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## **Cooperative Learning as Formative Approach in Physical Education for All**

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### **Abstract**

The purpose of this article was to explore Cooperative Learning as a promising approach for the inclusion of students with disabilities in physical education (Moliterni, 2013; de Anna, 2009; Cervantes et al. 2007). Constructivist perspective is used as a theoretical framework and connection with Cooperative Learning. Research in America by Johnson & Johnson (1989) on the use and benefit of Cooperative Learning in the classroom environment have been conducted, but we are now beginning to understand the inclusive nature of Cooperative Learning in physical education (Dyson & Casey, 2012). The structure of Cooperative Learning allow for participation to occur in a student-centered learning curriculum as opposed to a teacher-centered teaching curriculum. The teacher facilitates learning activities that have the potential to provide students with a holistic education that promotes social, physical, and cognitive learning outcomes. The emphasis is on active learning that involves the processes of decision making, social interaction, and cognitive understanding for students.

**Keywords:** social constructivism, inclusion, physical education

## Introduction

Motor skills are the basis for any bodily movement which is an intentional movement involving a motor or muscular component. Motor skills must be learned and voluntarily produced to capable perform a goal-oriented task (Connolly, & Montgomery, 2005). Development of motor skills occurs over relatively extended time periods that refers to the processes of change in motor behavior (Haywood, & Getchell, 2009). Gross and fine motor skills are two distinct types of motor skills. Gross motor skills are movements which involve the use of the large muscles such as crawling, stand up, up stairs, walking and running. In the early years of life, gross motor skills are developed as they are required for the stability and control of the body in addition to exploration of the environment (Cools et al. 2009; Gallahue, & Ozmun, 2006; Haywood, & Getchell, 2009; Rigal, 2003). Fine motor skills are the use of small muscles involved in movements that require the functioning of the extremities to manipulate objects (Gallahue, & Ozmun, 2006). Fine motor skills play a role in many activities of daily life such as dressing and feeding ones self, in addition to being essential in writing, drawing, picking up objects and cutting, (Cools et al. 2009; Summers et al. 2008a).

Cooperative Learning involves a learning environment in which cooperative collaboration leads to successful learning. Many researchers (Perkins, 1999; Antil et al., 1998; Cohen & Lotan 1997) have made the connections between cooperative learning and constructivism. Perkins (1999) emphasized three tenets of constructivism that were evident in the implementation of cooperative learning: the active learner, the social learner, and the creative learner.

In this sense Casey and Dyson (2012) argued that Cooperative Learning is a dynamic student-centered pedagogical model that promotes students learning in the physical, cognitive and social domains. The literature (Dyson & Casey, 2012; Comoglio, 1996; Cohen, 1994; Johnson & Johnson, 1989) has reported five essential elements in Cooperative Learning: positive interdependence, individual accountability, promotive face-to-face interaction, interpersonal and small group skills, group processing.

In this approach, students of different levels of ability explore the socio-cultural significance of human movement by working together in small structured heterogeneous groups using a variety of learning activities. Each member of a team is responsible not only for learning what is taught but also for helping team members learn. For this reason, Cooperative Learning can make the Physical Education a positive learning environment and limit behaviour problems in classes while students work to develop understanding and task competency (Dyson, Ovens & Smith, 2012). Therefore Cooperative Learning supports the achievement of many national and state curriculum objectives (Goodyear, 2012).

This paper offers a description of the Cooperative Learning elements and provides an example of how Cooperative Learning theory can be put into practice as a reciprocal teaching style where the role of the learner is to work in a 'partner' relationship (Mosston & Ashworth, 2002).

## Pedagogical framework

Research in physical education has demonstrated that our area has didactic and curricular problems (Cothran & Ennis, 1998; Carlson, 1995; Siedentop, Doutis, Tsangaridou, Ward & Rauschenbach, 1994; Locke, 1992).

Rovegno & Kirk (1995) suggested that new constructivist literature had the potential to stimulate growth in research on curriculum and didactic activity in physical education.

Practitioners need to take into account several pedagogical considerations when implementing any of these three instructional models: (a) the teacher guides (coach) the class-group as a facilitator of learning, (b) structuring space and time of activities, (c) students are active learners, (d) students work in small groups with modified games, (e) learning activities are authentic and developmentally appropriate, (f) learning activities are interesting and challenging, (g) games invention and self-made materials and (h) students are held accountable.

#### *The teacher guides (coach) the class-group as a facilitator of learning*

As the facilitator, the teacher sets problems or goals, and students are given an opportunity to seek solutions to these problems. Solutions to the problem are identified through a questioning process and these solutions then become the focus of a situated practice. The teacher also facilitates the practice by either simplifying or challenging based on student abilities. In this way, the teacher is working with the students' prior knowledge to develop new knowledge.

#### *Structuring space and time of activities*

Organize daily routines using schedules and calendars, 5-7 min free play between students, 2-3 min introductory activity, 30 min fitness/games development and 10 min closing activity talking with students about problems, successes, emotions, new knowledge emerged during activities (deAnna, 2009).

Students are more likely to participate in physical activity if they are positively disposed to it, if they receive social influence to do so, and if they believe they will be successful (Armitage, 2005)

#### *Students are active learners*

In Cooperative Learning, students have a high rate of engagement. Students take responsibility for organization, management and take on leadership roles. Teachers delegate responsibility so that more students can talk and work together on multiple learning tasks. Therefore, students have positions of responsibility.

#### *Students work in small groups with modified Games*

Grouping is usually heterogeneous (for ability, gender, geographical origin) in small groups (4-6 students) with peer collaboration and peer tutoring. The developers of Cooperative learning recommend that prior to implementing cooperative learning, teachers use team-building or social skill-building activities that are designed to develop the appropriate behaviors for cooperation as well as some specific skills for working successfully with others (Dyson & Rubin, 2003; Dyson, 2002; Antil et al., 1998).

Modifying the games allows students to practice their skills and decision-making in "real" game-like situations. Having the teacher emphasize authentic realization of the movements and the fun puts students in an active learning situation.

*Learning activities are interesting and challenging.*

When learning activities are either interesting or challenging to students, they are more likely to be satisfying or even enjoyable. The discovery of solutions to various learning activities requires that students contribute to the group or team task. Students will need to rely on each other to complete the learning activity or score the point, which is an example of positive interdependence. Learning activities can also include one or more physical, social, and/or cognitive goals that are aligned with the national standards.

*Games invention and self-made materials*

Rooted in the Constructionist Theory of Learning (Hay & Barab, 2001), constructionist learning environments, like the ones that can be created through self-made materials, allow students to cooperatively reflect on the sharable artefacts they build. Developing on this idea, students could also be challenged to invent different uses and/or games according to available resources. This can encourage students to construct personal meanings by understanding their experiences in physical education in relation to their lives, backgrounds, and personal values.

*Students are held accountable*

Assessment is an ongoing part of instruction, and students are provided with continuous feedback for reflecting on problem solving during physical activity experiences. Assessment should be authentic and therefore aligned with the national standards and specific objectives. For example in Cooperative learning, students can be held accountable by teacher with peer assessments using self-assessment forms in small group, pupil's diary, to keep track of various learning activities students.

Learning takes place in the interactive social world within social practices or interpersonal relationships that are in the process of production, reproduction, transformation, and change (Lave & Wenger, 1991).

Kirk and Macdonald (1998: 382) have argued that “school physical education may regularly and consistently fail to provide young people with the opportunity for legitimate peripheral participation in a community of practice of exercise, and physical recreation” .

Dewey (1966) was perhaps the first modern educator to recognize education as a social enterprise. In Dewey's philosophy, children's educational development cannot take place through direct teaching of beliefs, emotions, and knowledge, but instead occurs through the intermediary of community where collective experiences or activities are shared. Conjoint activities, or activities that relate to the social and the community, are essential for the growth of the young. Dewey argued that the educational setting should include conditions and situations that have the characteristics of real life. Authentic learning, therefore, results when students connect classroom activities to their lived experiences and to their lives.

In this sense Constructivist and situated learning perspectives have been endorsed as providing a potentially useful reconceptualization of existing approaches to teaching and learning in physical education ( Dodds, Griffin, & Placek, 2001; Ennis, 2000; Rovegno & Bandhauer, 1997).

Many researchers (Perkins, 1999; Antil et al., 1998; Cohen & Lotan 1997) have made the connections between cooperative learning and constructivism. As noted by Cohen and Lotan (1997: 42), “Constructivists almost unanimously recommend small cooperative groups as settings in which students have the opportunity for such discourse”.

Vygotsky (1978: 90) 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” .

Perkins (1999) emphasized three tenets of constructivism that were evident in the implementation of cooperative learning: 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 decision-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.

We argue that Cooperative Learning in physical education can provide structures or formative models for situated learning to occur within a community of practice based on the meaningful, purposeful, and authentic tasks presented and practiced by students.

### **Cooperative Learning in Physical Education**

Cooperative Learning (CL) is a pedagogical approach that also shifts the focus of learning to the student. A primary goal in CL is that each student becomes a meaningful participant in learning. Students work together in small, structured, heterogeneous groups to master the content;

they are not only responsible for learning the material, but also for helping their group-mates learn (Antil, Jenkins, Wayne, & Vadasy, 1998; Putnam, 1998).

There is a growing body of research in education that reports the benefits of cooperative learning (Slavin, 1996,1990; Cohen, 1994; Kagan, 1990; Johnson & Johnson, 1989).

In general education, researchers have found that cooperative learning can have positive effects on academic achievement, self-esteem, active learning, social skill, decision making, problem solving skills development, positive inter-group relations, the ability to work collaboratively with others and equal opportunities (Dyson 2002; Slavin, 1996; Cohen, 1994; Kagan, 1992; Johnson & Johnson, 1989).

Grineski (1989) found that cooperative learning could enhance physical fitness and social interactions for elementary students, kindergarteners, and preschool children.

Smith et al.(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.

There are four major CL approaches: (a) conceptual, (b) structural, (c) complex instruction.

First, Johnson & Johnson (1989) have developed the conceptual approach, which is based on the

premise that teachers can learn the key elements of structuring effective cooperative learning activities. Johnson et al.(1998) have presented five main elements that they believe are necessary for cooperative learning to be successful:

1. Positive interdependence

refers to each group member learning to depend on the rest of the group while working together to complete the task.

2. Individual accountability

is defined as practices teachers use to establish and maintain student responsibility for appropriate behavior, engagement, and outcomes.

3. Promotive face-to-face interaction

is literally head-to-head discussion around the group in close proximity to each other.

4. Interpersonal skills and small group skills

are developed through the tasks and include listening, shared decision making, taking responsibility, learning to give and receive feedback, and learning to encourage each other.

5. Group processing

refers to time allocated to discussing how well the group members achieved their goals and maintained effective working relationships.

The structural approach to cooperative learning is based on the creation, analysis, and systematic application of structures such as Jig-saw and Learning Teams, or content-free ways of organizing social interaction in the classroom (Kagan, 1990). To ensure success when using the structural approach, Kagan (1992) highlighted two main elements, positive interdependence and individual accountability.

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. The focus is on team rewards, equal opportunity for success (they work on material appropriate to their own grade level), and individual accountability. Individual accountability is assured because students take roles and tasks that contribute to the teamwork. Slavin (1996) found that cooperative learning could 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 cooperative learning methodology.

Finally, Cohen's (1994) 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 curricula and grade-level non specific approach is the least structured in her adherence to a formalized prescription of



cooperative learning. Cohen and Lotan (1997) argued that group work is a powerful method for conceptual learning by creating problem-solving situations to facilitate intellectual and social goals and hold students accountable. 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).

One of the most appealing attributes of cooperative learning is its dual focus on social and academic outcomes (Antil et al., 1998; Cohen, 1994; Putnam, 1998).

Research has shown that CL promote a positive impact on social variables (inter-group relations), inclusion of students with disabilities, ability to work collaboratively with others, self-esteem (Cervantes et al, 2007; Slavin, 1996; Sapon-Shevin, 1994; Johnson & Johnson, 1989).

Cooperative learning works to place the student at the center of learning. In a cooperative learning activity, all students contribute to group work, each according to his/her own level of development and they rely on each other to complete the task.

In particular Magnanini (2009) argues that cooperation is competence centered on task.

The teacher acts as a facilitator and works to shift the responsibility to the students while holding them accountable. Putnam (1998) pointed out that educators are not typically aware of the conditions that are essential for cooperative learning to lead to positive outcomes.

But Putnam (1998: 18) suggested that “simply placing students in groups and asking them to cooperate will not ensure higher achievement or positive interpersonal outcomes”.

The implementation of cooperative learning is a complex process (Dyson, 2002; Antil et al., 1998; Putnam, 1998; Cohen & Lotan, 1997; Cohen, 1994) and it may take three or more years for a teacher to feel comfortable with this instructional model.

In physical education, CL has enhanced students' goals of the lessons, helped students take responsibility through roles, improved students' motor skills and strategizing, enhanced students' communication skills, improved students' working together, and held students accountable through the use peer assessment and task sheets (Dyson, 2001, 2002).

Barrett (2000) found that cooperative structures increased students' trials in sports skills units. In addition, low-skilled male and female students also showed improved performances.

In physical education the structure “Learning Teams” have been used to apply cooperative learning in the gymnasium (Dyson, 2002; 2001). 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. Learning Teams are useful for teaching any physical education content, although this structure can be readily applied to sports skills and tactics. Student roles and practice tasks are written on a task sheet (Dyson & Rubin, 2003). For example, students could be in groups of four, in roles such as coach, organizer, recorder, and encourager, actively providing feedback to each other. Students could work on the tactical problem “creating space in attack” in soccer using a “give and go” practice task. Students in their groups/teams rely on each other to practice, monitor, and assess their group mates' skills and strategies. At the end of class students discuss their skills and strategies in a group processing session facilitated by their teacher.

In teacher preparation, faculty often use different cooperative learning structures in their programs. For example, in a sport-related games course focused on volleyball, the instructor could set up a CL jigsaw structure to teach the students' skills or tactics. Students could be placed into four even groups and each group could practice a basic skill or tactic: passing a free ball, receiving a serve, setting, or a penetrating setter offense. Each group would then be expected to establish a plan to teach the critical elements of their assigned skill or tactic. One student from each group (now the expert/coach) would rotate around to each group to teach the other groups the critical elements of the skill or tactic. The group dynamic in cooperative learning allows for students to take on roles and responsibilities and provides students with the opportunity to achieve tasks while they are socially interacting.

Therefore Cooperative Learning could also be considered a formative approach student-centered that require experiences that are meaningful, challenging and authentic for students.

### **Conclusion**

The purpose of this article was to explore Cooperative Learning as a promising approach for the inclusion of students with disabilities in physical education, but implementation is complex. Teachers must make substantial adaptations in the way they organize and manage their classes: modify the elements of effort, space, time, objects and people to perform movement sequences and participate positively in groups and teams by encouraging others and negotiating roles and responsibilities.

The learning environment is designed to be student-centered through problem-solving with a peer reciprocal teaching and guidance as to the task objective, and not a prescriptive 'automated for all' final performance product.

Cooperative Learning groups are thus a 'means to an end', students need to know precisely what they are expected to learn (what is the end point) and be able to do so on their own as required, as well as within the group.

In this sense this study recommends mixed ability groupings but that requires the teacher to carefully consider the selection of the students in the inclusive group. We're talking about learners capable of interacting with a variety of student types and that show support of group members.

However, a limitation in our understanding is that we know little certain issues relating to the implementation of cooperative learning in Physical Education: teachers' use of this approach and how the school contextual factors constrain or facilitate teachers' use of this approach (Goodyear & Casey, 2015).

### **Conflict of Interest**

The author has not declared any conflicts of interest.



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