

The Implementation of Cooperative Learning in an Elementary Physical Education Program

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The purpose of this study was to explore (a) a teacher's perspective of the implementation of cooperative learning in an elementary physical education program, and (b) the students' responses to the implementation into their own physical education classes. Data collection included interviews with a physical education teacher and students in two mixed third- and fourth-grade classes and two fourth-grade classes, nonparticipant observation, fieldnotes, a teacher journal, and documents. Inductive analysis and constant comparison methods were used to analyze and organize the data throughout the research process. The findings revealed that the teacher and students held similar perceptions of cooperative learning. This was evident from the categories that emerged from the data: goals of the lessons, student roles, accountability, communication skills, working together, and practice time. This study demonstrated that the cooperative learning instructional format holds much promise for physical education, but that its implementation will likely not be smooth or trouble free.

Key Words: innovation, instructional format, constructivism

Cooperative learning is a dynamic instructional format that can teach diverse content to students at different grade levels. Students work together in structured, small heterogeneous groups to master subject matter content. They are responsible not only for learning the material but also for helping their group-mates learn (Antil, Jenkins, Wayne, & Vadasy, 1998; Putnam, 1998).

In general education, researchers have found that cooperative learning can have positive effects on academic achievement, self-esteem, active learning, social skill development, and equity achievement (Cohen, 1994a; Johnson & Johnson, 1989; Kagan, 1992; Slavin, 1996). Though potentially beneficial, implementing cooperative learning does require substantial modifications and adaptations in how teachers organize and manage their classroom or gymnasium.

Proponents of cooperative learning advocate five essential elements: positive interdependence, individual accountability, promotive face-to-face interaction, interpersonal and small-group skills, and group processing (Antil et al., 1998; Putnam, 1998). These elements are described in a previous paper (Dyson, 2001).

One of the most appealing attributes of cooperative learning is its dual focus on social and academic outcomes (Antil et al., 1998; Cohen, 1994a; Putnam, 1998). Sapon-Shevin (1994) proposed that social skills need to be taught explicitly. Teachers must plan specific social skills, such as listening, working together, and providing appropriate feedback to each other, to enhance students' interpersonal skills. Students make the greatest gains in learning when teachers delegate responsibility so that more students can talk and work together at multiple learning centers (Cohen, 1994a).

Several physical educators have encouraged the use of cooperative learning as a resource for change in physical education classes (Dyson, 2001; Grineski, 1996; Rovegno & Kirk, 1995). The National Association for Sport and Physical Education (1995) established motor, cognitive, and social goals for physical education programs. Despite the rhetoric, there has been little research on cooperative learning and its impact on physical education.

The small amount of research on cooperative learning in physical education indicates that the results are promising. Grineski (1989) found that cooperative learning could enhance physical fitness and social interactions for elementary students, kindergarteners, and preschool children. Smith, Markley, and Goc Karp (1997) explored the use of cooperative learning and its effect on social enhancement and participation of third-graders in physical education classes. They reported that sociometric ratings improved for target students who scored low prior to a 6-week cooperative learning unit. In addition, social diagnostic assessment scores indicated improvements in students' social reasoning skills, interaction, and social participation.

In an elementary physical education program using cooperative learning, Dyson (2001) found that a teacher and students emphasized improving motor skills, developing social skills, working together as a team, helping others improve their skills, and taking responsibility for their own learning. In the same school district at the high school level, Dyson and Strachan (2000) reported that a physical education teacher believed cooperative learning helped her meet the following goals: developing motor skills, developing game strategies, actively participating, respecting one's peers, accepting responsibility, and improving communication skills. Students in Grades 8 and 11 stated that cooperative learning encouraged participation, was fun, and allowed them to develop motor skills and interpersonal skills.

Barrett (2000) studied the use of two cooperative learning strategies, Performer and Coach Earn Rewards (PACER) and Jigsaw II in Physical Education (Jigsaw II-PE). The two roles of performer and coach were utilized in two Grade 6 physical education classes. These strategies employed three elements of cooperative learning: cooperative interaction (positive interdependence), individual accountability, and group contingency. PACER and Jigsaw II-PE resulted in increased correct trials for participants and total trials for Jigsaw II-PE in sport skills units. Low-skilled boys and girls in PACER and Jigsaw II-PE classes also demonstrated improved performances.

Some applications of cooperative learning, including the one in this study, are closely aligned with the cognitive theory of constructivism. Perkins (1999) emphasized three tenets of constructivism that were evident in the implementation of cooperative learning in the present study: the active learner, the social learner, and the creative learner. As active learners, Perkins (1999) argued that students are not passive recipients of knowledge but are involved in tasks that stimulate deci-

sion-making, critical thinking, and problem-solving. As social learners, students construct knowledge through social interaction with their peers, facilitated by their teachers. As creative learners, students are guided to discover knowledge themselves and to create their own understanding of the subject matter. Individuals draw on prior knowledge and experiences to construct knowledge.

Many researchers (Antil et al., 1998; Cohen & Lotan 1997; Perkins, 1999) have made the connections between cooperative learning and constructivism. As noted by Cohen and Lotan (1997), "Constructivists almost unanimously recommend small cooperative groups as settings in which students have the opportunity for such discourse" (p. 42). Vygotsky (1978) stated that "an essential feature of learning is that it creates the zone of proximal development; that is, learning awakens a variety of internal processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers" (p. 90).

The constructivist perspective has also been promoted in the physical education literature (Ennis, 2000; Rovegno & Bandhauer, 1997; Rovegno & Kirk, 1995). Ennis (2000) presented Sport for Peace as a constructivist curriculum that could augment contemporary sport-based physical education: "The curriculum is socially interactive by design and emphasizes the interdependent role of the individuals within a cooperative environment or community" (p. 122). In addition, Rovegno and Kirk (1995) suggested that new constructivist literature had the potential to stimulate growth in research on curriculum and instruction in physical education.

Any meaningful change in teaching requires a conceptual shift in the way a teacher presents instruction. Fullan (1993) argued that change does not have a blueprint, is not linear, and is loaded with uncertainty. Innovation of a new instructional format is problematic at best. What, how, and why innovations work are valid questions.

Research in physical education has demonstrated that our area has instructional and curricular problems (Carlson, 1995; Cothran & Ennis, 1998; Locke, 1992; Siedentop, Doutis, Tsangaridou, Ward, & Rauschenbach, 1994). This study presents the first 2 years of a project in which a university researcher, a teacher, and two full-time student-teaching interns worked to enhance physical education by infusing cooperative learning into a physical education program. The road was not smooth and this paper attempts to represent this journey of change. Therefore the purpose of this paper was to explore (a) a teacher's perspective of the implementation of cooperative learning in an elementary physical education program, and (b) the students' responses to this implementation into their own physical education classes.

Method

Participants and Settings

The research focused on two mixed third- and fourth-grade classes and two fourth-grade classes and their physical education teacher at Loon Elementary School. Pseudonyms were used for the school and all parties in the study. Informed consent was obtained from all the participants, and appropriate human subjects procedures were followed. Loon Elementary is located in New England and made up mostly of Caucasian students, with 4% Asian, 3% African American, and 2% Hispanic students.

Amanda Roberts had taught physical education to these students since kindergarten. The students had one 30-minute and one 45-minute lesson each week. In the first year of the research project, units on striking, educational gymnastics, and throwing and catching were observed; in the second year, units on throwing and catching, kicking, and orienteering were observed. These students had not previously been exposed to cooperative learning in their classes.

Amanda had been teaching physical education for 9 years and was considered one of the most effective physical educators in the local area according to her principal, university faculty, other physical educators, and student teachers. With support from the school district, Amanda had attended one full-day and one 2-day workshop on cooperative learning. She had also presented cooperative learning workshops at state and regional conferences. Amanda's teaching style utilized many components of a movement education approach to teaching physical education (Graham, Holt/Hale, & Parker 1993). She described her teaching as a combination of direct teaching, small group interaction, and station work.

For this study Amanda used a cooperative learning format as described in the conceptual approach (Johnson, Johnson, & Johnson-Holubec, 1998) and complex instruction approach (Cohen, 1994a). Amanda used Pairs-Check-Perform and Learning Teams as cooperative learning structures (Dyson & Grineski, 2001; Grineski, 1996). Pairs-Check-Perform is similar to Mosston's (1981) reciprocal style of teaching in which students are assigned in pairs to work together, with each student given responsibility as either an observer or performer. In Learning Teams, small groups of students were assigned to various roles such as recorder, trainer, encourager, checker, and coach. Students were given task sheets explaining the learning cues or skills; the sheets were then checked off or signed by other group members and/or the teacher.

Data Collection

The main data sources for this paper were interviews with the physical education teacher and students, the teacher journal, and nonparticipant observation of all observed lessons. Data were also collected through fieldnotes, informal interviews, and document analysis.

Amanda was informally interviewed before and after every lesson observed. She was also interviewed informally on several occasions to clarify events as they occurred in context. Brief interviews were held at the beginning of each lesson to determine Amanda's specific goals for that lesson. Open-ended interviews were held after each observed lesson for approximately 20 to 30 minutes to obtain her perceptions of the lessons. An in-depth structured interview was conducted with Amanda at the beginning and end of each year, and after each unit. The open-ended and in-depth interviews were audiotaped and transcribed for analysis. The first interview sought biographical data and related teaching experiences while the other interviews explored Amanda's perceptions concerning the implementation of cooperative learning in her program. The in-depth structured interviews lasted 40 to 65 minutes.

Student interviews involved groups of 3 or 4 students after each observed lesson for approximately 10 minutes. Students are central to the education process, yet are rarely consulted. They can provide valuable insights into curriculum and instruction (Graham, 1995).

All students in the 4 classes were interviewed at least once. All interviews were audiotaped and transcribed for analysis. Interviews were conducted to get the students' perceptions of lessons and their notions about the new program. Examples of interview questions were: What were your goals for the lesson? If you were the teacher, what would you change next time you taught the lesson, if anything? These were followed by questions to further probe students' responses.

The study also involved nonparticipant observation of the 4 classes. The researchers took fieldnotes during each targeted unit in the physical education class and also during or after observations in the classrooms, playground, or staff room at Loon School. An organized method was implemented for taking fieldnotes (Schatzman & Strauss, 1973). The teacher's lesson plans, unit plans, the school district guidelines, and other written documents related to the program were collected and analyzed.

Data Analysis

Findings were grounded in a specific context; that is, categories that emerged from these data were based on the day-to-day events at the school. This interpretive approach was utilized in order to accurately describe and interpret the teacher's and students' voices.

Inductive analysis and constant comparison were used to analyze and organize the data throughout the research process (Denzin & Lincoln, 1994; LeCompte & Preissle, 1993). First the data were organized into manageable and accessible records. Second, a category system of analysis was inductively derived; categories that arose frequently were combined to form themes or categories. Fieldnotes included observational notes, informal interviews, and document analysis. Third, the teacher's and students' perceptions were merged with the fieldnotes to inform the findings. This provided triangulation of data sources that strengthened the findings.

Data Trustworthiness

Trustworthiness is the degree to which the findings are dependable, credible, and transferable (Lincoln & Guba, 1985). An attempt was made to articulate the researchers' bias by using a structured method of taking fieldnotes (Schatzman & Strauss, 1973). To combat reactivity, the researchers spent extended periods of time at the school so that their continual presence would reduce possible distortions or reactivity in the school setting.

Confirmability was established by triangulation, member checks, and peer debriefing (Denzin & Lincoln, 1994; LeCompte & Preissle, 1993; Lincoln & Guba, 1985). Triangulation of source/respondent was made to strengthen the perspective or provide disconfirming evidence of the interviews with the physical education teacher and students. Methodological triangulation (interviews, field observations, and document analysis) allowed a number of data sources to be cross-checked.

Two member checks were conducted. The first consisted of returning all interview transcripts to Amanda, giving her an opportunity to modify or clarify any aspect of the interviews. Only editorial and semantic changes were made. The second member check involved Amanda's reading a draft of the manuscript to verify interpretations. No substantive changes were suggested. Member checks were not carried with the students, due to their age.

Peer debriefing was also used to help analyze and interpret the data. It consisted of inviting other researchers and reviewers to challenge interpretations of the data. A search for disconfirming evidence was conducted throughout the data analysis for negative cases that could disprove categories or provide an alternative viewpoint.

Results and Discussion

The data represents the teacher's and students' perspectives on the implementation of cooperative learning in physical education classes. Categories are represented by quotes from interviews and fieldnotes. Amanda's and the students' voices related to cooperative learning are presented to foreground a discussion of pertinent literature. Six major categories emerged: goals of the lessons, student roles, accountability, communication skills, working together, and practice time.

Goals of the Lessons

Amanda believed that her students needed to develop psychomotor, cognitive, and affective skills. "My lessons are designed to allow every student to feel success in some way or another. I want the kids to appreciate each other, their differences, and respect their abilities. I want students to learn at their own skill level." Motor skill, cognitive, and social skill goals were planned in every lesson (fieldnotes). Similarly, other studies have also reported academic and social goals as important contributors to cooperative learning (Cohen, 1994a; Johnson & Johnson, 1989; Kagan, 1992; Slavin, 1996). In the final interview, Amanda reflected,

I want them to be active and be able to work together as a team and be supportive of one another. Have a respect for one another and be able to carry that not only in a physical sense but also throughout their lives. Give and receive feedback from their peers. To improve not only the quality of their movement skills but that of their peers as well.

Amanda is not alone in emphasizing motor, cognitive, and affective goals. The seven national standards for physical education (NASPE, 1995) recommend that content and assessment are developed for these three domains of learning. In line with the national standards, many physical educators have argued for a more holistic curriculum that incorporates the three domains of learning (Carlson & Hastie, 1997; Ennis, 2000; Hellison, 1996; Lambert, 2000; Rovigno & Bandhauer, 1997). Cooperative learning structures have been suggested as instructional formats that can help teachers meet the national standards (Dyson & Grineski, 2001). In this study the students constructed knowledge and motor skills through social interaction with their peers.

Students in Amanda's classes also talked about social and motor goals. Many felt that the overall goals of the lessons were to work together while performing the various skills they were learning. Maggie reflected, "I think [the goal] was for us to work together and use the strategies we already learned.... Helping us to throw passes and catch." Vicki added, "To do cooperative learning, you have to cooperate together to make sure the goal is achieved...the goal was to learn how to dribble the ball and do an obstacle course. Yeah, and you have to take turns." Students also

talked about learning motor skills and could often articulate how to perform those skills. Jen described an appropriate throwing technique: "First keep your hand in back of you, put your opposite leg in front of you, step with your opposite leg, and move your other arm forward, and throw the ball."

Motor skills were enhanced by the clear focus on learning cues that helped students experience developmentally appropriate motor form. Learning cues are three- or four-word phrases derived from the critical elements of the skill to help the students learn that skill. For example, in a volleyball overhead pass the learning cues would be: "bend your knees"; "square to target"; and "move to the ball" (Rink, 1996).

Learning cues were provided for the students on their task sheets, posters, and on the white marker board. Amanda reviewed the cues with the students before and after tasks or lessons. Many students used these cues when commenting on the goals of a lesson. In a kicking lesson, Ronnie stated, "her goals were to help us make paths and learn to dribble with different parts of our feet. She also wanted us to learn how to 'look up' instead of looking down." The learning cues also gave the students some guidance for assessing their partner's progress. The students used many of these phrases when giving feedback to their peers. Amy said, "We had to watch for how they were doing the steps and to make sure they were doing what they were supposed to do. 'Keeping arms back,' 'stepping forward.' The performer would perform those steps for the overhand and underhand throw."

These tasks illustrate Perkins' (1999) three tenets of constructivism. Students were actively involved in thinking critically about new motor skills while observing their partner. They needed to extend themselves beyond rote memorization of the learning cues; they had to understand these learning cues to the point where they could analyze a partner's performance. Students constructed this knowledge of motor skills through social interaction with peers, facilitated by their teacher's learning cues.

Student Roles

Students were responsible for performing certain roles, such as coach, organizer, recorder, or encourager. These roles helped them depend on each other to complete the tasks. In the first two units, kicking and striking, Amanda assigned four roles to each group. She was hesitant at first to assign roles to the students because, as she said,

I want everybody taking the responsibility in doing all the roles and that if they see someone doing a skill wrong then they'll go over and be their coach and say, "You need to be doing this." Or "Wow that's great you made three out of five"... Especially with the encourager's role... I like to see all my classes encouraging each other.

Over time Amanda came to realize that in cooperative learning the students needed particular roles. In the final interview she said, "To help improve positive interdependence, I expect that each student should have a role and be expected to use that role to accomplish the tasks." The use of roles contributes to the development of positive interdependence in cooperative learning (Antil et al., 1998; Cohen, 1994a; Johnson & Johnson, 1989; Putnam, 1998).

The students quickly understood how their roles functioned. Christina recalled, "The coach watched everybody and made sure they were doing it the right way and giving feedback. The organizer got the balls [equipment]. The recorder recorded." Amanda stated that "understanding what is meant by the roles is the first step, but being able to apply the roles to the lesson added another challenge for the students. The students have to first decide their roles, understand them and then apply them to the lesson." Amanda learned that roles had to be taught explicitly. After many lessons the students still needed guidance on how to perform their roles (fieldnotes). In the first unit of the second year, students still expressed frustration because the whole group would not follow their roles. Chris remembered,

There were a lot of people throwing balls around. It was hard to work. Everyone wanted to be the same role. I wanted to be the coach and Andrew wanted to be the encourager and he wouldn't be the organizer.

Early in the study, Amanda became frustrated with the students' inability to use their roles effectively. She commented,

I don't think the kids understood. They knew what their roles were and who did what. The readers were good at reading the task, but I can't say that they had everyone's attention when they read. They don't know how to go about getting the group organized or they just don't feel confident enough to do it. The students did not know what to say or do.

To reduce confusion and increase the amount of practice time, Amanda switched from having four roles to two after the third unit. Each group was divided into two pairs consisting of a coach and a performer. The coach was responsible for making sure the performer used proper form when executing a skill. This format allowed the students to practice the role of coach with more ease and gave the kicker plenty of opportunities to practice. Fieldnotes indicated that the students were more focused and provided their partner with skill-specific feedback. It is clear from this study that teachers cannot merely place students in small groups and expect them to know how to perform their roles. Although it does not happen automatically, it has been reported that if students are taught explicitly, they can be successful in their roles (Barrett, 2000; Carlson & Hastie, 1997; Dyson, 2001; Pope & Grant, 1996).

When students worked in groups of four, a problematic issue for them was deciding their roles in an equitable manner. Amanda tried to solve this issue during group processing and have the students develop their own strategies. Some solutions included sharing roles and switching roles during the activity. Students were encouraged to take responsibility and creatively solve their own problems (fieldnotes). This illustrates the "discourse, debate, and dialogue" of constructivism and cooperative learning advocated by Cohen and Lotan (1997). Even though the students were not proficient at using their roles, Amanda was pleased with "their enthusiasm about trying this new approach. They were really excited about their roles."

Coaching. Coaching was one of the roles talked about most frequently by the students and teacher. The coach's responsibilities were to provide demonstrations and/or skill-specific feedback to students while ensuring that they had plenty of opportunities to practice. Amanda felt that the students should help teach each other. She stated,

By having the coach be responsible for providing their performer with feedback, the students developed the sense of respect for each other. They were able to encourage and help one another develop the skills we were working on. They would use phrases like “I like the way you extend your arms.”

Students can help their peers learn by relating to them on the same level. Other research in physical education has also reported that students were able to teach each other skills (Barrett, 2000; Carlson & Hastie, 1997; Dyson, 2001; Dyson & Strachan, 2000; Ennis, Solmon, Satina, et al., 1999). In fact, when employing a cooperative learning instructional format, Barrett (2000) argued that the role of coach enhanced student learning more than did the use of traditional physical education instruction.

Many students enjoyed the role of coach. Jill recalled, “We just worked together and gave encouraging words when we were coach. [Like] ‘bring your arm back’ and ‘bring the ball into your stomach when you catch the ball’ and ‘aim for your target’ because that is really helpful.” Students liked teaching their peers to perform the skills. As students, they often are enthusiastic about taking on the role of coach and enjoy coaching and being coached by their peers (Carlson & Hastie, 1997; Dyson, 2001; Ennis et al., 1999; Hastie, 1996; Pope & Grant, 1996).

In a throwing and catching unit, coaches would help with group members’ positioning of the body. Josh recalled,

Since I was the coach, I was helping him do the right move. Like when he has to have his opposite foot in front and his hand in back. He kept putting his hand back, the one that he is supposed to keep frontwards... I told him to put the ball in the hand that is back and then I told him to go like that [Josh demonstrates his movement]. He made good hits.

Josh and Peter both received special education services from the Extend Resource Room at Loon Elementary that allowed students with special needs to participate in the classroom with the support of a student-specific aide or special educator. This example demonstrated that cooperative learning can foster the inclusion of students with special needs.

The responsibilities of the coach illustrate Perkins’s (1999) concept of constructivism. Students were actively acquiring new knowledge through social interaction. Coaching their peers also helped students increase their own level of understanding of the motor skill. As Amanda stated, “I think when you teach a skill you learn it better, you internalize it.” The role of the coach also illustrates what sets cooperative learning apart from other types of constructivism. Not only are students learning something together but also, as Sapon-Shevin (1994) found, “cooperative learning involves allowing—encouraging—students to take responsibility for their own learning and that of their classmates” (p. 187).

Encouraging. The teacher also emphasized the role of encourager. The encourager’s responsibility was to provide the group with positive verbal and non-verbal encouragement to help motivate them to accomplish their task. Marisa commented that the most important thing she learned in class was to “not make other people feel bad” and to do this she had to “encourage people.” To help the encouragers, Amanda had them brainstorm and write encouraging and motivating words on their task sheets. She placed encouraging words on the task sheets used to describe their roles and had several catch phrases posted on the wall: “YOU can do

it,” “almost,” “Awesome,” “Keep it up,” “next time try...” Thumbs-up (nonverbal), High Five (nonverbal). Amanda felt that,

The encouragers could use these posters as a reference. The students constantly need to be reinforced to give encouraging words... When I went to the group and asked the encourager “What can you say for support?” they would say some positive words. I think having the words on the cards helped.

Particularly in the first year, Amanda thought the role of encourager was difficult for the students because “it’s hard for [the encouragers] to let their peers know how they were doing. You can encourage them when things get tough but sometimes your friends don’t want to hear that stuff.”

A conflict arose at the beginning of the study when the principal investigator and the teacher disagreed on the role of encourager. As noted earlier, Amanda found it difficult to assign roles to students at the beginning. In particular, she wanted every student to encourage rather than assigning one person to this role. The principal investigator believed there had to be a specific encourager role to teach students to encourage each other and provide each other with relevant information or feedback. Johnson and Johnson (1989) reported that the role of encourager facilitated the group’s working as team. Even though Amanda wanted all students to be encouragers, fieldnotes indicated that it did not seem to come naturally to them. As the study continued, Amanda reported that the students had to be taught how to encourage each other and the role of encourager helped facilitate this.

Accountability

The notion of accountability is a prominent topic in both physical education and cooperative learning discourse (Antil et al., 1998; Lambert, 2000). Proponents of cooperative learning have argued that accountability is a key element in the implementation of cooperative learning (Antil et al., 1998; Barrett, 2000; Dyson, 2001; Johnson & Johnson, 1989; Kagan, 1992; Slavin, 1996). To hold students and groups accountable for the skills and tactics of activities, Amanda made sure that every lesson had a task sheet outlining the tasks for students to complete. The students were required to check off their work on the various tasks. Amanda explained,

We designed the task sheets so that the reader read the sheet, then the coach used it to help teach the students and know the cues. On the assessment sheet were the same cues so it was being reinforced through the roles.

At first the students found the sheets overwhelming and difficult. However, after an early lesson Anne commented that it would be easier next time “because you know what you’re supposed to do. I didn’t really know what to do today.” Initially the amount of information on the sheets tended to confuse the students. As the study progressed, Amanda changed the task sheets to be more concise and less confusing.

Even though they found the task sheets confusing, the students seemed to understand their importance. After 2 years of cooperative learning, Andrea reported, “When you write it down [sign your name] it means you practiced it and are good enough to do it [perform the skill] in front of the class and then you could sign the paper.” At the end of the second year, Audrey demonstrated her under-

standing of the importance of the task sheets when her partner, Drew, wanted to check her off when she felt she was not ready. She said to him, "Don't check me off because I haven't done it yet." Audrey was holding herself accountable for the activity (fieldnotes). Students seemed to like the task sheets for various reasons. In the second year of the study, Cam commented that he "liked being the recorder. It was fun to write all the stuff down that people said." In another lesson, Alex said, "I like them [the task sheets] because they tell us what balls we already used." Similarly, Barrett (2000) found that sixth-graders were able to hold each other accountable by frequently recording their peers' performance on task cards.

Amanda explained that another technique for fostering accountability was to encourage students to use appropriate feedback skills. "I used students as examples. When I saw things going right, I said 'look at what this group is doing.' I think that helped them get started." Fieldnotes indicated that Amanda often asked students to provide specific skill feedback and positive general feedback to each other.

Communication Skills

At Loon Elementary, each physical education lesson using cooperative learning offered many opportunities for students to practice their interpersonal skills. Amanda stated, "Developing effective communication skills is high on my list of goals."

Communication was an integral part of every physical education lesson. Students at Loon said they learned by interacting with their peers and cooperating to complete their tasks. This was an example of the zone of proximal development discussed by Vygotsky (1978). An important communication skill is the ability to listen, and Amanda expected the students to listen to each other (fieldnotes). In addition, the students highlighted listening as an important part of good communication. When asked what helped them complete their task, students frequently responded, "We listened to each other." Amanda felt that the cooperative learning element of promotive face-to-face interaction enhanced their communication skills. "Face-to-face interactions increased listening and communication between students and enhanced their interpersonal skills" (journal).

Students explained that communication broke down when group members did not listen or speak clearly. In the second unit of the study, Jessica reported, "[The reader] just muttered it and you couldn't really hear it and then he'd just go off and start rolling even though he didn't know what to do... He didn't even read it himself, he just skimmed over it." In another lesson, Melanie said, "I was the coach and the group was yelling and talking too loud and people weren't listening to me. I don't know why." The students' examples highlight both the importance and the difficulty of communication and small-group skills in cooperative learning. These quotes also demonstrate that students were constructing their own meaning about listening and its importance to the success of the task.

Problems sometimes arose when students had to communicate with one another to solve disputes about their roles, the use of equipment, or any other decision that had to be made during the lesson. Amanda used group-processing sessions to help facilitate appropriate communication and provide the students with ideas and possible solutions to the problems she observed (fieldnotes). In the second year of the study, group processing occurred during and at the end of most classes.

These group discussions allowed students to process the lesson or an issue

that arose. Some questions Amanda asked were: What went well? What do we need to work on? What helped you be successful? She encouraged students to provide appropriate feedback to their group (fieldnotes). Each student had the power to make sure the students in his or her group were performing their roles, staying on task, and following directions. In a postlesson interview, Amanda reflected, "I told one group that if someone is fooling around, you as a coach or organizer can say that you need to sit down and discuss the problem."

Interpersonal and small-group skills are an essential element for successful cooperative learning. If knowledge is socially constructed, which is a basic premise of constructivism, then cooperative learning provides a structure for enhancing student learning (Antil et al., 1998; Cohen & Lotan, 1997; Putnam, 1998). This concept has also been championed in physical education by Ennis (2000) with a Sport for Peace curriculum, by Rovegno and Bandhauer (1997) with a movement education curriculum, and by Barrett (2000) and Dyson (2001) with cooperative learning. By the end of the second year, this cooperative learning instructional format was consistent with one of the major tenets of constructivism—that knowledge is constructed socially (Ennis, 2000; Perkins, 1999; Rovegno & Bandhauer, 1997).

Working Together

Students have been encouraged to cooperate and work as a team in physical education classes (Barrett, 2000; Dyson, 2001; Dyson & Strachan, 2000; Ennis, 1994; Ennis et al., 1999; Johnson & Ward, 2001). Positive interdependence, or working together to achieve a goal, is an inherent part of many physical education programs and is also inherent to sport teams (Dyson, 2001; Dyson & Strachan, 2000). Cohen (1994b) has advocated students working in groups using one another as resources to complete the task. From a constructivist and cooperative learning perspective, "working together is superior to working alone" (Antil et al., 1998, p. 443).

A central aspect of Amanda's teaching was to have her students "be able to work together in small or large group activities." Developing groups that were able and willing to work together was challenging. Students initially were not happy to be placed in groups without their friends (fieldnotes). Nevertheless, Amanda thought, "It is important that they learn to work with different people of different abilities" (journal). To address this problem, Amanda allowed the students to work with at least one friend and then paired the groups of two together into four. By the end of the second year she felt that the students learned to work with different people during the cooperative learning lessons and that they enjoyed this method of instruction after they had some experience with it (fieldnotes). Amanda believed the students were learning to depend on one another regardless of who was in their group. Working together meant the group was responsible for achieving a common goal. Amanda commented,

As they were doing the skills, they were learning how to maneuver and position their body. They were learning to work together. The students also learned that they don't have to be so and so's best friend to be able to work with that person.

It appeared that the students had an understanding of working together. Amy commented, "I like how people had to work together and work on giving feed-

back.” Quinn described working together as, “using everybody’s answer, not just one person’s.” In group-processing sessions, these third- and fourth-grade students were able to articulate a clear understanding of working together.

Despite an awareness of the importance of working together, students were not always able to put this understanding into practice and did not always work together in their groups. In the first unit of the study, when asked if their group had cooperated, Ronnie replied:

No, because first of all I wanted to be the organizer. But they all picked their roles and I ended up with the encourager. When we were drawing the obstacle course, they were all deciding and I barely got to help. I said “I have an idea” and they said “what?” and then they just skipped me. I felt left out, mad, and sad.

Teamwork does not just happen without careful planning of tasks and constant facilitation by the teacher. Many teachers have found that simply putting students in teams does not ensure that they will work together (Antil et al., 1998; Cohen, 1994b; Putnam, 1998). As with any conceptual shift in teaching, time and effort is required and the innovation will not always be successful (Fullan, 1999; Prawat, 1992). As leading proponents of cooperative learning remind us, it may take 2 or 3 years of persistent work for a teacher to become comfortable with this instructional format (Antil et al., 1998; Cohen, 1994a; Putnam, 1998).

Practice Time

In physical education class, students need time to practice skills in order to succeed at motor and social tasks. In fact, appropriate practice time is considered a prerequisite for effective physical education (Rink, 1996). In the first year of this study, the amount of time needed to prepare, familiarize, and organize the students for using the cooperative learning approach was frustrating for Amanda. She observed that in one early lesson, “After I explained and organized the students into their groups, they only had 15 minutes to do the activity.” After one of the first lessons she vented her frustrations: “I still didn’t feel comfortable. I don’t like this method, it’s not working for me, it takes too much time. I don’t get as far as I do with the other classes.” Students were also frustrated with the amount of time required to get started on the task. Vickie said, “We cooperated and then it took most of our gym time by who was going to do what. So we didn’t have much time to do our obstacle course.”

Amanda believed the amount of practice time the students had was dependent on their ability to listen to one another and get organized, and on the type of content or task sheet used. CiCi reflected that if their group “could listen more to each other” they might have had more time to practice. Pat suggested that if they “figured out who’s going first,” that may also help.

Amanda was frustrated that organizing cooperative learning took so much time but she felt it would get better. “Time was a big factor. There was a lot to do in a half-hour class but there will be more time next class because we won’t have to go through such a big discussion of their roles” (journal). Cooperative learning initially decreased practice time due to the organization of groups, the learning of roles, and the cognitive discussions that occurred during the lessons. From a constructivist perspective this is time well spent, for it encourages student cogni-

tive and affective development. Later in the year the amount of time needed to organize students decreased as students became familiar with cooperative learning. In the second year of the study, Chelsea said, "Our group worked well together. We knew what we wanted to get and we all chose our different roles. We all wanted different roles. So we all worked together to make the course."

Conclusions

This study tells the story of a teacher's and her students' 2-year journey with the implementation of a new teaching format, cooperative learning. Therefore it provides a snapshot of the process of change in teaching. Using cooperative learning or a constructivist approach to teaching often requires a conceptual shift in how a teacher operates (Fullan, 1999; Prawat, 1992). For Amanda this meant different management, instruction, and planning—labor-intensive activities that forced her outside her comfort zone. Fullan (1999) reminds us that change means facing uncharted territory. This journey produces anxiety for teachers who need support and guidance to accommodate the feeling that they are not in total control of their teaching and learning environment. It is not surprising that Cohen (1994a) found many teachers unable or unwilling to delegate responsibility to students, "that is, to let go and to allow the children to solve problems for themselves" (p. 28).

During the implementation of cooperative learning at Loon Elementary, Amanda reported psychomotor, cognitive, and affective goals for students in her program. Social and motor goals frequently articulated by the students were enhanced by the use of roles. The use of different roles for working in groups was a significant shift for Amanda and her students. In fact, at the beginning of the study she was not convinced about the need for roles. Students typically enjoyed using the roles and were enthusiastic about them, but often could not perform them effectively, especially at the beginning. It is clear from this study that teachers cannot merely put students in small groups and expect them to know how to perform their roles. Amanda learned that the skills required for each role had to be taught explicitly. An example of this was brainstorming with students about positive words the encourager could use and then including these on students' task sheets.

Several aspects of cooperative learning were problematic at first but improved over the 2 years of this study. Initially Amanda was frustrated that she had to give up practice time to implement cooperative learning, but this improved as students became familiar with this instructional format. In addition, despite an awareness of the importance of working together, students did not always mesh well when completing their group tasks. Conflicts often arose, but the students became more proficient at making decisions with others as they practiced their interpersonal skills. They eventually reported that central to cooperative learning was developing respect for the ideas of all members of their group.

Amanda reflected on her practices and made changes in the program, usually simplifying the organization of cooperative learning such as switching from four roles to two or modifying the task sheets. The task sheets helped hold students accountable for learning the motor skills, a key element of cooperative learning that is often missing. Slavin (1996) and Antil et al. (1998) reported that procedures for assuring individual accountability are often absent from teachers' interpretations of cooperative learning. Putnam (1998) pointed out that educators are not

typically aware of the conditions essential for cooperative learning to lead to positive outcomes. She added, "simply placing students in groups and asking them to cooperate will not ensure higher achievement or positive interpersonal outcomes" (p. 18).

Many researchers have made the connections between cooperative learning and constructivism (Antil et al., 1998; Cohen & Lotan 1997; Perkins, 1999). Despite the problems with implementing this innovation, cooperative learning at Loon Elementary eventually illustrated the three tenets of constructivism described by Perkins (1999): active learning, social learning, and creative learning. Students learned more about a motor skill by analyzing each other's skills and providing skill-specific feedback to their group-mates. The students were given tasks or problems to solve together in their groups. The teacher organized the content and acted as instructor and facilitator.

In cooperative learning, the constructivist idea of social learning is taken to the next level: not only are students learning together but they are also encouraged to take responsibility for their classmates' learning (Sapon-Shevin, 1994). This study supports other research which has found that students can teach their peers (Barrett, 2000; Carlson & Hastie, 1997; Dyson, 2001; Dyson & Strachan, 2000; Ennis et al., 1999). Students at Loon Elementary said they liked teaching their classmates.

This study shows that the cooperative learning instructional format holds much promise for physical education, but its implementation is not easy or trouble free. Teachers must make substantial adaptations in the way they organize and manage their classes. The implementation of cooperative learning is complex and may take 2 or more years for a teacher to feel comfortable with it, and it may take even longer for institutionalized change. More research is required on the implementation of cooperative learning in order to ease the transition for other teachers who may wish to embark on this journey of change.

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