Energizing Learning: The Instructional Power of Conflict

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Although intellectual conflict may be an important instructional tool (because of its potential constructive outcomes), conflict is rarely structured in instructional situations (because of its potential destructive outcomes). Many educators may be apprehensive about instigating intellectual conflict among students because of the lack of operational procedures to guide them. Ideally, operational procedures should be based on social science theory that is validated by research. *Constructive controversy* is an instructional procedure that is designed to create intellectual conflict among students and that meets these criteria. The authors of this article summarize the theory underlying constructive controversy and review the results of their meta-analysis of the validating research. The positive outcomes indicate that intellectual conflict can have important and positive effects on student learning and well-being.

Whether teachers desire it or not, conflicts among students inevitably will occur in any classroom. The purpose of this article is to present evidence that intellectual conflict is not only highly desirable but also an essential instructional tool that energizes student efforts to learn. In doing so, it is necessary to summarize the conflicting views about conflict, define constructive controversy, describe how it is used in academic situations, summarize its underlying theory, and review the research demonstrating its effectiveness.

Is Conflict Constructive or Destructive?

Conflict Is Constructive

Conflict is to student learning what the internal combustion engine is to the automobile. The internal combustion engine ignites the fuel and the air with a spark to create the energy for movement and acceleration. Just as the fuel and the air are inert without the spark, so, ideas in the classroom are inert without the spark of intellectual conflict. Intellectual conflict is the spark that energizes students to seek out new information and study harder

and longer (Johnson, Johnson, & Johnson, 1976; Johnson & Johnson, 2007; please note that all references to "Johnson & Johnson" refer to D. W. Johnson and R. Johnson unless otherwise indicated.). By structuring intellectual conflict in a lesson, instructors can grab and hold students' attention and energize students to learn at a level beyond what they may have intended. More specifically, intellectual conflict has the potential to accomplish the following:

1. Focus student attention on the material to be learned and on the instructional tasks.
2. Energize students to complete instructional tasks, seek out new information, and study harder and longer.
3. Motivate students to learn and to continue learning about the subject after the course has ended.
4. Produce higher levels of cognitive reasoning in completing the instructional tasks.
5. Increase accuracy and frequency of perspective taking.
6. Produce higher levels of achievement and retention of the material being studied.
7. Produce higher levels of creativity and divergent thinking.
8. Build more positive relationships among students.
9. Increase students' self-esteem. (Johnson & Johnson, 2005b, 2007)

Conflict Is Destructive

Not everyone believes that intellectual conflict is constructive and will lead to desirable outcomes. Educators often view intellectual conflict as undesirable, as it can lead to anger, hostility, rejection, divisiveness, damaged relationships, distrust, and decreased commitment to learning (Chiu & Khoo, 2003; Collins, 1970; Janz & Tjosvold, 1985). Conflict can create stress and anxiety, which may result in loss of sleep, injury and accidents, failure to innovate or be creative, absenteeism, sick days, discipline problems, and reductions in the quality and quantity of achievement (Dana, 1999; Slaikev & Hasson, 1998). Conflict between instructors and students or among faculty may reduce instructor productivity through low instructor and student morale, missed opportunities to teach critical concepts, loss of time because of the need to mediate or control conflicts, and loss of the time that it takes replacement instructors to become effective (Dana 1999; Slaikev & Hasson, 1998). Conflicts may also result in passive-aggressive

behavior, abusive behavior (including bullying and sexual harassment), loss of credibility, miscommunication, reduced collaboration, the formation of factions and cliques, and other negative outcomes (Deutsch, Coleman, & Marcus, 2006).

Avoiding Conflict

Surprisingly little conflict tends to be structured in instructional situations (DeCecco & Richards, 1974), suggesting that many, if not most, educators believe that conflict may have more negative than positive outcomes. This belief is unfortunate because avoiding conflict tends to undermine interpersonal relationships and team performance as well as increase competitiveness (Chen & Tjosvold, 2002; Wong, Tjosvold, Wong, & Liu, 1999), and may result in conflicts that need to be managed in costly, painful ways (Janz & Tjosvold, 1985). Creating intellectual conflicts typically involves discussion among students, and Parker (2006) notes that discussion remains a rarity in U.S. schools. High-stakes accountability, furthermore, discourages the use of intellectual conflict among students, especially if it involves controversial topics (Allington, 2002; Noguera & Cohen, 2006; Shepard, 2000). Instructors may avoid structuring intellectual conflicts because the student involvement and interest it generates tend to result in animated and somewhat noisy discussion. Consequently, instructors may fear they will lose control of their classes and thereby lose their sense of being a good instructor. Images of discussions spilling into chaos are particularly associated with lower-socioeconomic-status and lower-achieving students. The use of intellectual conflict may also be avoided because of concern about coverage: Instructors may fear that intellectual conflicts will take time to resolve and thereby limit the amount of material covered. Instructors may also be concerned that the students may sacrifice open-mindedness for advocacy when engaging in arguments (Baron, 1995; Perkins, Farady, & Bushey, 1991; Voss & Means, 1991). In one Midwestern college, the majority of students believed that balanced discussion of diversity issues was impossible (Trosset, 1998). Finally, instructors may be concerned about the lack of operational procedures for structuring intellectual conflicts and their own lack of training in how to conduct intellectual conflicts (i.e., insufficient *proceduralization;* Beyer, 1984). For these and other reasons, intellectual conflict among students is conspicuously lacking in many classrooms.

The Nature of Conflict

In discussing whether conflicts are to be encouraged or discouraged, it is necessary to understand the nature of conflict. A *conflict* exists whenever incompatible activities occur (Deutsch, 1973). An activity that is incompatible with another activity is one that prevents, blocks, or interferes with the occurrence or effectiveness of the other activity. At least four types of conflicts are important for schools: (a) *controversy,* which occurs when one person's ideas, information, conclusions, theories, and opinions are incompatible with those of another and the two seek to reach an agreement; (b) *conceptual conflict,* which occurs when incompatible ideas exist simultaneously in a person's mind or when information being received does not seem consistent with what

one already knows; (c) *conflict of interests,* which occurs when the actions of one person attempting to reach his or her goals prevent, block, or interfere with the actions of another person attempting to reach his or her goals; and (d) *developmental conflict,* which occurs when recurrent incompatible activities between adult and child, based on the opposing forces of stability and change within the child, cycle in and out of peak intensity as the child develops cognitively and socially (Johnson & Johnson, 2005a). *Intellectual conflict* typically involves constructive controversy and conceptual conflict.

If we are to make the case that intellectual conflict can be used to enhance student learning and development, there must be operational procedures that guide instructors in its use and empirical evidence documenting the effectiveness of the procedures. A number of instructional procedures are recommended for promoting intellectual conflict. Oliver and Shaver (1966/1996) have recommended a jurisprudential procedure in which instructors present a controversial issue and conduct a dialogue with students emphasizing justification, clarification, and evidence. Procedures based on dialectical systems are used to create cognitive conflict by requiring students to witness a "debate" between at least two positions (Churchman, 1971; Earle, 1973; Paul, 1984). Dialectical procedures are based on the assumptions that (a) individuals, because of their differing areas of expertise, value systems, and perspectives, will make different inferences from the same data; and (b) when viewing two interpretations of the same information, students will become involved in resolving the conflicting interpretations. Unfortunately, few empirical studies document the benefits of jurisprudential and dialectical procedures. Any instructional procedure emphasizing inquiry, problem-based learning, and problem solving may result in cognitive conflict, but few instructional procedures emphasize the creation of intellectual conflict. There is growing interest in argumentation and debate as instructional procedures (Huber & Snider, 2005). Many conflict resolution programs focus on conflict of interests and emphasize negotiation, mediation, restitution, and reconciliation (Johnson & Johnson, 2005a). These programs typically are separate from the academic program.

Among programs promoting intellectual conflict, constructive controversy (Johnson & Johnson, 2007) may be the most closely based on theory and may be the most extensively evaluated. We will use constructive controversy as an example to make the case that intellectual conflict is a powerful and essential aspect of instruction and learning. In the following sections, constructive controversy will be defined, the instructional procedure will be described, the underlying theory will be discussed, and the empirical evidence supporting its effectiveness will be summarized.

What Is Constructive Controversy?

Constructive controversy exists when one person's ideas, information, conclusions, theories, and opinions are incompatible with those of another and the two seek to reach an agreement (Johnson & Johnson, 2007). Constructive controversies involve what Aristotle called *deliberate discourse* (the discussion of the

Table 1
Constructive Controversy, Debate, Concurrence Seeking, and Individualistic Processes

Process	Constructive Controversy	Debate	Concurrence Seeking	Individualistic Efforts
Initial conclusion	Categorizing and organizing information to derive conclusions	Categorizing and organizing information to derive conclusions	Categorizing and organizing information to derive conclusions	Categorizing and organizing information to derive conclusions
Oral presentation	Presenting, advocating, elaborating position and rationale	Presenting, advocating, elaborating position and rationale	Presenting, advocating, elaborating position and rationale	No oral statement of positions
Level of uncertainty	Being challenged by opposing views results in conceptual conflict and uncertainty about correctness of own views	Being challenged by opposing views results in conceptual conflict and uncertainty about correctness of own views	Being challenged by opposing views results in conceptual conflict and uncertainty about correctness of own views	Presence of only one view results in high certainty about the correctness of own views
Motivation	Epistemic curiosity motivates active search for new information and perspectives	Closed-minded rejection of opposing information and perspectives	Apprehension about differences and closed-minded adherence to own point of view	Continued high certainty about the correctness of own views
Revised conclusion	Reconceptualization, synthesis, integration	Closed-minded adherence to own point of view	Quick compromise to dominant view	Adherence to own point of view
Relative outcomes	High achievement, relationship quality, and psychological health	Moderate achievement, relationship quality, and psychological health	Low achievement, relationship quality, and psychological health	Low achievement, relationship quality, and psychological health

advantages and disadvantages of proposed actions) aimed at synthesizing novel solutions (i.e., *creative problem solving;* see Table 1 and Figure 1). Related to controversy is *cognitive conflict,* which occurs when incompatible ideas exist simultaneously in a person's mind or when information being received does not seem consistent with what one already knows (Johnson & Johnson, 2007). Constructive controversy is most commonly contrasted with concurrence seeking, debate, and individualistic efforts.

Concurrence seeking occurs when members of a group emphasize agreement, inhibit discussion to avoid any disagreement or argument, and avoid realistic appraisal of alternative ideas and courses of action (Johnson & Johnson, 2007). Concurrence seeking is close to Janis's (1982) concept of *groupthink,* which arises when members of a decision-making group set aside their doubts and misgivings about whatever policy is favored by the emerging consensus so as to be able to concur with the other members. The underlying motivation of groupthink is the strong desire to preserve the harmonious atmosphere of the group, on which each member has become dependent for coping with the stresses of external crises and for maintaining self-esteem (Janis, 1982).

Debate occurs when two or more individuals argue positions that are incompatible and a judge declares a winner on the basis of who presented his or her position the best (Johnson & Johnson, 2007). An example of debate is when each member of a group is assigned a position on whether more or less regulation is needed to manage hazardous wastes and an authority declares as the winner the group member who makes the best presentation.

Individualistic efforts occur when individuals work alone without interacting with each other, in a situation in which their goals are unrelated and independent from each other (Johnson, Johnson, & Holubec, 2008).

Instructors and schools may grapple with controversial issues and controversial subject matter; however, these are not constructive controversy, although the constructive controversy procedure may be useful in discussing them. *Controversial issues* are those on which society has not found consensus and which are considered so significant that each proposed way of dealing with them has ardent supporters and adamant opponents (Johnson & Johnson, 2007). Controversial issues, by nature, arouse protest from some individual or group because any position taken will be opposed by those who favor another position. The protest may result from a feeling that a cherished belief, an economic interest, or a basic principle is threatened. In contrast, constructive controversy is aimed primarily at learning rather than at resolving political issues within a community.

Controversial subject matter is curriculum content on which members of the community have not found consensus and which is considered to be significant enough that there is opposition to using the curriculum materials or covering the topic (Johnson & Johnson, 2007). It varies from school to school and community to community. Any subject matter issue or topic has the potential to become controversial at some time or place. However, constructive controversy is a procedure for learning, not for addressing controversial issues or controversial subject matter.
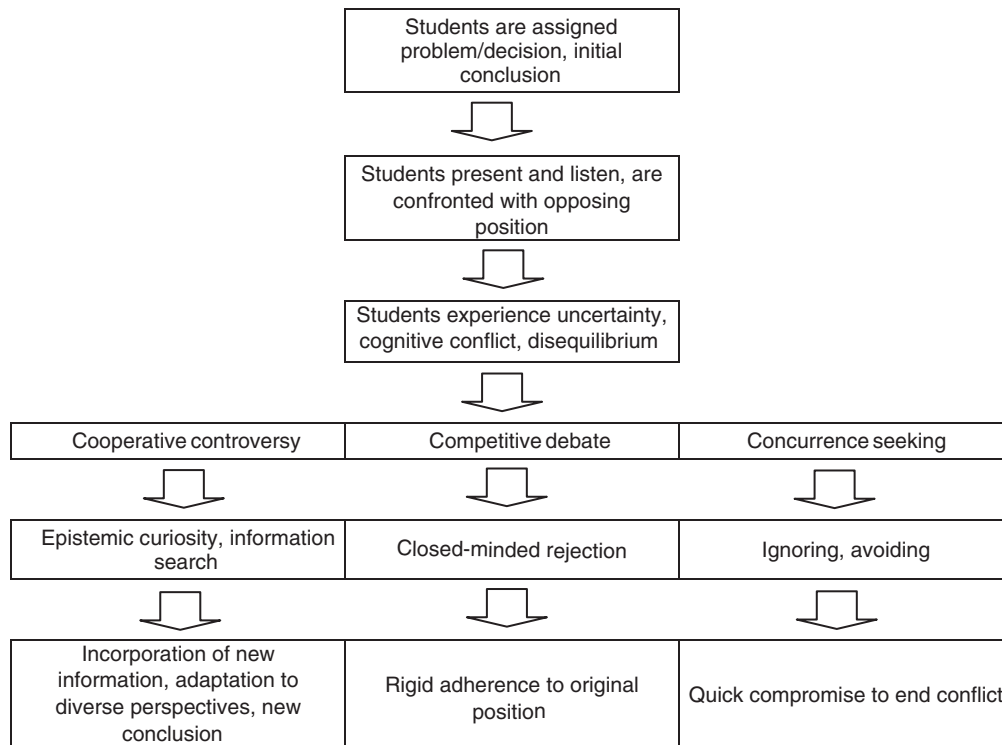
FIGURE 1. *Processes of constructive controversy, debate, and concurrence seeking.*

The Instructional Procedure for Constructive Controversy

> Have you learned lessons only of
> those who admired you, and were tender
> with you, and stood aside for you?
> Have you not learned great lessons
> from those who braced themselves
> against you, and disputed the passage
> with you?

Walt Whitman, 1860

A U.S. history instructor is presenting a unit on civil disobedience. The instructor notes that in numerous instances, such as in the civil rights and antiwar movements in the United States, individuals have wrestled with the issue of breaking the law to redress a social injustice. In the civil rights movement individuals broke the law to gain equal rights for minorities. In the past few years, however, prominent public figures have felt justified in breaking laws for personal or political gain. The teacher asks, "Is civil disobedience in a democracy constructive or destructive?" Students are placed in groups of four and given the assignments of writing a report and passing a test on the role of civil disobedience in a democracy. Each group is divided into two pairs. One pair is instructed to develop and advocate the best case possible for the constructiveness of civil disobedience in a democracy; the other pair is instructed to develop and advocate the best case possible for the destructiveness of civil disobedience in a democracy. The overall group goal is for students to reach consensus as to the role

of civil disobedience in a democracy. To develop their positions, students draw from sources such as the Declaration of Independence, written primarily by Thomas Jefferson; *Civil Disobedience,* by Henry David Thoreau; *Speech at Cooper Union, New York,* by Abraham Lincoln; and *Letter From Birmingham Jail,* by Martin Luther King Jr. The students are to learn the information relevant to the issue being studied and ensure that all other group members learn the information, so that (a) their group can write a high-quality report on the issue, and (b) all group members can achieve high scores on the test. Students proceed through the following steps of constructive controversy.

Step 1: Preparing the Best Case Possible for Position

Each pair prepares the best case possible for its assigned position by (a) researching the assigned position and learning all relevant information; (b) organizing the information into a persuasive argument that contains a thesis, assertion, or claim ("Civil disobedience is a constructive necessity to maintain the integrity and fidelity of a democracy"), a rationale supporting the thesis ("Civil disobedience provides *a, b,* and *c*"), and a logical conclusion that is the same as the thesis ("Therefore, civil disobedience is a constructive necessity to maintain the integrity and fidelity of a democracy"); and (c) planning how to advocate effectively for the assigned position to ensure that it receives a fair and complete hearing.

Step 2: Persuasively Presenting the Best Case for Position

Students present the best case for their assigned position to ensure that it receives a fair and complete hearing. They strive to be

forceful, persuasive, and convincing advocates, ideally using more than one medium. They listen carefully to and learn the opposing position, clarifying anything they do not understand.

Step 3: Engaging in an Open Discussion

Students engage in an open discussion of the issue. They freely exchange information and ideas while arguing forcefully and persuasively for their position (presenting as many facts as they can to support it) and engaging in spirited disagreement. They critically analyze the opposing position (its evidence and reasoning), ask for data to support assertions, and refute the opposing position by pointing out the inadequacies in the information and reasoning. While doing so, students thoroughly learn the opposing position and give it a "trial by fire" as they follow the rules for constructive controversy. Finally, students rebut attacks on their position. The instructor may take sides to encourage more spirited arguing, play devil's advocate, ask one group to observe another group engaging in a spirited argument, and generally stir up the discussion.

Step 4: Reversing Perspectives

Students reverse perspectives and present the best case possible for the opposing position. In presenting the opposing position sincerely and forcefully, students may use their notes and add new facts. Students should strive to see the issue from both perspectives simultaneously.

Step 5: Creating a Synthesis or Integrated Joint Position

Students drop all advocacy and strive to find a synthesis to which they can all agree. They summarize the best evidence and reasoning from both sides and integrate them into a joint position that is new and unique. Students write a group report on the synthesis including the supporting evidence and rationale, individually take a test on both positions, process how well the group functioned, and celebrate the group's success and the hard work of each member.

This procedure, which has been implemented in classes in numerous parts of the world, is derived from a theory validated by considerable research (Johnson & Johnson, 2007). The theory and its limiting conditions will first be discussed. The research will then be discussed.

Theory of Constructive Controversy

The processes through which intellectual conflict leads to positive outcomes has been theorized about by developmental (Kohlberg, 1969; Piaget, 1948, 1950), cognitive (Berlyne, 1966; Doise & Mugny, 1984; Hammond, 1965), social (Janis, 1982; Johnson, 1970, 1980; Johnson & Johnson, 1979), personality (Freud, 1930/1961), communication (Smedslund, 1966), and organizational (Maier, 1970) psychologists. On the basis of their works, we have posited that conflict among ideas, theories, or conclusions leads to uncertainty, which leads to epistemic curiosity, which, in turn, leads to reconceptualized and refined conclusions.

The Process of Constructive Controversy

More specifically, we propose the following process of constructive controversy (Johnson, 1970; Johnson & Johnson, 1979,

1989, 2003, 2007; Johnson et al., 1976; Johnson, Johnson, & Smith, 2000):

1. When individuals are presented with a problem or decision, they form an initial conclusion based on categorizing and organizing their current (but usually limited) information, experience, and perspectives. They tend to have a high degree of confidence in their initial conclusion (they freeze the epistemic process).
2. When individuals present their initial conclusion and its rationale to others, they tend to engage in cognitive rehearsal and higher-level reasoning strategies, thereby deepening their understanding of the problem or decision.
3. When individuals are confronted with different conclusions based on other people's information, experiences, and perspectives, they tend to become uncertain as to the correctness of their own conclusion, and a state of conceptual conflict or disequilibrium is aroused. They unfreeze their epistemic process.
4. Uncertainty, conceptual conflict, or disequilibrium tends to motivate *epistemic curiosity.* The result is an active search for (a) more information and new experiences (increased specific content) and (b) a more adequate cognitive perspective and reasoning process (increased validity) in the hope of resolving the uncertainty.
5. By adapting their cognitive perspectives and reasoning through understanding and accommodating the perspectives and reasoning of others, individuals tend to derive a new, reconceptualized, and reorganized conclusion. Novel solutions and decisions that, on balance, are qualitatively better tend to be detected.

The process may begin again at this point, or it may be terminated by a freezing of the current conclusion and resolution of any dissonance by increasing confidence in the validity of that conclusion.

This process contrasts with concurrence seeking, debate, and individualistic efforts. The process of concurrence seeking is a combination of cooperation and avoidance of conflict. Two sides prepare their positions, present the best case possible, experience uncertainty once they realize there is disagreement, become apprehensive about the disagreement, and seek to avoid and suppress the conflict by finding a compromise position that ends disagreement immediately. The process of debate is based on competition. Two sides prepare their positions, present the best case possible, listen carefully to the opposing position, attempt to refute it, rebut the opponent's attempts to refute their position, and wait for the judges to declare the winner. Although the process of debate begins the same as the process of controversy, the uncertainty created by being challenged results in a closed-minded, defensive rejection of other points of view and dissonant information (Tjosvold & Johnson, 1978). Individuals thus stay committed to their original positions. Because the debate requires refutation of other points of view, however, individuals do learn opposing information. In individualistic efforts, individuals study both sides of the issue but make no oral statements; their initial conclusions are not challenged, and they are

free to confirm what they initially thought (Johnson et al., 2008).

Conditions Determining the Constructiveness of Controversy

> He that wrestles with us strengthens our nerves, and sharpens our skill. Our antagonist is our helper.
>
> Edmund Burke, 1790

Although controversies can operate in a beneficial way, they will not do so under all conditions. Whether controversy has positive or negative consequences depends largely on the conditions under which it occurs. These conditions include the context within which the controversy takes place, the heterogeneity of participants, the distribution of information among group members, the level of group members' social skills, group members' ability to engage in rational argument, and the active involvement of all participants (Johnson & Johnson, 1979, 1989, 2007).

Cooperative goal structure. Deutsch (1973) emphasizes that the context in which conflicts occur has important effects on whether they turn out to be constructive or destructive. There are two possible contexts for conflict: cooperative and competitive. A *cooperative context* tends to facilitate constructive controversy, whereas a *competitive context* tends to promote destructive controversy (Johnson, 2003). Controversy in a competitive context tends to result in closed-minded lack of interest and rejection of the opponent's ideas and information, and rigid adherence to one's original conclusion (Johnson & Johnson, 2007; Tjosvold, 1998). In a competitive context, people often sacrifice open-mindedness for advocacy when they construct arguments (Baron, 1995; Perkins et al., 1991; Voss & Means, 1991). A competitive context tends to induce competence threat (i.e., social comparison occurs exclusively in terms of a competence differential). When a competitive social comparison of competencies occurs, participants tend to deny the other's competence and try to confirm their own point of view instead of solving the problem or accomplishing the task (Butera & Mugny, 1995), in a dynamic similar to downward comparison (Wills, 1981). The result is that engaging in controversy with someone who has more expertise tends to be threatening because adopting the expert's conclusions implies acknowledging one's own incompetence (Butera & Mugny, 2001). To preserve one's own sense of competence, one is motivated to deny the expert's competence rather than attempt to solve the problem. In situations where the other's superior expertise has to be recognized, being obligated to recognize one's inferior competence leads to rejection of the expert's information (Mugny, Tafani, Falomir, & Layat, 2000). In addition, in a competitive context, people generally perceive their opponent to be biased. This perception motivates them to act in competitive, aggressive, and conflict-escalating ways (Kennedy & Pronin, 2008).

In a cooperative context, constructive controversy tends to result in open-mined inquiry that leads to refined conclusions (Johnson & Johnson, 2007). Constructive controversy in a cooperative context tends to induce feelings of comfort, pleasure, and helpfulness in discussing opposing positions, an open-minded listening to the opposing positions, motivation to hear more about the opponent's arguments, more accurate understanding of the opponent's position, and the reaching of more integrated positions where the opposing conclusions and reasoning are synthesized into a final position (Johnson & Johnson, 2007; Tjosvold, 1998). These patterns of interaction, in turn, promote social support and safety, creativity, performance, and higher quality solutions to which participants are highly committed (Tjosvold, 1998). In cooperative situations, distributed knowledge and different perspectives tend to be viewed as complementary and interdependent, which, in turn, increases accurate perspective taking, reduces competence threat, and focuses participants' attention on coordinating different points of view to enhance the cooperative effort, all of which tends to enhance learning and productivity (Butera, Huguet, Mugny, & Prez, 1994; Butera, Mugny, & Buchs, 2001; Gruber, 2006).

Skilled disagreement. For controversies to be managed constructively, participants need interpersonal and small group skills (Johnson, 2009; D. W. Johnson & F. Johnson, 2009). Even in carefully structured cooperative situations, there may still be competitive elements involving leadership and dominance (e.g., demonstrating superior power, intellect, or competence). Seeking superiority can come at the cost of achievement and group success. Competitive goals may be reflected in lack of politeness or skill when participants express disagreement (Chiu & Khoo, 2003). Impolite disagreement has pronounced negative influences on relationships, achievement, and group success. Although cooperative goals need to be compelling enough that concerns about leadership and dominance become nonexistent or secondary, participants still need to disagree and challenge each other with considerable skill. In an effort to adhere to and internalize the norms of skilled disagreement, participants should direct themselves as follows:

1. Be critical of ideas, not people. I challenge and refute the ideas of the other participants while confirming their competence and value as individuals. I do not indicate that I personally reject them.
2. Separate my personal worth from criticism of my ideas.
3. Remember that we are all in this together, sink or swim. I focus on coming to the best decision possible, not on winning.
4. Encourage everyone to participate and to master all the relevant information.
5. Listen to everyone's ideas, even if I do not agree.
6. Restate what someone has said if it is not clear.
7. Differentiate before I try to integrate. First, I bring out *all* ideas and facts supporting both sides and clarify how the positions differ. Then, I try to identify points of agreement and put them together in a way that makes sense.
8. Try to understand both sides of the issue. I try to see the issue from the opposing perspective to understand the opposing position.
9. Change my mind when the evidence clearly indicates that I should do so.

10. Emphasize rationality in seeking the best possible answer, given the available data.
11. Follow the *golden rule of conflict:* I act toward opponents as I would have them act toward me. I want the opposing pair to listen to me, so I listen to them. I want the opposing pair to include my ideas in their thinking, so I include their ideas in my thinking. I want the opposing pair to see the issue from my perspective, so I take their perspective.

One of the most important skills of the group is to be able to disagree with each other's ideas while confirming each other's personal competence (Tjosvold, 1998). Disagreeing with others and, at the same time, imputing incompetence to them, tends to increase their commitment to their own ideas and their rejection of the opponent's information and reasoning. Disagreeing with others while simultaneously confirming their personal competence, however, results in being better liked and receiving less criticism of one's own ideas; opponents become more interested in learning about one's ideas and more willing to incorporate one's information and reasoning into their own analysis of the problem. The participants are more likely to believe that their goals are cooperative, to integrate their perspectives, and to reach agreement (Tjosvold, 1998).

Another important set of skills for exchanging information and opinions in a context of constructive controversy is perspective taking (Johnson, 1971; Johnson & Johnson, 1989). More information, both personal and impersonal, is disclosed in interactions with a person who is engaging in perspective-taking behaviors (such as paraphrasing an opponent's statements; Colson, 1968; Noonan-Wagner, 1975; Sermat & Smyth, 1973; Taylor, Altman, & Sorrentino, 1969). Perspective-taking skills are reflected in one's capacity to phrase messages so that they are easily understood by others and to comprehend accurately the messages of others (Feffer & Suchotliff, 1966; Flavell, 1968; Hogan & Henley, 1970). Perspective taking in conflicts results in increased understanding and retention of the opponent's information and perspective (Johnson, 1971). Perspective taking facilitates creative, high-quality problem solving (Johnson, 1971). Finally, perspective taking promotes more positive perceptions of the information-exchange process, of fellow group members, and of the group's work (Johnson, 1971).

A third set of skills involves the cycle of differentiation of positions and their integration (D. W. Johnson & F. Johnson, 2009). Group members should ensure that there are several cycles of differentiation (bringing out differences in positions) and integration (combining several positions into one new, creative position). The potential for integration is never greater than the adequacy of the differentiation already achieved. Premature integration tends to result in poor decisions (Janis, 1982). Controversies often go through a series of differentiations and integrations before reaching a final decision (Johnson & Johnson, 2007).

Rational argument. In constructive controversy, group members are encouraged to follow the canons of rational argumentation (Johnson & Johnson, 2007). Rational argumentation begins when each side constructs its pro and con arguments. An argument consists of an assertion or claim, a rationale, and a conclusion that reiterates the thesis. Constructing an argument includes generating ideas, collecting relevant information, organizing the information through inductive and deductive logic, and making tentative conclusions based on one's current understanding. One's position is then presented to a person holding the opposite point of view. A dialogue follows. Engaging in intellectual arguments is like dancing with the opponent. Each move creates a countermove. Person 1 can make an assertion or claim, and Person 2 can respond with a concession, a request for justification (reasons that the assertion or claim is true), or a refutation (a challenge to the validity of the information and logic contained in the assertion). If asked for justification, Person 1 responds with empirical evidence or an explanation. Empirical evidence tends to be the strongest form of justification because it ties the assertion to actual events. Plausible explanations of how a cause is connected to an effect are useful when empirical evidence is lacking (explanations are often stories or examples illustrating how a cause and effect are linked). If confronted with a refutation, Person 1 can respond with a rebuttal delineating the validity of his or her information and logic and the flaws in Person 2's refutation. Rational argumentation requires that participants keep an open mind, changing their conclusions and positions when others are persuasive and convincing in their presentation of rationale, evidence, and logical reasoning. In other words, participants engage in open-minded inquiry characterized by rational argumentation and focused on creating a synthesis that incorporates the best reasoned judgments of everyone involved.

Active involvement of all participants. The likelihood that a controversy will have positive outcomes tends to increase as the active involvement of all participants increases. Controversy, therefore, may *not* result in beneficial outcomes when one or more persons

- avoid the conflict;
- yield to others (see discussion of compliance in Mugny, Doise, & Perret-Clermont, 1975–1976; although compliance is an easy way to avoid and end conflicts, it reduces the opportunity for positive outcomes);
- passively refuse to explain their views or perspectives; or
- impose their views on others without explanation (Mugny & Doise, 1978), on the basis of unilateral decision making (Carugati, De Paolis, & Mugny, 1980–1981, Study 2; Mugny, De Paolis, & Carugati, 1984), asymmetrical power, or authority (a child works with an adult or a leader is appointed; Carugati et al., 1980–1981, Study 1), or when communication is not possible (Doise & Mugny, 1975).

Empirical Evidence

General Characteristics of Constructive Controversy Research

The research on constructive controversy has been conducted primarily in the past 40 years by numerous researchers in a variety of settings using many different participant populations and many different tasks in both lab-experimental and field-experimental formats (see Table 2). In 82% of the studies, participants were randomly assigned to conditions. All but two of the studies were published in journals. Participants ranged from first-grade students to adults. The duration of the studies

Table 2
General Characteristics of Studies (n = 39)

Characteristic	Number	Percentage
Decade conducted		
1970–1979	11	32
1980–1989	16	38
1990–1999	6	15
2000–2009	6	15
Assignment to conditions		
Random assigned participants	32	82
No random assignment	7	18
Grade level		
Grades 1–3	7	18
Grades 4–6	9	23
Grades 7–9	4	10
Grades 10–12	3	7
College	14	36
Adult	2	5
Mode of publication		
Published in journals	37	94
Dissertation	1	3
Conference paper	1	3
Number of sessions		
1 Session	14	36
2–9 Sessions	8	20
10–20 Sessions	13	33
21+ Sessions	4	10

ranged from 1 to more than 20 sessions. Taken together, the results have considerable validity and generalizability. Weighted effect sizes were computed for the 39 studies (i.e., using Hedges unbiased estimator g^U weighted by the inverse of its variance) included in the analyses (see Table 3).

Achievement, Retention, and Quality of Decision Making and Problem Solving

From Table 3 it may be seen that, in these studies, controversy tended to result in greater mastery and retention of the material and of the skills being learned than did concurrence seeking (effect size [*ES*] = 0.70), debate (*ES* = 0.62), or individualistic efforts (*ES* = 0.76). More specifically, participation in a constructive controversy—in comparison with concurrence seeking, debate, and individualistic efforts—tended to result in (a) significantly greater ability to recall the information and reasoning contained in one's own and others' positions, (b) more skillful transferring of such efforts to new situations, and (c) greater generalization of principles learned to a wider variety of situations. In addition, constructive controversy tended to result in higher quality decisions (including decisions that involved ethical dilemmas) and higher quality solutions to complex problems for which different viewpoints could plausibly be developed (Boulding, 1964; Glidewell, 1953; Hall & Williams, 1966, 1970; Hoffman, Harburg, & Maier, 1962; Hoffman & Maier, 1961; Maier & Hoffman, 1964; Maier & Solem, 1952). Disagreeing for mutual benefit tended to result in integrated, high-quality solutions to problems (Lovelace, Shapiro, & Weingart, 2001; Nauta, De

Dreu, & Van Der Vaart, 2002). Finally, controversy promoted cognitive rehearsal and accurate understanding of both perspectives (Smith, Johnson, & Johnson, 1981) and enhanced elaboration in oral interactions (Smith, Johnson, & Johnson, 1984).

An interesting question concerning controversy and problem solving is, What happens when erroneous information is presented by participants? Can the advocacy of two conflicting but wrong solutions to a problem create a correct solution? In most of the studies conducted, two conflicting but legitimate alternative solutions were advocated by members of problem-solving groups. Creative contributions, however, may be made by opposing positions even when they are wrong. The value of the controversy process lies not so much in the correctness of an opposing position as in the attention and thought processes it induces. More cognitive processing may take place when individuals are exposed to more than one point of view, even if the point of view is incorrect. Nemeth and Wachtler (1983) found that participants exposed to a credible minority view generated more solutions to a problem and more correct solutions than did participants exposed to a consistent single view, even if the minority view was incorrect. For example, a number of studies on cognitive reasoning have focused on how nonconserving, cognitively immature children can be influenced to gain critical insights into conservation. Presenting immature children with erroneous information that conflicts with their initial position has been found to promote some cognitive growth, although not as much growth as when they receive correct information (Cook & Murray, 1973; Doise, Mugny, & Perret-Clermont, 1976; Murray, 1972). On subsequent posttests taken individually after controversy, significant gains in performance were recorded.

Ames and Murray (1982) compared the impact of controversy, modeling, and nonsocial presentation of information on the performance of nonconserving, cognitively immature children on conservation tasks. The immature children were presented with erroneous information that conflicted with their initial position. Ames and Murray found modest but significant gains in conservation performance. Three children with scores of zero out of 18 scored between 16 and 18 out of 18 on the posttest, and 11 children with initial scores of zero scored between 5 and 15. Ames and Murray conclude not only that conflict in itself is cognitively motivating but that the resolution of the conflict is likely to be in the direction of correct performance. Doise and Mugny (1979) found that when children faced a partner at the same cognitive level who proposed an erroneous response, both partners showed progress on an individual posttest. The same results were found using confrontations with an incorrect response (at the same low level; Mugny et al., 1975–1976), and even when a more erroneous response was proposed (Mugny, Levy, & Doise, 1978). Schwartz, Neuman, and Biezuner (2000) found that paired children who had systematic mistakes on math problems and disagreed and argued tended to end up with the correct answer, even when both were initially incorrect.

Cognitive and Moral Reasoning

Cognitive development theorists such as Piaget (1950), Flavell (1968), and Kohlberg (1969) have posited that it is repeated interpersonal controversies in which individuals are forced again

Table 3

Table 3

Meta-Analysis of Constructive Controversy Studies for Major Dependent Variables: Mean Effect Sizes and n's

Dependent Variable	Constructive Controversy/ Concurrence Seeking		Constructive Controversy/ Debate		Constructive Controversy/ Individualistic Processes	
	ES	n	ES	n	ES	n
Achievement	0.70	12	0.62	4	0.76	13
Cognitive reasoning	0.84	2	1.38	1	1.10	7
Perspective taking	0.97	8	0.20	3	0.59	2
Motivation	0.68	8	0.73	2	0.65	3
Attitudes toward task	0.35	9	0.84	1	0.72	2
Interpersonal attraction	0.32	9	0.67	6	0.80	3
Social support	0.50	10	0.83	6	2.18	5
Self-esteem	0.56	5	0.58	3	0.85	3

Note. ES = mean effect size; *n* = number of studies.

and again to take cognizance of the perspectives of others that promote cognitive and moral development, the ability to think logically, and the reduction of egocentric reasoning. They posit that such interpersonal arguments create disequilibrium within individuals' cognitive structures, which motivates a search for a more adequate and mature process of reasoning. The reasoning of these theorists follows from Darwin's (1874/1981) position that ethical reasoning, once begun, pushes against initially limited ethical frameworks, always leading individuals toward a more universal point of view. The impact of controversy on cognitive and moral reasoning has been found in groups of various sizes and among markedly diverse student populations.

Students who have participated in academic controversies progress to using higher level reasoning and metacognitive thought more frequently than do students participating in concurrence seeking (*ES* = 0.84), debate (*ES* = 1.38), or individualistic efforts (*ES* = 1.10; see Table 3). Several studies have demonstrated that pairing a conserver with a nonconserver, giving the pair conservation problems to solve, and instructing them to argue until reaching agreement or stalemate resulted in the conserver's answer prevailing in the great majority of trials and in the nonconserver's learning how to conserve (Ames & Murray, 1982). Change tended to be unidirectional and nonreversible. Children who understood conservation did not adopt erroneous strategies, whereas nonconservers tended to advance toward a greater understanding of conservation. Walker (1983) found that students progressed in their stage of reasoning when confronted with reasons that opposed their own views and that were one stage ahead of their own reasoning. Students also progressed cognitively when confronted with counterarguments at the same stage of reasoning. Finally, even two immature children who argued erroneous positions about the answer tended to make modest but significant gains toward an understanding of conservation. The discussion of the task per se did not produce the effects. There had to be conflict among individuals' explanations for the effects to appear.

The same thing seems to happen with moral reasoning. A number of studies demonstrate that when participants are placed in a group with peers who use a higher stage of moral reasoning,

and the group is required to make a decision as to how a moral dilemma should be resolved, advances in the students' level of moral reasoning result (Johnson & Johnson, 1989). In a recent study, Tichy, Johnson, Johnson, and Roseth (in press) examined the impact of controversy compared with individualistic efforts on the four components of moral development (Rest, Narvaez, Bebeau, & Thoma, 1999). Although they did not find a consistent effect on moral sensitivity, controversy tended to produce significantly higher levels of moral motivation, moral judgment, and moral character, as well as a number of ethical skills.

Perspective Taking

To discuss difficult issues, make joint reasoned judgments, and increase commitment to implement a decision, it is helpful to understand and consider all perspectives. Most students are usually unaware of their classmates' alternative perspectives and frames of reference and of their potential effects on the accumulation and understanding of information and knowledge (Tversky & Kahneman, 1981). Two students interpreting information using different perspectives can draw directly opposing conclusions without recognizing the limitations of their thinking. Students do not see the *whole picture;* they see only what their perspective allows them to see, and they tend to overestimate the validity of their conclusions. In addition, students are apt to process information in a biased manner, accepting confirming evidence at face value and subjecting disconfirming evidence to highly critical evaluation (Lord, Ross, & Lepper, 1979). To make reasoned judgments, students need to be able to view the issue from all relevant perspectives.

Constructive controversy tends to promote more accurate and complete understanding of opposing perspectives than do concurrence seeking (*ES* = 0.97), debate (*ES* = 0.20), and individualistic efforts (*ES* = 0.59; see Table 3). Engaging in controversy tends to result in greater understanding of another person's cognitive perspective than does avoiding controversy. In the studies reviewed, individuals who engaged in a controversy tended to be more accurate in subsequently predicting what line of reasoning their opponent would use in solving a future problem

than were individuals who interacted without any controversy. Increased understanding of opposing perspectives tends to result from engaging in controversy (as opposed to engaging in concurrence-seeking discussions or individualistic efforts), regardless of whether one is a high-, medium-, or low-achieving student. Increased perspective taking tends to enhance individuals' ability to discover beneficial agreements in conflicts (Galinsky, Maddux, Gilin, & White, 2008). Finally, when students make comments that transform, extend, or summarize the reasoning of another person, more effective moral discussions tend to occur (Berkowitz & Gibbs, 1983; Berkowitz, Gibbs, & Broughton, 1980).

Open-Mindedness

Individuals participating in controversies in a cooperative context tend to be more open-minded in listening to the opposing position than do individuals participating in controversies in a competitive context (Tjosvold & Johnson, 1978). Tjosvold and Johnson note that when the context was competitive there was a closed-minded orientation in which participants felt comparatively unwilling to make concessions to the opponent's viewpoint and closed-mindedly refused to incorporate any of that viewpoint into their own position. In a competitive context the increased understanding resulting from controversy tended to be ignored in favor of a defensive adherence to one's own position (Tjosvold & Johnson, 1978).

Creativity

Proponents of creativity often view conflict as necessary to creativity. From the research, it may be concluded that controversy tends to promote creative insight by influencing individuals to (a) view problems from different perspectives and (b) reformulate problems in ways that allow the emergence of new orientations to a solution. There is evidence that controversy increases the number of ideas, quality of ideas, feelings of stimulation and enjoyment, and originality of expression in creative problem-solving (Bahn, 1964; Bolen & Torrance, 1978; Dunnette, Campbell, & Jaastad, 1963; Falk & Johnson, 1977; Gruber, 2006; Maier, 1970; Peters & Torrance, 1972; Torrance, 1970, 1971, 1973; Triandis, Bass, Ewen, & Mikesele, 1963). Being confronted with credible alternative views has resulted in the generation of more novel solutions (Nemeth & Wachtler, 1983), varied strategies (Nemeth & Kwan, 1987), and original ideas (Nemeth & Kwan, 1985). A cooperative orientation produces more creative syntheses than do individualistic (Gruber, 2006) or competitive (Carnevale & Probst, 1998) orientations. Competition especially leads to restricted judgment, reduced awareness of complexity, inability to consider alternative perspectives, and less creativity (Carnevale & Probst, 1998). Gruber (2006) notes that some problems absolutely require the synthesis of disparate points of view. And there is evidence that controversy results in more creative solutions to problems, with more satisfaction among group members, than do group efforts that do not include controversy (Glidewell, 1953; Hall & Williams, 1966, 1970; Hoffman et al., 1962; Maier & Hoffman, 1964; Rogers, 1970). These studies further demonstrate that controversy encourages group members to focus on a problem, raise issues, and settle

them in ways that show the benefits of application of a wide range of ideas, as well as resulting in a high degree of emotional involvement in and commitment to solving problems.

Task Involvement

John Milton (1847, paragraph 866) stated, "Where there is much desire to learn, there of necessity will be much arguing, much writing, many opinions; for opinion in good men is but knowledge in the making." Building knowledge through disagreement tends to arouse emotions and increase involvement. *Task involvement* refers to the quality and quantity of the physical and psychological energy that individuals invest in their efforts to achieve. Task involvement is reflected in participants' attitudes toward the following:

1. *Task:* Individuals who engaged in controversies tended to like the task better than did individuals who engaged in concurrence-seeking discussions (*ES* = 0.63) or individualistic efforts (Johnson, Johnson, Pierson, & Lyons, 1985; Lowry & Johnson, 1981; Smith et al., 1981).
2. *Controversy experience:* Individuals involved in controversy (and to a lesser extent, debate) liked the procedure and experience better than did individuals working individualistically (Johnson & Johnson, 1985; Johnson, Johnson et al., 1985; Johnson, Johnson, & Tiffany, 1984; R. Johnson, Brooker, Stutzman, Hultman, & Johnson, 1985; Lowry & Johnson, 1981; Smith et al., 1981, 1984).

The effectiveness of any instructional strategy is directly related to the capacity of the strategy to increase task involvement. Participants' time and energy are finite resources, and success can be evaluated in terms of increasing the time and energy that individuals will commit to their success. The success of controversy in increasing task involvement demonstrates its effectiveness as an instructional strategy.

Motivation to Improve Understanding

Participants in a controversy tend to have more continuing motivation to learn about the issue and to come to the best reasoned judgment possible than do participants in concurrence seeking (*ES* = 0.68), debate (0.73), or individualistic efforts (*ES* = 0.65; see Table 3). Participants in a controversy tend to search for (a) more information and new experiences (increased specific content), and (b) a more adequate cognitive perspective and reasoning process (increased validity) in hopes of resolving the uncertainty. There is also an active interest in learning others' positions and developing an understanding and appreciation of them. Lowry and Johnson (1981), for example, found that students involved in a controversy, as compared with students involved in concurrence seeking, read more library materials, reviewed more classroom materials, more frequently watched an optional movie shown during recess, and more frequently requested information from others.

Attitude Change on the Issue

Participating in a controversy tends to result in greater attitude change on the issue under discussion than does participating

in concurrence seeking, no-controversy, or individualistic efforts (Johnson & Johnson, 1985; R. Johnson et al., 1985). Correspondingly, conflicting perspectives about goals between the majority of members and a persistent minority tends to lead to attitude change (Nemeth & Owens, 1996). Disagreements within a group have been found to provide a greater amount of information and greater variety of facts, and a change in the salience of known information which, in turn, resulted in shifts of judgment (Anderson & Graesser, 1976; Kaplan, 1977; Kaplan & Miller, 1977; Nijhof & Kommers, 1982; Vinokur & Burnstein, 1974). Participants in a controversy tend to reevaluate their attitudes about the issue and incorporate opponents' arguments. The attitude change resulting from controversy tends to be relatively stable over time (not merely a response to the controversy experience itself).

Attitudes Toward Controversy

Individuals involved in controversy (and, to a lesser extent, those involved in debate) liked the procedure better than did individuals working individualistically (Johnson & Johnson, 1985). Participating in a controversy consistently promoted more positive attitudes toward the experience than did participating in debate, in concurrence-seeking discussions, or in individualistic efforts (Johnson, Johnson, et al., 1985; Johnson et al., 1984; R. Johnson, Brooker, et al., 1985; Lowry & Johnson, 1981; Smith et al., 1981, 1984). Controversy experiences promoted stronger beliefs that controversy is valid and valuable. Overall, individuals who engaged in controversies tended to like the controversy task better than did individuals who engaged in concurrence-seeking discussions of the task ($ES = 0.63$).

Attitudes Toward Task

If participants are to be committed to implementing the decision and participating in future decision making, they must consider the decision worth making. Individuals who engaged in controversies tended to like the decision-making task better than did individuals who engaged in concurrence-seeking discussions ($ES = 0.35$), debate ($ES = 0.84$), or individualistic efforts ($ES = 0.72$; see Table 3). The positive attitude toward the task resulting from controversy tended to enhance participants' commitment to engage in the controversy procedure in the future.

Interpersonal Attraction Among Participants

It is often assumed that the presence of conflict within a group will lead to difficulties in establishing good interpersonal relations and will promote negative attitudes toward fellow group members (Collins, 1970). Within controversy and debate there are elements of disagreement, argumentation, and rebuttal that could result in individuals' disliking each other and could create difficulties in establishing good relationships. These elements seem, however, to have the opposite effect. Constructive controversy was found to promote greater liking among participants than did concurrence seeking ($ES = 0.32$), debate ($ES = 0.67$), or individualistic efforts ($ES = 0.80$; see Table 3). Debate tended to promote greater interpersonal attraction among participants than did individualistic efforts ($ES = 0.46$).

Social Support

Constructive controversy tended to promote greater social support among participants than did concurrence seeking ($ES = 0.50$), debate ($ES = 0.83$), or individualistic effort ($ES = 2.18$; see Table 3). Debate tended to promote greater social support among participants than did individualistic efforts ($ES = 0.85$). Constructive controversy has been found to be significantly correlated with both task support and personal support (Tjosvold, XueHuang, Johnson, & Johnson, in press).

Self-Esteem

Participation in future controversies may be enhanced when participants feel good about themselves as a result of being involved in the current controversy, whether or not they agree with it. Constructive controversy tended to promote higher self-esteem than did concurrence seeking ($ES = 0.56$), debate ($ES = 0.58$), or individualistic effort ($ES = 0.85$; see Table 3). Debate tended to promote higher self-esteem than did individualistic effort ($ES = 0.45$). Constructive controversy has been found to be significantly correlated with task self-esteem (Tjosvold et al., in press).

Psychological Health

Predisposition to engage in constructive controversy has been found to be significantly positively correlated with life satisfaction and optimistic life orientation (Tjosvold et al., in press). In addition, controversy has been found to be significantly related to a sense of empowerment and to the values of egalitarianism and open-mindedness. These findings provide evidence that constructive controversy enhances participants' psychological health.

Values

Participating in the controversy process implicitly teaches values such as these: (a) Individuals have both the right and the responsibility to advocate for their conclusions, theories, and beliefs; (b) truth is derived from the clash of opposing ideas and positions; (c) insight and understanding come from a *disputed passage* where ideas and conclusions are advocated and subjected to intellectual challenge; (d) issues must be viewed from all perspectives; and (e) it is desirable to seek a synthesis that subsumes seemingly opposed positions (Johnson & Johnson, 2000, 2007). In addition, participating in the controversy process teaches hope and optimism about the future and a sense of empowerment; it also teaches a belief in the importance of egalitarianism, of keeping an open mind, of mutual respect and support, and of respect for organizational superiors (Tjosvold et al., in press).

Ability to Engage in Political Discourse

For students to be good citizens, they need to learn how to engage in collective decision making about community and societal issues (Dalton, 2007). Such decision making is known as political discourse (Johnson & Johnson, 2000). Thomas Jefferson, James Madison, and the other founders of the American Republic considered political discourse to be the heart of democracy. The clash of opposing positions was expected to increase citizens' understanding of the issues and the quality of decision making, given that citizens would keep open minds and change their opinions

when logically persuaded to do so. Generally, political education in U.S. schools is unremarkable (Parker, 2006). Students need to be educated for a "culture of argument" (Walzer, 2004, p. 107). When students participate in a controversy, they are also learning the procedures necessary to being an effective citizen in a democracy. The combination of cooperative learning and constructive controversy has been used to teach elementary and secondary students in Armenia how to be citizens in a democracy (Hovhannisyan, Varrella, Johnson, & Johnson, 2005; Johnson & Johnson, 2003, 2005b). Constructive controversy was used in Azerbaijan, the Czech Republic, Lithuania, and the United States (in Chicago, the District of Columbia, and Los Angeles) by 54 secondary school teachers with 1,109 students as part of the Deliberating in a Democracy Project (Avery, Freeman, Greenwalt, & Trout, 2006).

Concluding Comment

How you ride a horse leaves an imprint that can be detected by a skilled trainer. Some indicators are fairly obvious. If the horse has well-developed muscles on the underside of its neck, then the rider has been habitually pulling back on the reins. If the horse has well-developed muscles on the top of its neck, then the rider has held the reins loosely and moved the horse forward with his or her seat and legs. More subtle imprints can be detected only when the trainer rides the horse. By the way the horse moves, the trainer can tell who the last person to ride it was.

The methods we use to teach leave an imprint on students (of course, other influences do also). If instructors frequently use recitation, students are imprinted with a pattern of listening carefully, waiting to be called on, and giving factual answers that the instructor likes. If instructors frequently use group discussion, students are imprinted with a pattern of active participation, jointly considering higher level questions, exchanging ideas, and using each other's thinking. If instructors frequently use constructive controversy, students are imprinted with a pattern of open-minded inquiry that includes building coherent intellectual arguments, giving persuasive presentations, critically analyzing and challenging others' positions, rebutting others' challenges, seeing issues from a variety of perspectives, and seeking reasoned judgments. Students learn that the purpose of advocacy and criticism is not to win but rather to clarify the strengths and weaknesses of various courses of action, so that a joint agreement may be reached regarding what represents the best reasoned judgment.

Summary

This article began with the question of whether intellectual conflict in instructional situations would result in destructive or constructive outcomes. The obvious answer is, It depends on the conditions under which intellectual conflict occurs and the way it is structured. The avoidance of conflict in most instructional situations, however, indicates that the apprehension many educators feel is more powerful than their desire for the potential positive outcomes of conflict. Educators' apprehension may be increased by the lack of operational procedures to guide their use of intellectual conflict. Ideally, operational procedures should be based on social science theory that is validated by research. Constructive controversy is an example of an instructional

procedure designed to create intellectual conflict among students that meets these criteria.

Constructive controversy occurs when students' ideas and conclusions are incompatible and they seek to agree. The instructional procedure involves assigning students to groups of four, dividing each group into two pairs, and assigning them opposing positions. The pairs then (a) prepare the best case possible for their position, (b) present it to the other pair and listen to the opposing position, (c) engage in a discussion in which they attempt to refute the other side and rebut attacks on their position, (d) reverse perspectives and present the other position, and (e) drop all advocacy and seek a synthesis that takes both perspectives and positions into account and upon which all four students can agree.

Constructive controversy theory posits that conflict among ideas, theories, or conclusions leads to uncertainty about the correctness of one's views, which leads to epistemic curiosity and the active search for additional information and perspectives, which, in turn, leads to reconceptualized and refined conclusions. This process results in constructive outcomes when it occurs in a cooperative context, when students are skilled in challenging each other's positions, when the canons of rational argument are followed, and when all students are actively involved. Over the past 40 years, at least 39 research studies have been conducted on constructive controversy. Their results indicate that controversy—as compared with concurrence seeking, debate, and individualistic efforts—tends to result in greater achievement and retention, cognitive and moral reasoning, perspective taking, open-mindedness, creativity, task involvement, continuing motivation, attitude change, interpersonal attraction, and self-esteem. Controversy also teaches a set of values and provides training for effective citizenship in a democracy. The wide-ranging positive outcomes indicate that intellectual conflict can have important and positive effects on student learning and well-being. We hope that these findings will encourage greater recognition of intellectual conflict as a positive and, in fact, essential instructional tool that energizes student efforts to learn.

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