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Cooperative Learning: Prevalence, Conceptualizations, and the Relation Between Research and Practice

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This study examined the prevalence, conceptualization, and form of cooperative learning used by elementary school teachers. Responding to a survey, 93% of teachers (n = 85) from six elementary schools in two districts indicated they used cooperative learning. In interviews with a subset of those teachers (n = 21), all indicated having daily cooperative lessons in several subjects. The majority of teachers subscribed to cooperative learning to achieve both academic and social learning goals, structured tasks for positive interdependence, and taught students skills for working in small groups. When we applied criteria for cooperative learning derived from the research literature, few teachers were employing recognized forms of this practice, primarily because they did not tie individual accountability to group goals. Implications for communication between researcher-developers and teachers are discussed.

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Cooperative learning is arguably the best example of a contemporary teaching practice with origins that can be traced unmistakably to the work of social scientists. It is the product of theoretical and applied research, having evolved from 3 decades of scientific work in the fields of social relationships, group dynamics, learning, and instruction. Research on cooperative learning models and their features and cooperative learning's applicability to different contexts, subjects, and student groups represents one of the most active and fertile areas of systematic inquiry in education (Johnson, Johnson, & Maruyama, 1983). Recently, Johnson and Johnson (1992) reported that there were over 550 experimental studies and 100 correlational studies on this instructional approach. Moreover, the frequency of references to cooperative learning in textbooks on instructional methods, college and in-service offerings, teachers' journals, and instructional materials indicates that this approach to instruction is well situated in the educational mainstream.

Multiple factors contribute to the popularity of cooperative learning, starting with its potential for accommodating individual differences in the classroom. Identification of broadly effective teaching strategies that address individual differences has been among the principal challenges facing educators for as long as they have taught groups of children, and, if recent reports are accurate, the challenge is only getting bigger (Carnegie Foundation, 1995; Pallas, Natriello, & McDill, 1989). With variability that exceeds five grade levels in achievement inside typical classrooms (Biemiller, 1993; Jenkins, Jewell, Leicester, Jenkins, & Troutner, 1990), teachers are hard pressed to meet the needs of all students. Whereas in many instructional approaches individual differences are viewed as a nuisance to be controlled through individualized instruction (Wang & Birch, 1984) or ability groups (Carnine, Silbert, & Kameenui, 1990), in cooperative learning, individual differences are exploited to promote learning (Johnson & Johnson, 1986; Slavin, 1990; Stevens & Slavin, 1995a, 1995b).

The appeal of cooperative learning is also enhanced by the possibilities it offers for achieving multiple educational goals. Although academic learning goals hold primacy in most schooling efforts, teachers are also deeply concerned about their students' social and personal development (Goodlad, 1984). The preponderance of instructional strategies (e.g., lectures, demonstrations, explanations, question-answer routines, assigned reading, and guided practice) focus on academic goals, providing few opportunities for students to learn and practice interpersonal skills. Cooperative learning with its dual emphasis on academic and interpersonal skills (Johnson & Johnson, 1991) appeals to teachers because it addresses and integrates seemingly diverse goals within a single approach.

Contemporary ideas on the nature of human learning also contribute to cooperative learning's appeal. The once hegemonious conceptualization of learning as a simple case of knowledge transmission from expert to novice has begun to yield to a radically different paradigm that emphasizes the social construction of knowledge (Vygotsky, 1978). With this paradigm shift,

rationales for classroom approaches that encourage increased dialogue among students have garnered new respect, serving to spawn new ideas and to reinvigorate older ideas about peer-mediated instruction, including communities of learners (Brown, 1994; Gamson, 1984), collaborative learning (Palincsar, Stevens, & Gavelek, 1988), reciprocal teaching (Palincsar & Brown, 1984), peer tutoring (Greenwood, Delquadri, & Hall, 1989; Simmons, Fuchs, Fuchs, Hodge, & Mathes, 1994), as well as cooperative learning.

All this should not suggest that cooperative learning lacks critics: some are concerned that its orientation toward groups shortchanges individuals (Matthews, 1992), and others take issue with its efficacy for various types of learners (Anderson, Reder, & Simon, 1996; Biemiller, 1993; Druckman & Bjork, 1994; O'Connor & Jenkins, 1996; Tateyama-Sniezek, 1990). Nor is cooperative learning free of internal disagreements among researchers over specifics of its methods (Cohen, 1994; Slavin, 1983). Still, cooperative learning, for the most part, has been spared the divisive and acrimonious controversies that plague other, well-publicized, instructional approaches (such as whole language, Mosenthal, 1989; phonics, Goodman, 1977; ability grouping, Oakes, 1992; and direct instruction, Heshusius, 1991).

Given the extraordinary constellation of factors favoring cooperative learning—its capacity to accommodate individual differences, the dual focus on social and academic outcomes, compatibility with social constructivism, strong advocacy by some of the most respected researchers in education, and broad dissemination via teacher preparation and professional development programs and practitioner publications—it is reasonable to expect that many teachers, perhaps a majority, incorporate cooperative learning in their classroom lessons. However, assumptions about the breadth with which even highly respected instructional practices are applied can be hazardous (Knapp et al., 1995). With respect to cooperative learning, we were unable to locate any research on its prevalence, but we did find a few guesses about its use, all surprisingly low. Rich (1990), for example, speculated that “only rarely is [cooperative learning] implemented on a broad scale for any extended period of time as a systematic instructional strategy after the project initiator leaves the scene” (p. 83). Willis (1992) cited an interview with Slavin who estimated that “about 10% of teachers nationwide are using cooperative learning in some way” (p. 1). Could it be, despite all the research, writing, and talk about cooperative learning, that most teachers have ignored this approach or, having given it a trial, concluded that it did not meet their goals?

Questions about teachers' receptivity to the idea of cooperative learning—how they think about this practice and how they incorporate and adapt it to their classrooms—are of interest to the educational community because they go to the larger issue of research's impact on instructional practices. Researchers have developed and tested various cooperative learning models, devoting considerable effort to identify structural elements (e.g., positive interdependence among group members, individual accountability) that induce productive student interactions. When teachers take up an approach

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like cooperative learning, how closely do they adhere to models that researchers have tested, and, when teachers adapt the approach for their particular circumstances, do they choose to include those elements of the practice that researchers believe are important?

Using surveys and interviews, we sought answers about the prevalence of cooperative learning, the shape it takes in classrooms, and the correspondence between classroom and research models of cooperative learning. We were interested in assessing the role of teachers' beliefs about and goals for cooperative learning, their experiences with the practice, their personal estimation of its efficacy, and the ways that they use it. In particular, we listened for evidence that teachers' reasons for using cooperative learning were grounded in beliefs about the social construction of knowledge and the capacity of cooperative learning to address academic and social goals in heterogeneous classrooms.

Method

Participants and Settings

Schools. Teachers from four urban and two suburban elementary schools, located in the Pacific Northwest, participated in the survey phase of the study. We selected the urban and suburban schools to be demographically different from one another, the former drawn from a low income area of the city and the latter from an upper middle income area of the district. The urban schools were similar in racial composition: approximately 24% were Asian American, 38% African American, and 36% Caucasian students, with 42% of the student body qualifying for free or reduced lunch. Situated in a large school district within the same metropolitan area as the urban schools, the suburban schools had similar student demographics: approximately 5% Asian American, 2% African American, and 92% Caucasian students, with 7% students eligible for free or reduced lunch.

Teachers. All 85 classroom teachers from the six schools completed a survey seeking information on their cooperative learning practices. From this group, 21 classroom teachers (from two of the urban and both suburban schools) were selected for interviews. Mean years of teaching experience for the 4 male and 17 female teachers were 13, ranging from 1 to 34 years. Forty-seven percent held master's degrees. The mean size of their classes was 27 students, ranging from 22 to 32.

Measures

Surveys. A brief survey was distributed to all classroom teachers in the original six schools. The survey asked teachers to indicate their grade level and class composition, their use of cooperative learning, and their willingness to be interviewed about their cooperative learning practices. Ninety-eight percent returned completed surveys, and 80% of those consented to interviews.

Interviews. Interviewers were three researchers, all licensed teachers,

who used a semistructured protocol that sought information about (a) teachers' current use of cooperative learning and their experience with this instructional strategy, (b) their goals and rationale for cooperative learning, and (c) their judgments about its efficacy both overall and with various types of students. A number of questions included probes; their use was dependent on the amount and type of information teachers provided in their responses. Interview questions are shown in the appendix. After transcribing the interviews, establishing codes, and completing initial analyses, we conducted a second round of interviews to clarify ambiguities, pursue lines of questioning, and assist us in coding decisions.

Procedures

Teachers completed the surveys during their regularly scheduled faculty meetings. Using the survey results from four schools, we selected teachers who used cooperative learning and sampled classrooms at every grade level (1–5) that included special education students. The last criterion served as a proxy for within-classroom heterogeneity in achievement levels. Two of the original four urban schools were eliminated from the interview stage because they did not have at least one teacher at every grade level using cooperative learning and having a special education student in class. Interviews were conducted from March to June, and both initial and follow-up interviews were tape-recorded. Initial interviews lasted approximately 45 minutes, and follow-up interviews generally lasted 15 minutes. The follow-up interview was given to 20 of the 21 teachers who participated in the initial interview. One teacher was unavailable at the time of the second interview.

Transcriptions and coding. The audiotaped interviews were transcribed in preparation for coding. Teachers' statements were grouped into five general categories that stemmed from the interview questions: *frequency* of using cooperative learning, *rationale* for implementing cooperative learning, *strategies* used along with specific details relating to the strategy, *problems* encountered during implementation, and *efficacy* of cooperative learning in their classrooms. Numerous subcategorical codes were later developed to classify the different types of responses captured by one or more of the five major categories of the interview protocol.

Three researchers independently coded each of the transcripts. Frequent discussions were held throughout this phase of the investigation to ensure consistent use of the codes, to resolve any differences in the assignment of codes to the transcripts, and to develop new codes. Adjustments to our code list in the form of additions, deletions, and minor reinterpretations of some codes were sometimes necessary. All such changes were documented and then, through a recursive process, applied to previously reviewed transcripts to ensure consistency throughout the coding process. At the completion of this phase of the investigation, we used the Ethnograph software package (Seidel, Kjolseth, & Seymour, 1988) to format the transcribed interviews using the code words to facilitate examination and interpretation of the material during the analysis phase of the investigation.

Results

Prevalence

Analysis of the surveys and interviews indicated regular use of cooperative learning across a number of school subjects. Of the original 85 teachers who completed surveys, 79 (93%) reported using this strategy. From interviews with 21 of the teachers who had reported using cooperative learning, 17 (81%) said they conducted cooperative learning lessons every day in a typical week, with 100% reporting use of the strategy for reading and 17 (81%) reporting use of the strategy for math. In other subjects, teachers reported 13 (62%) for social studies, 11 (52%) for science, 9 (43%) for writing, 7 (33%) for language arts, and 5 (24%) for spelling. Teachers said they regularly used cooperative learning in four (median) subjects (the mode was five subjects), with reported use ranging from one to seven subjects.

Why Teachers Subscribed to Cooperative Learning

Throughout the interviews, we encouraged teachers to indicate their reasons for using cooperative learning and to tell us what they saw as benefits of this approach. Four major themes (frequencies reported in Table 1) along with several minor ones emerged as teachers spoke about their rationales for subscribing to cooperative learning. The themes were *academic learning*, *active involvement*, *social learning*, and *personal experiences as learners*. For each of these themes, we identified a nexus of associated ideas.

Academic learning. The most prominent theme, given by 16 (76%) of the respondents, consisted of beliefs about cooperative learning's promotion of academic learning. Teachers told us "cooperative learning increases comprehension and knowledge" (14-22)¹; "it affects their general overall speed of learning" (19-140). "Kids learn much more from each other than maybe we would like to believe. They don't really need a teacher that much" (6-23).

Usually teachers elaborated on the mechanism(s) through which cooperative learning operates to enhance academic learning. The most prevalent idea (11 teachers) involved children's ability to talk to one another in special ways, a view we coded *kid-talk*. According to this belief, peer-mediated learning occurs because one child hears a well-put explanation from a team member, sometimes but not always communicated in a form that is particular to the way that children speak. "They seem to have their own language. They are able to express their thoughts and ideas to each other in a way that I can't" (18-76). Another teacher expressed a similar idea. "I use teacher language, and kids explain in kid language. And as much as I try to do that, I'm still their teacher. I'm not a kid" (14-539).

Compared to the 11 teachers who gave kid-talk rationales, only 6 teachers spoke about learning by teaching (i.e., developing deeper knowledge and understanding by constructing and giving explanations).

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For the higher kids, retelling and reteaching helps improve their understanding of what they've read . . . They get into discussions and ask each other questions that involve high level thinking skills, but they're also bringing the lower ones along with them. (14-45)

Four teachers added a slightly different slant to the academic learning theme—namely, that children gain in knowledge and understanding from hearing different perspectives.

Active involvement. This rationale consisted of beliefs tied to the theme of active participation in learning. Various teachers (15 or 71%) told us that cooperative learning is beneficial because it results in broader student participation in lessons, more active learning, or greater task engagement in classroom lessons as a result of being permitted to work together. Sometimes, but not always (9 of 15), teachers remarked that better academic learning results from this higher involvement and participation.

Learning is enhanced. They retain information. It's a hands-on experience. They're not sitting listening to you in a cooperative group. They're doing something. If they're all in little groups and know their expectations, they can talk together and don't key each other out. (16-60)

The majority of our respondents linked *deeper* task engagement to peer interaction and activity-based assignments, but a few (6) also spoke about gaining *broad*er participation through something like Cohen's (1994) multiple-ability strategy; that is, they believed assigning multicomponent cooperative learning tasks raised the likelihood that a broad range of students would find an aspect of the assignment appealing and suited to their abilities. As one teacher told us, "They love to do skits, so we do a lot of skits. Someone is responsible for handing in a script, but then they assign themselves who's going to do the sets and costumes" (5-215). Another teacher said,

They collaborate and write the story and illustrate it together, or, if someone was a good writer and needed a good illustrator, they'd pair up and receive a joint grade. . . . There are certain kids in here who just illustrate very well, so kids actively seek those kind of kids. (20-410)

Social learning. This cluster of beliefs centered on the social benefits of cooperative learning. Social learning rationales were as prominent (15 or 71%) as active involvement. The most salient idea was that cooperative learning helps children learn to cooperate and to value cooperation. Other ideas contributing to the social learning theme were learning specific skills (e.g., listening and responding respectfully to peers' contributions, reaching consensus) and learning to work with nonpreferred classmates. "Sometimes I'll group kids who are having a hard time together so that they have to hash out their difficulties" (15-78).

Table 1
Grade, School, and Cooperative Learning Features Used by Teachers

	Teachers																						
Characteristic	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	%	
School	U1 ^a	U1	U1	U1	U1	U2 ^b	U2	U2	U2	U2	S1 ^c	S1	S1	S1	S1	S1	S2 ^d	S2	S2	S2	S2		
Grade	1	2	3	4	5	1	2	3	4	5	K-2	1-2	3	4	5-6	6	1	2	3	4	5		
Cooperative learning rationale																							
Academic	•	•		•		•		•	•	•	•	•	•	•		•		•	•	•	•	76	
Hearing kid-talk	•	•				•		•	•		•			•		•		•		•	•	52	
Giving explanations				•						•		•		•					•		•	29	
Social	•		•	•	•			•		•	•	•		•	•	•	•		•	•	•	71	
Active involvement	•		•	•	•	•	•			•	•	•	•	•	•	•	•			•		71	
Experience as learners				•	•			•	•		•	•					•			•		38	
Cooperative learning elements																							
Promotive interaction	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	100	
Positive interdependence	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	95	
Goal	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	95	
Role	•	•		•	•			•			•	•	•	•	•	•		•	•	•	•	71	

U1^a = Urban School 1. U2^b = Urban School 2. S1^c = Suburban School 1. S2^d = Suburban School 2.

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The value teachers placed on learning to cooperate was set squarely in the workplace. Several told us (and their students) that their future job success depended on learning to cooperate. "I tell them all the time: When you get out in the real world, you'll have all these coworkers, and you'll need to get along with them and respect them just like we do in our classrooms" (21-449).

A lot of jobs these days require people to work in a group, be part of a team. The students need the knowledge of how to be an effective part of a team, how to work with people who aren't effective members of a team. There are three kids in here who are a pain. They don't do work, don't settle down, don't hand in their homework assignments. Students have had to learn how to compensate for them. (14-238)

Some policy analysts (Kahne, 1994; Kohn, 1992; Sapon-Shevin & Schniedewind, 1992) have proposed an expanded rationale for adopting cooperative learning, suggesting that it is more than a gymnasium for individuals to acquire and practice academic and social skills that will help them "get ahead." Rather, they argued, cooperative learning functions as a laboratory in democracy where students prepare for democratic citizenship by interacting around meaningful issues in ways that help them form a vision of a good society. Whereas many of our teachers spoke easily about the relationship of learning social skills to long-term economic and occupational outcomes, only two remarked about the potential inherent in this form of instruction to produce social capital. In the words of a first-grade teacher,

Philosophically, I would much prefer to live in a world where people did work together, where people cared about each other, rather than everyone being very individualistic and only out for themselves. So, I come to teaching and working with kids with that idea. Cooperative learning helps to foster that. We live in a very individualistic society. I think cooperative learning does something for all of us as a whole. Kids are basically good at heart, and they don't like injustice. (1-137)

This teacher's value for learning to cooperate extended beyond the workplace (although she certainly alludes to it), hinting at broader notions of the common good that sometimes are overlooked in a society where individualism is regnant (Bellah, Madsen, Sullivan, Swidler, & Tipton, 1985). In this regard, John Stuart Mill's (cited in Walzer, 1992) words about how individuals come to value the common good described these long-range benefits of learning to work with and on behalf of others,

Give him something to do for the public . . . and his ideas and feeling are taken out of (their) narrow circle He is made to feel that, besides the interests which separate him from his fellow-citizens, he has interests which connect him with them; that not only is the common weal his weal, but that it partly depends upon his exertions. (p. 19)

Unlike Mill, most of our respondents expressed a narrow viewpoint on the value of social learning—as preparation for successful involvement in the workplace. Kahne (1994) wrote, “Indeed, teaching students to cooperate is often promoted as an economic imperative. The crucial question is whether a particular form of cooperative learning aligns with the ideals of democratic communities” (p. 242).

One of the initial motivations for advocating cooperative learning was the improvement of race relations (DeVries & Edwards, 1974; Sharan, 1980). Although two of the four schools in our sample had significant multiethnic and multiracial enrollments, none of the teachers referred to race or ethnicity at any time in their interviews, suggesting that, if they were hoping to enhance racial or ethnic relations through assignment to teams, it was an unspoken hope.

Experiences as learners. Some (8 or 38%) teachers’ attitudes toward cooperative learning were shaped in part by their experience as students. This influence was expressed in two forms. First, some respondents recalled negative aspects of their schooling, contrasting this with the richer learning opportunities observed in their current classrooms. “I remember when I was in school being afraid to not know the answer. Well, in this environment, kids are always asking each other for help. I think it leads to success for more kids more often” (17-108).

Second, a few respondents (4) talked about how their experiences of working in cooperative learning groups influenced them to use this approach. Some were inspired by their positive experience as participants in cooperative learning.

My own experience of [cooperative learning] was very powerful. I’ve always been a Lone Ranger type of learner who earned excellent grades, but, in working with partners, I found the end product was better and the process itself much more interesting and valuable. (5-31)

Another teacher recalled how negative experiences in learning groups affected the way that she prepared her students for learning together. “When I was in high school, they tried to give us cooperative projects, but it was awful. We weren’t taught how to do it. So, teach the procedures, skills, and communication, and do it consistently” (17-396).

Other themes. In addition to active involvement, academic and social learning, and experience as learners, teachers offered other reasons for adopting cooperative learning, but none was as prominent as the former. Five teachers gave a “product” rationale for using cooperative learning (i.e., group products are superior to individual products).

I think it’s really hard when you don’t know something, and you’re by yourself. But, if there are other people who are doing things and you’re contributing, then you’ve got a product that your group has come up with, and you’re part of it. That’s a really good feeling. If they had to do it by themselves, their product would be a lot less. (3-423)

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Four respondents mentioned how cooperative learning eased the task and varied the role of teaching: "The best part is you're not talking so much" (3-151). Three teachers volunteered that cooperative learning was a way to help struggling learners, and those who taught multi-age classes talked about the advantages of having more advanced students who could perform difficult aspects of assignments.

All but one teacher were articulate about the aspects of cooperative learning that attracted them; the exception was a teacher whose ideas about cooperative learning seemed relatively undeveloped. She reported minimal use of the strategy ("probably once or twice a week"), relying on simple peer and partner activities (e.g., reading to a partner, discussing a story) which appeared to be primarily under the direction of a compensatory education teacher who co-taught in her classroom. Despite repeated questioning, the only rationale this teacher articulated for cooperative learning was, "Well, they [the students] are engaged" (7-188).

Perceived Effectiveness

To ascertain the teachers' perceptions about cooperative learning's efficacy in meeting their goals, we asked a series of questions beginning with the signs they interpreted as indicators that cooperative learning lessons were working. Even though individual teachers had emphasized somewhat different goals in their decision to use cooperative learning, they showed a striking consensus on the indicators that told them when it was working; they saw children who were excited, active, engaged, concentrating, talking and listening but not bickering, and wanting the task to continue. On average, teachers said that cooperative learning worked as they wanted it to 75% of the time. When we asked them to estimate, for a typical lesson, the percentage of groups in which *all* the team members exhibited these signs, their answers ranged from 17% to 90% (median = 71%). The number of fully working groups in a classroom was limited because most teachers had a few students (from two to five) who could not be counted on to participate consistently (thus, if a group included one of these students it did not qualify as fully working). Sometimes these were students who preferred to work alone, and sometimes they were students who were generally unengaged. Although four teachers acknowledged they were not satisfied with every aspect of their current form of cooperative learning, all said it was working for them, and all remarked that most of their students preferred working together. Most teachers reported having received either no parental feedback on their use of cooperative learning (9) or positive feedback (8), but four reported that a parent had expressed concern about some aspect of cooperative learning (e.g., their child's teammates, accountability for their child, or that their child was not being sufficiently challenged).

Learning About Cooperative Learning

Teachers reported no shortage of opportunities to learn about cooperative learning—preservice classes, student teaching, graduate classes, workshops,

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and other teachers. Indeed most (17 or 81%) mentioned receiving formal training (e.g., classes or workshops). Nine said they had read books on cooperative learning, and nine emphasized the usefulness of conversations with peers in informing their practice.

I've read enough and heard enough that I know that there's the Johnsons' [books] and there's the Brown book and there's this, that, and the other, but basically it's been more the network level of just talking to people about what works and what doesn't work. (10-77)

Others (9) also spoke about observing mentor teachers or respected peers. "At first, I was really hesitant. I'd ask to observe, then watch for 10–15 minutes. I'd come back to my classroom and try the exact same thing" (16-265).

Teaching practices are formed by reading, training, and the advice and observations of mentors and peers, but experience also shapes teaching. Eight respondents described previous (unsuccessful) attempts to implement a specific cooperative learning approach. "I tried to use the [Johnson and Johnson] model and have not been successful with it; did all the things one is supposed to do to teach cooperative learning . . . I haven't been able to make that as successful as I'd like" (5-11). A similar sentiment is captured in the following excerpt:

When I was trained in [cooperative learning], it sounded so wonderful but so complex the way they laid it out. Every kid had to have a job, and they were so prescriptive. Through my teaching, I've learned that cooperative learning, for me, is just to have the kids discuss things with each other and put together a product. I was hoping I could use it full-blown all the time and learned that's not realistic. (13-288)

Grouping Practices

Seeking to uncover tacit beliefs about cooperative learning's utility in heterogeneous classrooms, we inquired about teachers' grouping strategies. They reported a variety of approaches for forming cooperative learning groups, 13 (62%) describing multiple strategies. Favorites were heterogeneous grouping (14 or 67%), allowing students to select their teammates (10 or 48%), random assignment (9 or 43%), and groups of convenience (e.g., students who sat near one another, 5 or 23%). Five said they always structured learning groups to be heterogeneous; none spoke of using ability groups. A majority of teachers said that some of the time they deliberately formed heterogeneous groupings; at other times, they used strategies that might or might not result in heterogeneous groups (e.g., random assignment, self-selected teammates, groups of convenience). Having chosen to employ cooperative learning, teachers had to create groups, which they tried to accomplish with maximum efficiency. Most of the time, ability composition was not their concern, nor did it seem to affect their decision to use cooperative learning.

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Group sizes varied. As shown in Table 1, just over half of the teachers (57%) said they sometimes established learning partners (pairs) and sometimes small groups (usually four students); two reported using pairs exclusively, and seven reported using small groups exclusively.

Personal Constructions of Cooperative Learning

All the teachers interviewed had indicated via survey that they used cooperative learning, and in conversations with us they described how they organized their classrooms in ways that encouraged children to work together. Given the sustained efforts of researchers to create effective cooperative learning methods and given teachers' apparent receptivity to this instructional approach, we expected to find teachers using some of the cooperative learning models prominent in the research literature. But this was not the case. During our interviews, 7 (33%) took care to distinguish their version of cooperative learning from the "more formal" version, which they perceived as too restrictive, formal, and exacting. Teachers told us, "When I took cooperative learning, I was told it's not cooperative learning unless you have a recorder, a reporter, and you have the whole gamut. And that's restrictive to me" (8-37). "My form of cooperative learning is very informal. I do know there's a more formal procedure for cooperative learning" (1-10). "I think maybe cooperative learning is a sophisticated way of putting it. They just work together. There isn't this exacting thing about it" (6-133).

Only one teacher (pointing to a well-worn edition of Johnson and Johnson's *Learning Together and Alone*, 1991, on his bookshelf) indicated that he tried to follow, fairly closely, an approach developed by a recognized cooperative learning researcher-developer. Not only did teachers ignore formal models of cooperative learning, but only 6 (29%) could recall any researchers or developers whose work influenced their own.

Actually, I had two different cooperative learning classes, and they were two different models. Can I remember what they were? No. [Laughs.] Maybe you can say what it's based on, but I just kind of used the best of what I heard. (15-64)

Those who mentioned an authority referred to Johnson and Johnson, usually in connection with a training experience or to distinguish their own approach to cooperative learning from a recognized model. "I don't use cooperative learning in the sense that Johnson and Johnson would refer to cooperative learning. I don't use cooperative learning in the sense that I'm assigning roles in the groups. I do group work" (3-13). The teachers who cited the Johnsons' approach had learned of it through a variety of sources. One had taken a class from the Johnsons; four learned of it through their initial teacher certification programs at various universities, and two had encountered it in staff development workshops.

By distancing themselves from "formal" cooperative learning, some

teachers appeared to create more room for their own adaptations. On the other hand, two thirds of respondents believed that their version of cooperative learning qualified as an authentic form of this practice. "I have read different books and articles on it and put together my own version. I think I use the basic structure of cooperative learning that most people write about, and then I'll adapt to the class" (13-43). Adaptation and modification were frequent themes. "There was a particular model [that he had learned], but I have since modified it. I think with anything like this, you have to make it work for you" (19-33). Teachers appeared to have sampled from a menu of cooperative learning features until they settled on an amalgamation that suited their context. "You know how, after you've read so many things, and been to so many workshops, you can't tell where one thing came from? It's kind of this amalgamation of all these things" (4-241).

Are Teachers Using Cooperative Learning?

The teachers we interviewed showed a distinct preference for organizing classroom instruction around partner and group work activities, but not all peer-mediated instruction qualifies as cooperative learning (Johnson & Johnson, 1991, 1994). As we have said, several teachers took pains to distinguish their approach from what they viewed as formal cooperative learning, sometimes disavowing a specific model (i.e., Learning Together, 1987, 1991, 1994). None of the teachers referred to other models in the research literature (e.g., Kagan's Heads Together, 1990; Slavin's Student Team Learning, 1990). Virtually all of the teachers told us they had constructed a version of cooperative learning that suited their classrooms, each version an amalgamation of ideas gleaned from schooling, in-service training, colleagues, and personal experience.

Whether these personal adaptations of cooperative learning qualify as the real thing depends on the presence of certain critical features that transform group work arrangements into authentic cooperative learning. But what are these critical features that qualify group work as cooperative learning?

Although major authorities agree that cooperative learning must at least include conditions that promote positive interdependence (the perception of members that they must work together to accomplish the goal) and individual accountability (the performance of each group member is assessed against a standard, and members are held responsible for their contribution to achieving the goal) (Johnson & Johnson, 1987; Kagan, 1990; Sharan, 1980; Slavin, 1990), the Johnsons also specify another two (Johnson & Johnson, 1986) or three (Johnson & Johnson, 1991) components as necessary features of cooperative learning: promotive interaction (group members meet face-to-face to promote one another's work), group processing (groups reflect on their collaborative efforts and decide on ways to improve effectiveness), and development of small-group skills (teaching students the group and interpersonal skills needed to work together). Even

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for the two consensus elements (positive interdependence and individual accountability), various authorities emphasize different conditions for achieving them. Sometimes the same authorities' ideas about individual elements like positive interdependence have evolved significantly over the years. For example, Johnson and Johnson (1986) indicated that teachers can create positive interdependence by arranging for interdependence in *any one* of the following: goal, reward, resource, role, or task. In a later writing, Johnson and Johnson (1991) suggested that positive interdependence requires the structuring of assignments to guarantee *goal* interdependence and that teachers *may* strengthen goal interdependence with one or more of several other types of interdependence (i.e., reward/celebration, role, resource, identity, task, environment). In their more recent thinking about cooperative learning, Johnson, Johnson, and Holubec (1993) suggested that supplementing goal interdependence with other types of interdependence is required:

There are three steps in structuring positive interdependence. The first is assigning the group a clear, measurable task The second step is to structure positive goal interdependence The third step is to supplement positive goal interdependence with other types of interdependence. (pp. 3:11–3:12)

Noting the variation in criteria used to classify group work as cooperative learning, we decided to test our teachers' descriptions against several standards, each of which emphasizes different defining criteria. We followed the same procedure in conducting all of the tests. The transcripts for each teacher were independently reviewed and coded by two researchers using the pertinent standards. In cases where teachers' descriptions were ambiguous, we were liberal in awarding credit for an element. Our adoption of a relatively generous scoring standard seemed appropriate because teachers probably had not told us everything about their use of cooperative learning.

Comparison With a Five-Element Standard

On our first pass through the transcripts, we used Johnson and Johnson's (1991) five-element standard for classifying group work as cooperative learning. Table 1 shows that all 21 teachers indicated that they encouraged students to interact and work together on assignments, a minimum requirement for peer cooperation. Twenty teachers (95%) also told us that they designed tasks to promote positive interdependence, and 18 (86%) said they explicitly taught students interpersonal and small-group skills. Considerably fewer teachers mentioned having groups reflect on and evaluate their processes (7 or 33%) or requiring individual accountability (5 or 24%).

Many cooperative learning authorities advocate explicit teaching of interpersonal and small-group skills, giving students specific feedback on their cooperative behaviors and having them reflect as a group on their performance. Cohen (1994) summarized the rationale for these practices:

There are several ways in which these procedures probably operate to improve the functioning of the group. They reduce interpersonal

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conflict; they increase the probability of specific behaviors that have been linked to learning outcomes; and they help the members of the group to take responsibility for one another and for what is happening in the group. (p. 28)

Johnson et al. (1993) proposed that instructing students in interpersonal and small-group skills is a necessary condition for cooperative groups to be productive. In line with these authorities, teachers in our sample were persuaded of the importance of preparing students to participate in cooperative learning; all but three teachers said that they explicitly taught students interpersonal and small-group skills they considered necessary for successful cooperation. One fifth-grade teacher is representative of those who indicated they included this element:

They don't walk in the door being cooperative! It doesn't come naturally, all the skills—using a quiet voice, taking turns talking, and reaching consensus. In September and October, I pulled out the book and very consciously in pretty rapid order covered all those things. And then it's just hitting back upon them as necessary. (10-226)

Besides up-front teaching of cooperative skills, Johnson and Johnson (1986) proposed that it is also essential to remind students to practice their collaborative skills by giving groups time to reflect on their processes and encouraging team members to give feedback to one another about the level and character of their participation. A third of our sample said they allocated time for groups to evaluate their efforts at achieving goals and to consider ways to maintain effective working arrangements.

All of the teachers mentioned using at least one of Johnson and Johnson's defining elements, and most indicated use of several elements (median = 3.5 elements; mode = 4), but only one teacher incorporated all five criteria. That is, she either described how she used specific elements, or her examples of cooperative learning assignments included these elements. In summary, applying Johnson and Johnson's five-element standard for cooperative learning resulted in the disqualification of all except one teacher.

Comparison With a Two-Element Standard

Not all authorities include the Johnsons' five elements as definitive criteria for cooperative learning. Slavin (1990) and Kagan (1990), for example, emphasized positive interdependence (specifically, group rewards) and individual accountability as defining elements. Slavin's (1990) meta-analysis indicated a mean effect size of .30 for treatments that included both positive interdependence and individual accountability but were negligible when individual accountability was omitted (effect size = .035), although not everyone agrees with Slavin's interpretation of this literature (e.g., Bossert, 1988; Cohen, 1994). Slavin and Kagan did not explicitly mention face-to-face promotive interactions, but this criterion is implicit in their cooperative

learning models, all of which rely on peer interactions. One could argue that Johnson and Johnson's remaining two criteria (i.e., interpersonal and small-group skills, and group processing) *facilitate* teamwork but are not essential if positive interdependence and individual accountability are in place. Following this reasoning, we devised a less stringent standard for assessing cooperative learning using the two elements mentioned by all authorities (i.e., positive interdependence and individual accountability).

Retesting the teachers' descriptions against this standard raised from 5% to 24% those classified as using cooperative learning (Table 1). Three of the five teachers meeting this standard (i.e., their descriptions of group work included positive interdependence and individual accountability) came from one school. Interestingly, only one of these three had learned about cooperative learning in a district-sponsored workshop; the other two attributed their start in this practice to conversations with and observations of peers and mentors. The remaining two cooperative learning teachers taught at two different schools. One of them had learned about cooperative learning in a course.

Of the 16 teachers who did not meet the two-element standard but considered themselves to be using a form of cooperative learning, 15 qualified for structuring lessons to induce positive interdependence, but none appeared to establish individual accountability. Thus, these teachers' understanding of cooperative learning differed from that of researcher-developers mainly in regard to individual accountability. Because positive interdependence and individual accountability are the centerpieces of cooperative learning, the way that teachers arrange for these two conditions bears examination.

Strategies for positive interdependence. According to Johnson et al. (1993), positive interdependence is "the first and most important element" of the defining features of cooperative learning (p. 9). This element is present when "students perceive that they can reach their learning goals if and only if the other students in the learning group also reach their goals" (p. 6). As noted earlier, the Johnsons' ideas about the conditions necessary for inducing positive interdependence have continued to evolve, and their later writings place increased emphasis on goal interdependence as essential for promoting group interdependence. In addition, they encourage teachers to supplement goal interdependence with other types of interdependence (rewards, etc.).

To examine the means by which the teachers promoted interdependence within their learning groups, we coded each transcript for instances of the various types of positive interdependence listed by Johnson and Johnson (1991): goal, reward, resource, role, task, identity, and environment. We also coded for Johnson and Johnson's (1991) subtypes of *goal* interdependence: (a) learning goals achieved either by arranging for groups to produce a single product, setting a goal for all group members to score above a specified criterion on a test, or setting a goal for all members to improve their performance over their previous scores; (b) goals set as

competition against an outside enemy; or (c) goals derived from problem solving in the context of a fantasy.

Table 1 gives the percent of teachers reporting various strategies for inducing positive interdependence. Altogether, we credited 20 of the teachers (95%) for establishing goal interdependence, principally because their groups produced a single product. "We used groups of three. They needed to come up with a new ending for the story and write it down" (1-257). Or, as another teacher told us:

Sometimes we have kids doing group work produce a final product They all have an equal portion of the pie. Some kids might be able to handle their specific part of the assignment easier than another child, and, if that's the case, they're more than welcome to help that child. It's a group product. If it's individual, it's probably not cooperative learning. (18-53)

One teacher described an assignment in which student teams made believe they were weighing life and death decisions on the Oregon Trail with Lewis and Clark (another form of goal interdependence—fantasy interdependence), but none of the teachers' examples of cooperative learning lessons included other goal interdependence strategies described by Johnson and Johnson (1991)—for example, all members of a cooperative group scoring above a specified individual criterion on a test.

Besides encouraging teachers to induce goal interdependence through various means, Johnson and Johnson (1991) as well as Cohen (1994) recommended increasing positive interdependence and participation by assigning specific roles to group members (e.g., facilitator, reporter). Giving group members specific, complementary roles increases interdependence by defining expectations and obligations within the group. Overall, 15 of 19 teachers who qualified for goal interdependence supplemented it with roles. Teachers mentioned two types of roles. One consisted of roles that facilitated working relations within the group (e.g., leader, checker, and reinforcer). "[Cooperative learning] gives every child a chance to get a leadership role. . . . One person has to make sure everyone talks, one has to make sure everyone uses a 6-inch voice" (11-47). The other type was task-related roles (e.g., reader, recorder, and gatherer) exemplified in the following:

We were doing a unit on space. We put kids into groups, assigned them each a planet, gave them a sheet of paper that had a specific set of questions on it. They were to decide who was going to record, who would read, who would gather information. (18-139)

We noted two other types of positive interdependence in the teachers' descriptions and examples of cooperative learning. Seven (33%) mentioned they sometimes gave all group members the same grade for the cooperative task (reward interdependence). Four teachers (19%) indicated using resource interdependence (i.e., distributed resources so that members were required to coordinate their efforts to attain a goal).

In summary, teachers described multiple strategies for establishing interdependence among group members, but assigning a single product for the group and assigning roles were the strong favorites. Although their illustrations of cooperative learning lessons did not include Johnson and Johnson's three other types of interdependence (i.e., task, identity, environment), one should not infer that the examples they described represented an exhaustive list of the strategies they used to induce interdependence. Rather, the percentages in Table 1 suggest that teachers favored some approaches for inducing interdependence over others.

Individual accountability. According to Johnson and Johnson (1991), "individual accountability . . . exists when the performance of each individual student is assessed and the results given back to the group and the individual" (p. 57). Having information about each individual's learning enables teammates to provide needed assistance. Moreover, making this account visible is intended to discourage individuals from slacking off and relying on others to do the work (and the learning). Johnson and Johnson (1986) described several ways for teachers to structure individual accountability. If our teachers mentioned using any one of these strategies or if a strategy was included in their illustrative lessons, we credited them for establishing individual accountability. Table 1 gives the percentage of teachers who mentioned using the various Johnson and Johnson strategies for inducing individual accountability.

One strategy for inducing individual accountability is to have students teach what they have learned to someone else in their group. When done concurrently by all students working in pairs or otherwise, this is called *simultaneous explaining* (Johnson et al., 1993). Three teachers (14%) gave indications that they established individual accountability by encouraging teammates to tell/teach one another what they had learned or to edit one another's work. One teacher told us:

They're responsible for their own learning first and foremost. They are responsible to find out the information that they need. But they're also responsible for taking the knowledge that they have and imparting it to others and making sure that the other person understands. So they are responsible for getting it across in a way that the other person will understand and, if they don't get their point across one way, then they've got to figure out how to teach them a different way. (14-282)

It was difficult to determine whether teachers required all group members to tell or teach what they had learned (so that everyone had an opportunity to think about and construct explanations and to receive feedback from peers) or whether giving explanations was something teachers only encouraged, relying on more skilled students either to volunteer explanations or to respond to peers' requests. The distinction between requiring and encouraging students to give explanations is important because establishing individual accountability through mutual explaining does not occur unless *all* team members give explanations or demonstrate their

skills to their peers (Johnson et al., 1993). Several teachers indicated that they assigned the role of *checker* (i.e., someone in each group who monitors teammates' participation or assignment completion), but none of the teachers mentioned using checkers to monitor peer telling, explaining, or teaching. "I usually have a checker in the group to make sure that everybody has all the right answers, has their name on their paper" (4-339).

Teachers can also induce individual accountability by conducting random *oral examinations* (i.e., calling on one or two students to answer a question, give an explanation, or provide a demonstration). When students understand that they might be selected to represent their team, they are motivated to prepare themselves and their teammates for this possibility (Johnson & Johnson, 1987, 1991; Kagan, 1990). During interviews, three teachers described using random oral examinations as a means of keeping students accountable. One of these three also employed mutual explanations as a way of promoting individual accountability.

Testing is another means of promoting individual accountability. Several teachers said that they regularly tested students to determine what they had learned during group work. Testing provides teachers with an account of each individual's learning and reminds students that they will be held accountable for developing subject matter knowledge and skills during group work. According to the Johnsons' model, however, testing by itself does not satisfy the standard for individual accountability unless teachers also communicate the test results to the groups. For example, the Johnsons (1991) suggested that teachers administer practice tests, inform groups on how their members performed, and encourage them to use this information in assisting teammates who need help. In Slavin's cooperative learning models, teachers are supposed to remind students to test and teach one another before they take the unit quiz because the quiz scores of individual team members (qualified by past performance) are combined to earn team awards. Although testing differs somewhat in the Johnson and Slavin models, its intent is to give students information about individuals' current knowledge, thereby enabling both individuals and teammates to increase effort and take actions necessary to improve performance. In Slavin's approach, establishing individual accountability also involves clarifying for individual students how their performance affects the group's reward. Even though half of the teachers (52%) said they believed that students were responsible for one another's learning, none indicated that they used testing to promote cooperation and mutual helping or to demonstrate to individuals how their performance affected their group's outcomes.

In summary, mutual explaining and random oral examinations were the favored means for establishing individual accountability. But, for most of the teachers, individual accountability was not a consideration, at least in the sense in which this term is used by cooperative learning authorities (i.e., to inform individuals and their partners about the status of their knowledge and possible need for peer assistance). Rather, teachers assessed to keep tabs on individuals' learning. Indeed, all but two reported that they frequently

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required individual products, either in place of or in addition to a group product so that they could monitor individual students' learning. The picture painted by most of our teachers was one in which individual students were held accountable *to the teacher* (i.e., assessed through tests or through inspection of work products) but not *to their teammates* vis-a-vis the learning goals of the group. Accountability to the teacher, rather than to the group, is illustrated in the following quotation:

I want the group product to be spectacular, but the whole point of it is for the individual student to learn and grow and produce something. It's important for me to know how each student is doing. I need some kind of project or activity that demonstrates their knowledge. A lot of times, I'll insert that after they've done a cooperative project to get the knowledge and skills. Then I can evaluate individual students. (13-128)

We are left to question whether our sample of teachers interpreted the idea of individual accountability differently from researcher-developers or whether they simply did not see this as a key aspect of cooperative learning or whether their beliefs about individualism made them uncomfortable with the idea that children can assume some responsibility for one another's learning.

Comparison With Cohen's Standard

Cohen (1986, 1994) has also developed an approach to peer-mediated learning. Although her model does not technically fall under the cooperative learning rubric, its goals and procedures are classroom tested and similar enough to cooperative learning that we include it here. In contrast to Johnson and Johnson's, Kagan's, and Slavin's frameworks for cooperative learning, Cohen's approach to group work places less emphasis on psychological constructs (e.g., positive interdependence, individual accountability). Instead, she approached cooperative group work from a sociological framework, emphasizing the nature of the task and delegation of responsibility. In Cohen's (1994) words,

complex instruction is a method of small group learning featuring open-ended discovery or conceptual tasks that emphasize higher order thinking skills. Each group in the classroom carries out a different task, all related to a central intellectual theme. Students have the opportunity to experience more than one of these tasks. (p. 7)

She distinguished true group tasks from the kind of collaborative seatwork tasks used in many cooperative learning models that she viewed as lacking in reciprocity because they rely on stronger students helping weaker students but not vice versa.

A *group task* is a task that requires resources (information, knowledge, heuristic problem-solving strategies, materials, and skills) that no

single individual possesses so that no single individual is likely to solve the problem or accomplish the task objectives without at least some input from others. (p. 8)

The tasks in complex instruction also differ in an important way from the more routine knowledge-acquisition tasks in which there is a right answer (e.g., the tasks used in Slavin's Student Team Learning, 1990). Cohen's tasks are open-ended, consisting of problems with ill-structured solutions that involve discovery. In addition, complex instruction emphasizes delegation of authority to students, accomplished by "systematic training in cooperative norms and the allocation of a different role to each group member" (Cohen, 1994, p. 29).

We matched teachers' descriptions of their cooperative learning lessons against four criteria needed to satisfy Cohen's (1994) idea of complex instruction: open-ended conceptual or discovery tasks that emphasize higher order thinking skills, group tasks that require input from other members, multiple tasks related to a central intellectual theme with the opportunity to experience more than one of these related tasks, and roles assigned to different group members. Beginning with the last criterion, we have already seen that 71% of our teachers indicated they delegated authority through the assignment of roles and, of these teachers, all said they provided training in cooperation. However, in illustrating their cooperative learning tasks, fewer teachers (9 or 43%) spoke of using open-ended discovery or conceptual tasks emphasizing the higher order thinking that Cohen described.

Even fewer of our respondents (24%) gave descriptions that satisfied Cohen's criterion for a group task. Instead, they gave descriptions of cooperative learning assignments that Cohen would classify as collaborative seatwork (i.e., tasks done in groups, which could have been accomplished by individuals working alone—e.g., learning a set of spelling words, learning to punctuate text involving direct speech). Finally, 2 of 21 teachers indicated that they designed multiple tasks related to a central theme and required groups to rotate through at least two such tasks. Overall, we were able to classify the lessons described by one teacher as incorporating all four criteria for complex instruction (see Table 1).

The answer to the question of whether teachers were using cooperative learning is in the eyes of the beholder. Of the 21 teachers who were interviewed (all of whom had indicated on a written survey that they regularly used cooperative learning), 1 (5%) met Johnson and Johnson's (1991) five-element criterion, 1 other described lessons that satisfied Cohen's (1994) four characteristics for complex instruction, and 5 (24%) satisfied Slavin's (1990) two-element criterion.

We examined the data in Table 1 for relationships among different approaches to cooperative learning (e.g., formed by combinations of various cooperative learning features such as positive interdependence and individual accountability, size of group, products required) and relationships between these approaches and district, school, grade, and teachers' rationale

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for adopting cooperative learning. In searching teachers' remarks for indications that teachers meeting the two-element standard held a conceptualization of cooperative learning that distinguished them from their colleagues, we found three significant relationships. Relative to the 16 teachers who missed receiving a cooperative learning classification, the five teachers who met the two-element standard were more likely to have adopted cooperative learning as a means of satisfying academic *and* social learning goals ($p = .035$, Fisher's Exact Test). This finding is consistent with Rich's (1990) idea that teachers who see its potential for achieving academic and social goals are drawn to cooperative learning. They were also more likely to reward interdependence (i.e., to award a grade for a group product) ($p = .02$, Fisher's Exact Test) and to indicate that students were responsible for their teammates' learning ($p = .035$, Fisher's Exact Test). With respect to the latter, one teacher remarked:

I raise the level of concern of the groups by saying I'm gonna come to anybody in their group and they should know the answer Everybody in the group needs to know. They should be cognizant of what everyone else is doing in their group So I want the ones who get it to make sure that everybody in the group gets it. (8-235)

We could discern no other statistically significant relationships among the various demographic variables, conceptualizations of cooperative learning, and features implemented.

Discussion

We undertook this research to examine how teachers used and thought about cooperative learning and to compare their use with the low estimates for use of this instructional approach in the literature (e.g., Slavin's, as cited in Willis, 1992, estimate of 10%). In contrast to those estimates, 93% of the teachers surveyed in this study reported using cooperative learning regularly and across a number of subjects, leaving us to wonder whether these six schools, these school districts, or this region were unusually disposed to cooperative learning or whether cooperative learning might be more widely used than previously thought. An anonymous reviewer of this article called our attention to an interim report of a congressionally mandated study of educational opportunity (Puma, Jones, Rock, & Fernandez, 1993) which found that a high percentage of third-grade children had teachers who said they used cooperative learning in math (79%) and reading and language arts (74%). The results of the Puma et al. (1993) study and our study suggest that the prevalence of this pedagogy may far outstrip earlier estimates. On the other hand, even if a high percentage of teachers report use of this method, settling on the defining criteria for cooperative learning remains an issue in estimating prevalence.

Teachers in this study had broad exposure to cooperative learning from

a variety of sources: certification and graduate coursework, professional development workshops, conversations with and observations of colleagues and mentors. They regarded cooperative learning as an appropriate, up-to-date form of classroom instruction. In answer to the question, "What advice would you give another teacher who is interested in starting cooperative learning?" one teacher told us, "I don't know. I thought everybody did cooperative learning" (14-407).

We had hypothesized that teachers' interest in cooperative learning might be affected by such factors as its perceived capacity to reach both social and academic goals, by current ideas about social constructivism, and by the instructional challenges posed by academic heterogeneity. Regarding the first of these, interviews revealed that the principal reasons for adopting cooperative learning included perceived academic and/or social learning benefits, better student participation and involvement in classroom lessons, and personal insights from their experiences as learners that led teachers to conclude that learning together is superior to learning alone. Most respondents were attracted to cooperative learning because it enabled them to address both academic and social learning goals with a single approach, supporting Rich's (1990) hypothesis that teachers' receptivity to cooperative learning depends on the weight they give to social outcomes and on their perception of cooperative learning's efficacy for those outcomes. All but 6 of the 21 respondents included social learning in their rationale for using this approach, and the majority of teachers (52%) gave rationales that emphasized *both* social and academic learning, as illustrated in the words of one teacher,

Social skills is one of the most important reasons why I use cooperative learning . . . getting them to know each other. Also, it helps because a lot of my kids who catch on real quickly in a cooperative learning situation tend to help those kids who aren't getting it as quickly to learn things. And maybe they can explain something better than I can. (21-16)

There were also signs that teachers interpreted cooperative learning's benefits through a prism colored by social constructivism. In one sense, teachers modified the traditional paradigm of knowledge transmission by removing themselves from center stage and arranging for students to work together, converse with, and coach one another. Prominent themes associated with social constructivism included better development of academic knowledge and skills from hearing classmates' explanations (i.e., kid-talk), developing deeper knowledge and understandings by constructing accessible explanations for classmates, and constructing superior products by working as a group. Although these themes echo constructivist ideas, many of the tasks that students worked on together (e.g., math computation, spelling lists, writing mechanics) do not readily lend themselves to the social construction of knowledge.

Just over half of the teachers subscribed to the conventional wisdom

that relatively lower performing students are the primary beneficiaries in peer-mediated instruction (i.e., students who are recipients of kid-talk). However, research support for the conventional wisdom is inconsistent, with some studies reporting benefits for students who receive explanations (Webb, 1980, 1982) and others reporting no effects (Peterson, Janicki, & Swing, 1981; Webb & Kenderski, 1984). The most consistent finding from the literature on small-group learning is that students who *construct* conceptual and procedural explanations demonstrate greater achievement gains, even after controlling for pretest performance (Swing & Peterson, 1982; Webb, 1983, 1991; Webb & Kenderski, 1984). Giving seems to be better than receiving. A quarter of the respondents stated that students benefited from giving explanations.

Notably absent from teachers' rationales were descriptions of cooperative learning as a pedagogical response to challenges posed by academically heterogeneous groups. Although teachers mentioned that students helped one another learn, no one expressly mentioned the topic of heterogeneity in response to questions about why they tried out cooperative learning in the first place, why they continued to use cooperative learning, and the perceived benefits of cooperative learning. Moreover, although most respondents indicated they sometimes deliberately created heterogeneous ability groups (presumably, using cooperative groups to manage academic heterogeneity), this was by no means their dominant approach to grouping. Other frequently mentioned grouping strategies were random assignments, student selection of teammates, and groups of convenience.

Research on the composition of instructional groups suggests that this variable affects achievement, although its effects are complex and its generalizations about it remain tenuous. For example, a meta-analysis of within-class grouping effects (Lou et al., 1996) indicated that low-achieving students learned more in heterogeneous groups, average achievers learned more in homogeneous groupings, and high achievers performed comparably in both. Group composition also seems to affect the quality of explanations provided low-achieving students. In a study that contrasted the pairing of high-ability students and students with learning disabilities versus medium-ability students and students with learning disabilities, Fuchs, Fuchs, Karns, et al. (1996) found that high-ability children provided better conceptual explanations than did average-ability children and these explanations led to better performance by the children with learning disabilities. Lou et al. (1996) also concluded that teachers who deliberately used a mix of criteria in forming groups (e.g., taking into account students' achievement levels as well as compatibility and interest) saw stronger achievement outcomes, suggesting inferior outcomes for grouping strategies like random assignment, groups of convenience, and self-selected groups.

Reflecting on the effectiveness of cooperative learning in their classrooms, teachers estimated that a mix of criteria in forming groups worked as they desired approximately 75% of the time, but they eschewed cooperative learning models that dominate the research literature. Instead, they

described personal amalgamations of selected cooperative learning features that matched their teaching philosophy and settings. When we examined the interviews for clues that these amalgamations included features that most researchers claim to be essential, we found that most classroom applications were incomplete. Noteworthy was the absence of procedures for ensuring individual accountability for achieving group goals.

During interviews, some teachers were hesitant to affix the cooperative learning label to their practices, acknowledging that they didn't use "formal" cooperative learning. Most were comfortable with the cooperative learning label. Regardless of what they called their approach, all used some form of partner or group work. The majority reported that they, at least sometimes, established positive goal interdependence by requiring a single product from groups, established role interdependence by assigning students roles within groups, arranged the classroom to promote face-to-face interactions, required students to produce individual products, used both partner and small-group structures, used multiple strategies for composing groups (with heterogeneous grouping the most common strategy), considered students responsible for one another's learning, and did not structure lessons to promote individual accountability. Within this general framework, however, there was a breadth of task structures (ranging from group tasks that required everyone's input, to "collaborative" seatwork that individuals could perform by themselves, to problems with well- to ill-structured solutions, to arrangements in which every student was responsible for his or her own product, to single group products) as well as differences in the ways that peer interactions were structured (ranging from assignment of specific roles for every member of the group to permission for students to seek assistance from a peer).

In describing what he saw as the central dilemma of educational reform, Elmore (1996) wrote,

We can produce many examples of how educational practices could look different, but we can produce few, if any, examples of large numbers of teachers engaging in these practices in large-scale institutions designed to deliver education to most children. (p. 11)

Our findings give a slightly different nuance to Elmore's dilemma. Teachers told us they had indeed taken on new ways of teaching; in their classrooms, students spent a considerable portion of the day learning together in supportive groups rather than working by themselves, listening to whole-class presentations, or receiving instruction in separate ability groups. Teachers indicated they had broken from an older tradition in the way they organized instruction and enlisted students in the learning process and even in how they thought about their role as teachers. They had appropriated the language of cooperative learning, as well as some of its features. But the majority of the teachers were using a form of cooperative learning that differed from those described by researcher-developers.

Discrepancies Between Teachers' and Researcher-Developers' Ideas About Cooperative Learning

Are the discrepancies between the cooperative learning practices described by the teachers and the approaches advocated by cooperative learning researcher-developers important? We suspect the answer is yes. Advocacy for and adoption of cooperative learning stems from research claims that this approach yields superior academic and interpersonal outcomes relative to those obtained from nonpeer-mediated approaches. The consensus from studies of various cooperative learning approaches is that achievement is mediated by productive student interactions—that is, giving and receiving conceptual explanations (Fuchs, Fuchs, Hamlett, et al., 1997; Swing & Peterson, 1982; Webb, 1983, 1991; Webb & Kenderski, 1984) and assisting and receiving assistance in mastering skills and factual knowledge (Slavin, 1990). Similarly, the majority of our respondents interpreted the achievement benefits of cooperative learning as deriving from these same kinds of student interactions. Thus, like researcher-developers, our teachers believed that certain types of peer interaction led to superior learning, but they were less unanimous about the conditions that promote these interactions.

Claims of cooperative learning's efficacy derive from research conducted on instructional models that are defined by specific elements seen as critical for generating productive student interactions. Given that only one cooperative learning teacher in our sample indicated that she employed Johnson and Johnson's (1991) five elements, one other used Cohen's (1994) four elements, and only a few more included the two elements that Slavin (1990) claims are required to affect achievement, we are left to wonder how many of cooperative learning's often-demonstrated benefits occur when these elements are omitted from classroom applications.

The deeper issue is the source of the discrepancy between researchers' models and practitioners' applications of cooperative learning. Though our interviews documented a chasm between researcher-developers' and practitioners' approaches, they did not reveal the source of these differences. Perhaps teachers, who are oriented to the practical (Doyle & Ponder, 1978), judge researcher-developers' cooperative learning models as too complicated and arduous. Take, for example, the element of individual accountability. Structuring for individual accountability, as in one of Slavin's (1990) Student Team Learning models, may induce students to monitor and teach one another in ways they would not otherwise do, but this change exacts a price—the added expenditure of nontrivial amounts of time and effort (i.e., keeping a running log of students' weekly test scores; computing individual averages and improvement scores; totaling scores for each team based on members' improvement scores; and assigning group awards according to the scores teams earned). Faced with these added chores, and given the relentless demands of the classroom, teachers might opt to scale down cooperative learning to a more manageable form.

Practitioners may combine this orientation toward the practical with a

belief that they will achieve the benefits of cooperative learning if they can just arrange for and teach their students to work together. One version of this hypothesis holds that teachers have heard but reject researchers' claims that particular elements of cooperative learning are essential for improved student learning, perhaps because their firsthand experiences with cooperative learning in their classrooms do not jibe with the research (Nicholls & Nolen, 1995) or because they see researchers' claims as focused too narrowly on achievement outcomes. Illustrating the latter, Thorkildsen and Jordan (1995) described a teacher who rejected one aspect of cooperative learning (use of rewards) that conflicted with her philosophy of education and another (assigning students to groups) that seemed to undermine her efforts to achieve valued affective goals.

Another version of this hypothesis holds that teachers do not explicitly reject researchers' claims about the relationship between learning outcomes and the *how* of cooperative learning. Rather, they have assimilated research findings more generally as "research shows that children benefit from cooperative learning," and, although they are closely attuned to authorities' descriptions of the *how*, these descriptions are interpreted as suggestions or helpful guidelines, not as essential elements of the practice. In the words of one teacher responding to a question of what advice she would give to another teacher interested in undertaking cooperative learning, "Try, and keep trying . . . not to hold up any 'right' way of doing it, [but] to be creative, and to look for your own way of doing it." (5-223). Unfortunately, we did not explicitly address teachers' views of the research evidence for cooperative learning in our interviews.

A second hypothesis for explaining the discrepancy between researchers' and practitioners' approaches to cooperative learning considers the communication among researcher-developers, those who disseminate new teaching practices, and teachers. As we have seen, cooperative learning researchers are unanimous about the benefits of cooperative learning, but they reveal less unanimity about the methods for achieving these benefits. Different ideas about teaching methods across researcher-developers should present no problem for teachers who are learning about cooperative learning for the first time, as long as their learning is confined to one approach. However, if the same teachers subsequently receive information on a different cooperative model, the benefits described are likely to be similar to those attributed to the first model, though the new methods may differ. This might inadvertently promote an overgeneralization about the flexibility of the methods under cooperative learning. Or, in a related scenario, teachers' initial introduction to cooperative learning may come via a course or workshop that includes an array of cooperative learning methods from which to choose. Implicit in these scenarios is the idea that there are many equally valid approaches to cooperative learning, and teachers are invited to select features that suit their style and setting. With the exception of Slavin (1990), who is quite clear about the necessity of including individual accountability and group rewards in cooperative learning if it is

to influence achievement, researchers are rarely explicit in stating that the demonstrated benefits of cooperative learning should be expected only when certain conditions have been met. Thus, teachers could infer that there is great latitude in what passes for cooperative learning and that the benefits will be theirs whether they implement all or only some of the procedures.

Of course, other hypotheses could explain the differences between teachers' and researcher-developers' conceptions of cooperative learning (e.g., quality of training, ongoing support; McLaughlin, 1991), but we suspect that part of the answer lies with the models and part lies with the way they are disseminated. At any rate, because of cooperative learning's rich tradition of research, it provides an exceptional opportunity for studying the utilization of instructional research.

Clearly, the relationship between research and practice that we observed is poorly mapped by a linear model of research utilization that depicts research knowledge as something to be replicated. Rather, personal and professional theories, experience, and values were the arbiters of practice, reminiscent of Schon's (1983) *appreciative systems*, a filter through which teachers interpret and decide about the value and utility of practices for their classrooms.

This discrepancy between research and practice in cooperative learning requires further probing: In creating and testing cooperative learning models, have researcher-developers failed to sufficiently consider the difficulty involved in using the products of their work, leaving teachers to conclude that full-fledged versions of cooperative learning violate the "reality principle" that serves to filter instructional approaches (Gersten & Woodward, 1990)? Have researcher-developers and teacher educators failed to communicate the meaning and importance of individual accountability as tied to goal interdependence, giving practitioners a diffuse concept of cooperative learning? Or have teachers chosen to reconstruct cooperative learning so as to reduce its dissonance with their personal beliefs (Kohn, 1992), rejecting the idea of tying individual accountability to the attainment of group goals because they find this notion conflicts with the individualistic norms that underpin American schools and culture, which Tocqueville (1848/1966) noted a century and a half ago?

Finally, there are three important caveats for this research. First, teachers told us a good deal about how they conceptualized cooperative learning and how they used it, responding to 28 substantive questions, many of which were accompanied by follow-up probes. Nevertheless, they did not tell us everything, leaving us to infer some things about their practices from illustrations of cooperative learning lessons that they described. For example, we did not ask them directly about each of Cohen's (1994) four characteristics of complex instruction. Instead, we asked them for several illustrations of cooperative learning lessons, coding their descriptions for various characteristics. Second, although we found remarkable uniformity in teachers' reported use of cooperative learning in each of the six schools across two very different districts, a general claim about cooperative learning's

prevalence, derived from so circumscribed a sample, would be inappropriate. More troubling is the disparity between survey results (where teachers reported extensive use of cooperative learning) and interview results (which disclosed a range of interpretations for the meaning of cooperative learning). This disparity suggests that obtaining accurate estimates of prevalence may require more than a broader survey sampling scheme (e.g., Puma et al., 1993). Lack of consensus among teachers and researcher-developers about the meaning of cooperative learning makes estimating the prevalence of this teaching strategy difficult. Third, our results derive solely from interviews; classroom observations are needed to fill out the picture of actual teaching practices. Still, findings of this study raise questions about the role that teachers and researcher-developers see for research on instruction; about the way that researcher-developers, teacher educators, staff developers, and teachers communicate with one another; and about the role of instructional research in the educational enterprise.

APPENDIX

Interview Questions and Follow-Up Probes

1. Do you use cooperative learning?
If no: Have you used cooperative learning in the past (years approx.)?
What stands in the way of your using cooperative learning now?
2. How often do you use cooperative learning?
Days/week/month/year.
Specifically in the last month of teaching, how many days would you estimate that you used cooperative learning?
3. In what subjects do you use cooperative learning in your classroom?
4. Why do you use cooperative learning?
Definition of cooperative learning; rationale for goals.
5. What got you started in cooperative learning?
How did you learn about cooperative learning?
Did you learn a particular model?
Do you use a particular model?
6. If a model has been described: Have you altered the model? If so, how?
Have you altered the approach you began with? How?
7. What is it that you like about cooperative learning?
What keeps you using it?
8. How do you get the cooperative learning system started each year?
Do you have to do any special preteaching on group skills?
Can you tell me more about those first days each year?
9. How do you form groups?
Specifics (e.g., heterogeneous/self-selected).
10. Have you had any feedback about cooperative learning from parents?
11. Have students altered the structure of cooperative learning in your class?
Have students suggested changes in the cooperative learning structure?
How did you handle the suggestions?

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12. Does cooperative learning in your class usually include group and/or individual products?
Usual use of cooperative learning.
13. Are individuals responsible for one another's learning or product?
In a cooperative learning group, what are students responsible for?
14. Do you use a point system?
How does it work?
What are students rewarded for?
What do students do with points?
15. Do cooperative learning activities contribute to the students' grades? How?
Individual and group components of grades.
16. What kinds of tasks do you assign your cooperative learning groups?
17. Can you give me examples of cooperative learning activities you've used recently?
More examples?
18. What advice might you give another teacher who is interested in starting cooperative learning?
19. When a group is going really well, what do you see happening?
20. As you observe the groups, on the average, what percent of the groups are exhibiting cooperative behaviors?
21. In a typical cooperative learning exercise in your class, what would you estimate is the percent of groups in which every member participates fully (i.e., speaks, gives ideas, etc.)?
22. Have you had any problems with cooperative learning?
Are your goals being achieved?
Solutions?
Any others come to mind?
23. How do the students like it?
Is there anyone who doesn't like it?
24. Does cooperative learning work better for some students than for others?
How does it work for students with special needs?
25. Do you have any special education students in your classroom? How many?
Students struggling academically? Behavior problems?
How do these students tend to do in cooperative learning groups?
Is the assignment modified for these students?
26. Of the special education students, or struggling learners in your class, what percent would you estimate actually participate (i.e., speak, discuss, etc.) in a typical cooperative learning session?
27. What are the major benefits of cooperative learning to your lower performing students?
28. Do you have any external assistance/other adults during your cooperative learning lessons?
What do you have them do (their role)?

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¹Transcript coding system: Number before the dash is the teacher number (see Table 1); final digits indicate the line of transcript where quotation begins.

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