of games education and a good reminder that games teaching isn't new but has resurfaced with renewed enthusiasm.

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chapter
10

Integrating Cooperative Learning and Tactical Games Models: Focusing on Social Interactions and Decision Making

Ben Dyson

When I lived in New Hampshire, I was in a location that was conducive to learning to kayak, and I had friends there to teach me that skill. Without the location (opportunity) and the friends (social interdependence), I would not have kayaked as much and would not have developed kayaking skills. I was positively interdependent on friends to take me kayaking, and without them I would not have gone. In rough water, if you do not paddle your kayak, you will fall out. So by the very nature of the task, I was held accountable for paddling my kayak—that is, if I didn't want to swim in the cold ocean water. With Cooperative Learning, if the task is set up appropriately, the students "sink or swim together."

Sport-related games, as content in physical education, provide countless opportunities for social interactions and decision making. Integrating a Cooperative Learning model with the Tactical Games model provides a structure for foregrounding the cooperative dimension in games teaching and learning. Cooperative learning (CL) and Tactical Games (TG) share several pedagogical principles. First, the learning is student centered. Second, students work in small groups or teams and rely on each other to complete the learning activities. Third, the teacher facilitates learning by shifting the majority of responsibility to the students. Fourth, learning activities are authentic. Finally, learning activities have the potential to

include social, physical, and cognitive development. These models also have as an inherent focus the use of modified games to better situate learning within the context of the game and to enable students to experience meaningful play. By integrating CL and TG, the teacher can potentially better highlight social interaction, problem-solving skills (i.e., decision making), and cognitive understanding.

The purpose of this chapter is to do the following:

- Provide an overview of CL as an instructional model
- Review the research on CL in physical education
- Make theoretical connections between CL and TG
- Emphasize the pedagogical integration of the models
- Provide practical examples of the integration of TG and CL (Griffin, Mitchell, & Oslin, 1997; Mitchell, Oslin, & Griffin, 2003)

TG is considered an extension of the original Teaching Games for Understanding model (TGfU) (Bunker & Thorpe, 1982). TG has been elaborated on throughout this text and will not be explained in this chapter.

Overview of Cooperative Learning As an Instructional Model

CL emerged as a response to the early educational reform in cognitive psychology (Deutsch, 1949; Dewey, 1924). Early progressive educators created a foundation of research and literature that led to CL being aligned with social constructivism (Antil, Jenkins, Wayne, & Vadasy, 1998; Cohen & Lotan, 1997; Perkins, 1999). CL is an instructional model that shifts the focus of learning to the student. Each student becomes a meaningful participant in learning. Students work together in structured, small, heterogeneous groups to master the content. The students are responsible not only for learning the material, but also for helping their group-mates learn (Antil et al., 1998; Putnam, 1998).

Students work together in structured, small, heterogeneous groups to master the content.

Five main elements of CL have emerged from research and teaching:

- *Positive interdependence.* Each group member learns to depend on the rest of the group while working together to complete the task.
- *Individual accountability.* Teachers establish and maintain student responsibility for appropriate conduct, task involvement, and outcomes (Siedentop & Tannehill, 2000).

- *Face-to-face interaction.* Group members have head-to-head discussions in close proximity to one another.
- *Interpersonal and small-group skills.* These include listening, shared decision making, taking responsibility, learning to give and receive feedback, and learning to encourage each other.
- *Group processing.* Time is allocated to discuss how well the group members achieved their goals and maintained effective working relationships. Group processing is similar to the processing or debriefing that takes place in adventure education experiences. This form of verbal reflection during or after a lesson serves as an opportunity for students to express themselves and for the teacher to provide specific and relevant feedback to the students, and can act as a form of accountability.

The four major approaches to CL, which were developed and researched by advocates of the model, emphasize the elements of CL to varying degrees (Antil et al., 1998; Cohen, 1994b; Putnam, 1998). The approaches (and their developers) are as follows: conceptual (Johnson, Johnson, & Johnson-Holubec, 1998), structural (Kagan, 1992), curricular (Slavin, 1996), and complex instruction (Cohen, 1994b).

- *Conceptual approach.* The conceptual approach, designed by Johnson and Johnson (1989), is based on the premise that teachers can learn the key elements of structuring effective CL activities. Teachers are taught to plan, implement, and assess CL activities to match their own curriculum needs. Generic or content-free forms of CL are used in a variety of subjects and at different grade levels. Johnson, Johnson, and Johnson-Holubec (1998) suggested that the five elements of CL are necessary for authentic implementation of CL.
- *Structural approach.* Kagan's (1992) structural approach to CL is based on different strategies that Kagan (1990) referred to as structures, such as Think-Share-Perform, Jigsaw, and Learning Teams. To ensure success when using the structural approach, Kagan (1992) highlighted two main elements, positive interdependence and individual accountability. The effective design of a CL lesson requires teachers to use a variety of different structures, each chosen for the cognitive, physical, and social goals it best accomplishes within a given teaching situation or context.
- *Curricular approach.* Slavin's (1990) curricular approach shifts away from the content-free structural approach to grade-level-specific and subject-specific curricula. In Slavin's (1996) highly structured approach, he defined group goals as students working together to earn recognition, grades, rewards and other indicators of group success. Slavin (1996) found that CL can be an effective means of increasing student achievement,

but only if the essential elements of specific group goals and individual accountability are integrated into the CL methodology.

- *Complex instruction approach.* Cohen's (1994a) complex instruction approach focuses on group work as a strategy for enhancing student social and academic development. Complex instruction is a method of small-group learning that features open-ended discovery or a conceptual task that emphasizes higher order thinking skills. Of the four approaches, Cohen's approach does not specify content or grade-level. This nonspecific approach is the least structured in its adherence to the elements of CL. In this peer-mediated approach, students work in groups using one another as resources to complete the tasks. Group roles such as material manager, harmonizer, and resource person are assigned to students. The teacher's role is to facilitate the group work and emphasize that all skills and abilities are important and relevant for completing the task (positive interdependence). These approaches are described in more detail in Dyson (2001).

Substantial evidence exists to support the idea that students working in small cooperative groups can master material presented by the teacher better than students working on their own (Cohen, 1994b; Johnson & Johnson, 1989; Slavin, 1990, 1996).

A body of research in general education reports the benefits of CL (Cohen, 1994b; Johnson & Johnson, 1989; Kagan, 1990; Slavin, 1990, 1996). Substantial evidence exists to support the idea that students working in small cooperative groups can master material presented by the teacher better than students working on their own (Cohen, 1994b; Johnson & Johnson, 1989; Slavin, 1990, 1996). Other benefits of CL include higher achievement scores and social outcomes such as positive intergroup relations, the ability to work collaboratively with others, and the development of self-esteem (Cohen, 1994b; Johnson & Johnson, 1989; Slavin, 1990, 1996).

Research on Cooperative Learning in Physical Education

Although the evidence in general education to support teachers using CL is strong, research on CL in physical education is limited. Nonetheless, the studies that have been conducted indicate promising results. Grineski (1993) found that CL can enhance physical fitness and social interactions

for elementary, kindergarten, and preschool children. Preschool children involved in cooperative games had higher rates of positive physical contact than children involved in free play, especially children with disabilities. In addition, cooperative games enabled players to demonstrate high rates of goal-related cooperative behaviors and lower rates of negative physical contact and negative verbal interactions. The CL structures facilitated successful student participation and positively affected player performance. Smith, Markley, and Goc Karp (1997) used CL with third-grade students in physical education classes. They found that students' social reasoning skills, interactions, and social participation improved after a six-week CL unit. With grade 5 and 6 students using CL, Dyson (2001) reported that both the teacher and the 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) found that a physical education teacher believed that CL helped her students meet the following goals: developing motor skills, developing game strategies, actively participating, respecting one's peers, accepting responsibility, and improving communication skills. Grade 8 and 11 students stated that CL encouraged participation, was fun, and allowed them to develop motor skills and interpersonal skills.

Barrett (2000) investigated the use of two CL structures, Performer and Coach Earn Rewards (PACER) and Jigsaw II in Physical Education (Jigsaw II-PE), in which the two roles of performer and coach were used in two grade 6 physical education classes. These strategies used three elements of CL: 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 male and female participants within PACER and Jigsaw II-PE classes also showed improved performances.

In another study, a teacher and her third- and fourth-grade students were followed over a two-year period to understand the process of implementing CL (Dyson, 2002). The teacher used Pairs-Check-Perform and Learning Teams as CL structures (Dyson & Grineski, 2001; Grineski, 1996). In this study the teacher and students held similar perceptions related to goals of the lessons, student roles, accountability, communication skills, working together, and practice time.

This was represented in the categories that emerged from the data: goals of the lessons, student roles, accountability, communication skills, working together, and practice time.

The findings from physical education research support the belief that CL can help students

- improve social reasoning skills,
- develop interpersonal skills,
- improve their active participation,
- develop motor skills and game strategies,
- improve working together as a team,
- assist others improve their skills,
- take responsibility for their own learning, and
- hold each other accountable for completing their tasks.

To introduce CL in physical education, a teacher can begin with students working in pairs and providing feedback to each other. Pairs-Check-Perform is based on Kagan's (1992) structure, Pairs Check. This structure requires individuals to stay on task and help others learn, and is useful when learning locomotor, manipulative, sport, gymnastic, or aquatic skills and strategies. The Pairs Check structure is similar to Mosston's (1981) reciprocal style of teaching, in which students are assigned to work in pairs, with each student given responsibility as either an observer or a performer. Later, students could work in groups of three in which the roles could include coach, encourager, and recorder. Initially, the coach watches for good form compared to appropriate learning cues; the encourager provides feedback to encourage and motivate group-mates (such as "Good follow-through" or "Nice parallel swing"); and the recorder writes the specific skill or tactical information (group-mates' progress) on the task sheet. For example, in a forehand tennis lesson, the coach's role is to watch that the performers are hitting the ball using good form (learning cues are side to net, racket, swing parallel, and follow through).

An example of a four-person activity could be a Jigsaw Perform (Aronson, 1978). In this CL structure each student is responsible for learning and performing a portion of the content, and then teaching that portion to group-mates. The Jigsaw Perform structure can be used in physical education for developing routines, creating stations, teaching dance, and teaching and reviewing motor skills and tactics. To be successful, the whole group needs to make sure that every student completes the tasks. That is, during Jigsaw Perform,

The Jigsaw Perform structure can be used in physical education for developing routines, creating stations, teaching dance, and teaching and reviewing motor skills and tactics.

positive interdependence is strong because each student is dependent on others for information. For example, to create a dance routine, individual students are assigned a component or part of the dance to develop and are responsible for teaching that part to other group members. Students in small groups create a dance routine that matches a musical selection, uses steps outlined by the teacher, and uses specified body parts. Student groups take turns teaching their part of the dance routine to other group members, and then the group puts the dance together to perform it for the class.

Theoretical Connections Between CL and TG

Both CL and TG can be thought of as examples of situated learning. Situated learning theory is conceptualized as one component of a broader constructivist theory of learning in physical education (Kirk & Macdonald, 1998). Constructivist and situated learning perspectives have been promoted in the physical education literature (Chen & Rovegno, 2000; Dodds, Griffin, & Placek, 2001; Ennis, 2000; Kirk & Macdonald, 1998; Rovegno & Bandhauer, 1997; Rovegno & Kirk, 1995). The pedagogical emphasis is a focus on the student as an active, social, and creative learner (Perkins, 1999).

Situated learning theory investigates the relationships among the various physical, social, and cultural dimensions of the context of learning (Lave & Wenger, 1991). Situated learning is a type of social constructivism that provides a more holistic view of learning. The social and cultural situation of the teaching environment contributes significantly to what and how students learn (Kirk & Macdonald 1998). The deliberate organization and structures of CL and TG allow for participation to occur in a student-centered "learning curriculum" as opposed to a teacher-centered "teaching curriculum" (Lave & Wenger, 1991, p. 97). This moves students (learners) into situations in which they can also help their group-mates or teammates learn.

Kirk and MacPhail (2002) offered a connection between TG and situated learning. They suggested that TG can lead teachers to pay attention to the students' perspectives, skills, tactics, and game play. CL has many similarities to TG, with student-centered tasks that require student input and are meaningful, challenging, and authentic to students. The group dynamic in CL allows students to take on roles and responsibilities and provides students with the opportunity to achieve tasks while they are socially interacting.

Pedagogical Integration of the Models

Tactical problems, tactical awareness, and decision making are emphasized in the following example that integrates CL and TG (see figure 10.1). In soccer, maintaining possession of the ball is an important tactical problem for students to master. Using the triangle ball activity as a practice task for supporting the ball carrier can heighten the students' tactical awareness of maintaining possession of the ball. In the triangle ball activity, students are encouraged to make quick decisions as they pass the ball and run to support the ball carrier. Each student has a role: coach, organizer, encourager, and recorder. The students carry out their roles and provide feedback to each other to enhance learning. The recorder writes on the task sheet an assessment of each student based on the learning cues: call name and make eye contact, reach for ball (show a target), get into a supporting position, use a leading pass (to a partner on the move), give appropriate feedback, and receive feedback appropriately.

In addition, the triangle ball task sheet in figure 10.2 can be used to assess student learning. The triangle ball practice task sheet contains learning cues for the students. The teacher should review these learning cues with the students prior to sending them off to perform the task. Students should be encouraged to provide their teammates with specific feedback during the practice task. In the role of facilitator the teacher will actively monitor and interact with the students and encourage them to provide their peers with appropriate feedback to help them improve their skills.

1. Four players in a square, 3v1; three players work on the corners and sides of the square.
2. One of the four players works in the middle area and tries to intercept the ball as the other three pass it around.
3. Players with the ball can only pass and run along the perimeter lines of the square.
4. No diagonal passes.
5. Players in possession of the ball cannot move.

Teaching point:

Players should support the ball carrier on both sides.

Figure 10.1 Triangle ball practice task.

Task

Play triangle ball and support the ball carrier on both sides.

Learning cues

1. Call name and make eye contact.
2. Reach for ball; show a target.
3. Move into a supporting position.
4. Use a leading pass (to a partner on the move).
5. Give appropriate feedback.
6. Receive feedback appropriately.

When you feel you are ready, complete the following form, rating each player's performance with each skill.

Awesome—uses the cues every time
Good—uses the cues most of the time
Needs work—rarely uses the cues

Name	Calls name	Reaches for ball	Uses a leading pass	Gives feedback	Receives feedback

Figure 10.2 Triangle ball task sheet.

Pedagogical Shift

Integrating TG and CL will require a pedagogical shift or change in teachers' mind-sets that will take time and effort. Mitchell, Oslin, and Griffin (2003) emphasized preparing students for TG: "A tactical approach requires that elementary students engage in game play independently in small groups; this requirement is a different way of learning for most elementary students" (p. 15). The TG or CL structure needs to be taught, reinforced, and reviewed for students. Physical educators need to understand the essential conditions needed for TG and CL to lead to positive outcomes. Putnam (1998) cautioned that "simply placing students in groups and asking them to cooperate will not ensure higher achievement or positive interpersonal outcomes" (p. 18). The process will require trial and error, but has many possible benefits for teachers.

Teachers can develop knowledge and experience in integrating these models from attending workshops, reading texts, and practicing TG and CL structures. Starting with familiar content and one or two learning activities can be helpful. Teachers will have to work with students to build interpersonal skills and small-group skills; these should be an integral part of every physical education lesson. Many students need to learn how to communicate more effectively with others. Therefore, lessons may go more smoothly if teachers spend the first several weeks of the school year engaging the students in activities that encourage them to have positive interactions (promotive face-to-face interaction). Students need to know how to give directions, listen to one another, work together, solve problems, and give and receive feedback. Activities that encourage these skills include Project Adventure activities (Rohnke, 1984), team building (Glover & Midura, 1992), and cooperative activities (Grineski, 1996). Because teachers may have many of these activities in their teaching arsenals already, they should start with what works for them.

Integrating TG and CL will require a pedagogical shift or change in teachers' mind-sets that will take time and effort.

Teacher As Facilitator

Integrating TG and CL will require the teacher to guide the instruction and curriculum as a facilitator of learning who is not at the center of instruction. As the facilitator, the teacher sets problems or goals, and students are given an opportunity to seek solutions to these problems. For both CL and TG, being a facilitator is a complicated role. Quality facilitation is a learned skill that takes extended periods of time to develop, plan, and employ. Many teachers have difficulty releasing control to their students in a task or game. In TG, teachers need to learn how to guide their students through their questions and problems to help them determine their own solutions. The CL instructional model emphasizes working as a team and relying on each other to achieve the task. An integrated approach can assist the team to come up with the best possible solutions. For the teacher to act as a facilitator, the students need to be taught to organize equipment and be responsible for it, cooperate in their teams, coordinate teams or officiate games, give and

Quality facilitation is a learned skill that takes extended periods of time to develop, plan, and employ.

receive feedback to their peers, coach, tutor, solve problems, and help their teammates learn.

Being Faithful to the Models

Metzler (2000) reminded us to be sure to preserve the fidelity of an instructional model when implementing it for the first time. Therefore, in an integrated CL and TG unit, teaching occurs in a deliberate manner to emphasize both social interaction and psychomotor (skill and tactical) outcomes. Teachers need to be aware of the salient features of each model to ensure the preservation of both. For example, in CL this can be accomplished by focusing on the five elements: positive interdependence, individual accountability, face-to-face interaction, interpersonal and small-group skills, and group processing. A common error that teachers make when trying to implement CL is failing to require positive interdependence in student tasks. If the students do not rely on each other to complete the task, then they are not positively interdependent. Similarly, using TG, teachers should focus on tactical problems, tactical awareness, and decision making. More specifically, questioning is a critical teaching skill in TG that enables the teacher to guide students to identify solutions to the tactical problems presented in games. Teachers need to know when to use questions and when to provide answers. They should preplan their questions and reflect on their efficacy after each lesson.

If the students do not rely on each other to complete the task, then they are not positively interdependent.

Benefits of Integration

Because the integration of CL and TG is a complex and labor-intensive enterprise, a teacher may not be comfortable and effective teaching these instructional models for two or more years. There are, however, several benefits to the integration of CL and TG models: (1) The Game Performance Assessment Instrument (GPAI) (Mitchell & Oslin, 1999) complements the CL task sheet assessments by providing assessment of tactics during the game. The tactical emphasis of the GPAI draws attention to a focus on tactics in CL, not just skill development (see figure 10.3). (2) Both CL and TG have a focus on cognitive understanding, but the TG model emphasizes tactics in the game, in questions, and in assessments. This focus can help students develop tactical awareness and skillful decision

making. (3) In CL, the tactical questioning can be expanded in the debrief to cover more affective or social issues: What happened? So what? Now what? In addition, questions can focus students on determining specific goals for the next lesson: What was one thing your team did well? and What is one thing your team needs to work on? (4) In both CL and TG, working in small-sided game situations allows for more touches of the ball and less complex situations in which students can problem solve and find solutions to tactical problems. In addition, staying in teams for an entire unit allows students in CL to develop teamwork, which can enhance positive interdependence and team affiliation. (5) Students taking roles can encourage positive interdependence in groups or teams and assist teachers with organization of their environment (e.g. role of equipment manager), (6) In both TG and CL, students assume responsibility in tasks and games. This empowers students to take control of their own learning. The appendix to this chapter provides a practical example of an integrated TG and CL lesson for setting up the attack in volleyball.

Task

In your groups, make sure that each teammate is observed. The recorder should check that everyone has a completed GPAI. The coach should discuss the observation with the teammates in a group-processing session after the game.

Components of game performance (criteria for appropriate or inappropriate rating)

1. Decision-making criteria:	Player attempts to pass to well-positioned teammate
	Appropriate attack (spike, dink, long ball)
2. Skill execution criteria:	Ball reaches target
	- Forearm pass (bent knees, straight platform, move, square to target)
	- Set (soft hands, window, extended arms, square to target)
3. Support:	Attempts to make three hits
	Communicates with team members (e.g., calls for the ball)

(continued)

Figure 10.3 GPAI volleyball.

	Decision making A	Decision making IA	Pass execution E	Pass execution IE	Support A	Support IA	Overall assessment (comments for individual or team)
Name:							
Provide comments to justify your score:							
Name:							
Comments:							
Totals:							Summary:
Analysis of tactic:							
Suggested improvements:							

Key: A = Appropriate, IA = Inappropriate; or E = Efficient, IE = Inefficient

Figure 10.3 *(Continued)*

Conclusion

Remember my description of having the opportunity and instruction necessary to develop my kayaking skills? Similarly, in physical education I believe that we need to provide the opportunity and motivation for students to be physically engaged. I argue that a combination of Cooperative Learning and Tactical Games can provide the individual accountability and positive interdependence to facilitate successful completion of relevant tasks or specific goals to enhance student physical activity. The level of integration between the CL and TG models will depend on the needs and preferences of the physical educators. The goal should be to use the most effective combination to facilitate a student-centered learning environment in the gymnasium. Griffin, Oslin, and Mitchell (1997) provided some useful guidelines for implementation of the models: make explicit your core beliefs, think small, pick your favorite sport, make it yours, think "gamelike" and authentic, make the lessons reflect the lesson format of a game-practice-game cycle, plan the unit, and find company to reflect on your teaching and discuss how to enhance student learning. In addition, group processing can help teachers gain valuable information from their students. Both TG and CL can contribute to students' motor and social skills, but they also can enhance students' cognitive development through tactical awareness and skillful decision making. The road to implementation will be a labor-intensive process, but the potential benefits for students in physical education can be immeasurable.

Discussion Questions

1. What are the psychomotor, cognitive, and affective goals for your program? How can this integrated approach to teaching quality physical education achieve those goals?
2. How will you group your students? Take time to experiment so that you have truly heterogeneous groups that function effectively.
3. How will you assess your students? Two suggestions:
   a. Try to develop task sheets that can be used for teacher assessment or peer assessment.
   b. Make sure you have individual accountability for at least one task in every lesson.
4. How are the students positively interdependent on each other to achieve their tasks?
5. How can you incorporate group processing into each of your lessons? Remember that good questions can facilitate appropriate cognitive responses during the lessons about skills and tactics and also enhance group processing.

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Appendix

Integration of CL and TG: A Practical Example

Here is a practical example that has been used at the middle school level. The activities are designed to enhance students' psychomotor, cognitive, and affective capabilities by using TG integrated with a Learning Teams CL structure to teach volleyball (Dyson & Grineski, 2001). The structure of Learning Teams is based on Student Teams-Achievement Divisions (Slavin, 1990) and Learning Together (Johnson & Johnson, 1975). Learning Teams provide students with the opportunity to share leadership and responsibility roles and use collaborative skills to achieve group goals. The purpose of Learning Teams is to motivate students to be positively interdependent with their teammates, which is enhanced by students' taking on roles. In addition, the tasks are designed to help the students take responsibility in their group to complete their tasks. The task sheet (see figure 10.4) or a GPAI can also be used as a form of peer assessment. The intent of this lesson is to provide an example and framework for integrating TG and CL into physical education programs. Teachers should adapt this lesson to suit their contexts and their students' needs. Within the Learning Teams structure, students are taught roles such as coach, checker, recorder, organizer, and encourager. The teacher is in the role of facilitator.

The responsibilities of each role are as follows:

Coach—provides feedback to the group members to improve their performance

Checker—checks that every student completes the task

Recorder—records each student's performance on the task sheet

Organizer—organizes equipment

Encourager—encourages everyone to be involved and provides feedback to all group members

The coach explains the learning cues to the group, and the group practices the tasks. Remember that everyone participates in the tasks and everyone has a role. Students check off on the task sheet after their whole group has completed tasks 3, 5, and 6. Feedback cues can be on a clipboard or on a poster.