

A reflection on cooperative education: from experience to experiential learning

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The paper provides a brief review of the development of cooperative education in North America over the last 100 years. It describes the different phases of this development and describes how cooperative Education research has traditionally dealt with the benefits that accrue to students, employers, and the institution. The paper notes that to reinvent cooperative education as an academic discipline, research in the area has to go beyond justifying its existence to demonstrating its true experiential learning and value (*Asia-Pacific Journal of Cooperative Education*, 2007, 8(1), 67-76).

Keywords: Development; cooperative education; experiential learning; research; North America.

It has been about 100 years since a cooperative education program was launched at the University of Cincinnati in the United States (Sovilla & Varty, 2004). About 50 years later, the first Canadian cooperative education program started at the University of Waterloo. The American program was in part inspired by the sandwich programs which may have existed in the United Kingdom since 1840 (Brewer, 1990). The advent of cooperative education programs in North America was mainly motivated by the needs of industry for better prepared engineers. Industrial expansion in the early Twentieth Century in the United States and around the mid-Century in Canada necessitated a rapid growth in engineering and technological education (Sovilla & Varty, 2004; McCallum & Wilson, 1988).

The first American cooperative education program started in 1906 at the University of Cincinnati with an enrollment of 27 students, while the first program in Canada started in 1957 at what came to be known as the University of Waterloo. It had an enrollment of 75 students. Both of these programs were engineering programs. The first programs in both the United States and Canada were met with great resistance from both traditional educators and non-committed industrialists; however, these two programs expanded very quickly and proved to be successful. They were soon used as models for many other universities which started to implement cooperative education in their engineering programs. As well, cooperative education programs in disciplines other than engineering started to appear. The University of Cincinnati started a cooperative education program in Business in 1920 (Sovilla & Varty, 2004). In Canada, Waterloo's program was followed by another at l'Université de Sherbrooke in 1964, and a third at Memorial University of Newfoundland in 1968 (McCallum & Wilson, 1988). Today, cooperative education programs exist in 88 Canadian post-secondary institutions with an enrollment of more than 78,000 students (CAFCE: Canadian Association, 2004).

Cooperative education programs were established initially to bridge the gap between theory and practice in engineering education, meet the new developments in industrial needs, and make university education accessible to the growing number of students (Sovilla & Varty, 2004; Lebold, Pullin, & Wilson, 1990). This phase in the development of cooperative education lasted for about 50 years. During this phase, cooperative education was considered

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a method for complementing learning in the classroom by practical experience in the shop. The objectives that Schneider, the father of cooperative education, hoped that a student would achieve through cooperative education are described by Park (1943) as “A natural method of arriving at a suitable type of work, an opportunity to gain a maximum of educational content from his industrial environment, an understanding of human factor in industry, acquisition of certain disciplinary values as a result of his shop experience, and acquisition of certain economic values” (as cited in Dressler & Keeling, 2004, p. 219).

As the implementation of cooperative education grew, it was faced by resistance from skeptics who thought “it wouldn’t work” (McCallum & Wilson, 1988, p. 61). According to Finn (1977), the early proponents of cooperative education, “the pioneers,” fought back using “tenacious knowing” (p. 38). Finn defines “tenacity” as unquestioned belief; she uses this term to describe the attitudes of the early practitioners of cooperative education who ignored “research findings that do not support their beliefs about the tacit worth of coop” (1997, p. 38). Serious questioning of the validity of the cooperative education model and its impact on post-secondary education started in the late 1950s. One of the main questions asked was about the actual merits of cooperative education (Wilson, 1997). One of the objectives of this work is to discuss studies made regarding the benefits accrued by the student, the employer, and the institution as a result of the cooperative education experience.

Several factors brought about a second phase in the history of cooperative education: more cooperative education programs started to appear, and many educators became involved in the creation of these programs. Additionally, the changing economic conditions prompted administrators to seek solid arguments for the merit of these programs as the costs of cooperative education programs represent a burden on an institution’s budget. This phase saw the start of cooperative education research; most of the early studies that exist in the literature from the 60s, 70s, and 80s have limited scope. Their results cannot be generalized, and some findings are even contradictory. The cooperative education literature in these decades shows a “prevalence of articles about what is believed about coop but has not been validated by research or supported by theory” (Finn, 1997, p. 38). The late 1990s and early 2000s saw the beginning of a third phase in cooperative education research. Calls for rethinking cooperative education (Wilson, Stull & Vinsonhaler, 1996), for adopting reflective practices (Van Gyn, 1996), for restructuring cooperative education (Ricks, 1996), and for implementing a paradigm shift (Schaafsma, 1996) appeared in the literature. Research that used modern educational theories to study cooperative education (e.g., Contomanolis, 2003; Grosjean, 2003; Eames & Coll, 2004) started to emerge in the literature.

As the title of this paper suggests, there is a difference between experience and experiential learning. Van Gyn (1996) maintains that “people do not necessarily learn from experience” (p. 125). She goes on to say “if coop is only a vehicle for experience to gain information about the work place and to link technical knowledge with work place application then its effectiveness is not fully developed” (Van Gyn, 1996, p. 125). In this work, the evolution of cooperative education as an experience and as an experiential learning methodology is reviewed.

DEFINITIONS

A number of definitions have been suggested in the literature for the term ‘cooperative education’. The Canadian Association for Cooperative Education defines cooperative education as “a program that formally integrates a student’s academic studies with work

experience with participating employers” (CAFCE, 2005, p. 1). This definition is further elaborated to include programs which are based on either work experience alternating with academic studies or internship programs which are based on a single work experience.

The National Commission for Cooperative Education defines cooperative education as “a structured educational strategy integrating classroom studies with learning through productive work experiences in a field related to a student’s academic or career goals.” (Groenewald, 2004, p. 17). Groenewald (2004) reviewed existing definitions of the term cooperative education and their historical development. He concluded that “cooperative education can be reduced to four core dimensions ... namely: (a) an integrated curriculum, (b) learning derived from work experience, (c) cultivation of a support-base, and (d) the logistical organization and coordination of the learning experience.” (p. 24). The four components refer to developing a curriculum which integrates the needs of industry with academic requirements; careful design of the work component to ensure its contribution to the experiential learning process; the cultivation of a loyal supporting industrial base; and establishing a structure which ensure sound practices of monitoring and evaluating students before, during, and after the work experience.

THE EXPERIENCE

The questions that were raised in the mid-twentieth century about the actual merits of cooperative education motivated a number of studies which investigated the benefits of cooperative education. Since, the cooperative education model incorporates three partners: the student, the employer, and the institution, the research focused on the assessment of students’ benefits and perceptions, the employers’ benefits gained as a result of hiring cooperative education students, and the impact of cooperative education programs on the institution.

Student Benefits

Gardner, Nixon, and Motschenbacker (1992) indicate that participation in cooperative education programs “provides an advantage in terms of starting salary” (p. 26). This is also confirmed by Riggio, Kubiak, Taylor, and Neale (1994) and Gardner and Motschenbacker (1997). Riggio et al. (1994) also found that graduates who participated in the cooperative education course had significantly more responsible jobs than graduates belonging to the comparison group who did not enroll in the course. Riggio et al. also concluded that “alumni with previous cooperative education experience believed that the cooperative education experience has a very positive effect on their careers” (p. 64). However, a study by Wessels and Pumphrey (1996) suggests that cooperative education has an insignificant effect on the hourly wages of its graduates. The sample used in this study consisted of college graduates who had been in the work force for five years. The inconsistency between this study and other studies, which show that cooperative education has a positive effect on the earnings of the graduates, may be caused by the fact that there is a “catch up” factor. Graduates of coop may have had higher starting salaries, but the difference in salaries between them and those who are not graduates of a cooperative education program disappeared in five years. The study also suggests that there is a “significant and positive institutional effect” for females, and it confirms the suggestion that students with the least experience benefit from participation in cooperative education programs.

Blair and Millea (2004) conducted a comprehensive study of cooperative and non-cooperative students at Mississippi State University. They looked at the effect of cooperative experience on the GPA and starting salaries of graduates. The results indicate a significant increase in the GPA for engineering and business students. No significant effect was found on the GPA of other majors. The mean starting salary for engineering cooperative education students was about US\$2,000 higher than the mean starting salary for the non-cooperative education students. The mean starting salary for business students was negatively affected by the cooperative education experience. The authors explain this by the fact that “within the business majors, a large proportion of the coop students represent the Professional Golf Management/Marketing major which is typically a lower paying major than the other business degrees” (Blair & Millea, 2004, p. 68).

Gardner and Motschenbacker (1997) studied the early career dynamics of a group of engineering college graduates. Their study suggests that the advantage of a higher starting salary does not translate into an accelerated career. In addition, they suggest that students with other experiential learning experience may gain the same benefit. Students benefit financially from their cooperative experience, not only in terms of an increased starting salary but also in terms of a decrease in student loans. A study conducted by the Provincial Government of Newfoundland and Labrador (2001) indicates that the percentage of students who incur debt and the average loan per student are less for cooperative education students than for the students in non-cooperative education programs.

Dressler and Keeling (2004) suggest that student benefits have to be evaluated in the context of the objectives of students’ learning, the systematic learning experience which can be used to achieve the objectives, and the extent of the students’ achievement. They summarize the student benefits as reported in the literature. Among these are: “Increased disciplined thinking; improved learning: taking responsibility for learning, learn how to learn; improved problem-solving: analytical thinking; improved performance in the classroom, increased GPA; increased commitment to educational goals; increased ability to finance their education” (Dressler & Keeling, 2004, p. 225).

Students’ Perceptions

Students’ satisfaction with their cooperative education experience can be also considered as a benefit that students gain as a result of their participation in the program. Riggio et al. (1994) surveyed undergraduate students who just completed a cooperative education course. The results of this survey indicate that the students believed that their cooperative education experiences were positive and beneficial. The statistical results show that the mean overall evaluation of the experience is 5.9 on a 7-point scale. It is interesting to note that a survey conducted at Memorial University of Newfoundland has very similar results (Dickson, 2006). The two general questions asked were “would you recommend the coop program to other students?” and the second was “would you select a coop program again if given the choice?” (Dickson, 2006, p. 22). On a 7-point scale, the mean responses to the two questions are 5.95 and 5.9, respectively.

Apostolides and Looye (1997) carried out a study to identify the factors that highly correlate with the overall success of a cooperative education program from the students’ point-of-view. They suggest that students’ overall approval of their cooperative education experience is related to having quality supervision, a sense of contribution to projects, and challenging assignments. Schambach and Dirks (2002) studied the perceptions of cooperative education

students in the Applied Computer Science program at Illinois State University. Their survey was designed to measure the “benefits incurred by the student interns,” the results provide a strong indication that the students find the internship experience is “worthwhile and valuable” (Schambach & Dirks, 2002, pp. 3-4).

The level of satisfaction of mechanical engineering students at the University of Kettering was assessed by Nasr, Pennington and Andres (2004). Of the 177 student respondents, over 90% seemed to be satisfied with the level of supervision and the work environment, and over 90% believed that the assignments they were given during their work terms contributed to their professional development, while 87% of the respondents were satisfied with their work experience.

Employer Benefits

Studies of employers’ perceptions about cooperative education show that employers participate in these programs to hire motivated new employees, to improve their corporate image, to save on the cost of operation, to create a more dynamic work environment, and to create a pool for career recruitment (Hurd & Hendy, 1997; Reeve, 2001). Braunstein and Loken (2004) report that studies surveying employers about the benefits of cooperative education indicate that the benefits most often reported by the employers are “screening of new hires; hiring of enthusiastic employees; interacting positively with universities and other institutions; accruing cost savings; and hiring coops for special projects” (p. 243). Metzger (2004) explored employers’ perception of the internship program at Boise State University, in Boise Idaho, USA; the vast majority of the 223 employers responding to the survey indicated that “students gain marketable skills from participating in internships programs” (p. 46). More than 80% of the respondents agreed that “the internship programs provide a source of pre-professional staffing,” and is used “as a post-graduate recruitment device” (Metzger, 2004, p. 47).

Institution Benefits

Martin (1997) studied the effect of mandatory cooperative education programs on student recruitment at the University of the Pacific School of Engineering. The results of the study show that cooperative education was the most influential factor for students choosing to join the University of the Pacific School of Engineering. In addition, he surveyed 230 prospective students asking them to choose between a non-cooperative four-year program and a five-year cooperative education program. Martin (1997) reports that “eighty-nine percent of the total sample of prospective students preferred a five-year Bachelor of Science Engineering program that included one year of cooperative education” (p. 97).

A study of the characteristics of students at entry to cooperative and non-cooperative education programs at the University of Victoria and the University of British Columbia was reported by Van Gyn, Branton, Cutt, Loken and Ricks (1996). The results of the study indicate that the sample of cooperative education students had a significantly higher percentage of first class students than the non-cooperative education sample. Also, the cooperative education students had significantly more previous work experience than the non-cooperative education students. The total score on the objective form of the College Outcomes Measure Program for cooperative education students - in the Arts and Science - was significantly higher than that for non-cooperative education students. The total score for engineering students in cooperative education was slightly, but not statistically significantly,

higher than the non-cooperative education students. These results support the opinion that cooperative education programs attract excellent students (Van Gyn et al., 1996; Rowe, 1989).

Murphy, MacGillivray, Reid and Young (1999) studied the difference in cognitive styles between cooperative and non-cooperative education undergraduates enrolled in the Bachelor of Business Administration and the Bachelor of Tourism and Hospitality Management programs. The study consisted of administering the Cognitive Styles Index. Murphy et al. maintain that the Cognitive Styles Index was “specifically designed as an easily-administered and easily-scored instrument for use in large-scale organizational studies” (1999, p. 55). The results of the study indicate significant differences in the mean value of the index between cooperative and non-cooperative students, with the cooperative education students scoring higher than the non-cooperative education students for the two programs. Murphy et al. suggest that cooperative education students appear to have a cognitive style that “tends to be more analytical than intuitive” (1999, p. 58). The results of the study do not support the claim that there are significant differences in the cognitive styles of male and female students.

As students become aware of the benefits of cooperative education, their choice of which post-secondary institution to join is affected. Enrolments are affected by the existence of cooperative education programs (Weisz & Chapman, 2004; Martin, 1997). Other benefits that educational institutions may gain include enhanced relationships with industry, curriculum development, and staff development (Weisz & Chapman, 2004). Cooperative education programs represent an added burden to their institutions. They are costly to maintain. Weisz and Chapman (2004) estimate that the total cost to the institution for each coop student is about AU\$3,144 per year. Several investigators developed economic models to quantify the financial gain from cooperative education programs (e.g., Weisz & Chapman, 2004; Cutt & Loken, 1995). However, these benefits can be considered to accrue not only to the institution but also to the economy in general. Furthermore, this could be used by an institution’s administration to negotiate with its government to increase the institution’s grant.

Cutt and Loken (1995) provide a framework, using an economical model, to quantify the benefits derived from cooperative education programs in Canada. They use the economic benefit accrued from the program at the University of Victoria to justify the continuation of the program. Based on data collected for the year 1992-1993, their model shows that 64% of the funding for the program comes from wages paid by employers.

THE EXPERIENTIAL LEARNING

The late 1990s and early 2000s saw the beginning of more robust studies. An emerging trend in the use of modern education theories to understand learning achieved by cooperative education was also seen. Van Gyn (1996) called for the use of reflective practice. Wilson et al. indicated that for cooperative education to become academically acceptable, it “must be conceived and presented as a curriculum model that links work and academics” (1996, p. 163). Finn maintains that cooperative education needs to be “reinvented as an academic discipline with its own body of knowledge” (1997, p. 44). Experiential learning is achieved when the cycle of experience, reflection, and learning is completed (Kolb, 1984).

Contomanolis (2003) studied faculty attitudes towards integrating students’ cooperative education based learning into their classroom teachings. Grosjean (2003) used a phenomenographic approach to study conceptions of learning experienced by students in

cooperative education programs. Eames and Coll (2004) used a sociocultural perspective to analyze the student learning experience in cooperative education. Ricks (1996) outlines the principles of a successful cooperative education program as:

- Cooperative education fosters self-directed learning and is student centered.
- Cooperative education fosters reflective practice.
- Cooperative education fosters transformational learning.
- Cooperative education integrates school and work learning experiences.
- Cooperative education learning experiences are collaborative: students, faculty, coop coordinators, and work site partners have different roles while respectfully owning the entire process.
- Cooperative education learning experiences are grounded in adult learning theories.
- Cooperative education insures school and work learning experiences that are relevant and meaningful to life and life long learning.
- Cooperative education is enhanced by using advanced technology and alternate models of delivery.
- Cooperative education is defined through program and curriculum.
- Cooperative education is accountable and insures that learning claims are demonstrated and documented. (p. 11)

DISCUSSION AND CONCLUSION

The development of cooperative education learning experience went through different phases. Schneider's vision was to create a program where engineering students can obtain practical experience which makes them better prepared to join the work force after graduation. His first objective was that cooperative education would be a "natural method of arriving at a suitable type of work." Although one of the objectives was for the student to get "an opportunity to gain a maximum of educational content from his industrial environment," there is little evidence of a real integration between the academic program and the cooperative education experience.

This mode of operation continued for at least 50 years after the inception of the first cooperative education program at the University of Cincinnati. As the number of cooperative education programs started to grow in the United States and Canada, there was a need to study the pedagogical and other merits of the program. These studies were limited in scope. Studies investigating the benefit to employers are consistent in their findings. There is no doubt that cooperative education programs provide employers with great opportunities to hire a less expensive, enthusiastic, young, and vibrant work force. Additionally, many of the major companies are using cooperative employment as a means for recruiting; a work term provides an opportunity for a four-month job interview.

Results regarding the benefit to students are less consistent and sometimes contradictory. This question has been raised before in the literature (Wilson, 1997). Rowe (1989) suggests that the problem being investigated is situation-specific. There are many factors that would affect the results of research conducted to study the impact of cooperative education on students. The first group of factors includes the location of the institution, the service that the institution provides to its students, and the caliber of the coordinators who are engaged

in the cooperative education program. Another group of factors includes the level of intellectual ability of the students, their analytical skills, and their interest in being engaged in real life work environments. A third group includes the industrial environment around the institution, the interest of the employers in being seen as “good citizens,” the economic situation of the industry, the level of industrial activities around the institution, and the strength of the relation between the institution and the employers. In addition to these three groups, there is the factor of time. The economic cycle has a major effect on the hiring of cooperative students, that is, the number of students to be hired, the wages that they are paid, and the quality of work experience that they receive.

Cooperative education research is maturing as it enters into its second century (Coll & Eames, 2004). Studies which attempt to analyze the learning models embedded in cooperative education are emerging. Work on understanding students’ conceptions of learning in cooperative education will help shape new programs. New profiles for successful cooperative education coordinators are drawn. Best practices for building strong relationships with industry are suggested. Looking at the future of cooperative education, there is a need to ‘reinvent’ cooperative education as an academic discipline. This is a very ambitious calling; however, as a start, the following undertakings are suggested:

- Bring cooperative education into the realm of experiential learning. Students need to be given reflective assignments during their work terms to enable them to develop their “shop” experience into learning experience.
- Integrate work term experience into classroom instructions. This can be accomplished through encouraging faculty to allow students to use their work term experience as part of their projects or written assignments. Credit may be given to parts of the work term experience which can be legitimately classified as academic laboratory exercise.
- Encourage cooperative education coordinators to administer reflective work term assignments to help students transform their work experience into learning experience.

These are reasonable and attainable steps that cooperative education practitioners can pursue to move cooperative education from a ‘shop’ experience into an experiential learning methodology. It should be mentioned that some of these steps are being carried out by different cooperative education programs in one form or the other. However, an overall plan needs to be developed for the structured implementation of these steps.

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ABOUT THE JOURNAL

The Asia-Pacific Journal of Cooperative education (APJCE) arose from a desire to produce an international forum for discussion of cooperative education issues for practitioners in the Asia-Pacific region and is intended to provide a mechanism for the dissemination of research, best practice and innovation in work-integrated learning. The journal maintains close links to the biennial Asia-Pacific regional conferences conducted by the World Association for Cooperative Education. In recognition of international trends in information technology, APJCE is produced solely in electronic form. Published papers are available as PDF files from the website, and manuscript submission, reviewing and publication is electronically based.

Cooperative education in the journal is taken to be work-based learning in which the time spent in the workplace forms an integrated part of an academic program of study. Essentially, cooperative education is a partnership between education and work, in which enhancement of student learning is a key outcome. More specifically, cooperative education can be described as a strategy of applied learning which is a structured program, developed and supervised either by an educational institution in collaboration with an employer or industry grouping, or by an employer or industry grouping in collaboration with an educational institution. An essential feature is that relevant, productive work is conducted as an integral part of a student's regular program, and the final assessment contains a work-based component. Cooperative education programs are commonly highly structured and possess formal (academic and employer) supervision and assessment. The work is productive, in that the student undertakes meaningful work that has economic value or definable benefit to the employer. The work should have clear linkages with, or add to, the knowledge and skill base of the academic program.

INSTRUCTIONS FOR CONTRIBUTORS

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Research reports should contain; an introduction that describes relevant literature and sets the context of the inquiry, a description and justification for the methodology employed, a description of the research findings-tabulated as appropriate, a discussion of the importance of the findings including their significance for practitioners, and a conclusion preferably incorporating suggestions for further research. Essays should contain a clear statement of the topic or issue under discussion, reference to, and discussion of, relevant literature, and a discussion of the importance of the topic for other researchers and practitioners. The final manuscript for both research reports and essay articles should include an abstract (word limit 300 words), and a list of keywords, one of which should be the national context for the study.

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