CHAPTER SEVEN

CO-OPERATIVE LEARNING: WHAT MAKES GROUPWORK WORK?

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Robert Slavin reviews the substantial body of studies of co-operative learning in schools, in particular those using control groups being taught with more traditional methods. There are two main categories – "Structured Team Learning" and "Informal Group Learning Methods" – each reviewed and illustrated. As regards affective outcomes, co-operative learning overwhelmingly shows beneficial results. For achievement outcomes, positive results depend heavily on two key factors. One is the presence of group goals (the learner groups are working towards a goal or to gain reward or recognition), the other is individual accountability (the success of the group depends on the individual learning of every member). The chapter presents alternative perspectives to explain the benefits of co-operative learning - whether it acts via motivations, social cohesion, cognitive development, or "cognitive elaboration". Despite the very robust evidence base of positive outcomes, co-operative learning "remains at the edge of school policy" and is often poorly implemented.

Introduction

There was once a time when it was taken for granted that a quiet class was a learning class, when principals walked down the hall expecting to be able to hear a pin drop. In more recent times, however, teachers are more likely to encourage students to interact with each other in co-operative learning groups. Yet having students work in groups can be enormously beneficial or it can be of little value. How can teachers make best use of this powerful tool?

Co-operative learning has been suggested as the solution for wide array of educational problems. It is often cited as a means of emphasising thinking skills and increasing higher-order learning; as an alternative to ability grouping, remediation, or special education; as a means of improving race relations; and as a way to prepare students for an increasingly collaborative work force. How many of these claims are justified? What effects do the various collaborative learning methods have on student achievement and other outcomes? Which forms of co-operative learning are most effective, and what components must be in place for co-operative learning to work?

To answer these questions, this chapter reviews the findings of studies of co-operative learning in elementary and secondary schools that have compared co-operative learning with control groups studying the same objectives but taught using traditional methods.

Co-operative Learning Methods

There are many quite different forms of co-operative learning, but all of them involve having students work in small groups or teams to help one another learn academic material. Co-operative learning usually supplements the teacher's instruction by giving students an opportunity to discuss information or practise skills originally presented by the teacher. Sometimes co-operative methods require students to find or discover information on their own. Co-operative learning has been used and investigated in every subject at all grade levels.

Co-operative learning methods fall into two main categories. One set – "Structured Team Learning" - involves rewards to teams based on the learning progress of their members, and they are also characterised by individual accountability, which means that team success depends on individual learning, not group products. A second set – "Informal Group Learning Methods" - covers methods more focused on social dynamics, projects, and discussion than on mastery of well-specified content.

Structured Team Learning Methods

Student Team Learning

Student Team Learning (STL) techniques were developed and researched at Johns Hopkins University in the United States. More than half of all experimental studies of practical co-operative learning methods involve STL methods. All co-operative learning methods share the idea that students work together and are responsible for one another's learning as well as their own. STL also emphasises the use of team goals and collective definitions of success, which can only be achieved if all members of the team learn the objectives being taught. That is, in *Student Team Learning* the important thing is not to **do** something together but to **learn** something as a team.

Three concepts are central to all *Student Team Learning* methods: **team rewards**, **individual accountability**, and **equal opportunities for success**. In classes using STL, teams earn certificates or other team rewards if they achieve above a designated criterion. "Individual accountability" means that the team's success depends on the individual learning of all team members. This focuses team activity on explaining concepts to one another and making sure that everyone on the team is ready for a quiz or other assessment that they will be taking without teammate help. With equal opportunities for success, students contribute to their teams by improving over their past performances, so that high, average, and low achievers are equally challenged to do their best and the contributions of all team members are valued.

The findings of these experimental studies indicate that team rewards and individual accountability are essential elements for enhancing basic skills achievement (Slavin, 1995, 2009). It is not enough simply to tell students to work together. They must have a reason to take one another's achievement seriously. Further, if students are rewarded for doing better than they have in the past, they will be more motivated to achieve than if they are rewarded based on their performance in comparison to others - rewards for improvement make success neither too difficult nor too easy for students to achieve.

Four principal Student Learning methods have been extensively developed and researched. Two are general co-operative learning methods adaptable to most subjects and grade levels: *Student Team-Achievement Divisions* (STAD) and *Teams-Games-Tournament* (TGT). The remaining two are comprehensive curriculums designed for use in particular subjects at particular grade levels: *Team Assisted Individualisation* (TAI) for mathematics in years 3-6 and *Co-operative Integrated Reading and Composition* (CIRC) for reading and writing instruction in years 3-5.

Student Teams-Achievement Divisions (STAD)

In STAD (Slavin, 1994), students are assigned to four-member learning teams which are mixed in performance level, sex and ethnicity. The teacher presents a lesson, and the students work within their teams to make sure that all team members have mastered the lesson. Finally, all students take individual quizzes on the material, at which time they are not allowed to help one another.

Students' quiz scores are compared to their own past averages, and points are awarded based on the degree to which students can meet or exceed their own earlier performances. These points are then summed to form team scores, and teams that meet certain criteria earn certificates or other rewards. The whole cycle of activities, from teacher presentation to team practice to quiz, usually takes three to five class periods.

STAD had been used in a wide variety of subjects, from mathematics to language arts and social studies. It has been used from grade 2 through college. STAD is most appropriate for teaching well-defined objectives, such as mathematical computations and applications, language usage and mechanics, geography and map skills, and science facts and concepts. Typically, it is a co-operative learning programme in which students work in 4-member heterogeneous teams to help each other master academic content and teachers follow a schedule of teaching, team work, and individual assessment. The teams receive certificates and other recognition based on the average scores of all team members on weekly quizzes. This team recognition and individual accountability are held by Slavin (1995) and others to be essential for positive effects of co-operative learning.

Numerous studies of STAD have found positive effects of the programme on traditional learning outcomes in mathematics, language arts, science, and other subjects (Slavin, 1995; Mevarech, 1985, 1991; Slavin and Karweit, 1984; Barbato, 2000; Reid, 1992). For example, Slavin and Karweit (1984) carried out a large, year-long randomised evaluation of *STAD* in Math 9 classes in Philadelphia. These were classes for students not felt to be ready for Algebra I, and were therefore the lowest-achieving students. Overall, 76% of students were African American, 19% were White, and 6% were Hispanic. Forty-four classes in 26 junior and senior high schools were randomly assigned within schools to one of four conditions: *STAD*, *STAD* plus *Mastery Learning*, *Mastery Learning*, or control. All classes, including the control group, used the same books, materials, and schedule of instruction, but the control group did not use teams or mastery learning. In the Mastery Learning conditions, students took formative tests each week, students who did not achieve at least an 80% score received corrective instruction, and then students took summative tests.

The four groups were very similar at the start. Shortened versions of the standardised Comprehensive Test of Basic Skills (CTBS) in mathematics served as a pre- and post-test, and the purpose was to identify the effect size[1] of those being taught using the co-operative methods (using 2 x 2 nested analyses of covariance). There was a significant advantage noted for the STAD groups (Effect Size = +0.21, p<.03), in other words, their post-test levels were about a fifth of a standard deviation ahead of the control group, and these gains were similar for high, average, and low-achieving students as measured by their pre-test scores. The gain was slightly larger for those who had had the teams methods combined with Mastery Learning (the effect size compared to the control group was +0.24), while that for *STAD* without Mastery Learning was +0.18. There was no significant main effect for Mastery Learning by itself.

Teams-Games-Tournament (TGT)

Teams-Games-Tournament uses the same teacher presentations and teamwork as in STAD, but replaces the quizzes with weekly tournaments (Slavin, 1994). In these, students compete with members of other teams to contribute points to their team score. Students compete at three-person “tournament tables” against others with a similar past record in mathematics. A procedure changes table assignments to keep the competition fair. The winner at each tournament table brings the same number of points to his or her team, regardless of which table it is; this means that low achievers (competing with other low achievers) and high achievers (competing with other high achievers) have equal opportunity for success. As in STAD, high performing teams earn certificates or other forms of team rewards. TGT is appropriate for the same types of objectives as STAD. Studies of TGT have found positive effects on achievement in math, science and language arts (Slavin, 1995).

Team Assisted Individualisation (TAI)

Team Assisted Individualisation (TAI; Slavin *et al.* 1986) shares with STAD and TGT the use of the four-member mixed-ability learning teams and certificates for high-performing teams. But where STAD and TGT use a single pace of instruction for the class, TAI combines co-operative learning with individualised instruction. Also, where STAD and TGT apply to most subjects at grade levels, TAI is specifically designed to teach mathematics to students in grades 3-6 or older students not ready for a full algebra course.

In TAI, students enter an individualised sequence according to a placement test and then proceed at their own rates. In general, team members work on different units. Teammates check each others’ work against answer sheets and help one another with any problems. Final unit tests are taken without teammate help and are scored by student monitors. Each week, teachers total the number of units completed by all team members and give certificates or other team rewards to teams that exceed a criterion score based on the number of final tests passed, with extra points for perfect papers and completed homework.

Because students take responsibility for checking each others’ work and managing the flow of materials, the teacher can spend most of the class time presenting lessons to small groups of students drawn from the various teams who are working at the same point in the mathematics sequence. For example, the teacher might call up a decimals group, present a lesson, and then send the students back to their teams to work on problems. The teacher might then call up the fractions group, and so on. Several

[1] An effect size (ES) is the proportion of a standard deviation by which experimental groups exceed control groups, after adjusting for any pre-test differences.

large evaluations of TAI have shown positive effects on mathematics achievement in the upper-elementary grades (*e.g.*, Slavin and Karweit, 1985; Stevens and Slavin, 1995).

Co-operative Integrated Reading and Composition (CIRC)

A comprehensive programme for teaching reading and writing in the upper elementary grades is called *Co-operative Integrated Reading and Composition* (CIRC) (Stevens *et al.* 1987). In CIRC, teachers use reading texts and reading groups, much as in traditional reading programmes. However, all students are assigned to teams composed of two pairs from two different reading groups. While the teacher is working with one reading group, the paired students in the other groups are working on a series of engaging activities, including reading to one another, making predictions about how narrative stories will come out, summarising stories to one another, writing responses to stories, and practising spelling, decoding, and vocabulary. Students work as a team to master "main idea" and other comprehension skills. During language arts periods, students engage in writing drafts, revising and editing one another's work, and finalising the team books.

In most CIRC activities, students follow a sequence of teacher instruction, team practice, team pre-assessments and quizzes so that they do not take the quiz until their teammates have determined that they are ready. Certificates are given to teams based on the average performance of all team members on all the reading and writing activities.

Research on CIRC and similar approaches has found positive effects on measures of reading performance in upper-elementary and middle schools (Stevens and Slavin, 1995a, 1995b; Stevens, Madden, Slavin, and Farnish, 1987; Stevens and Durkin, 1992). CIRC has been adopted as the upper-elementary and middle school component of the *Success for All* comprehensive reform models and is currently disseminated under the name *Reading Wings* by the *Success for All Foundation* (see Slavin and Madden, 2009).

An example of the positive evaluations can be found in Stevens *et al.* (1987, Study 2). They evaluated CIRC over a 6-month period in a middle class suburb of Baltimore, with 450 3rd and 4th graders, of whom about a fifth (22%) were minority and 18% disadvantaged as indicated by entitlement to free or reduced-price lunches. CIRC was used in 9 classes in 4 schools, and there were 13 control classes in 5 schools matched on California Achievement Test (CAT) reading scores and demographics. Using the CAT measures to identify the impact of the different types of teaching showed the clear positive gains for the CIRC students (effect sizes were +0.35 ($p<.002$) for Reading Comprehension, +0.11 ($p<.04$) for Reading Vocabulary, and +0.23 ($p<.01$) for CAT Total). On standards of oral reading (using individually-administered Durrell Oral Reading Tests for six randomly-selected students in each class), the CIRC students scored substantially higher than the control groups, averaging ES = +0.54 across five measures ($p<.02$). Combining the effects found using the California Achievement Test with those for oral reading using Durrell gave a mean effect size of +0.45.

Even larger impacts were measured special needs students. Separate analyses for students in special education found CAT effect sizes of +0.99 for Reading Comprehension and +0.90 for Reading Vocabulary; analyses for remedial reading students found effect sizes of +0.40 for Reading Comprehension and +0.26 for Reading Vocabulary.

Peer-Assisted Learning Strategies (PALS)

Peer Assisted Learning Strategies (PALS) is a learning approach in which pairs of children take turns as teacher and learner. The children are taught simple strategies for helping each other, and are rewarded based on the learning of both members of the pair. Research on PALS in elementary and middle school mathematics and reading has found positive effects of this approach on student achievement outcomes, (*e.g.*, Mathes and Babyak, 2001: Fuchs, Fuchs, and Karns, 2001; Calhoon *et al.*, 2006: Fuchs, Fuchs, Kazden, and Allen, 1999, Calhoon, 2005).

For example, Fuchs, Fuchs, Kazdan, and Allen (1999) evaluated PALS in a 21-week study in Grades 2-3. Two forms of PALS were evaluated. In PALS, students worked 35 minutes 3 times a week in pairs, alternating roles as teacher and learner. They engaged in partner reading, summarisation, identification of main ideas, and predictions. Teachers of 16 classes were randomly assigned to PALS or control classes. They designated one low, one average, and one high-achieving student, and only these students were assessed (even though all children in each class participated in the treatments). Students were pre- and post-tested on the Reading Comprehension subtest of the Standard Diagnostic Reading Test (SDRT). The results were very positive for the students using PALS compared with the others, at nearly three-quarters of a standard deviation in front (ES=+0.72). Positive learning effects of a similar programme called *Classwide Peer Tutoring* (Greenwood, Delquardi, and Hall, 1989) have also been found. Two Belgian studies (Van Keer and Verhenge, 2005, 2008) also found positive effects for same-age tutoring.

IMPROVE

IMPROVE (Mevarech, 1985) is an Israeli mathematics programme that uses co-operative learning strategies similar to those used in *STAD* but also emphasises teaching of meta-cognitive skills and regular assessments of mastery of key concepts and re-teaching of skills missed by many students. Studies of *IMPROVE* have found positive effects on the mathematics achievement of elementary and middle school students in Israel (Mevarech and Kramarski, 1997; Kramarski, Mevarech, and Lieberman, 2001). For example, Mevarech and Kramarski (1997, Study 1) evaluated this approach in four Israeli junior high schools at seventh grade over one semester with matched controls using the same books and objectives. The experimental classes were selected from among those taught by teachers with experience teaching *IMPROVE*, and matched control classes were selected as well. Students were given pre- and post-tests certified by the Israeli superintendent of mathematics as fair to all groups. Pre-test scores were similar across groups. The results significantly favoured the *IMPROVE* classes on scales assessing introduction to algebra (ES=+0.54) as well as mathematical reasoning (ES=+0.68), for an average effect size of +0.61. That is, the achievements of those students following the co-operative methods exceeded the others by over three-fifths of a standard deviation, and these positive impacts were similar whether the students were low, average, or high achievers.

Informal Group Learning Methods

Jigsaw

Jigsaw was originally designed by Elliot Aronson and his colleagues (1978). In Aronson's *Jigsaw* method, students are assigned to six-member teams to work on academic material that has been broken down into sections, (for example, a biography might be divided into early life, first accomplishments, major setbacks, later life, and impact on history). Each team member reads his or her section. Members of different teams who have studied the same sections then meet in "expert groups" to discuss their sections, after which the students return to their teams and take turns teaching their teammates about what they have learnt with the others sharing the same section material.

Since the only way students can learn material other than their own is to listen carefully to their teammates, they are motivated to support and show interest in one another's work. Slavin (1994) developed a modification of *Jigsaw* at Johns Hopkins University and then incorporated it in the Student Team Learning programme. In this method, called *Jigsaw II*, students work in four-or five-member teams as in TGT and STAD. Instead of each student being assigned a particular section of text, all students read a common narrative, such as a book chapter, a short story, or a biography but each student also receives a topic - such as "climate" in a unit on France - on which to become an expert. Students with the same topics meet in expert groups to discuss them, after which they return to their teams to teach what they have learned to their teammates. Then students take individual quizzes, which result in team scores based on the STAD improvement assessment system. Teams that meet preset standards earn certificates. *Jigsaw* is primarily used in social studies and other subjects where learning from text is important (Mattingly and Van Sickle, 1991).

Learning Together

David Johnson and Roger Johnson at the University of Minnesota developed the *Learning Together* models of co-operative learning (Johnson and Johnson, 1999). These involve students working on assignment sheets in four- or five-member heterogeneous groups. The groups hand in a single sheet and receive praise and rewards based on the group product. Their methods emphasise team-building activities before students begin working together and regular discussions within groups about how well they are collaborating.

Group Investigation

Group Investigation, developed by Shlomo Sharan and Yael Sharan (1992) at the University of Tel-Aviv, is a general classroom organisation plan in which students work co-operatively in small groups with inquiry, group discussion, and shared planning and project realisation. In this method, students form their own two- to six-member groups. After choosing sub-topics from a unit being studied by the entire class, the groups further break their sub-topics into individual tasks and carry out the activities necessary to prepare group reports. Each group then makes a presentation or display to communicate its findings to the entire class. A study in Israel by Sharan and Shachar (1988) found positive effects of *Group Investigation* on achievement in language and literature.

What Makes Co-operative Learning Work?

Co-operative learning methods are among the most extensively evaluated alternatives to traditional instruction in use today. Use of co-operative learning almost always improves affective outcomes. Students love to work in groups and they feel more successful and like subjects taught co-operatively. They have more friends of different ethnic groups and are more accepting of others different from themselves (see Slavin, 1995). Regarding achievement, however, outcomes depend a great deal on how co-operative learning is used. In general, two elements must be present if co-operative learning is to be effective: **group goals** and **individual accountability** (Slavin 1995, 2009; Rohrbeck *et al.*, 2003; Webb, 2008). That is, groups must be working to achieve some goal or to earn rewards or recognition, and the success of the group must depend on the individual learning of every group member.

Why are group goals and individual accountability so important? To understand this, consider the alternatives. In some forms of co-operative learning, students work together to complete a single worksheet or to solve a problem together. In such methods, there is little reason for more able students to take time to explain what is going on to their less able group-mates or to ask their opinions. When the group task is to **do** something, rather than to learn something, the participation of less able students may be seen as interference rather than help. It may be easier in this circumstance for students to give each other answers than to explain concepts or skills to one another.

In contrast, when the group's task is to ensure that every group member **learns** something, it is in the interests of every group member to spend time explaining concepts to his or her group-mates. Studies of student behaviour within co-operative groups have consistently found that the students who gain most from co-operative work are those who give and receive elaborated explanations (Webb, 1985, 2008); in fact, giving and receiving answers without explanations were negatively related to achievement gain in these studies. Group goals and individual accountability motivate students to give explanations and to take one another's learning seriously, instead of simply giving answers.

A review of 99 studies of co-operative learning of durations of at least four weeks in elementary and secondary schools compared the achievement gains of the co-operative approaches with control group learning. Of sixty-four studies of co-operative learning methods that provided group rewards based on the sum of members' individual learning (categorised here as *Structured Team Learning Methods*), fifty (78%) found significantly positive effects on achievement, and none found negative effects (Slavin, 1995). The median effect size for the studies from which effect sizes could be computed was +.32 (*i.e.* nearly a third of a standard deviation separated co-operative learning and control treatments). In contrast, studies of informal group learning methods which used group goals based on a single product from the work or provided no rewards, found few positive effects, with a median effect size of only +.07. Comparisons of alternative treatments within the same studies found similar patterns: group goals based on the sum of individual learning performances were a necessary ingredient to the instructional effectiveness of the co-operative models (*e.g.*, Chapman, 2001; Fantuzzo, Polite, and Grayson, 1990; Fantuzzo, Riggio, Connelly, and Dimeff, 1989; Huber, Bogatzki, and Winter, 1982).

Co-operative learning methods generally work equally well for all types of students. While occasional studies find particular advantages for high or low achievers, boys or girls, the great majority find equal benefits for all types of students. Teachers or parents sometimes worry that co-operative learning will hold back the high-achievers. The research provides no support for this claim: high achievers gain from co-operative learning (relative to high achievers in traditional classes) as much as do low and average achievers (Slavin, 1995).

Theoretical Perspectives on Co-operative Learning

While there is a general consensus among researchers about the positive effects of co-operative learning on student achievement, there remains a controversy about why and how they affect achievement and, most importantly, under what conditions they have these effects. Different groups of researchers investigating co-operative learning effects on achievement begin with different assumptions and conclude by explaining the effects of in terms that are substantially unrelated or conflicting. In earlier work, Slavin (1995, 2009; Slavin, Hurley, and Chamberlain, 2001) identified *motivationalist*, *social cohesion*, *cognitive-developmental* and *cognitive-elaboration* as the four major theoretical perspectives held by different researchers on the achievement effects of co-operative learning.

The motivationalist perspective presumes that task motivation has the greatest impact on the learning process, and that the other processes (such as planning and helping) are driven by individuals' motivated self interest. Motivationalist scholars focus especially on the reward or goal structure under which students operate. By contrast, the social cohesion perspective (also called "social interdependence theory") suggests that the effects of co-operative learning are largely dependent on the cohesiveness of the group. In this perspective, students help each other to learn because they care about the group and its members and come to derive the benefits of self-identity from group membership (Johnson and Johnson, 1989; 1999; Hogg, 1987).

The two cognitive perspectives focus on the interactions among groups of students, holding that these interactions themselves lead to better learning and thus better achievement. The cognitive developmentalists attribute these effects to processes outlined by scholars such as Piaget and Vygotsky. The cognitive elaboration perspective instead asserts that learners must engage in some manner of cognitive restructuring (elaboration) of new materials in order to learn them; co-operative learning is seen to facilitate that process.

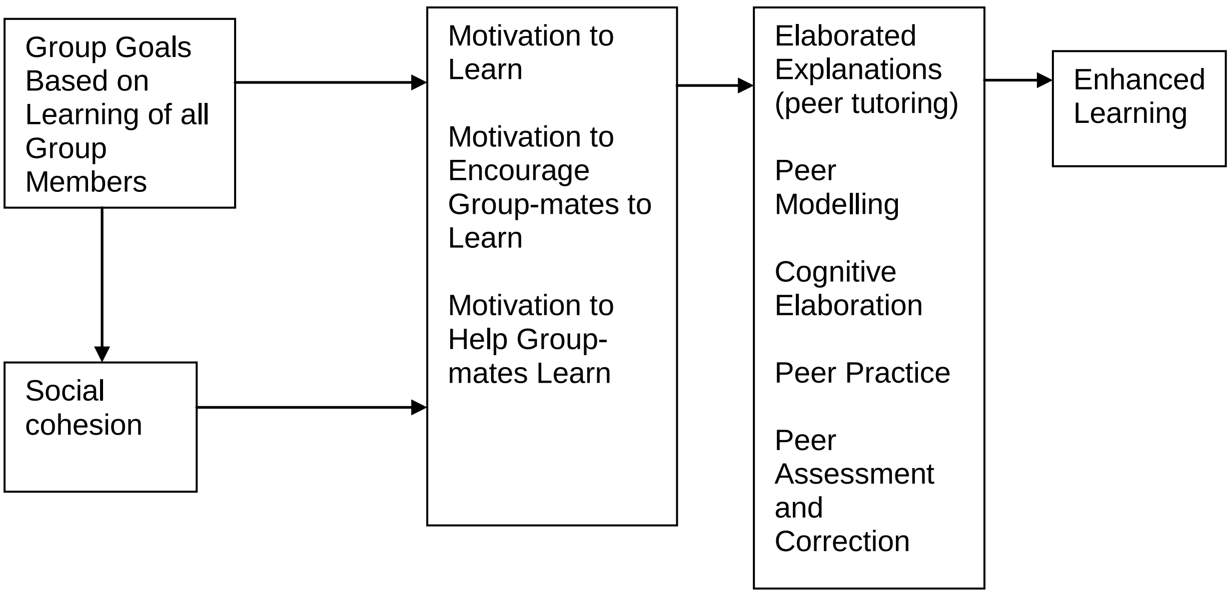
Slavin *et al.* (2003) have proposed a theoretical model intended to acknowledge the contributions of each of the major theoretical perspectives and the likely role that each plays in co-operative learning processes. They explore conditions under which each may operate, and suggest research and development needed to advance co-operative learning scholarship so that educational practice may truly benefit the lessons of thirty years of research.

The different perspectives on co-operative learning may be seen as complementary, not as exclusive alternatives. For example, motivational theorists would not argue that the cognitive theories are unnecessary but instead assert that motivation drives cognitive process, which in turn produces learning. They would argue that it is unlikely that over the long haul students would engage in the kind of elaborated explanations found by Webb (1989, 2008) to be essential to profiting from co-operative activity, without a goal structure designed to enhance motivation. Similarly, social cohesion theorists might identify the utility of extrinsic incentives to lie in their contribution to group cohesiveness, caring, and pro-social norms among group members, which in turn affects cognitive processes.

A model of how co-operative learning might improve learning, adapted from Slavin (1995), is shown in Figure 7.1, depicting the main components of group learning interaction and representing the functional relationships among the different theoretical approaches.

This diagram of the interdependent relationships among the components begins with a focus on group goals or incentives based on the individual learning of all group members. It assumes that motivation to learn and to encourage and help others to do so activates co-operative behaviours that will result in learning. This includes both task motivation and motivation to interact in the group. In this model, motivation to succeed leads directly to learning, and it also drives the behaviour and attitudes that foster group cohesion, which in turn facilitates the types of group interactions - peer modelling, equilibration, and cognitive elaboration - that yield enhanced learning and academic achievement.

Figure 7.1
How Co-operative Improves Learning



Co-operative Learning in Learning Environments for the 21st Century

Learning environments for the 21st century must be ones in which students are actively engaged with learning tasks and with each other. Today, teachers are in competition with television, computer games, and all sorts of engaging technology, and the expectation that children will learn passively is becoming increasingly unrealistic. Co-operative learning offers a proven, practical means of creating exciting social and engaging classroom environments to help students to master traditional skills and knowledge as well as develop the creative and interactive skills needed in today's economy and society. Co-operative learning itself is being reshaped for the 21st century, particularly in partnership with developments in technology.

Co-operative learning has established itself as a practical alternative to traditional teaching, and has proven its effectiveness in hundreds of studies throughout the world. Surveys find that a substantial proportion of teachers claim to use it regularly (*e.g.*, Puma, Jones, Rock, and Fernandez, 1993). Yet observational studies (*e.g.*, Antil, Jenkins, Wayne, and Vadasy, 1998) find that most use of co-operative learning is informal, and does not incorporate the group goals and individual accountability that research has identified to be essential. Clearly, co-operative learning can be a powerful strategy for increasing student achievement, but fulfilling this potential depends on the provision of professional development for teachers that is focused on the approaches most likely to make a difference.

Training in effective forms of co-operative learning is readily available, such as from the *Success for All Foundation* in the United States and the United Kingdom (www.successforall.org), as well as the US-based *Peer-Assisted Learning Strategies* (www.peerassistedlearningstrategies.net) and *Kagan Publishing and Professional Development* (www.kaganonline.com). Training should include not only workshops, but also follow-up into teachers' classes by knowledgeable coaches, who can give feedback, do demonstrations, and provide support.

In comparison with schooling practices that are often supported by governments - such as tutoring, technology use, and school restructuring - co-operative learning is relatively inexpensive and easily adopted. Yet, thirty years after much of the foundational research was completed, it remains at the edge of school policy. This does not have to remain the case: as governments come to support the larger concept of evidence-based reform, the strong evidence base for co-operative learning may lead to a greater focus on this set of approaches at the core of instructional practice. In the learning environments of the 21st century, co-operative learning should play a central role.

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