

## 5 Theories of Learning in Cooperative and Work-Integrated Education

CHRIS EAMES

*University of Waikato, Hamilton, New Zealand*

CHERYL CATES

*University of Cincinnati, Cincinnati, OH, USA*

The principal goal of any educational program is to facilitate student learning. In cooperative education (co-op) programs, this learning facilitation occurs in two distinct settings, the educational institution and the workplace. A key tenet of cooperative education is that the student will integrate learning between these two settings. To facilitate this integration, educators in co-op programs must adopt appropriate curricula and pedagogy for student learning, underpinned by theory.

In the previous chapter, Van Gyn and Grove-White discuss theoretical perspectives on learning framed by three general orientations: *transmission*, *transaction* and *transformation*. In the present chapter, we focus primarily on learning theories within the transaction orientation of cognition and pragmatism. The emphasis of this orientation on intellectual and rational activities associated with problem-solving, and the development of cognitive skills to support further knowledge acquisition, combined with the focus on learning rather than teaching, and on learner-centered outcomes makes the transaction perspective a logical orientation for cooperative education practitioners. This fits with the prevailing Western view of learning in which many co-op programs have been situated. We conclude our look at theories by examining sociocultural views of learning, which moves the discussion towards the transformational learning discussed in the previous chapter, an orientation that also fits well with cooperative education, particularly in the emerging/developing countries.

Within this framework, we briefly introduce a number of learning theories that are helpful in thinking about learning in co-op programs. These theories allow explication of what a student should learn through a curriculum in the classroom and in the workplace. This theoretical base would also permit adoption of pedagogical (teaching & learning) strategies such as classroom instruction, preparation for, completion of, and assessment of, the work placement, and integration of the learning between the pedagogical settings. Finally, an understanding of a sound theoretical basis to cooperative education can assist in justifying the inclusion of work placement components in an educational program and underpin research into educational outcomes of co-op programs. These issues are further explored below, and in the following chapter.

### ISSUES IN LEARNING IN CO-OP PROGRAMS

The development of cooperative education has been characterized by research which Bartkus and Stull (1997) have described "as applied-descriptive and evaluative in scope. It has been largely pragmatic in nature without a strong theoretical underpinning" (p. 9). This research is typified by the work of Auburn (1972), Dubick, Mc Nerney, and Potts (1996), Eames, Kumar, Rowe, and Hitchcock (1996), Fenster and Parks (2008), Gomez, Lush, and Clements (2004), Henry (1978-1979), Somers (1995), and Wessels and Pumphrey (1995). Their findings have helped to define what constitutes the *operation* of a successful co-op program and have contributed much useful quantitative data to the field. In particular, these studies have pointed to outcomes of the work placement such as application of theory in the workplace and career clarification for students; completion of small projects and recruitment of suitable graduates for employers; collaboration with employers, and attraction of students to their programs for educational institutions. However, the cooperative education community has noted the greater difficulty in ascertaining the educational outcomes from, and processes in, work placements (Ryan, Toohey, & Hughes, 1996; Van Gyn, Cutt, Loken, & Ricks, 1997). This difficulty has led to a relative paucity of understanding about learning in the work placement. This section examines the issues surrounding understanding learning in co-op programs, which are addressed as legitimization, and theoretical concerns.

### *Legitimization*

Concern for understanding how learning occurs on co-op placements, which could help legitimize placements as educative, has been prominent in the co-op literature for many years. In Wilson's view, "we rely too much on student papers about their work experiences and on employer ratings in order to award credit and we spend too little effort finding out what the students are really learning so that we can effectively guide them in their further learning efforts" (1989, p. 42). A key to these concerns is the fact that many institutions award degree credit for work experience conducted as part of a co-op program (Wilson, 1973). Wilson (1989) argued that it is important that credit is not simply given for work experience, but that it is given "for learning resulting from work experience" (p. 36). Therefore, it is important to co-op educators that learning through work experience is understood so that appropriate curricula, pedagogy, and assessment can be designed and implemented.

It was this concern for assessment and legitimization of learning on work placements that led the U.S. Government in the late 1970s to commission a study into educational outcomes and their assessment in co-op programs (Wilson, 1980-1981). This study surveyed large numbers of students, employers and coordinators, and identified 72 learning objectives that could or should be incorporated into co-op programs. Other studies suggested methods for setting objectives and measuring outcomes (Garmon & Strandberg, 1976; Laramee, 1972), and focused on student perceptions of what they learnt on placement (Trigwell & Reid, 1998). These studies fuelled a debate about whether work placements can be viewed as a learning component, and whether they should be incorporated into an academic qualification, particularly at tertiary level. This debate led co-op practitioners to believe that they must legitimize co-op programs as learning programs through a pedagogically sound work placement process. In their assessment of the Canadian co-op system, Cutt and Loken (1995) concluded that evidence to that date to support that legitimization of pedagogical soundness was thin. As Van Gyn et al. (1997) pointed out, the traditional view had been that cooperative education is an effective training strategy rather than an educational strategy. This view implies that co-op is a vehicle for training students to perform certain tasks in certain jobs, rather than the more generalist knowledge/skill accumulation and development of thinking assumed to be the domain of classroom education, particularly in the higher education sector.

We would argue that such a distinction between learning on placement and learning in the classroom is unhelpful and irrelevant to understanding learning in co-op programs. What is more germane is to consider the learning that does occur through co-op placements and how it complements the classroom learning. Enhancing understanding of this placement learning and its integration with classroom learning through research-derived evidence could remove administrative and political objections to the value of co-op placements, and help provide greater legitimacy to co-op programs.

### *Theoretical Concerns*

The failure to gain clear recognition of work experience components as learning opportunities, and to understand the integrative nature of the learning process, has been linked to a failure thus far to place cooperative education on a sound educational basis with a theoretical underpinning. There have been increasing calls, for example, by Ricks et al. (1990) and Stull, Crow, and Braunstein (1997), that for cooperative education to be credible as an educational practice, it should be related to a theoretical framework of education and educational goals, grounded in learning theory. In 1985, the Cooperative Education Association of America (CEA, now CEIA, incorporating internships) commissioned a committee to report on the location of cooperative education within the mainstream of American higher education. They were concerned that despite the obvious growth and success of co-op, the discipline languished on the periphery of academic endeavor (Heinemann, 1988). The committee's report reflected this view and suggested three main reasons for this:

1. Faculty do not recognize work as a vehicle for learning and, in fact, view cooperative education as *anti-intellectual* [original emphasis];
2. Co-op practitioners tend to see themselves as operational people concerned with logistics and administration – not as educators; and



3. Cooperative education methodology for promoting learning is vague and underdeveloped (as summarized by Van der Worm, 1988, p. 121).

On the strength of the committee's report, the CEA committee recommended that more research be conducted into learning outcomes that takes heed of cognitive psychology, skill acquisition and enlists the aid of researchers from a variety of disciplines such as psychology, sociology and education, so as to be exposed to a variety of theoretical views (Heinemann, 1988). This recommendation found favor with Branton et al. (1990) who further argued that more research of itself would not help: the research needed to be "placed in the context of contemporary learning theories" (p. 31). An alternative to this strategy would be to generate theory from research into co-op practice as suggested by Ricks et al. (1990).

Cates and Jones (1999) argued for three important benefits that result from planning for learning in co-op placements: student learning is optimized through conceiving the work placement as a learning experience that is pedagogically planned; clear learning goals linked to a curriculum can be defined and assessed in placements; and the co-op program can enhance the educational standing of the institution. The developing recognition (Coll et al., 2009; Dimenas, 2010; Griffin, Mitchell, & Lorenz, 2010) of the importance of understanding and fostering integrative learning pathways in co-op programs strengthens this argument. This is seen to be particularly important in development of explicit pedagogical approaches (Coll et al., 2009) and assessment of learning outcomes in the workplace (Allen & Peach, 2011). Some theories of learning that could assist in achieving these developments are now discussed.

## LEARNING THEORIES FOR COOPERATIVE EDUCATION

Theories abound on how students learn. In this section, we briefly examine several of these theories for their use in helping us to identify the factors in cooperative education practice that support learning from a theoretical perspective.

### *Piaget's Cognitive-Development Theory*

As co-op students are developing reasoning strategies related to the classroom, they are also developing reasoning strategies related to industry while they are completing their co-op work assignments in the workplace. Jean Piaget proposed that logical thinking occurs when the learner simultaneously coordinates an operation and its inverse and predicts the changes that will be likely to occur (Piaget, 1985). According to Piaget, there are three fundamental processes in the development of logical thinking: assimilation, accommodation and equilibrium.

- *Assimilation.* The integration of external elements into the learner's internal structures;
- *Accommodation.* Adjustments in the learner's internal structures and qualitative transformations in thinking; and
- *Equilibrium.* The set of processes that maintains cognitive organization during the learner's changes in thinking.

For the co-op student, the processes of assimilation, accommodation and equilibrium are naturally at work, as they encounter new knowledge, skills and experiences in the new context of the workplace. But as we examine the concept of cooperative education for its effect on student learning, perhaps it is the area of equilibrium that is most significantly affected. Co-op practitioners have long advocated this educational methodology as the best way to ease students into the world of work. What actually occurs for the co-op student is a less drastic taxing of their equilibrium. The simultaneous development of reasoning strategies for both education and work enables students to maintain the organization of their cognitive structure more easily. It also explains why co-op students make the transition to work immediately upon graduation whereas the non-co-op student undergoes an adjustment period (Gardner & Koslowski, 1993). The non-co-op student develops the logic of the classroom but upon graduation, must radically shift to the logic of work. This adjustment to the student's internal structure and subsequent change in thinking creates a state of disequilibrium that may explain the transition problems employers often describe in non-co-op students. Co-op students may experience less disequilibrium compared with non-co-op students during that transition.

### *Atkinson's Model of Achievement Motivation*

One of the claims about cooperative education is that it increases student motivation (Dawson, 1980-81; Fletcher, 1989). But what could it be that motivates students to learn? One model to describe student motivation is the expectancy-value model derived from Atkinson's model of achievement motivation (Atkinson, 1964). In this model, expectancy, in combination with task value, leads to task involvement and subsequent achievement. Atkinson defines expectancy as the student's belief regarding his/her probability of success (or failure) on a particular task and value as the value the individual attaches to the success or failure of the task.

Cooperative education has the potential to influence both sides of the expectancy-value model of student motivation. The co-op process is typically a series of successes or failures that build upon one another. From the first résumé to the final job offer upon graduation, most students build upon previous successes, or learn from previous failures. As students meet with success they come to believe in the probability of future successes. As students suffer defeats, they learn appropriate ways of working within that workplace. With co-op professionals to guide the students in securing the work assignment, and supervisors or mentors to guide them while at the work assignment, students come to realize that the task difficulty is not something beyond their capabilities. Turning to the value side of the model, the value students place on the task is influenced by the student's perception of the task's ability to provide a challenge, the student's belief in the enjoyment they will derive from the task, and the importance of the task in facilitating the student's goals, and the institution's or employer's goals set for the task. When cooperative education students are working in an assignment that matches what the student wishes to do, the work is likely to provide them with enjoyable challenges and facilitate the achievement of their goals. This theory also highlights the different value that students may place on tasks that are designed for institutional learning (such as assignments to pass a course) compared to tasks in the workplace (that are crucial to the ongoing success of the business). Consideration of this theoretical perspective on student learning has implications for designing a pedagogy that takes into account the expectancy-value model.

### *Bandura's Social Learning Theory*

In his theory of social learning, Albert Bandura began by exploring imitative learning which maintains that the learner imitates a modeled behavior and, as that behavior is reinforced, repeats the behavior (Bandura, 1977). In Bandura's social learning theory, consequences of behavior are essential to learning. But, unlike some other learning theories, the consequences of behavior are not limited to that of the learner. Students can learn through vicarious consequences, either reinforcement or punishment. Vicarious reinforcement conveys information about which behaviors are appropriate in which settings and allows the observer to experience emotional responses to the model's reward. In the case of vicarious punishment, the observer views behaviors that are likely to be punished and are therefore inappropriate. Cooperative education students experience social learning as they observe the behaviors and consequences of those behaviors in their colleagues in the workplace. While co-op students will learn from their own successes and failures, they also learn from the successes or failures of others. In preparing students for the work placement, pedagogy from this perspective would need to include orientation of students to the importance of observation of workplace behavior and reflection on its meaning and consequence.

### *Experiential Learning and Reflection*

Perhaps one of the most familiar learning theories to co-op practitioners is Kolb's experiential learning model (Figure 1) (Kolb, 1984). It describes the learning process as a four-stage cycle, which co-op students move through on a continuing basis:

1. Concrete experience followed by;
2. Observation and reflection which lead to;
3. The formation of abstract concepts and generalizations which lead to; and
4. Hypotheses to be tested in future action, which in turn lead to concrete experience.



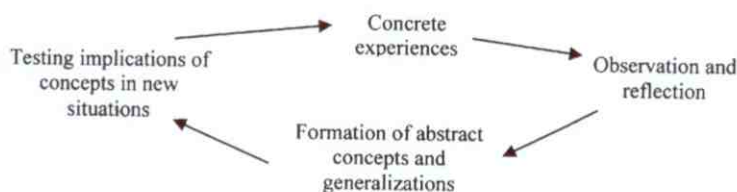


FIGURE 1  
Kolb's experiential learning model

Within this model of the learning process, the learning cycle is constantly recurring. This model describes the co-op learning cycle quite eloquently. Students will have concrete experiences through their academic coursework and their cooperative education assignment. Both on the job and when they return to the classroom they will be given the opportunity to observe and reflect upon those experiences. Students will be asked to complete an assignment that is designed to heighten their observation while on the job and to reflect upon these experiences. Reflection on practice and in practice has been argued (Boud, Keogh, & Walker, 1985; Schön, 1983) to contribute to learning from experience. Researchers (Doel, 2009; Howard, 2009; Van Gyn, 1996) have demonstrated that this process can enhance co-op student development and make assessment for learning more productive.

Both the experience itself and the reflection in any postplacement assignment will give students the opportunity to form abstract concepts and generalizations that they will then test in subsequent experiences. Students can begin anywhere in the cycle. Students completing an academic term can formulate concepts to test in the workplace during the next phase of the cycle. Students completing a co-op work term can formulate concepts for action and reflection during the next academic term as well as the next co-op work assignment. This model is particularly useful in explaining how learning can be integrated between the classroom and the workplace. By this argument, learning would be reinforced through more than one co-op placement in a program, and the pedagogy in the co-op program would be designed to enhance student engagement in each of the stages of the cycle. Similarly, assessment tools would be designed to fit this learning process.

#### *Reflection-in-Action*

Reflection-in-action as a theoretical framework to understand cooperative education has been advocated by Schön (1983) and adopted as viable by many others in the profession. Schön argues that for reflective practice to take place, students must apply past knowledge to a new situation. This can happen as individuals reflect upon an incident while it is occurring or with the assistance of reflective dialogue by a mentor or coach after the conclusion of the incident itself. Mezirow (1998) describes reflection as "simple awareness of a perception, thought, feeling, disposition, intention, action" and includes in his definition "letting one's thoughts wander over something, taking something into consideration, or imagining alternatives" (p. 195). This activity allows us to step back and recapture experiences, evaluate them and consciously learn from them (Bailey, Hughes, & Moore, 2004; Boud et al., 1985). Most recently, Raelin has been a prolific voice for the importance of reflection in the learning process. He argues that when dialogue takes place in a trusting environment, the emotional data from the experience can surface and enhance contextualized learning (Raelin, 1997). From the perspective of contextualized learning, the idea of reflection-in-action permits its consideration within the praxis branch of learning in which one thinks about what is being learnt (Raelin, 2006). Raelin further argues that reflection-in-action often requires some level of facilitation to assist learners in framing their knowledge into critical inquiry (Raelin et al., 2008).

