealing with teams, ASP time allocation to teams, dealing with Clients, finding projects, scoping projects and stakeholder roles.

An example of the iteration cycle

An example of this iteration process occurred in the composition of teams. In the first iteration of the module it was decided to assign teams to projects based on their technical skills. Thus a good programmer would be placed with an effective communicator providing complementary skillsets for members in a team. However there were considerable interpersonal problems arising from this arrangement. The underlying goal was to spread the available student skills evenly across all the project teams and to match individuals' skills to form cross-functional teams where all teams would have a chance of success as each team would have a full cross-section of technical skills. This meant that some teams consisted of groups of students who did not know each other. There were many complaints at the initial forming of the teams about this method of team formation. On-going problems during the projects progress were attributed by the ASPs to ongoing interpersonal problems within the teams.

The following year it was decided to allow the students choose their own team members to avoid the interpersonal problems with the expectation that each team would extend themselves to fill any gaps in their technical skills. This was not just left to chance as the student group was regularly reminded by the academic staff that choosing a team member should not just be based on friendship, but also consideration of that person's personality, academic background and general ability to work in a team, as well as their technical strengths.

This year the ASPs noted a definite reduction in interpersonal conflict and some very effective team work on the part of self selected teams, who produced excellent products and academic outcomes. These findings are mirrored by Stein's observations (2003) and are also reflected in the log books and meeting minutes of both the students and the ASPs.

Future improvements

In order to achieve a hermeneutic dialectic relationship (Guba & Lincoln, 1989) the iterative redevelopment of the environment is assumed to be based on reflective evaluation of the previous cycle and to follow a process that involves evaluators and stakeholders. This relationship is achieved by the open collection and interpretation of the data involving discussion with all the stakeholders. One current weakness in the capstone reflection process is the lack of direct input from clients and student stakeholders. Students' inputs are not formally gathered and this is one aspect that will be included in the next iteration. Clients also have no formal influence or input into the process, however they frequently attend the Project Presentation and often give informal feedback at that time. Formal client feedback will be addressed in future project iterations.

 Conclusion

Challenges faced by the academic team in delivering a meaningful IT capstone project are many and varied. This experience report describes the stakeholders, our methodology to improve the outcomes, and the benefits accrued to all stakeholders in the experience. The writing of this report has, in itself provided a reflective experience for the authors. We hope other groups involved in this experience will also gain insights into the process from this paper.

References

Clear, T., Goldweber, M., Young, F. H., Leidig, P.M. & Scott, K (2001) Resources for instructors of capstone courses in computing. *ACM SIGCSE Bulletin* V 33, 493-113

Guba, E.G. & Lincoln, Y.S. (1989) *Fourth Generation Evaluation.* Newbury Park, CA: Sage

Imel, S. (1999) Job skills for the current economy. *Eric Digest,* ED37624

Kemmis,S. & McTaggart,R (2000) *Participatory Action Research.* In handbook of Qualitative Research 2nd Edition 567-605

Lloyd, B. (2001) *Matchmaker- students and employers*, Proceedings of the NACCQ conference, July 2001 in Napier

Smith, A.R. (2000) *Lifelong learning in an information age: A networked approach between education, industry and individuals* PhD Thesis

Stein, M.V. (2002) *Using large vs small group projects in capstone and software engineering courses*. The journal of Computing in Small Colleges V 17, 4 1-6

The time course of learning - how does the length of the cooperative placement affect the learning experience?

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Abstract

Amongst cooperative education programmes there is great diversity in placement length and structure. These parameters appear to be driven as much by timetabling and regulation demands as pedagogical reasons. Little research has been published to provide evidence supporting a particular structure on learning grounds, particularly from a student's perspective.

A written questionnaire (n=42) and in-depth follow-up interviews (n=7) were used to explore the perceived impact on student learning of the non-continuous (2 days per week) and two-semester nature of the sport and recreation cooperative education programme at Auckland University of Technology (AUT). In addition to workplace activities the students in this programme design and complete a project that is beneficial to their organisation. The influence of this project work on student learning is also examined.

Content analysis of the data indicated that the 350 hours spent in the workplace over 2 semesters was important for relationship building and the development of trust. The findings indicate that the students' learning changed over time in the placement. Students felt they learnt more in the second half of the placement as they moved from doing simple tasks and became involved in more complex tasks and thinking. Most students responded in favour of the non-continuous nature of the placement.

We conclude that the 350 hours of placement contributes to students developing their own meaning of practice in sport and recreation, and that greater learning may occur with more time in the workplace, and the use of tools such as projects that enhance students understanding of their workplace community.

Introduction

There has been debate amongst the cooperative education community in recent years about the nature of learning outcomes and processes that students experience while undertaking work placements (Parks, Onwuegbuzie & Cash, 2001) . Recent research (e.g. Eames, 2000) has shown that students believe they learn on placement in a multitude of areas including technical knowledge and skills, communication and interpersonal skills and understanding about the work

culture. Ongoing research is suggesting that the social and cultural environment of the workplace (Lave, 1991; Salomon & Perkins, 1998) plays a key role in student learning.

Amongst cooperative education programmes there is great diversity in programme, and in particular placement, structure. The structure of the placement has often been driven by timetabling and regulation demands rather than pedagogical reasons. Little research has been published to provide evidence supporting a particular placement structure on learning grounds.

There has recently been debate at the Auckland University of Technology (AUT) about the placement structure in the Bachelor of Sport & Recreation (BSR). This paper describes a small research project that investigated BSR students' perceptions of their learning on placement and how the structure of the placement programme at AUT impacted upon that learning.

Context of the study

The BSR is a three-year programme designed to prepare students for careers in the areas of sports science, sports management, recreation, fitness, physical education or outdoor tourism. During their final year the BSR students complete 600 hours of cooperative education where work and learning are integrated through the development of partnerships between the university, the student and a sport and recreation organization.

Cooperative education papers (Cooperative 1 and Cooperative 2) are structured so that the student spends the equivalent of two days a week during the two semesters of the academic year within one organization. During Cooperative 1 the students complete 200 hours of workplace activities and 100 hours is allocated as academic time for the students to reflect on and critically analyse their experiences as well as to design a project that is beneficial to their organization. During Cooperative 2 the students are required to complete 150 hours in the workplace and the remaining 150 hours allows time for the students to complete, evaluate and present their industry related project.

Industry placements include national or regional sports organizations (e.g. NZ Soccer, Auckland Rugby Football Union), community recreation and fitness centres, outdoor tourism operators, schools (Physical Education departments or sports coordinators), regional sports trusts and sport performance centres. The students are supported in their learning experience by an industry supervisor and an academic supervisor from the university.

Methodology

A case study approach (Merriam, 1988) was used to investigate the learning experiences of the cooperative education students from the BSR at AUT. The research consisted of two stages. In the first stage a written questionnaire was given to all students who had completed the cooperative education programme in 2002 (n= 48). The questionnaire was anonymous and included both open-ended questions and scaled responses. Students were asked to indicate what they had learnt during their experience and to comment on factors and influences on their

learning. The questionnaire also asked for comments on the non-continuous structure of the programme and whether they felt the number of hours were appropriate. Other questions focused on comparing the way they learnt and the amount of learning between cooperative 1 and cooperative 2. In addition the students were provided with a grid and asked to draw a learning curve that related the amount of learning to the time course of the experience.

The second stage involved in-depth semi-structured interviews (Cohen, Manion, & Morrison, 2000) with 7 volunteers from the cohort. The questionnaire responses were used to gain indicative data that informed the preparation of the interview guide. All interviews were audio-taped and transcribed. Informed consent was gained in writing from all participants. Ethics approval was gained from the AUT Ethics Committee. Pseudonyms have been used in this paper in reporting student comments. The questionnaire responses were analysed using descriptive statistics where appropriate. The interview transcripts were content analysed in an interpretive manner.

The learning curve was analysed using Simpsons Rule to determine the area under an irregular curve (Bajpai, Mustoe & Walker, 1974). Each curve was divided into 13 equal segments and the height of the curve at each segment was measured. The following equation was used to determine the area for each curve for Cooperative 1 and Cooperative 2:

$$A_{(Coop\ 1)} = (H_0 + (H_1 x4) + (H_2\ x2) + (H_3\ x\ 4) + (H_4\ x2) + (H_5\ x4) + H_6) / 3$$
$$A_{(Coop\ 2)} = (H_6 + (H_7 x4) + (H_8\ x2) + (H_9\ x\ 4) + (H_{10}\ x2) + (H_{11}\ x4) + H_{12}) / 3$$

The area for Cooperative 1 was then compared to the area for Cooperative 2 using a paired T-test with an alpha level of 0.05. The heights at each segment were averaged for all curves to construct the composite curve in figure 1.

Results

Forty-eight students completed the cooperative education component of the Bachelor of Sport & Recreation in 2002. From this cohort 42 completed the written questionnaire. The majority (90%) were in the 20 –24 age group and the gender was balanced (22 female, 20 male). The cooperative experiences of the respondents were undertaken within a range of organizations within the sport and recreation industry (Table 1).

Table 1. Industry placements for the BSR cohort in 2002

	Number
Sports Performance centres	12
Secondary schools	10
Outdoor recreation/tourism	6
Recreation/ fitness centres	5
Regional/national sports	5
Regional Sports Trusts	4

Only 15 students received any payment for their work activities. This is consistent with the nature and constraints of the sport and recreation industry as 31 organisations were identified as non-profit or community funded.

Student learning
The questionnaire analysis affirmed that the students were achieving the learning outcomes that were expected in the cooperative education papers. Students indicated they had learnt oral and written communication skills, time management, reflective thinking, critical analysis, teamwork, problem - solving and research skills. The interview responses reinforced these key areas as well as highlighting that the students gained confidence and leadership skills along with a range of practical and technical skills relevant to their specific work activities.

The interviews confirmed the importance of the development of soft skills. Michelle commented that "They are the things that you can carry over into anything. They are the things that make you better in the workplace - no matter where you are, they are more important". In particular time management was said to " far outweigh anything" (Geoff). Many students (17/42) felt that the project had a major influence on the development of time management skills. They commented on the importance of planning, the need to be organised, to set goals and objectives and to allow time because they often had to rely on others. Undertaking the project also facilitated personal development by providing an increased responsibility, developing confidence and the use of initiative. Communication skills were developed through the process of formal report writing and the presentation of their projects to industry and academic staff.

The students also acknowledged that by undertaking the project they developed an understanding of the research process and associated research skills. Students also commented in the questionnaire that the "theory was related to the practical situation" and "demonstrated the benefits of research to the industry".

People interactions were highlighted as a major influence on student learning especially the effect of academic and industry supervisors. Academic supervisors were said by many to provide motivation, encouragement, guidance and feedback that "strengthens your work – encourages you to do more" (Susan).

Time in the workplace
Sixty seven percent (28/42) felt that the total of 350 hours in the workplace was either the right amount or not enough time. Comments from the questionnaire and interviews highlighted the importance of needing enough time to build relationships. For example one student said, "Time was right, any less and I feel we wouldn't blend in with the team members as well", and another commented "I think you get a better view. You get to know more people, you get to interact with more people in a year". This indicated the importance of the time in the workplace to engage in social interactions and to become part of the community of practice (Lave & Wenger, 1991).

Students also noted the time needed to build trust and learn in the workplace. Susan commented that " If it was shorter you wouldn't get so much responsibility because you have to build trust a bit- they'd have to learn about you and I think it is quite important to have a year to just learn

about each other." In Susan's placement, as in many others, the seasonal nature of the sector was also a factor, as she noted that "new opportunities arise over the course of a year as you go through the different seasons". Similarly Michelle felt that her placement "gave me deeper learning- with all the presentation skills and communication skills- like comparing it with doing it over one semester you would still get it all done but you wouldn't - it maybe more rushed you might have more time but some processes take along time".

However fourteen students (33%) felt there were too many hours. Questionnaire responses included that "it made it difficult to hold down a part time job", and "it was difficult to set objectives that would efficiently utilise the hours for learning, to balance academic and industry requirements. Time is not the issue, the utilisation to maximise learning is the issue". There was no relationship between the students' responses and whether they received payment for their work activities or whether they had previously worked fulltime for 6 months or more.

The responses from the questionnaire were mostly in favour of the current non - continuous or part-time placement structure. Alison commented that " comparing it with doing it over one semester you would still get it all done …it maybe more rushed… you wouldn't have as deeper learning as you would just doing it gradually over the year". Students felt that the placement structure gave enough time to still concentrate on university studies while getting a 'feeling' for the organization. The structure also provided a choice when the student undertook their work placement, which enabled them to have flexibility for other university and personal activities. Not all students utilised two set days per week, particularly in the sports performance area, where 7 of the 12 students had no set structure. Students were able to spread the work activities over the week and if necessary, to do more work in one week and less in another. However it was highlighted that the students must be aware of the need for good time management skills.

However 3 of the 4 participants that were placed in the regional sports trusts would have preferred to be full time or to do the 350 hours in a block in one semester – to give more focus on industry experience.

Relationship between learning and time
Fifty seven percent of the students (24/42) indicated the way they learnt changed over time. Responses from the questionnaire highlighted that students learnt more work related skills in Coop 1 but more work related knowledge and research skills in Coop 2. Students developed more independent learning and initiative during Coop 2 when they were undertaking their project work. The relationship between learning and time was described by one student as "Observation first then hands on practical", and another as "I was thrown in the deep end and learnt a hell of a lot. One student indicated that learning from others in the workplace was important in their comment that "The way I learnt first was just going out and doing it and then I probably looked at how others were doing it".

Amount of learning
The students were asked to draw a curve to indicate the amount of learning over the time course of the placement. A composite of the learning curve for all students is shown in Figure 1.
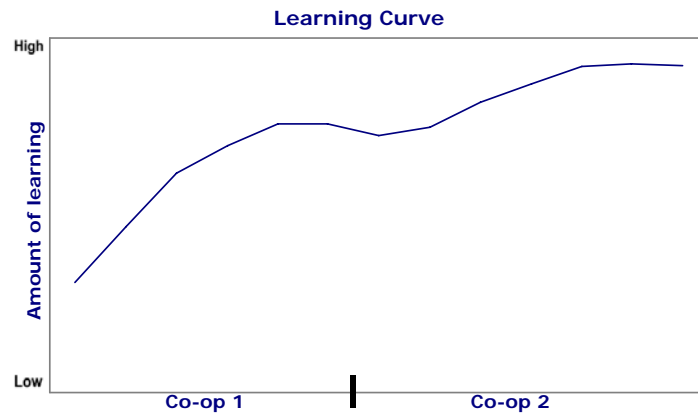
Figure 1. Amount of learning over time.

This curve indicates rapid learning at the beginning of the placement and then a further increase in the amount of learning during the first half of Coop 2. The analysis of the area under the curve determined that the amount of learning in Coop 2 was significantly greater than in Coop1 (p=0.000). This is consistent with a similar question in the questionnaire (Table 2).

Table 2. Comparison of the amount of learning between Co-op 1 and Co-op 2.

Amount of learning	Number
Co-op 1 > Co-op 2	9
Coop 1< Co-op 2	21
Coop 1 = Co-op 2	12

Examining the individual curves, 13 students did not follow the same overall trend as the composite curve. However the shape of the curve drawn was consistent with their questionnaire responses. Student comments did not indicate a clear trend as to possible reasons for the amount of learning in Coop 2 to be the same or less than for Coop 1.

Summary

The study findings indicate that the 350 hours students spent in the workplace over two semesters was important for relationship building in the workplace. This points to a need for students to develop social interactions with their workmates that may facilitate their enculturation (Hennessy, 1993) into the workplace community of practice (Lave & Wenger,1991).

The findings also indicate that the students' learning changed over time in the placement, as they moved from doing simple tasks and became involved in more complex tasks and thinking,

suggesting that they were learning through their participation (Rogoff, 1995) in the activities of the community.

The findings suggest that students learn more in the second half of the placement at a time when they are undertaking an independent project at work. This indicates that the role of the project may be significant in students' understanding of their work placement.

We conclude that the 350 hours of placement contributes to students developing their own meaning of practice in sport and recreation, and that greater learning may occur with more time in the workplace, and the use of tools such as projects that enhance students understanding of their workplace community.

References
Bajpai, A.C., Mustoe, L.R., & Walker, D.(1974). *Engineering Mathematics.* England. John Wiley & Sons Ltd. (p439)

Cohen, L., Manion, L., & Morrison, K. (2000). *Research methods in education* (5th ed.). London: Routledge-Farmer.

Eames, C. W. (2000). Learning in the workplace through co-operative education placements: Beginning a longitudinal qualitative study. *Journal of Cooperative Education*, 35(2-3), 76-83

Hennessy, S. (1993). Situated cognition and cognitive apprenticeship: Implications for classroom learning. *Studies in Science Education, 22*, 1-41.

Lave, J. (1991). Situated learning in communities of practice. In L. B. Resnick & J. M. Levine & S. D. Teasley (Eds.), *Shared cognition: Thinking as social practice, perspectives on socially shared cognition* (pp. 63-82). Washington, DC: American Psychological Association.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK: Cambridge University Press.

Merriam, S. B. (1988). *Case study research in education*. San Francisco: Jossey-Bass.

Parks, D. K., Onwuegbuzie, A. J., & Cash, H. (2001). Development of a Measure for Predicting Learning Advancement through Cooperative Education: Reliability and Validity of the PLACE Scale. *Journal of Cooperative Education*, 36 (1) 23-31

Rogoff, B. (1995). Observing sociocultural activity on three planes: Participatory appropriation, guided participation and apprenticeship. In J. V. Wertsch & P. del Rio & A. Alvarez (Eds.), *Sociocultural studies of mind* (pp. 139-164). Cambridge, MA: Cambridge University Press.

Salomon, G., & Perkins, D. N. (1998). Individual and social aspects of learning, *Review of Research in Education* (Vol. 23, pp. 1-24). Itasca, IL: F.E.Peacock.

The Sport Management Practicum @ Massey

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Abstract

This paper will provide a background and description of the Sport Management Practicum at Massey University involving both internal and extramural students. The practicum involves a variety of projects over a double semester period. The type of projects involve strategic, event and programme management. The paper will describe the nature of the partnerships developed with national and regional sport organisations, the student's experiences, the transfer of learning to the work place, and employment opportunities.

Recent years have seen the professionalisation of sport and leisure services throughout New Zealand. The provision of public, commercial and voluntary sector sport facilities and events has continued to expand. The effectiveness of such provision, however, lies in the hands of volunteers and the sports and recreation managers and officers. Therefore, managers within the New Zealand sport and leisure sector require a knowledge base which allows them to deliver sport and leisure experiences effectively and efficiently. Although the scale of facilities and events vary enormously, the principles for effective facility and event management are the same. The contemporary demands on sport and leisure managers require the development of specialised management knowledge and skills.

This paper provides a background and description of the Sport Management Practicum (SMP) program developed and successfully implemented at Massey University for both internal and extramural students. The Sport Management degree program situated in the College of Business began in 1992 and was the first of its kind in New Zealand. The development of the SMP recognised the increasing requirement of employers emphasizing practical experience, in addition to a strong background in theoretical business foundations. The structure of the SMP has remained largely unchanged during the past decade.

Parkhouse (2001) argued that cooperative education and practica internships provided discrete educational experiences and that the application of an experiential learning model (Kolb, 1984; Henry, 1989) in these sport management settings was appropriate. Kolb (1984, p.38) characterizes learning as "a process whereby knowledge is created through the transformation of experience". The transfer of learning is enhanced by the experiential learning process (Macaulay, 2000).

The linking of theory and practice through co-operative education experiences is an essential precursor for future sport management careers (Ammon, 2000; Parkhouse, 2001; Pitts, 2001). In addition, Southall, Nagel, LeGrande and Han (2003, p.28) argued that

> "successful sport management programs should maximize experiential learning experiences before students leave university….The key element of experiential learning is that it addresses the needs and wants of the learner, allowing the learner to directly experience the reality being studied."

The SMP is a for credit double semester paper, normally undertaken in the third year of study as part of a Bachelor of Business Studies or a Bachelor of Sport and Exercise, and a compulsory requirement in the Sport Management and Coaching major. The SMP offers a range of practical experiences in the sport and leisure management field. It consists of a period of supervised practical experience in an area related to the student's disciplinary and professional interests. Students are able to specialise in various areas of sports management and administration with on site supervision provided by the sport organisation in conjunction with the university's SMP course coordinator.

The SMP is a bridge for the student between the academic present, and the professional future. Students have the opportunity to merge their academic preparation with the practical experiences of the SMP. The SMP is a three-way partnership between the student, the practicum organisation, and the University. All parties in the relationship assume definite responsibilities, perform specific functions, and achieve benefits as a result of the involvement (Appendix A). This relationship has helped to produce an academic programme which is sensitive to the needs of organisations in the leisure industries, as recommended by Ferkins (2002). In turn, these organisations are more receptive to students of the course. The process is formalised by the first

piece of assessment, the Learning Contract (10%). This contract is a binding agreement between the student and the organisation, which includes a job description of the project, a detailed time line or critical path, personal learning objectives and evaluation methods. Some of the organisations have also introduced a formal induction process, recognising the importance of volunteers within the sport industry in New Zealand

The aim is for the student to be responsible for a particular practicum project, 'add value' to the organisation, and as much as possible, take work away from their organisation supervisor. Whilst the organisation is ultimately responsible for the project, the students are encouraged to take ownership of their projects. Examples of recent projects in Palmerston North are:
- Sports Events (Secondary School National Badminton, Basketball, and Hockey competitions)
- Special Events (Reuters CCF Games, KiwiSportacular, Active Age Games)
- Programmes (Primary and Secondary School Basketball and Small Black Rugby)
- Event series (Manawatu Triathlon)
- Conference (Secondary Schools Sport Coordinators)
- Awards ceremonies (Secondary School Sports Awards)
- Marketing (Lido Aquatics opening; Squash Palmerston North Gym opening)

About twenty students internally and extramurally find practicum placements. Most students find placements on their own and/or are assisted by the network of contacts from previous placements and former practicum students who are now working for sport organisations. Examples of the range of partner organisations linked to the Palmerston North campus students are:
- Regional Sport Trusts (Sport Manawatu)
- Regional Sport Organisations (Rugby Basketball, Netball, Cricket, Hockey, Soccer)
- Facility and Event Management (Arena Manawatu; Lido)

Extramural students are placed with a variety of organisations all over New Zealand and a few are placed overseas. These placements do present issues related to the level of organisation support, the level of the student's project involvement, and standards of on site supervision. A further issue is also the increasing number of international students and their level of English conversation and comprehension when placed in an unfamiliar work context and environment. There is also limited funding to assist the university course co-coordinator in visiting these students.

The SMP consists of approximately 180 hours of work experience, completed part-time over a double semester period, in the sport and leisure industry plus an academic evaluation component. The industry is defined widely to include sports clubs and associations, recreation centres, commercial and institutional fitness centres, consultancy work, swimming pools, park and reserve management, adventure recreation activities, activities for special populations, therapeutic recreation management, and outdoor recreational activities. The SMP aims to provide an opportunity to apply theoretical knowledge gained in academic studies to the 'real world' and to prepare the student for a career in the leisure industry by providing an opportunity to develop relevant professional skills.

In order for transfer of learning to take place there also needs to be a strong focus on self (Butler, 2001). Hager (1999, p.72) states that "learning from experience is fundamental to individual personal growth and development" and that "in a rapidly changing world successful and competitive enterprises require workers who have certain broad generic skills". The importance of personal development in the area of management education is increasingly

being recognized (Hager, 1999; Whitaker, 1997). "Managers and organizations will need to accept that professional development will have to place personal goals alongside professional ones to help in the creation of a more integrated and holistic self-concept" (Whitaker 1997, p.21). Management education must therefore assist in preparing managers for the challenging work environments they are likely to encounter as professionals working within often complex and changing organizations (Reynolds, 1998).

Frontloading the SMP with prescribed specific objectives did not take place. The rationale for this is that each student comes with different experiences, reflective of their stage in life and therefore will gain different learning from the same experience. The SMP has broad general objectives that are reflective of the development of both personal and professional objectives for each student.

- Apply theories, concepts and skills learned from previous study/experience to a practical work situation;

- Discover individual strengths, limitations and suitability for employment in a particular field or occupation;

- Establish personal learning goals, objectives and performance criteria by which the student's placement performance can be evaluated.

The assessment procedures, in addition to the learning contract (10%), for the SMP consist of the following components, which emphasise the role of the student as a reflective practitioner (Schön, 1987).

1. Analysis of a management issue related to the practicum management (20%) – this involves interviewing a manager within the placement organisation about a current management issue of significance, and then providing a report indicating recommendations.
2. Log book completed by students on aspects of the workplace and work experience (20%) – this diary records and reflects upon, duties performed, work behaviour, and linking management theory to practice.
3. Practicum evaluation report (30%) – this requires the students to reflect on key aspects of theory and practice, critically assessing the success of the project by reviewing objectives, tasks/responsibilities undertaken, evaluation methods, and final outcomes. It also requires the student to analyse how effective they were at achieving personal objectives and critically evaluate their overall performance utilising performance criteria from the learning contract. There is opportunity to identify strengths and weaknesses, suggest areas for future professional development, and comment on how the SMP experience could be improved for the student and for the placement organisation.
4. Supervisor Evaluation (20%) - The final piece of assessment is the workplace supervisor's assessment of the practicum performance. This is done formally through a written response and in discussion with the academic supervisor.

There has been a wide range of employment opportunities gained by students as a result of the SMP experiences. For example,

- Strategy and Management – National and Regional Sport Organisations
- Marketing - IMG
- Events – Rugby World Cup, City Councils
- Facilities – Arena Manawatu, Eden Park
- Programming – Regional Sport Trusts

The following comments from students are examples of how the linking of theory and practice through the co-operative education experiences has benefited them in their future sport management careers. Both these students had placements involving event management projects at a Regional Sports Trust, Sport Manawatu:

> "I am now Arena Manawatu's full-time Bookings Facilitator; my job is to do part admin, and mainly bookings and relationship building with community users…Just what I studied my degree for. Thanks again for being such a great lecturer, my interest in wanting to work in a facility was mainly from your [facility and event management] paper".

> *"I was offered the job as Sport Club Development Officer for Massey University. I'm very excited about the excellent opportunity…Both the Sport Practicum, and Sport Facility and Event Management papers will be of vital importance to my job. I enjoyed both these papers and found them to be among the most valuable of my time at university".*

Further research is currently being undertaken to support the anecdotal evidence related to personal and professional benefits of the SMP experience for the students and also the transfer of learning to the workplace. A qualitative approach using semi-structured interview and/or open ended questionnaires is proposed. Triangulation of these findings from work place supervisors and the researcher as a participant observer may enhance this research.

References

Ammon, R. (2000). The globalization of sport: Preparing sport managers fro the 21st century. *International Journal of Sport Management*, 1(3), 151-153.

Butler, J. (2001). *Reflection: Images of the self in action.* Paper presented at the Breakthroughs Conference, 15-19 January, Auckland.

Ferkins, L. (2002). Sporting best practice: An industry view of work placements. *Asia-Pacific Journal of Cooperative Education, 3*(2), 29-34.

Hager, P. (1999). Finding a good theory of workplace learning. In D. Boud & J. Garrick (Eds.), *Understanding learning at work* (pp. 65-82). London: Routledge.

Henry, J. (1989). Meaning and practice in experiential education. In S.W. Weil & I. McGill (Eds.), *Making sense of experiential learning: Diversity in theory and practice* (pp.29-33). Milton Keynes, UK: Open University Press.

Kolb, D.A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, N.J.: Prentice Hall.

Macaulay, C. (2000). Transfer of learning. In V. E. Cree & C. Macaulay (Eds.), *Transfer of learning in professional and vocational education* (pp. 1-26). London: Routledge.

Parkhouse, B. L. (2001). *The management of sport: Its foundation and application* (3rd ed.). New York: McGraw Hill.

Pitts, B.G. (2001). Sport management at the millennium: A defining moment. *Journal of Sport Management, 15*(10), 1-9.

Reynolds, M. (1998). Reflection and critical reflection in management learning. *Management Learning, 29*(2), 183-200.

Schön, D.A. (1987). Educating the reflective practitioner: Toward a new design for teaching and learning in the professions. San Francisco: Jossey-Bass.

Southall, R.M., Nagel, M.S., LeGrande, D., & Han, P. (2003). Sport management practica: A meta-discrete experiential learning model. *Sport Management Quarterly*, 12(1), 27-36.

Whitaker, P. (1997). Changes in professional development: The personal dimension. In L. Kydd, M. Crawford & C. R. Riches (Eds.), *Professional development for educational management.* (pp. 11-25). Buckingham: Open University Press.

Appendix A

Student benefits
- To understand the structural, organisational and operational aspects of a sport organisation;
- To plan, implement, and evaluate independent projects that benefit the organisation;
- To formulate goals and measurable objectives to be accomplished;
- To understand the relationship between theory and sport management practice necessary for managerial or supervisory positions.

Organisation benefits
- To establish a co-operative working relationship with the University;
- To participate in the preparation of future sport and leisure management professionals;
- To increase awareness of new and innovative ideas in the sport and leisure management field;
- To develop and/or create new programmes or projects.

University benefits
- To evaluate the effectiveness and relevance of the course curriculum in relation to the current needs and trends of the various industry sectors;
- To provide university contact with professionals in the field;
- To inform organisations about the University curriculum, new ideas that are being generated, and the latest research development in the field.

Communities of learners: students learning while practising their skills

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Abstract

An example of a "community of learning" can occur when teachers study a particular course within a qualification. Within this discussion session, Elaine and Rosie discuss two communities of learning: Elaine facilitated a course for experienced teachers who work in any kind of teaching environment, and Rosie was a student within that course; Rosie facilitates the learning of early childhood student teachers and supervises their practical placements. In each case the students practice their teaching in different settings from each other. The students share discussions about their teaching experiences with their peers in the class. This session focuses on how Rosie and Elaine foster shared learning among the students in their courses. Each teacher in their courses is a part of two communities: one as a student and one as a teacher. They argue that the skilled learner is able to take questions and understandings from one site to the other. It is the role of the teacher-facilitator to foster learning skills which link these two learning spaces.

Introduction

Within teacher education, we have all heard of stories that the school experience is seen by the student teacher as much more relevant than the experience at College. The theory we espouse challenges this contrast. It is not helpful to make judgements about whether one teaching/learning site is more relevant or useful than the other. It is more useful to ask questions about how the two sites of learning might interact and inform each other.

"Does this apply to bakery?", asked a colleague, "How would this idea work for a baker's apprentice who argues that the theory he is being taught is not relevant in his work placements? My son is dropping out of his apprenticeship because he has lost interest and cannot see the sense in it all."

"Yes," we reply, "it applies."

If there is a mismatch between what is being taught and what is being experienced, then it is the role of the teacher in the classroom, and of the associate in the workplace, and of the student, to identify the mismatches and to see where the tensions lie. The student has the responsibility of asking questions and identifying her/his emerging understandings. The teacher-facilitator needs to teach this skill of making links and asking questions. Society cannot build systems where there will be a unified message coming from industry and from the classroom: change is too rapid now, ideas are too complex, we no longer believe that there is a 'best' answer to apply in each situation. What is needed is to develop skills so that each practitioner is able to learn from varied experience, both practical and theoretical. It is on the basis of this kind of learning that we each make decisions in our daily lives.

We seek to capitalise on the tension between workplace and classroom theory rather than to eliminate it: we suggest that what is important is not the tension itself, but rather the way that students, teachers and associates use this potential for disagreement as a catalyst for learning. We

argue that it is *harmful* to learning to ask whether one site of learning is better or more relevant than the other - it is more important to wonder about the differences**;** we argue that the *skilled learner* is one who carries questions and observations from one setting to the other so that each of the participants, the student, the teacher, and the associate, are able to grapple with the issues raised; we argue *that a key role of the teacher* is to facilitate the skills necessary for robust, healthy conversations to take place among the participants; we argue that *the classroom* is the place where diverse views from a variety of workplaces can come together, not to create a 'truth about best practice', but to allow the students to debate relationships between theory and practice.

When students identify tensions between their classroom and their workplace experiences, they raise questions which are worthy of discussion. When students have an "aha" moment and are later able to share their insights with others, two things happen**:** they adjust and consolidate their emerging understandings, and they enable others to learn from them. When students notice a mismatch between theory and practice, and question the difference, they open up the possibility for learning, both their own learning, and collective learning for the teacher-associate-student triad. If students merely make judgements about which site of learning they preferred they escape the need to learn from the differences, but by raising questions about the mismatch, students open up meaningful investigations.

We begin by describing our respective classrooms as cohort communities, and highlight the fact that Rosie is a member of both communities of learning: she is both student and teacher. Secondly we use a story from Rosie's teaching to explain our emerging understandings of the roles of teacher and student: skilled learners carry questions and insights from one setting to the other, and back again. We conclude by sharing some of the insights and highlighting some of the questions which have been generated in the process of developing these ideas.

Describing our practices: working within cohort communities

Lawrence (2002: 83) refers to cohort groups as (usually) strangers who are connected only through a mutual desire to complete a common course of studies: they come together with the expectation and willingness to work collaboratively. Even though cohorts of students are not a community in an ongoing sense because their formal links end when the courses end, students who are expected to work collectively and discuss their experiences do form communities where they establish their own ways of working together and supporting each other in their learning.

During 2002, Elaine led the reflective practice strand within a course for postgraduate teachers: TL811 *Critical Reflection on Theories and Practices of Teaching and Learning*. Rosie, who works as a teacher within a diploma of teaching in early childhood at another institution, was a participant in the course. Two years later we have come to appreciate the ways in which Elaine's work with practising teachers and Rosie's work with pre-service teachers are similar. In each case we are working with students who gain practical experiences related to the taught curriculum through their work. The students are all employed or have practicums outside the institution where they are studying; in each case they are developing and refining skills that relate to their paid employment (or in the case of pre-service teachers, their future employment).

Figure 1   Cohort communities: learners belong to other communities

(i) The postgraduate cohort, where Elaine is teacher and Rosie and others are students is shown by an oval. Rosie and others belong to other teaching/learning communities, represented by the vertical lines.

| | A | B | C | Rosie | D | E |

Elaine is teacher

(ii) The diploma of teaching cohort where Rosie is the teacher of Julie (not her real name) and other students who each have their own practicum-teaching sites.

| | H | I | J | Julie | K | L |

Rosie is teacher

(iii) The early childhood cohort where Julie is the teacher of Kiri (not her real name) and other children who are each living and learning at school and at home and in other places.

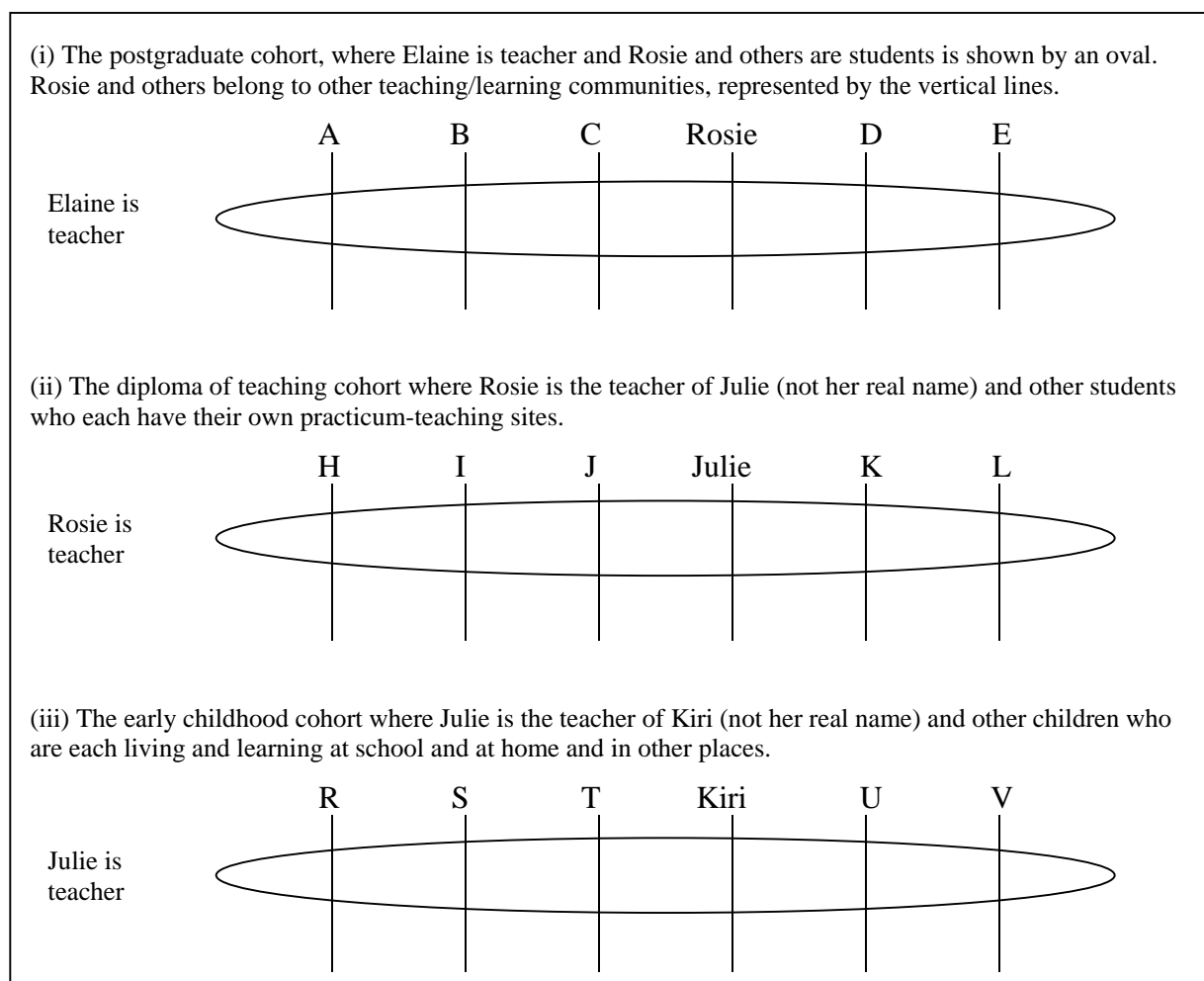| | R | S | T | Kiri | U | V |

Julie is teacher

Figure 1 illustrates the idea that each participant is a member of both the community of learners (the course of study) and of the community of practice (the practicum). The ovals refer to the cohort communities who assemble in class with the teacher where the focus is on learning (or making sense of links between theory and practice). In diagram (i) for example, the oval shows that all the participants (A, B, C, Rosie, D and E) take part in the discussions in the postgraduate classroom, while the vertical lines show that Rosie (and H, I, J, K and L) are each part of another community when they are away from class: this latter community is illustrated in diagram (ii), etc.

There are many similarities in the ways in which we, Rosie and Elaine foster learning, even though the contexts of our teaching are different. Elaine teaches a postgraduate course in which the participants reconsider theory surrounding the notion of reflective practice**:** they question the very notion of reflection and wonder about its effect on teachers**;** they trial different strategies suggested by various theorists**;** they develop a portfolio of their experiences**;** they seek to understand what assumptions influence the choices they make as teachers**;** and they talk with colleagues, they gain insight by asking questions of their students, they think back over their experiences as learners, and they search the literature for ideas that might challenge their strongly held views.

The participants in the course were all practising teachers in schools or early childhood centres or were involved in various forms of adult or tertiary education. Participants lived in various parts of New Zealand and came together only once for a three day workshop. Other communications took place using flexible teaching methods**:** readings were posted to students**;** discussion took place on an Internet site (StudentNet) where different groupings of students discussed various issues of

common interest**;** we held two telephone conferences; there were also email and telephone conversations between individual students and Elaine.

Rosie teaches third year student teachers in the Diploma of Teaching in Early Childhood Education in a small private College of Education. The students come from throughout New Zealand to attend the three year course. The programme comprises face to face classes and practical placements which are undertaken in a variety of early childhood settings. During the programme, they are involved in a variety of informal learning interactions.
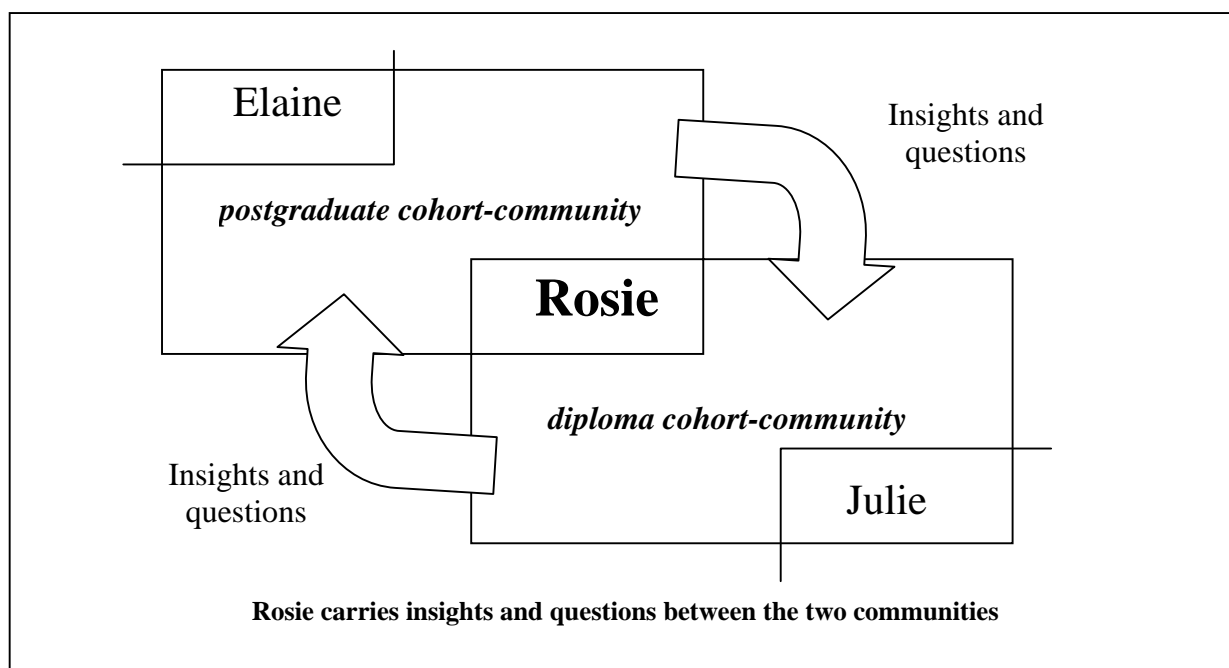
Part of the programme requires the students to meet weekly in informal study groups where they discuss practicum or assignment requirements. Each group member is expected to record her/his learning as a result of these discussions and to submit these reflective comments to Rosie as part of an ongoing conversation. This means that each student is working with peers, reflecting individually on their learning, and taking part in an ongoing dialogue with Rosie. Rosie also writes in an individual journal which is made public to the students who may discuss this material in their next weekly group meeting (referred to as 'Friday Forum'). The conversations (written and oral) within this arrangement include both material covered within the formal curriculum and experiences gained from practicum.

Although the contexts are different, there are similarities between our groups. Both cohorts of students met with each other in a variety of informal ways. For example, Rosie met with classmates over lunch where current assignment work was discussed, and she knows that her students meet in similar ways in a variety of places. Elaine is aware of one student who lacked confidence and sought out support from another student**:** unknown to other participants, a separate tutorial space was created on StudentNet; the resulting conversations fostered confidence. Rosie has teamed a student who lacks confidence with another who is able to scaffold her learning and foster her independence. Strategies are different, or evolve**:** texting between cell phones for Rosie's students takes the place of the mainly-landline phone calls of Elaine's more mature students of two years ago.

Emerging insight: learning emerges across the communities

Parallels between the two cohort communities can be extended. We are both aware that some students who achieve well are particularly skilled in using the one setting to challenge assumptions made in the other setting, and they use these questions to enhance their learning. Our insight is that the *skilled learner* is able to take questions and understandings from one site of learning to another. A skilled learner investigates the ways in which meanings she/he constructs in one location are helpful in other locations. This is a reciprocal relationship in that experiences from the practicum inform discussions in the classroom and vice versa. Rosie illustrated her skill when she talked about her experiences and raised questions within StudentNet, and when, in her own teaching, she trialed and adapted strategies such as keeping journals and used the literature (for example, strategies from Brookfield, 1995) to promote discussion among her own students.

Figure 2 The communities of a learner: Rosie is linked to two cohort-communities.

Elaine

postgraduate cohort-community

Rosie

Insights and questions

diploma cohort-community

Insights and questions

Julie

Rosie carries insights and questions between the two communities

Later, as we talked about this, Rosie identified that the teaching strategies Elaine was using were ones which she was now using more within her own teaching. What happened in Elaine's class was echoed in Rosie's class, what happened in Rosie's class was echoed in those of her students. This is illustrated in figure 2 which shows Rosie's involvement both as a student in the postgraduate classroom and as a teacher of diploma students within the early childhood college. The arrows in this diagram show that Rosie's questions and insights are carried between the two communities.

The pattern continues. Rosie tells a story which links the diploma classroom with the early childhood centre where her student, Julie was working. Julie now becomes the person who links two cohort communities together as illustrated in figure 3. Julie becomes the person who, as a skilled learner, carries ideas questions between settings.

Rosie was concerned that Julie, when on teaching practice, was acting as "children's friend" rather than standing aside and allowing the child time to learn. Current theory in early childhood argues that one of the teacher's roles is to facilitate children's learning by encouraging them to take the initiative and to think and problem-solve for themselves (Ministry of Education, 1996). Julie tended to "play" with the children and do some of the activities herself and make suggestions about what they might do next. This had been identified as a problem on the previous placement: Rosie and Julie agreed that a focus for Julie's next practicum placement would be to step back from playing with children, to observe more, to ask open-ended questions, and to facilitate play rather than take part herself.

During a visit to the centre where Julie was on her practicum placement, Rosie saw Julie making the same kind of mistake; she reminded Julie of her focus for this placement; and stepped back and away from the teaching space. Rosie reports:

"Julie carried on with her teaching and I moved aside … Julie went on with her teaching … then … it was like a light suddenly went on … she looked at me and said "Oh, I know what it means now."

We argue that the skilled learner is able to carry insights and questions between the sites of learning. We also argue that the role of the teacher-facilitator is to foster learning skills which link these two learning spaces. The aim is to build the student's skill in learning within both the

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classroom and the workplace. In Julie's case, (a) she selected her focus before teaching practice based on analyses of her previous experiences; (b) she was reminded of this at a critical moment during teaching practice and (c) she then gained an insight which resonated; (d) she consolidated her learning in the rest of her teaching, and (e) she later reported to her classmates, in the Friday Forum within the diploma programme, that she "felt like a real teacher." It is evident that Julie had learned to act in ways that she and her cohort sees are appropriate for a teacher: she has integrated theory and action and, furthermore, she was able to talk about her learning: her learning made sense of links between workplace experience and in the classroom theory.

Figure 3 The communities of a learner: Julie is linked to two cohort-communities.

Julie carries insights and questions between the two communities
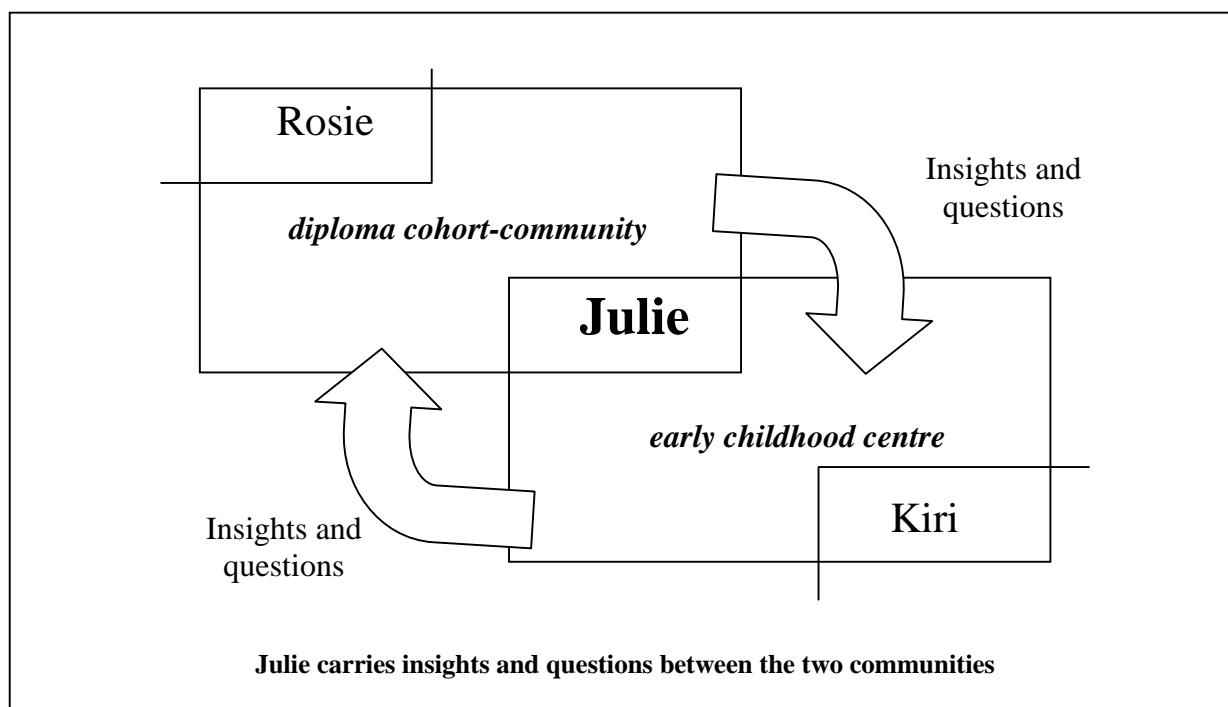
Rosie played two roles here. Firstly, as teacher who is supporting students to learn to be early childhood teachers, she helped Julie identify her need, she reminded her of this need during placement, and she debriefed with her and celebrated the learning that had taken place. Secondly as a teacher who is helping students to gain effective skills to apply to ongoing learning, Rosie has put in place processes whereby Julie knows that she is expected to make links for herself between the things that happen in class and in the workplace: reflective journals and Friday Forums require Julie to identify places where there is a mismatch between theory and practice, and to investigate these, or to identify places where her learning can be enhanced by adapting the strategies used by other teachers. Julie has not only learnt to let her learners do the thinking, she has also come to realise that her own learning was enhanced because her teacher stepped back and left her to build her own experiences, but also supported her by challenging her to think for herself and to talk about her learning.

Similarly, Rosie reports that Elaine had a strategy of allowing groups to find their own interpretations of readings by *not* answering direct questions to her, but by standing back from discussion: teachers are left to grapple with their own issues related to the reading. This strategy has been reinterpreted and adapted by Rosie, in her role of the teacher-facilitator: she encourages her students to discuss issues for themselves in the Friday Forums and participates only when she

sees the need to alert students to assumptions they may be making or to link their ideas back to the curriculum. Julie's insight into letting the child "do the thinking" is a multiple re-interpretation and adaptation of many other teaching strategies.

At all levels, not only in early childhood, one of the teacher's roles is to facilitate learning by encouraging learners to take the initiative and to think and problem-solve for themselves.

The teacher-facilitator, therefore, needs to foster strategies that enhance such learning. We have highlighted the need for students involved in cooperative education to capitalise on the differences between two sites of learning by identifying insights and raising questions. The questions and insights that arise in one setting are the challenges the learner can take to the other space. The learner has the responsibility of investigating tensions between the two settings, with the support of both teacher and associate, and in the context of the classroom and of the workplace.

Emerging questions:

We have argued that the tension, within cooperative education, between workplace learning and classroom learning can set one site of learning in opposition to the other: the tension might be eliminated, or at least reduced, by bringing practice and theory closer together so that the associate and the teacher agree on what should be taught, and how, and share understandings about what is good practice, and how innovations are introduced into practice. This approach is unrealistic: even if it were possible for teachers and associates to agree on such complex things, there is no time for extended discussions between them.

The challenge, therefore, for teachers and associates in workplaces is to foster students' questioning skills and to foster their ability to relate theory and practice. Our story has told of emerging insight into teaching, it does not tell of how the questions that Kiri, or Julie, or Rosie asked led to cohort discussions where fresh understandings emerged. We argue that the role of the teacher is to foster the skills of noticing patterns and asking questions, but we recognise that asking questions is very difficult. It is difficult to ask questions that challenge our own assumptions, and it is even more difficult to respond to questions raised by student teachers. In order for the model we espouse to work, relationships within the teacher-associate-student triad would need to be negotiated so that each partner understands and values the questioning, investigative, problem-solving approach to learning that is being fostered.

By focusing on the cohort communities and the ways that insight emerges across communities, we have shown one way that learning occurs for teachers and those who are learning to be teachers. We have defined the skilled learner as one who reflects on differences between theory and practice and who seeks insights and questions that will enhance their understandings. We have not addressed the ways in which teachers might foster these skills in students, associates and themselves, nor have we explained how the conditions for this learning can be fostered within the three-way relationship among associate, teacher and student. But questions are emerging: as we finish the writing of this paper Rosie talks:

That teacher-associate triad is so important - I wonder about how to make it safe for students to let their associates know about their concerns - the journal may be one way, where the associate gets to read the student's journal, and the student words her concerns in ways that are not too challenging. I wonder about how to make it safe for the associates too, because it can be very challenging for them if a student asks too many questions or asks them in a way that is undermining …

Just as insights emerge within cohort communities, questions emerge as we discuss ideas across our networks: questions arise when we are challenged to explain our ideas in other settings.

References

Brookfield, S. D. (1995). *Becoming a critically reflective teacher*. San Francisco: Jossey-Bass.

Lawrence, R. L. (2002). A small circle of friends: cohort groups as learning communities. *New directions for adult and community education*, 83-92.

Ministry of Education (1996). *Te Whāriki: He whāriki mātauranga mō ngā mokopuna o Aotearoa: Early childhood curriculum.* Wellington: Learning Media.