Cooperative Learning: Successful Integration of Theory, Research, and Practice

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Relationship Among Theory, Research, and Practice

Ideally, theory, research, and practice are interrelated (Johnson, 2003). Theory summarizes existing research, subsumes it into a meaningful conceptual framework, guides future research (tells us what we need to find out), and guides practice (tells us what to do in applied situations). Research validates or disconfirms theory, thereby leading to its refinement, modification, or abandonment. Practice is guided by validated theory, yet reveals inadequacies that lead to further refinement of the theory and new research studies.

Cooperative learning is an example of a successful integration of theory, research, and practice. In the present article, the nature of cooperative learning will be discussed, the underlying social interdependence theory will be presented, research testing the theory will be covered, and the importance of operationalizing practical procedures from the validated theory will be discussed.

Cooperative Learning

One of educational psychology’s great success stories is the widespread use of cooperative learning. From being relatively unknown and unused in the 1940s, 1950s, 1960s, and 1970s, cooperative learning is now utilized in schools and universities throughout the world in every subject area and from preschool through graduate school and adult training programs. Its use so pervades education that it is difficult to find a textbook on instructional methods, a teachers’ journal, or instructional material that does not discuss cooperative learning. Also, the cooperative learning literature has been translated into many languages. Our work, for example, has been translated into at least sixteen languages (Japanese, Chinese, Korean, Thai, Arabic, Greek, Italian, Spanish, French, Russian, Ukrainian, Polish, German, Norwegian, Danish, and Finnish).

Cooperative learning exists when students work together to achieve joint learning goals (Johnson, Johnson, & Holubec, 2002, 2008). Any assignment in any curriculum for any age student can be done cooperatively. In working cooperatively, students realize they (a) are mutually responsible for each other’s learning and (b) have a stake in each other’s success.

Three ways that cooperative learning may be used.

Formal cooperative learning groups consist of students working together, for from one class period to several weeks, to achieve shared learning goals and complete specific tasks and assignments jointly. The teacher makes necessary preinstructional decisions (such as size of the groups and the method for assigning students to groups), and then explains the instructional task and the cooperative structure. While the students work together, the teacher moves from group to group systematically monitoring their interactions and intervening when students do not understand the academic task or when there are problems in working together. After the assignment has been completed, the teacher evaluates the academic success of each student and has the groups process how well they functioned.

Informal cooperative learning groups consist of having students work together to achieve a joint learning goal in temporary, ad-hoc groups that last from a few minutes to one class period during direct teaching that sets expectations as to what will be covered in the class session, focuses student attention on the material to be learned, and provides closure to an instructional session. The procedure involves three- to five-minute focused discussions before and after the lecture or demonstration, in order to set expectations and pro-
vide closure, and two- to three-minute pair discussions interspersed every fifteen minutes or so throughout the lecture or demonstration, in order to ensure active cognitive processing of the material being presented.

Cooperative base groups are long-term, heterogeneous cooperative learning groups (lasting for one semester or one year) with stable membership, whose primary responsibilities are to provide support, encouragement, and assistance to make academic progress and develop cognitively and socially in healthy ways, as well as holding each other accountable for striving to learn. Base groups typically consist of three to four members, meet at the beginning and end of each class session (or week) in order to complete academic tasks such as checking each members' homework, routine tasks such as taking attendance, and personal support tasks such as listening sympathetically to personal problems or providing guidance for writing a paper.

What makes cooperative learning different from most instructional methods is that it is based on social interdependence theory and has been validated by hundreds of research studies. Social interdependence theory provides educators with a conceptual framework for understanding how cooperative learning may be (a) most fruitfully structured, (b) adapted to a wide variety of instructional situations, and (c) applied to a wide range of issues, such as achievement, ethnic integration, and prevention of drug abuse. The research provides a validation and generalizability that is lacking in most educational practices.

Social Interdependence Theory

The success of cooperative learning may result from its being based on social interdependence theory. Social interdependence exists when individuals share common goals, and each individual's outcomes are affected by the actions of the others (Deutsch, 1949, 1962; Johnson, 2003; Johnson & Johnson, 1989, 2005).

Deutsch (1949, 1962) conceptualized two types of social interdependence: positive and negative. Positive interdependence exists when there is a positive correlation among individuals' goal attainments. Individuals perceive that they can attain their goals if and only if the other individuals with whom they are cooperatively linked attain their goals. Negative interdependence exists when there is a negative correlation among individuals' goal achievements. Individuals perceive that they can obtain their goals if and only if the other individuals with whom they are competitively linked fail to obtain their goals. No interdependence exists when there is no correlation among individuals' goal achievements. Individuals perceive that the achievement of their goals is unrelated to the goal achievement of others.

Deutsch (1949) specified three psychological processes resulting from interdependence: substitutability (the degree to which the actions of one person substitute for the actions of another person), cathexis (the investment of psychological energy in objects outside of oneself, such as friends, family, and work), and inducibility (openness to being influenced and to influencing others).

When individuals take action, there are three ways that what they do may be related to the actions of others. One's actions may promote the success of others, obstruct the success of others, or not have any effect at all on the success or failure of others. Positive interdependence results in promotive interaction (individuals encouraging and facilitating each other's efforts to complete tasks in order to reach the group's goals), whereas negative interdependence results in oppositional or contrariant interaction (individuals discouraging and obstructing each other's efforts to complete tasks in order to reach their goals). The basic premise of social interdependence theory is that the way that participants' goals are structured determines how they interact, and the interaction pattern determines the outcomes of the situation.

There are five conditions that must be established in order for cooperation to be effective (Johnson, 2003; Johnson & Johnson, 1989, 2005).

Positive interdependence is the heart of cooperation. There are three major categories of interdependence: outcome, means, and boundary interdependence. Individual accountability exists when the performance of each individual member is assessed, the results given back to the individual and the group to compare against a standard of performance, and the member is held responsible by groupmates for contributing his or her fair share to the group's success. Promotive interaction is reflected in students helping and assisting each other and sharing needed resources. The greater the promotive interaction, the stronger the
effects of cooperation. Teamwork requires the appropriate use of interpersonal and small group skills. Cooperative learning is inherently more complex than competitive or individualistic learning, because students have to simultaneously engage in task work and teamwork. Group processing occurs when members discuss how well they are achieving their goals and maintaining effective working relationships among members. These five elements are the key to structuring cooperation effectively.

Research Validating Social Interdependence Theory

Between 1898 and 1989, over 575 experimental and 100 correlational studies were conducted by many researchers with different age types of subjects, in different subject-matter areas, and in different settings (see Johnson & Johnson, 1989 for a complete listing of these studies). Research participants have varied as to economic class, age, sex, nationality, and cultural background. Many research tasks, ways of structuring cooperation, and measures of the dependent variables have been used. Researchers who have conducted the research have markedly different orientations and were working in different settings, countries, and decades. The research on cooperation has validity and generalizability rarely found in the educational literature.

Cooperation tends to promote higher achievement than competitive or individualistic efforts (effect-sizes = 0.67 and 0.64 respectively). Cooperators spend considerably more time on task than competitors (effect-size = 0.76) or students working individually (effect-size = 1.17). Cooperative experiences, compared with competitive and individualistic ones, have been found to promote more positive attitudes toward the task and toward the experience of working on the task (effect-sizes = 0.57 and 0.42 respectively).

Over 175 studies have investigated the relative impact of cooperative, competitive, and individualistic efforts on the quality of relationships, and another 106 studies have investigated social support. Cooperation generally promotes greater interpersonal attraction among individuals than do competitive or individualistic efforts (effect-sizes = 0.67 and 0.60 respectively). Cooperative experiences tend to promote greater social support than do competitive (effect-size = 0.62) or individualistic (effect-size = 0.70) efforts. Stronger effects are found for peer support than for superior (teacher) support.

With few exceptions the solitary animal in any species is an abnormal creature. Psychological health is the ability (including cognitive capacities, motivational orientations, and social skills) to build, maintain, and appropriately modify interdependent relationships with others in order to succeed in achieving goals. Studies using diverse samples of adolescents and adults found (a) a strong relationship between cooperativeness and psychological health, (b) a strong relationship between a mixture of health and illness indicators and competitiveness, and (c) a strong relationship between an individualistic orientation and psychological pathology. Socially isolated and withdrawn students learn more social skills and engage in them more frequently within cooperative than within individualistic situations, especially when the group is rewarded for their doing so. Cooperation tends to promote higher self-esteem than competitive or individualistic efforts (effect-sizes = 0.58 and 0.44 respectively). Finally, cooperation promotes more frequent use of higher level reasoning strategies than do competitive (effect-size = 0.93) or individualistic (effect-size = 0.97) efforts. Similarly, cooperation tends to promote more accurate perspective-taking than do competitive (effect-size = 0.61) or individualistic (effect-size = 0.44) efforts.

These research studies represent one of the largest bodies of work ever conducted in educational psychology. The empirical support for cooperation's effectiveness over competitive and individualistic efforts is so powerful that responsible instruction may be obliged to include cooperative learning. The multiple outcomes simultaneously achieved by cooperation makes it all the more necessary for educational practice.

Implementing Cooperative Learning

In discussions of the relationship among theory, research, and practice, the role of practice has been somewhat neglected. The implementation of cooperative learning has had profound effects on social interdependence theory and research in at least four ways. First, the need for a persuasive rationale for the use of
cooperative learning led, in the 1970s and 1980s, to comprehensive reviews that organized the amount and nature of the existing research and focused attention on the variety of dependent variables that had been investigated (Johnson & Johnson, 1989). Second, the use of cooperative learning has focused theory and research on how to increase achievement in basic subject-matter areas such as math and reading, and how to solve social problems such as desegregation, inclusion of handicapped students in regular classrooms, prevention of drug abuse, and many at-risk pupils' low self-esteem.

Third, operationalizing cooperation in diverse settings (preschool, elementary and secondary schools, universities, afterschool and nonschool programs, inservice teacher training sessions, and so forth) validates social interdependence theory and the conceptual definitions of cooperative, competitive, and individualistic efforts. The operationalization of cooperation, competition, and individualistic efforts clarified the conceptual nature of each.

Fourth, in order to increase the effectiveness of cooperative learning, attention was focused on variables that mediated the relationship between positive interdependence and desired outcomes, such as increased learning and retention of academic material, and positive relations among diverse students. This led to significant revisions of social interdependence theory in order to include basic elements that must be present in cooperative situations, such as positive interdependence, individual accountability, promotive interaction, appropriate social skills, and group processing, as well as the conditions under which competition is effective (Johnson & Johnson, 1999). The identification of the five basic elements of cooperation focused research on the impact of these variables.

Fifth, the use of cooperative learning to address social problems and a wide variety of educational issues expanded the outcomes considered by social interdependence theory. Issues such as ethnic and cultural integration, and reduction of suicide, drug abuse, bullying, have widened the scope and breath of social interdependence theory. The theory was also expanded and further research generated when cooperative learning focused on values and moral reasoning and on predispositions toward cooperative, competitive, and individualistic efforts. The theory was also expanded and considerably more research was stimulated when the relation between social interdependence and conflict was delineated.

Finally, the widespread use of cooperative learning and the many different ways that it has been operationalized strengthen the confidence in social interdependence theory.

Thus, in the interrelations among social interdependence theory, research, and practice, it may be practice that has been the most powerful link in the chain. The worldwide application of cooperative learning may have fueled much of the interest in and development of social interdependence theory and generated most of the hundreds of research studies that have been conducted in the past thirty years. There is nothing so important to a good theory as the demonstration of its effective application.

Summary

Cooperative learning is a classic example of the interaction among theory, research, and practice. It is based on social interdependence theory, whose basic premise is that the way in which goals are structured determines how individuals interact which, in turn, creates outcomes. Over 750 research studies have been conducted in the past eleven decades on the relative merits of cooperative, competitive, and individualistic efforts and the conditions under which each is appropriate. These studies have validated, modified, refined, and extended the theory. Social interdependence theory has been widely applied, especially in education. The applications have resulted in revisions of the theory and the generation of considerable new research.
Figure  Relationship Among Theory, Research, and Practice

References


