Research Report

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Student Learning in Relation to the Structure of the Cooperative Experience

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Amongst cooperative education programs there is great diversity in placement length and structure, often governed as much by administration rather than learning opportunity. This paper describes a case study project that investigated students' perceptions of how the structure of the placement impacted upon their learning. The findings indicate that the 350 hours of placement was perceived as important for relationship building, developing trust and contributed to students defining their own meaning of practice in sport and recreation. Learning may be enhanced with more time in the workplace, and the use of tools such as projects that assist students understanding of their workplace community. (Asia-Pacific Journal of Cooperative Education, 2005, 6(2), 26 -31).

Keywords: Cooperative education; learning; program structure; New Zealand

Amongst cooperative education programs there is great diversity in program, and in particular placement, structure. It appears that placement structure is governed more by organizational influences such as institutional timetabling, placement availability and faculty commitment than by educational imperatives. This paper explores the student perceptions of the imposed placement structure in a sport and recreation cooperative education degree program in New Zealand.

In a survey of sport degree programs, selected from four different countries, Fleming and Ferkins (2005) found that there is little consistency in placement structure. Many sport students have more than one placement experience during their degree and the placements are undertaken either continuously, that is, full-time, or simultaneously with other courses over a number of days per week. Some placements are carried out during term-time while other students utilize the vacation periods to undertake work experience.

The structure of the placement component in cooperative education programs is often dictated by the number of academic credits or points rather than for pedagogical reasons. The amount of hours completed ranges from as little as 30 hours for a coaching placement, (undertaken as a component of a course) to 750 hours, or the equivalent of 10 to 60% of a full-time year of study (Fleming & Ferkins, 2005).

Remarkably, little research has been published to provide evidence supporting a particular placement structure on learning grounds. The research reported here is based on a study that sought to investigate learning on placement associated with placement structure in a sport degree program in a New Zealand higher education provider.

Theoretical Perspectives

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 (see, e.g., Cates & Jones, 1999; Eames & Cates, 2004; Parks, Onwuegbuzie & Cash, 2001; Stull, Crow & Braunstein, 1997). Recent research (Eames, 2000, 2003) 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. At the same time researchers have been recognizing learning as a legitimate activity within workplaces (Billett, 1999; Boud & Garrick, 1999; Davies, 1998), and theorizing about the processes underlying that learning.

Theoretical ideas that have been suggested to explain the nature of learning outcomes and processes at work had an early basis in the notion of experiential learning (Dewey, 1938; Kolb, 1984). More recently, the focus has fallen on the social and cultural environment of the workplace (Lave, 1991; Salomon & Perkins, 1998). With this focus, the workplace learner is seen as being situated alongside practicing professionals in a community of practice (Fuller, Hodkinson, Hodkinson & Unwin, 2005;

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Lave & Wenger, 1991), engaged in authentic activities through which the learner undergoes a form of apprenticeship (Billett, 1994). This process is seen not only to involve learning technical skills in the traditional sense, but also to involve cognitive skills (Berryman, 1993; Brown & Palincsar, 1989). This 'cognitive apprenticeship' through engagement in the socially and culturally-determined activities of the workplace can lead to enculturation of the learner into the community of practice (Rogoff, 1995).

These sociocultural ideas of learning have been drawn on to examine learning in cooperative education (Eames, 2003). Linn (2004) argued that situated learning theory that locates students as legitimate participants in placement communities provides a useful way of conceptualizing the learning that cooperative students can achieve. This situated learning would be influenced by time and place, and therefore it was considered that these learning ideas might prove useful to examine learning over time in a placement. They may also allow an exploration of students' experiences of learning according to the structure of their placement program. This approach dictates a focus on student learning that asks not only about what a student learns, but how they learn, who they learn from, when they learn, and analysis of data can be underpinned by notions of social and cultural determination.

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 case study project that investigated BSR students' perceptions of their learning on placement. The objective of the research was to examine how the structure of the placement program at AUT impacted upon student learning.

Context of the Study

The BSR is a three-year program designed to prepare students for careers in the areas of sport science, sport and recreation management, coaching, fitness, physical education or outdoor education. 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, 15-week, semesters of the academic year within one organization. During *Cooperative 1* the students complete 200 hours of workplace activities. In addition to the workplace activities 100 hours are allocated as academic time for the students to reflect on and critically analyze their experiences as well as to design a project that is beneficial to their organizations. The project design must demonstrate the application of the research process in an industry context.

Students may develop and implement physical activity or training programs within a school or the community. Some projects may include market research, customer satisfaction surveys or program evaluations. Other projects include reliability and validity studies for equipment or fitness testing protocols with athletes or members of the community. During *Cooperative 2* the students are required to complete 150 hours of workplace activities, 150 hours of academic time is allocated to enable the students to complete, evaluate and present their industry related project as well as critically analyze their overall cooperative experience.

The students are supported throughout their learning experience by an industry supervisor and an academic supervisor from the university. Students meet with the academic supervisor on campus generally once per fortnight. During the one-on-one meetings students are encouraged to critically reflect on their experiences. In addition the student will receive guidance in relevant areas related to the development and completion of their projects. Where students are located a distance from the university, regular communication occurs using email and telephone. The industry supervisor guides and supports the student in the workplace and has a key role in negotiating with the student appropriate work activities that will provide learning opportunities that allow the integration of theory and practice.

Industry placements include national, regional or local sport organizations (e.g., New Zealand Soccer, Auckland Rugby Football Union), community recreation and fitness centers, outdoor tourism operators, schools (physical education departments or sport coordinators), regional sport trusts and sport performance centers. The workplace activities are variable depending on the nature of the organization. Some examples include: coaching, fitness training or fitness testing teams and individual athletes; organizing sport and recreation events; assisting with marketing and promotion of sport and recreation products or services; assisting physical education teachers and sport coordinators in schools; administration activities for national or regional sport organizations; facilitating outdoor education activities for school camps or adventure tourism attractions; and, assisting with physical activity programs in community leisure and recreation facilities.

Methodology

The research question that was addressed in this study was: *How does the length and structure of the cooperative placement affect the learning experience for BSR students at AUT?* As this question focused on the students' experiences and sought to interpret the meaning of those experiences, an interpretive methodology was employed in the study (Cohen, Manion & Morrison, 2000). As the study focused on the BSR at AUT, a case study approach (Merriam, 1988) was used to investigate the learning experiences of the cooperative education students. Data collection was underpinned by sociocultural views of learning that emphasize the situatedness of learning, and social and cultural influences. A combination of methods for data collection was chosen to provide a greater depth of understanding and give confidence in the interpretation of the data (Coll & Chapman, 2000).

The research consisted of two stages. In the first stage a written questionnaire was given to all students who

had completed both *Cooperative 1* and *Cooperative 2* in 2002 (N= 48). From this cohort 42 students completed the written questionnaire (response rate 87%). The questionnaire was anonymous and included both open-ended questions and scaled responses. Students were asked to indicate what they felt they had learnt during their placement experience, and to comment on what they felt they had learnt from doing the industry project, as well as factors and influences on their learning. The questionnaire also asked for comments on the non-continuous structure of the program and to rate on a scale 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 learning curve was analyzed using Simpson's Rule, a numerical technique to determine the area under an irregular shaped curve (Bajpai, Mustoe & Walker, 1974). Each curve was divided into 13 equal segments and the height of the curve at each segment was measured relative to the horizontal axis. The following formula was used to determine the area for each curve for *Cooperative 1* and *Cooperative 2* (where H is height in mm, and H1 to H12 are heights at equal spacings under the curve):

A (Coop 1) = (H0 + (H1x4) + (H2 x2) + (H3 x 4) + (H4 x2) + (H5 x4) + H6) / 3

A (Coop 2) = (H6 + (H7x4) + (H8 x2) + (H9 x 4) + (H10 x2) + (H11 x4) + H12) / 3

This formula provides an exact answer if the curve models a cubic or quadratic function. The assumption is that most curves can be modeled by a series of cubics. Simpson's Rule can be applied to determine the area under an irregular curve provided that the segments are small and that the curve does not change shape too quickly.

The area under the curve for *Cooperative 1* was then compared to the area for *Cooperative 2* using a paired t-test with α 0.05. The heights at each segment were averaged for all curves to construct the composite curve displayed in the results section.

This first stage then provided some quantitative and qualitative data that indicated some overall trends. Quantitative data was tabulated, and for the learning curve, statistically analyzed, while the qualitative comments were content analyzed and interpreted.

The second stage involved in-depth semi-structured interviews (Cohen, Manion & Morrison, 2000) with seven volunteers from the cohort. This stage sought to probe deeply into the learning issues raised by the responses to the questionnaires. Interview prompts included: what did they learn and when did this learning occur; what were the major influences on learning; did the way they learnt and the amount they learnt change over the time course of the experience; how did the length of time and structure affect the learning experience. 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. The interview transcripts were content analyzed in an interpretive manner. Pseudonyms have been used in this paper in reporting student comments.

TABLE 1
Industry placement organization types for the Bachelor of Sport & Recreation at Auckland University of Technology.

Organisation Type	N
Sport performance centers	12
Secondary schools	10
Outdoor recreation/tourism	6
Recreation/ fitness centres	5
Regional/national sport	5
Regional sport trusts	4

The research findings are now discussed under themes that emerged from the data.

Research Findings

Some 42 students completed the questionnaire. The majority (90%) of the respondents 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).

Only 15 students received any payment for their work activities. This is consistent with the nature and constraints of the sport and recreation industry in New Zealand. Indeed, 31 of the organizations the students were placed with are categorized as not-for-profit or community funded. Organizations in this sector of the industry often have few paid employees, and therefore rely heavily on volunteers (Hayes & Gunson, 1999).

Learning Outcomes

The questionnaire analysis affirmed that the students perceived that they were achieving the learning outcomes that were specified 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 interpersonal skills. Michelle commented, "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". For example, 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 organized, to set goals and objectives and to allow time because they often had to rely on others. For some students, time management was said to "far outweigh anything" (Geoff). 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 (34/42) and the presentation of their projects to industry and academic staff (40/42).

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 industry and academic supervisors. Students commented in the questionnaire that they learnt through industry supervisors and staff being helpful, friendly and willing to share their knowledge. 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

Students were asked whether they felt the current requirement for 350 hours in the workplace was too little, too much or about right. Sixty seven percent (28/42) of participants felt that the requirement 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".

Students also noted in their comments 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 a long time".

However 14 students (33%) felt there were too many hours required in the workplace. Questionnaire responses included that so many hours on placement "made it difficult to hold down a part-time job" as well, and "it was difficult to set objectives that would efficiently utilize the hours for learning, to balance academic and industry requirements. Time is not the issue, the utilization to maximize learning is the issue". There was no significant relationship between the students' responses about time in the workplace and whether they received payment for their work activities, or whether they had previously worked fulltime for six months or more.

Students were asked how they felt about the current non-continuous or part-time placement structure. The responses from the questionnaire were mostly (30/42) in favor of the current 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 during the week or semester the student undertook their work placement, which enabled them to have flexibility for other university and personal activities. Not all students utilized two set days per week, particularly in the sport performance area, where seven 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, three of the four participants that were placed in the regional sport 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.

Learning and Time

Students were asked how they felt their learning might have varied over time during the cooperative experiences. 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 *Cooperative 1* but more work related knowledge and research skills in *Cooperative 2*. Students developed more independent learning and initiative during *Cooperative 2* when they were undertaking their project work. One student described the way they learnt as, "observation first then hands on practical", and another described their learning experience 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. 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 *Cooperative 2*. The analysis of the area under the curve determined that the amount of learning in *Cooperative 2* was statistically significantly greater than in *Cooperative 1* ($p=0.000$). This is consistent with responses to a similar question in the questionnaire (Table 2). Examining the individual learning

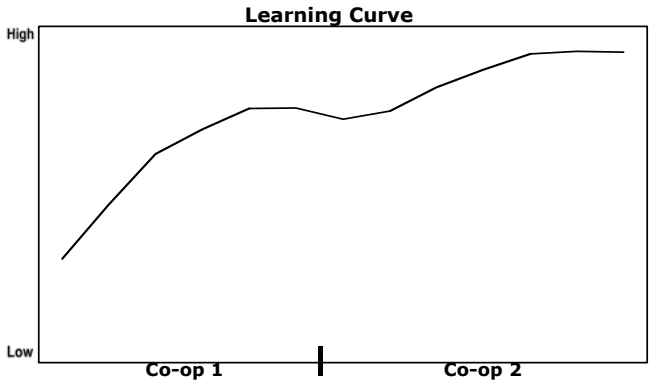

FIGURE 1
Amount of learning over time for the placement component, *Cooperative 1* and *Cooperative 2*, of the Bachelor of Sport & Recreation at Auckland University of Technology.

TABLE 2
Comparison of the amount of learning for the placement components, *Cooperative 1* and *Cooperative 2*, of the Bachelor of Sport & Recreation at Auckland University of Technology.

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

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 *Cooperative 2* to be the same or less than for *Cooperative 1*.

Summary

The findings of this study have shown that cooperative education experience for Bachelor of Sport and Recreation students at Auckland University of Technology has enhanced student learning and developed both hard and soft skills. The outcomes achieved are consistent with what has been previously been reported in other discipline areas (Burchell, Hodges & Rainsbury, 2000; Dressler & Keeling, 2004).

The study findings indicate that the 350 hours students spent in the workplace over two semesters were perceived by the students to be 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). This echoes previous findings that showed science and technology students found that development of relationships in their work placements was important to their learning (Eames, 2003). Learning is a social activity and the cooperative education model provides a social context in which students can learn (Atchison & Gotlieb, 2004). Students need to be able to observe the behaviors and consequences of those behaviors in their colleagues within the workplace (Eames & Cates, 2004)

Research has shown that cooperative education enables students to integrate their learning between the classroom and the workplace (Eames & Cates, 2004). The structure of the cooperative education experience may not affect the overall outcomes but it does influence the types of learning strategies that can be devised (Hodges, Smith & Jones, 2004). In the non-continuous or part-time structure there are more options for guiding student learning through on-campus contact and academic supervision. Effective supervision and mentoring is a critical part of the learning experience and has been shown to result in greater educational and career success for cooperative students (Ricks & Van Gyn, 1997). The non-continuous structure allows the knowledge and capabilities the students are learning in the workplace to be applied directly back in to the classroom and vice versa. A student exposed to the realities of the industry may then have a greater sense of purpose and motivation for classroom learning (Burchell, Hodges & Rainsbury, 2000; Weisz, 2000).

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 activities within sport-related organizations often involve a specific event or season, therefore it is important that the structure of the program is flexible and allows sufficient time for the student to experience learning opportunities which allow them to increase their responsibility as they participate fully within the social context of the organization.

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. Work on this project may allow students to delve more deeply in to the knowledge and understanding of the organization's endeavor that is distributed across its community (Pea, 1997), and hence become further enculturated into its community. Students are placed into real-world contexts where they may have the opportunities to take on responsibilities, develop relationships with colleagues and supervisors and to work as a member of the team.

The findings also point to extrinsic demands on students influencing the suitability of program structure. Using full-time or part-time placements impacts on the students' ability to manage their study time and their need to earn money to support themselves. These issues need to be considered by program administrators.

We conclude that the length of time of placement is influential for students developing their own meaning of practice in sport and recreation, through their engagement and understanding of the social and cultural practices of their community. 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.

Recognizing the cooperative experience as being socially and culturally determined has implications on the need for careful planning of the structure of the placement component of cooperative education programs. It would seem critical when developing a program to achieve a balance between a structure that meets the academic requirements but still enables sufficient time and flexibility to allow students to fully experience the many and varied learning opportunities that occur within the social context of an organization.

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