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# COOPERATIVE LEARNING IN A SECONDARY SCHOOL PHYSICAL EDUCATION PROGRAM

by

Kevin Strachan

Department of Physical Education
McGill University
Montreal, Canada

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Abstract

The purpose of this study was to describe and interpret cooperative learning in a secondary school physical education program. A multiple-method case study design was used to investigate the physical education environment. One eighth grade girls handball class in its first year of cooperative learning was compared to an eleventh grade girls handball class in its fourth year of cooperative learning. The qualitative inquiry included interviewing the students and the physical education teacher, taking field notes, and analysing relevant documents. A modified version of the task structure observational system (Siedentop, 1994) was used as a quantitative measure of the instructional ecology of the two physical education classes. Data revealed that both classes had low management, transition, and wait times. The grade eleven class spent less time in instruction and more time in engagement than the grade eight class. Both classes showed a similiar amount of opportunities to respond during activity, but the eleventh grade class exhibited higher successful student responses. The cognitive engagement was integral to the functioning of both units. This included time used by the students, instead of direct instruction by the teacher, for learning a skill, reviewing material learned, planning a strategy at the beginning of a game, implementing change in activity during the game, and reflecting on activity after the game. The study revealed that both teacher and students understood and could visibly see the benefits that cooperative learning offered to the physical education program. This example of cooperative learning in physical education incorporated the basic elements of positive interdependence, individual accountability, face-to-face interaction, social and interpersonal skills, and group processing, which are germane to effective cooperative learning.

## Abrégé

Le but de cette étude était de décrire et d'interpréter l'apprentissage coopératif dans un programme d'éducation physique au niveau secondaire. Une classe féminine de handball de huitième année dans sa première année d'apprentissage coopératif a été comparée à une classe de handball féminine de onzième année qui en était à sa quatrième année d'apprentissage coopératif. De l'observation systématique par l'entremise d'une version modifée du système de structure de tâche a révélé que les étudiantes de onzième année passaient moins de temps en enseignement et plus de temps au jeu par rapport à la classe de huitième année. Les deux classes ont montré un nombre similaire de chances de répondre lors des activités, mais la classe de onzième année a démontré des résponses plus appropriées. La majeure partie des deux unités était la composante cognitive - c'était le temps utilisé par les étudiantes au lieu de l'instruction directe par le professeur. La composante cognitive était employée pour apprendre une nouvelle habileté, revoir du matériel acquis, planifier une stratégie au début d'une partie, implanter un changement d'activité lors de la partie et réfléchir au sujet d'une activité après la partie. L'enquête qualitative a révélé que le professeur et les étudiantes avaient compris et pouvaient voir les bénéfices que l'apprentissage coopératif avait à offrir qu programme d'éducation physique. Les cinq éléments de l'apprentissage coopératif identifiés en class formelle - interdépendance positive, la responsabilité personelle, l'interaction face à face, les habiletés sociales et interpersonelles et le traitement de groupe étaient retrouvés au gymnase.

# DEDICATION

To Grandma G . . .

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# CHAPTER 1

# REVIEW OF LITERATURE

The research in generic education has focused on what cooperative learning can do for the classroom. This accounts for the majority of research in cooperative learning and provides a basis for the research in cooperative learning in physical education.

This review presents the research, theories, and methods concerning cooperative learning in generic education, curriculum innovation in physical education, methodology in physical education, and cooperative learning in physical education. It is hoped that this review will contribute to the understanding and interpretation of the questions addressed in this study.

## Generic Cooperative Learning

### Cooperative Learning Methods

One of the first cooperative learning strategies to be developed was the Jigsaw (Aronson, Blaney, Stephan, Sikes, & Snapp, 1978). In the Jigsaw approach, groups are given topics which have the potential to be subdivided into mini-topics. Team members become experts in the various mini-topics and meet with members of the other groups who are studying the same material. After learning the material, experts return to their 'home' groups to reteach the material, and in doing so, learn about the other mini-topics. Students are then tested individually on the material learned.

Jigsaw II (Slavin, 1980) is an adapted version of Aronson et al's (1978) method

that uses improvement scores to create inter-team competition. Students study the same material with each student focusing on one topic. The students are tested individually, but add their improvement scores to create a team score.

In the Co-op Co-op learning strategy (Kagan, 1985) each group chooses a topic, then subdivides the topic into mini-topics. Each group member is responsible for preparing a paper and presenting the material to their team. The group synthesizes the information from each of the mini-presentations and makes a presentation to the class on the whole topic. Students are evaluated by their team for their mini-topic presentation, evaluated by the teacher for their paper, and evaluated by both the class and the teacher for their team presentation.

Cooperative Scripts (McDonald, Dansareau, Garland, Holley, Collins, 1979) is a cognitive learning strategy which requires student pairs to read an assigned passage. One student serves as a recaller and attempts to summarize from memory what has been learned. The other student serves as the listener/facilitator and attempts to correct errors in the recall and to facilitate the organization and storage of the material. Cooperative Scripts relies on intrinsic motivation to facilitate both individual and group performance.

Student Teams Academic Divisions, also known as 'STAD' (Slavin, 1983), have groups vieing for recognition as 'Super Teams' based on each team member's knowledge of the academic material. STAD teams help each other study and complete worksheets after which students take individual quizzes on the material. Students are given individual improvement scores based on pretest to post-test learning gains which are added together to create an overall team score. Rewards are distributed to deserving

teams during a recognition ceremony.

Teams-Games-Tournaments, also known as 'TGT' (DeVries, Slavin, Fennessy, Edwards & Lombardo, 1980), is a cooperative learning strategy similiar to STAD with the exception that TGT uses weekly tournament points won in face-to-face competition to determine the contribution of each member to the team. In TGT, heterogeneous groups work together to learn the material. After the practice session is complete, students meet with two other students with similar abilities to play a game which involves answering questions similiar to the ones on the worksheets. The student who answers the most questions correctly wins six points for his or her team; the middle scorer takes four points; and the low scorer gets two points. Team scores are added and weekly newsletters recognize the most successful teams and individuals. After each tournament the winner is bumped up one table and the loser is bumped down one table to ensure that the competition is fair. Although some researchers (Kagan, 1989) criticize TGT for including the competitive element, it was included as a means of introducing a 'game' element to engage the interest of students that were otherwise bored with the material (Slavin, 1983).

Learning Together (Johnson & Johnson, 1975) involves groups of students working together on a single assignment sheet. Although students are expected to learn the academic material, the main focus of this strategy is on promoting positive group interactions and interpersonal skills, which makes this technique particularly useful for improving the prosocial behaviour of children (Johnson, Johnson, & Anderson, 1983). This is accomplished through the assignment of roles (i.e., recorder, encourager,

summarizer-checker) appropriate to the activity.

The Structural Approach (Kagan, 1990) provides teachers with a flexible, selective method of implementing cooperative learning. Most cooperative methods provide one design for organizing the classroom, and focus primarily on the development of a specific type of learning (e.g., acquisition of facts, social-interaction skills, learning strategies or higher level thinking). In contrast, the Structural Approach offers a repertoire of content-free activity structures which teachers can select from and apply to their content area. This flexibility allows teachers to foster the types of skills students exhibit the strongest need for, or which are the most appropriate for a given lesson or topic.

The various cooperative learning strategies have been developed as alternatives to the competitive classroom. They have been developed to enhance academic achievement (Johnson & Johnson, 1989; Johnson, Maruyama, Johnson, Nelson & Skon, 1981; Slavin, 1990a), to improve the students' affective domain, to improve interpersonal relationships and to improve one's psychological health (Johnson & Johnson, 1989; Johnson, Johnson & Maruyama, 1983; Slavin, 1990a).

Cooperative Learning and Psychological Health

Students require psychological health and stability to build and maintain family, community, and career relationships, to establish a basic and meaningful interdependence with other people, and to participate effectively in society (Johnson and Johnson, 1994). Johnson and Johnson (1989) found that cooperative experiences are positively related to a number of indices of psychological health, namely: social skills,

social perspective taking, and self-esteem.

The importance of social skills has been addressed throughout the literature (Lew, Mesch, Johnson, & Johnson, 1986; Janke, 1980; Johnson and Johnson, 1974, 1994; Slavin, 1977). Johnson and Johnson (1994) wrote that "interpersonal and small-group skills form the basic nexus among individuals, and if individuals are to work together productively and cope with the stresses and strains of doing so, they must have a modicum of these skills" (p. 69).

Lew, Mesch, Johnson & Johnson (1986) found that socially isolated and withdrawn students learned more social skills and engaged in them more frequently within cooperative situations than within individualistic situations, especially when the group was rewarded for doing so. A study by Slavin (1977) reported that emotionally disturbed adolescents who experienced cooperative learning were more likely than traditionally taught students to interact appropriately with other students. This effect was still present five months after the end of the study. In a similar study, Janke (1980) discovered that cooperative learning had positive effects on interactions among emotionally disturbed students.

Johnson & Johnson (1974) found that cooperation promotes more frequent, effective and accurate communication than do competitive and individualistic situations. Johnson & Johnson (1974) also found that cooperation promotes more constructive management of conflicts than do competitive or individualistic efforts.

Social perspective taking is the ability to understand how a situation appears to another person and how that person is reacting cognitively and emotionally to the

situation (Johnson & Johnson, 1989). The opposite of social perspective taking is egocentrism, the embeddedness in one's own viewpoint to the extent that one is unaware of other points of view and of the limitation of one's perspective. Johnson & Johnson (1989) found that cooperative learning experiences tend to promote greater perspective taking in the cognitive and affective domains than do competitive or individualistic learning experiences.

Self esteem is "a judgement about one's self-worth, value and competence based on a process of conceptualizing and gathering information about oneself and one's experiences" (Johnson & Johnson, 1994, p. 66). Slavin (1990a) suggested that self-esteem is the most important psychological outcome of cooperative learning methods. Johnson and Johnson (1989) conducted a meta-analysis examining over eighty studies comparing the impact of cooperative, competitive and individualistic experiences on self-esteem. The results found that cooperative efforts promoted higher self-esteem than did competitive (effect size = 0.58) or individualistic (effect size = 0.44) efforts (Johnson & Johnson, 1989). In this meta-analysis each study was rated in five areas of methodological adequacy to determine its quality. This included randomly assigning subjects to conditions, having a well-defined and unambiguous control, controlling for experimenter and curriculum effects and verification that the experimental and control conditions were appropriately implemented (Johnson & Johnson, 1989). The findings on psychological health and cooperative learning were consistent across high, medium, and low quality studies.

In the meta-analysis there were studies which contained a mixture of cooperative,

competitive and individualistic efforts and there were others which were purely cooperative. For example, the Jigsaw (Aronson et al, 1978) is a combination of cooperative and individualistic reward structures and Student Teams Achievement Divisions (Slavin, 1980) is a mixture of cooperation and intergroup competition. Johnson & Johnson's (1975) Learning Together is an example of a purely cooperative reward structure. Johnson and Johnson (1989) found that the pure operationalizations of cooperation had a significantly stronger impact than the mixed operationalizations (cooperative vs. competitive, mixed = 0.33 and pure = 0.74; cooperative vs. individualistic, mixed = 0.22 and pure = 0.51).

Cooperative Learning and Interpersonal Relationships

Cooperative learning experiences, when compared with competitive and individualistic instruction, promoted considerably more liking amongst students, with effect sizes of 0.66 and 0.60, respectively (Johnson & Johnson, 1989; Johnson et al, 1983). This was true regardless of individual differences in ability level, sex, handicapping conditions, ethnic membership, social class differences, or task orientation (Johnson et al, 1983). The cooperative students developed considerably more of a commitment to and caring for each other no matter what the initial impressions of and attitudes towards each other were (Johnson et al, 1983). When only the high quality studies were included in the analysis, the effect sizes were 0.82 for the cooperative versus competitive, and 0.62 for the cooperative versus individualistic (Johnson & Johnson, 1989). Johnson and Johnson (1989) found higher effect sizes for the studies using pure operationalizations than for studies using mixed operationalizations (cooperative vs.

competitive, pure = 0.79 and mixed = 0.46; cooperative vs. individualistic, pure = 0.66 and mixed = 0.36).

Johnson and Johnson (1989) reported that cooperative experiences tended to promote greater social support than competitive (effect size = 0.62) or individualistic (effect size = 0.70) efforts. Johnson and Johnson (1989) also found that in the higher quality studies the effect sizes were even stronger (effect sizes = 0.83 and 0.71, respectively). For the pure operationalizations, Johnson and Johnson (1989) found higher levels of social support than of that for the mixed operationalizations in both the competitive and individualistic efforts (competitive, mixed = 0.45 and pure = 0.73; individualistic, mixed = 0.22 and pure = 0.77)

Several researchers have suggested the benefits of cooperative learning to school likeability (Astin 1985; Bligh, 1972; Kulik & Kulik, 1979; Noel, 1985; Tinto, 1975). Tinto (1975) in her literature review, concluded that the greater the students' involvement in their learning experience, the more likely they were to persist to graduation. In a similar study, Noel (1985) reported that students were more likely to stay in school if they were satisfied with their learning experiences. Astin (1985) concluded that student involvement academically and socially in the school experience was the driving force to persistence and achievement. In addition, other studies (Bligh, 1972; Kulik & Kulik, 1979) have showed that college students reported greater satisfaction with courses that allowed them to engage in group discussion.

Cooperative Learning and Achievement

Johnson & Johnson (1989) examined over 375 studies conducted over the past

ninety years on the success of competitive, individualistic and cooperative learning structures in promoting productivity and achievement. When all studies were included in the analysis, Johnson and Johnson (1989) found that the average cooperating student performed at about two-thirds a standard deviation above the average competitive student (effect size = 0.67) or individualistic student (effect size = 0.64).

A number of the studies contained a mixture of cooperative, competitive and individualistic efforts, and others were pure. When the results of pure and mixed operationalizations of cooperative learning were compared, Johnson and Johnson (1989) found that the pure operationalizations produced higher achievement (cooperative vs. competitive, pure = 0.71 and mixed = 0.40; cooperative vs. individualistic, pure = 0.65 and mixed = 0.42).

Johnson and Johnson (1989) reexamined the studies which investigated time-on-task and found that cooperators spent more time on task than did competitors (effect size=0.76) or students working individualistically (effect size = 1.17). These results suggested that cooperative learning groups spend more time-on-task than students in competitive or individualistic reward structures.

Kulik and Kulik (1979) reported in their literature review on college teaching that students who participated in discussion groups in class were more likely to develop positive attitudes towards the course's subject matter. In a similar finding, Johnson and Johnson (1994) concluded that when compared with competitive and individualistic goal structures, cooperative learning promotes more positive attitudes towards the subject area, more positive attitudes towards the instructional experience, and more of a

continuing motivation to learn about the subject matter.

The application, evaluation, and synthesis of knowledge and other higher level reasoning skills are often neglected (Johnson & Johnson, 1994). However, cooperative learning promotes a greater use of higher level reasoning strategies and critical thinking than do competitive or individualistic learning strategies (Gabbert, Johnson & Johnson, 1986; Johnson & Johnson, 1989; Johnson, Skon & Johnson, 1980; Skon, Johnson & Johnson, 1981). Johnson & Johnson (1989) found that cooperative learning experiences promote more frequent insight into the use of higher level cognitive and moral reasoning strategies than do competitive or individualistic experiences (effect sizes = 0.93 and 0.97, respectively). Cooperative learning has also shown to be an important procedure for involving students in meaningful activities in the classroom and enhancing meta-cognitive skills (Brown, Collins & Duguid, 1989).

Slavin (1990a) also examined the effects of cooperative learning on student achievement in his review of literature on elementary and secondary school students. The review examined over sixty studies of various cooperative learning methods and their effect on achievement. The results found that the methods that emphasize group goals and individual accountability, in particular Slavin's Student Team Learning Methods (STAD, TGT), were consistently more effective for increasing student achievement than were other forms of cooperative learning, with a median effect size of 0.30 for all measures and 0.21 for standardized measures (Slavin, 1990a). Although the results were moderate, Slavin (1990a) suggested that they were important, especially when taken into account with the positive social benefits that cooperative learning has to

offer.

Elements of Cooperative Learning

Slavin (1990a) reported that cooperative learning methods "can and usually do have a positive effect on student achievement" (p. 52). However, the achievement depends on the essential features of group goals, or positive interdependence, and individual accountability.

Johnson, Johnson and Holubec (1988) defined positive interdependence as "the perception that you are linked with others in a way so that you cannot succeed unless they do (and vice versa), that is, their work benefits you and your work benefits them" (p. 4: 6). Positive interdependence is what differentiates cooperative learning from group learning. Abrami et al (1993) reported that

> the most important factor which differentiates group learning from cooperative learning is the degree to which group members function interdependently. . . cooperative learning centres around students interdependence. . . Traditional learning activities may have student interdependence; cooperative learning activities must have them. (p. 16)

Another important component of cooperative learning is individual accountability. Slavin (1986) defined individual accountability as "the team's success depend[ing] on the individual learning of all team members" (p. 5). The incorporation of individual accountability and positive interdependence into cooperative learning teaching methods is crucial. According to Slavin (1990a), "Cooperative learning can be an effective means of increasing student achievement, but only if group goals and individual accountability are incorporated" (p. 151).

Johnson, Johnson and Johnson-Holubec (1993) added three other elements if

cooperative learning was to be successful: face-to-face promotive interaction, interpersonal and small group skills and group processing. Face-to-face interaction was simply a description of the structure of the students' learning environment. This physical proximity promotes learning because the students are more accessible to help, share with and encourage one another (Johnson, Johnson & Holubec, 1988). For example, if there was a group of four students in a tight circle facing each other, their physical arrangement would be more conducive to learning than would a group of four students whose desks all faced the front of the classroom.

Abrami et al (1993) defined interpersonal skills as the "ability to engage in verbal and nonverbal interactions with others" (p. 142). Interpersonal and small group skills include leadership, decision-making, communication and conflict-management interactions. Thus, groups with positive interpersonal skills would display negotiating, integration of ideas, active listening, acceptance of differences, encouraging, and so on (Bennett, Rolheiser-Bennett & Stevahn, 1991). Since groups cannot function effectively without interpersonal skills, teachers must teach them (Johnson, Johnson & Johnson-Holubec, 1993). For the best results, they should be taught through the use of modelling, direct instruction and practice (Abrami et al, 1993).

Johnson and Johnson (1990) also addressed the issue of teaching cooperative skills. Students do not instinctively know how to interact with each other and they must first be taught these skills and motivated to use them in order that time spent in a cooperative learning environment can be productive. To teach interpersonal and small group skills, Johnson and Johnson (1990) reported that students must:

1. See the need to use the skill,
2. understand what the skill is and when it should be used,
3. realize when and how they are going to use the skill,
4. reflect on their use of this skill, and
5. persevere in the practicing of the skill.

The final step of persevering may be the most important step in the process. Johnson and Johnson (1990) reported that "students have to practice cooperative skills long enough to go through the stages of awkward enhancement, phony enactment, and mechanical use of the skill to automatic routine use where the skill is fully internalized" (p. 30). This is accomplished by continuing to assign a necessary cooperative skill, continuing to give students feedback on the frequency and performance of this skill, and rewarding the group with bonus points when members use the skill (Johnson & Johnson, 1990). This structured approach increases the use of the cooperative skill and eventually leads to the mastery of it.

Group processing is the "specific time to discuss how well the group members were at achieving their goals and maintaining effective working relationships" (Johnson, Johnson & Holubec, 1988, p. 1:28). This may include discussing actions which enhanced or demoted the group's success and/or the teacher's feedback on the effectiveness of the groups.

Principles for Success in Cooperative Learning

Edwards and Stout (1990) reported that to achieve benefits from cooperative learning, there must be three vital components: commitment, pacing and support. Commitment means that the undertaking of cooperative learning continues, even through the rough times. For example, if a teacher commits himself/herself to cooperative

learning for a year, they will be more likely to carry out this commitment. Teachers must pace the program by beginning with one lesson in one subject that they feel comfortable with, and continue in this area until the cooperative process is going smoothly socially, emotionally, physically and academically (Edwards & Stout, 1990). Subjects can then be added as teacher and student competence develops and social skills added as the need arises. Finally, there should be others that support you in your endeavours (Edward & Stout, 1990). Whether it be one other teacher that you meet with on a weekly basis, or the district cooperative learning support group that meets monthly, if someone is there to share your difficulties and triumphs, the greater the drive will be to succeed.

Sapon-Schevin and Schniedewind (1990) suggested some principles to achieve the full potential of cooperative learning. First, the time spent in revising teaching methods should also be used to examine subject content. Simply because a lesson is incorporated cooperatively does not assure its value. For example, using cooperative learning techniques to cover the same mathsheets with more efficiency does not demonstrate the full potential of cooperative learning. Second, cooperative learning can be used to help students learn about cooperation. One way this can be accomplished is through debates on humanistic issues that normally divide us on the basis of age, race, gender or physical condition (Sapon-Schevin & Schniedewind, 1990). For example, a cooperative discussion in a grade eight class on birth ranking would probably illicit different responses towards the advantages and/or disadvantages of first, middle, or last born in a family. Third, teachers have to apply cooperative learning to all aspects of the classroom. The processing of cooperative values should not just be limited to the

discussion period following the lesson, but it should be evident in the remainder of the day and eventually, in the students' everyday lives. Processing happens in the class all the time as students learn to trust and respect one another, as they learn to work together, and as they receive messages about the way they interact with one another. These events are of importance to the teacher and to the smooth functioning of the class (Sapon-Schevin & Schniedewind, 1990). Finally, cooperative learning should be promoted not because it is similiar to what is already done, but because it is different and has greater potential to enhance learning. Sapon-Schevin & Schniedewind (1990) suggested that "by using the principles of cooperative learning, teachers and students alike can be empowered, creating schools that are truly cooperative and a society that works together to accomplish a goal" (p. 65).

Issues and Concerns About Cooperative Learning

Although the research points to the many benefits of cooperative learning (Johnson, Maruyama, Johnson, Nelson & Skon, 1981; Johnson & Johnson, 1989; Johnson, Johnson & Maruyama, 1983; Slavin, 1990a), some authors have addressed their concerns on several issues (Sapon-Schevin, 1994; Slavin, 1990; Abrami et al, 1993). Abrami et al (1993) reported some of the practical concerns as being physical arrangements, noise, time, and curricular materials. Since the physical arrangement is based on face-to-face interaction (Johnson, Johnson and Johnson-Holubec, 1993), students often work on the floor, in the hall, or in the library with minimal supervision. Abrami et al (1993) advised that teachers notify the caretaking staff and other teachers of the students' working conditions. Another practical concern about the cooperatively

structured classroom is that there is often a louder noise level. Abrami et al (1993) reported that "teachers must communicate to the principal and fellow teaches that the increased noise is not evidence of lack of control but of students actively engaged in learning" (p. 63). Another factor to consider with a cooperatively structured classroom is that activities often take longer to complete than if they are done individually. Abrami et al (1993) suggested, "If there is a great deal of pressure to cover course content then it would be best to use cooperative learning only for short structured activities" (p.63). Finally, Abrami et al (1993) reported that because cooperative learning is a relatively new teaching curriculum, it may be difficult to find appropriate curricular materials for some topics, and further suggested that colleagues work together to develop units for different subject areas and grade levels.

Slavin (1990a) warned that "if not properly constructed, cooperative learning methods can allow for the 'free-rider' effect, in which some group members do all or most of the work (and learning) while others go along for the ride" (p.16). In addition, certain assignments can create a situation where the students who are perceived to be less skilful are ignored by other group members (Slavin, 1990a). This "diffusion of responsibility" is detrimental to the effects of cooperative learning but can be eliminated by making each group member responsible for a unique part of the task and by holding students individually accountable for their learning (Slavin, 1990).

Sapon-Schevin (1994) identified some of the problems with cooperative learning. She stated that the content of cooperative learning often represents the same curriculum implemented in groups where there has been little attention given to divergent

perspectives or meaningful learning. Sapon-Schevin (1994) argued "boasts by cooperative learning advocates that cooperative learning can be used to teach anything have resulted in just that: teaching anything, as opposed to something important" (p. 185). Another limitation of cooperative learning is its implementation as a thing apart from the rest of the school day. Schools that still support competitive school wide activities give mixed messages to students. In addition, Sapon-Schevin (1994) commented:

> Trying to have heterogeneous groups of students work together in schools that make no other attempts to address issues of racism, sexism, homophobia, classism, and tracking is not adequate to alter students' perceptions of one another or improve their interactions. (p. 185)

Another limitation of cooperative learning is that mandating teacher and student behaviour disempowers both teachers and students (Sapon-Schevin, 1994). Models of cooperative learning that specify the curriculum, or schools that mandate one specific approach, limit the extent to which teachers and students take ownership of the subject material. Sapon-Schevin (1994) reported that a major problem with cooperative learning techniques is that there are often incompatibilities between the content and the process. For example, a cooperative learning lesson on World War II leaves the students with a singular perspective about the inevitability of conflict and the relative lack of importance of cooperation. One other problem with cooperative learning is insuring the inclusion of each student within his/her group. It may be that teachers are just "simply placing students in groups and hoping nice things [will] happen" (Sapon-Schevin, 1994, p.185), rather than insuring that cooperative learning activities provide emotional support.

Similarly, insuring that students are developing the appropriate social skills may also be difficult. Finally, Sapon-Schevin (1994) suggested that "if cooperative learning has met with acceptance because of its apparent simplicity, perhaps we should ask if simplicity is compatible with systematic, thoughtful, comprehensive implementation" (p. 186). In this respect, if cooperative learning training programs "keep teachers from assuming full ownership and responsibility for implementing cooperative learning . . . maybe training is incompatible with education" (Sapon-Schevin, 1994, p.186). Sapon-Schevin summarized:

> Embracing cooperative learning as a school-wide philosophy would require the revamping of our curricula, our pedagogy, our grouping patterns, our grading and assessment procedures and our staffing patterns. Our goal should not be to implement cooperative learning as simply as possible, leaving intact the underlying beliefs, structures and practices of teachers, parents, administrators and students. Rather, our goal should be schools in which cooperative learning can function as a catalyst-forcing us to uncover and dismantle the structures that separate and damage children and reinvent schools that embody social and educational equity and justice. (p.189)

Although it is not without its shortcomings (Abrami et al, 1993; Sapon-Schevin, 1994; Slavin, 1990a), the generic research has suggested that if cooperative learning is used to its full extent, incorporating the basic elements of positive interdependence, individual accountability, face-to-face promotive interaction, interpersonal and small group skills and group processing, then the benefits will far surpass those offered by traditional methods (Johnson & Johnson, 1989; Johnson, Johnson & Maruyama, 1983; Johnson, Maruyama, Johnson, Nelson & Skon, 1981; Slavin, 1990a).

## Recent Innovation in Physical Education

### Critical Thinking Model

The importance of inquiry and critical thinking in physical education has been addressed by several researchers (Ennis, 1987; McBride, 1991; McBride, Gabbard and Miller, 1990). McBride (1991) suggested taking a closer look at critical thinking in physical education because of the potential for teaching critical thinking in the psychomotor domain. Ennis (1987) defined critical thinking as "reasonable and reflective thinking that is focused on deciding what to believe or do" (p. 10). McBride et al (1990) argued that students will need to be able to perform higher-level thinking skills in order to make the kinds of decisions necessary to survive in a rapidly changing world. McBride (1991) reported that for critical thinking to occur

> the learner must first be given the opportunity to inquire. Only during inquiry can critical thinking skills be activated through such cognitive functions as comparing, contrasting, drawing inferences, and testing hypothesis. . . The teacher must relinquish some of the responsibility for analyzing, evaluating, diagnosing, and providing direct feedback to the students. . . The leaner needs to assume responsibility for thinking for herself or himself. In effect the teacher weans the students from the traditional stimulus-response model, where learning chiefly occurs by drill and repetition, to a situation where the students actively pursue solutions and engage in critical thinking. (p. 117)

McBride (1991) proposed that critical thinking for students consisted of four components: cognitive organizing, cognitive action, cognitive outcomes, and psychomotor outcomes. Cognitive organizing referred to the nature of the problem or challenge. "A common trait separating effective critical thinkers from their less effective counterparts is the ability to initially concentrate on identifying the correct problem"

(McBride, 1991, p. 118). Cognitive action referred to the ability to "use the information generated during the organizing stage to refine responses, make judgements, and formulate hypotheses" (McBride, 1991, p.119). McBride (1991) grouped the cognitive and psychomotor outcomes together, "The way to assess the hypotheses generated from the cognitive action phase is to test them, which moves the learner into the cognitive and psychomotor outcomes phases of the critical-thinking process" (p.119).

McBride, Gabbard, and Miller (1990) stated:

> The goal of producing individuals who can work independently and create new alternatives to accomplish desired objectives is universal to education. Physical educators know that individuals who merely replicate a demonstration or respond to a teacher stimulus are being limited in both their movement and cognitive development. (p.201)

Self-Responsibility Model

Hellison (1990, 1995) developed the student self-responsibility model, which has been a successful student centered model. The self responsibility model was initially promoted as a means of teaching self-responsibility to at-risk youth.

> The model teaches self and social responsibility through a process of awareness, experience and decision making, and self-reflection. The subject matter is sport and exercise. . . Self responsibility is conceptualized as empowering at-risk youth to take more control of their lives, to learn how to engage in self development in the face of a variety of external forces, including socialization patterns, peer pressure, self-doubt, lack of concept and skills and limited vision of their own options. (Hellison, 1990, p.38)

He has advocated a progressive set of goals which take into account both the teaching learning progression and a hierarchy of values. Hellison (1995) identified these goals through a five level sequence:

Level I: Sufficient self control to respect the rights and feelings of others.
Level II: Participation and effort in program content.
Level III: Self direction with emphasis on independence and goal setting.
Level IV: Caring about and helping others.
Level V: Application of four levels outside the gym.

Hellison (1995) has suggested five strategies which have been developed to put the levels into practice: awareness talks, success at each level, individual decision-making, group meetings and reflection time. Awareness talks and success at each level acquaint students with the value of the program and the meaning of each level. Individual decision making builds negotiation and choices into the levels. Group meetings enable students to share ideas, opinions and feelings about the program, but more importantly, "to give students practice at group decision-sharing and decision-making" (Hellison, 1995, p. 47). Reflection time allows students to examine the reasons for, and consequences of their behaviour.

Hellison (1995) recognized that the student self-responsibility model would not solve today's social problems, but that

> providing today's young people with guidelines for, and practice in, taking responsibility for their personal well-being and contributing to the well-being of others [could] make a difference in what they value and in the choices they make. (p. 8)

Teaching Games for Understanding Approach

The Teaching Games for Understanding (TGFU) approach has been developed as an alternative to the traditional model in physical education (Almond, 1983; Griffin, 1996; Mitchell, 1996; Mitchell, Griffin, Oslin and Sariscsany, 1995; Turner, 1996; Werner, Thorpe and Bunker, 1996). Whereas a traditional teaching model follows a

series of highly structured lessons relying heavily on the teaching of skills and techniques, the TGFU approach stresses the importance of the student making correct decisions in the light of tactical awareness (Werner et al, 1996). This tactical model of teaching games has evolved due to inadequacies being revealed in the traditional, or technical, model. Werner, Thorpe and Bunker (1996) observed that the technical model contained

> a large percentage of children achieving little success due to the emphasis on performance, skilful players who possess inflexible techniques and poor decision-making capacities, performers who are dependent on the teacher/coach to make their decisions, and a majority of youngsters who leave school knowing little about games. In addition . . . skills that were taught often did not transfer to the game, children approached this phase of the lesson with low motivation, and the skills were focused at the average child. (p. 28)

While the technical model typically uses informing, extending and refining tasks to master motor skills before a game situation is introduced (Rink, 1993), the tactical approach focuses on the "what to do?" within the game context before the question of "how to do?". Lessons start with a modified game which presents an appropriate tactical problem. The skills that are needed to address the problem are identified and taught, before returning to the game which stresses the correct application of skill within a tactical context (Mitchell et al, 1995). This is achieved by modifying the number of players on a team, the court size and the type of equipment used (Werner et al, 1995). For example, if a teacher wants his/her students to examine the problem of maintaining possession of the ball, an appropriate way to begin this lesson would be by establishing a game form that forces students to think about keeping possession. A game of 3-on-3 in a

20 x 20 yard area in which the goal of the game is to keep possession for 5 consecutive passes, forces each team to concentrate on keeping possession. After a short period of time players will be able to answer teacher's questions about the goal of the activity and ways to achieve the goal. In this manner, the students are involved in more decision making and understand how their learned skills are applied to the game situation. Players then proceed to a structured practice segment, which focuses on solving the tactical problems (Griffin, 1996). After sufficient practice, students return to the initial game and apply their skills to the tactical situations.

The TGFU approach uses these tactical situations in other games, which are grouped through the Games Classification System (Almond, 1983) into the areas of invasion games, net/wall games, striking/fielding and target games. Mitchell et al (1995) suggested that "by getting students to think tactically about games we are more likely to enable them to transfer effectively from one game to another" (p. 7). Research comparing the TGFU approach to the technical approach has shown that in a 16 lesson field hockey unit the TGFU students improved significantly more in knowledge of the game, improved significantly more in control and decision making during game time and yielded greater satisfaction than the technical game students (Turner, 1996).

Cooperative Activities in Physical Education

Mosston and Ashworth (1986, 1994) provided an early identification of a form of cooperative learning in physical education. Through their spectrum of teaching styles, they identified the shifting of responsibilities from the teacher to the student. According to Mosston and Ashworth (1994), teaching styles may be placed along a continuum based

on their emphasis of teacher-centered and student-centered decision making. The first five styles (command, practice, reciprocal, self-check and inclusion) are characteristically teacher-centered. The instructor makes most of the decisions related to subject matter and the conditions surrounding the teaching-learning process (Mosston & Ashworth, 1994). If a teacher was to use the first five styles with the same subject matter, the emphasis would move from a very direct teaching style (command), to practicing specifically described skills at stations (practice), to working with partners on prescribed tasks (reciprocal), to performing the tasks individually (self-check), or to being allowed to achieve objectives within various performance levels (inclusion).

In the above styles, the student has been involved in the physical, social and emotional realms. The involvement in the cognitive realm has been limited. Beginning with guided discovery, the learner must cross the discovery threshold (Mosston & Ashworth, 1994), which provides the opportunity for inquiry and critical thinking. With guided discovery, the teacher leads the learner toward discovering a concept, principle or idea that was previously unknown to the learner (Mosston & Ashworth, 1994). If the student ventures too far from the path towards discovery, additional guidance is provided. With convergent discovery the learner "discover[s] the solution to a problem and learn[s] to clarify an issue and arrive at a conclusion by employing logical procedures, reasoning and critical thinking" (Mosston & Ashworth, 1994, p. 249). The divergent production teaching style has the learner "engaged in discovering and producing options within the subject matter" (Mosston & Ashworth, 1986, p. 190). Where the discovery styles converge to more of a specific solution, the divergent

production style attempts to seek multiple solutions to a problem (Mosston & Ashworth, 1994). Additional cognitive operations such as categorizing, synthesizing and hypothesizing are frequently engaged. The student determines which solutions are applicable to the problem and, therefore has greater control over the specifics of the subject matter (Mosston & Ashworth, 1994).

Based on the definition of cooperative learning, those styles specific to cooperative learning would include a combination of the reciprocal, inclusion, guided discovery, convergent discovery, and/or divergent styles. The reciprocal style contributes to the development of social skills through students working with and receiving feedback from peers. The inclusion style contributes the element of the inclusion of all learners. The discovery and divergent styles contribute to the development of cognitive skills where the student takes more responsibility for his/her learning.

Physical educators have since sought to incorporate cooperative learning into physical education. Writers have applied the research findings from the generic field to discussions on cooperative learning's incorporation into physical education (Mercier, 1992; Dunn and Wilson, 1991). Other authors have addressed the issue of cooperative games in physical education (Orlick, 1978, 1982; Decker, 1990; Glakas, 1991; Grineski, 1989; Deline, 1991).

Mercier (1992), in her discussion of cooperative education, related one of the five outcomes which characterize a physically educated person [National Association of Sport and Physical Education (NASPE), 1992]. The outcome suggested that a physically educated person values physical activity and its contributions to a healthy lifestyle. More

specifically, that person appreciates the relationship with others that results from participating in physical activity (NASPE, 1992). Mercier (1992) made some recommendations for achieving these outcomes in a cooperative learning physical education class:

1. Begin with pairs.
2. Begin with activities that are already cooperative.
3. As with anything new, there will be problems initially. Persistence is advised.
4. Modelling of the skills by adults in the educational setting will be the greatest contributor to success in teaching social skills.
5. Exclusive use of cooperative learning is not advocated.
6. It may take what appears to be a great deal of time in the beginning to introduce and reinforce social skills concepts and practice.

Mercier (1992) suggested that by incorporating a successful cooperative learning program which emphasizes social skills instruction,"remarkable changes will occur in the students' behaviour . . . Students [will] enjoy each other, feel good about themselves, and value physical education and healthy, active living" (p. 87).

Deline (1991) used the concept of 'focus words' to incorporate game and physical activities that provided students with opportunities to practice utilizing cooperative values, skills and strategies. The focus word was simply a word introduced at the start of the lesson in the what, why and how format. The 'what' was the definition of the word, the 'why' included a statement and example of why it was important, and the 'how' included specific cooperative strategies for students to utilize the word. Deline (1991) suggested that by incorporating a cooperative based social skill unit at the beginning of the year, students would be more able to utilize, practice, and apply these skills in later units.

Dunn and Wilson (1991) promoted cooperative learning in physical education suggesting the role of the teacher is to develop the cognitive, social and psychomotor capabilities of students in their classes. They defined the social dimensions of learning as involving cooperating, listening, decision-making, supporting and providing feedback. Dunn and Wilson (1991) provided the following guidelines for the incorporation of cooperative learning into physical education:

1. Activities should be structured so that a feeling of positive interdependence among group members is established . . . Give each student a specific role or assignment.
2. Goals and expectations should be communicated clearly to enhance group skills, ensure responsible learning of materials and attain appropriate skill performance levels.

Dunn and Wilson (1991) described a "Learning Together" format suggesting that students have various roles in group work such as performer, observer, presenter, timer, leader and collector. These roles are adaptable to the group's needs but allocate responsibility to each group member. Within the group the roles change regularly, sometimes during a single lesson and sometimes at the beginning of a new unit. A grade and/or feedback is based on the group's performance, and therefore encourages groups to work together. Students are given responsibility for reciprocal instruction by modelling for and teaching one another (Dunn & Wilson, 1991). Authors from generic education (Johnson, Johnson & Holubec, 1988; Kagan, 1990; Slavin, 1986) have recommended that teachers assign students to groups so that within each group students are as different as possible, while between each group teams are as similiar as possible. These heterogeneous teams have the benefit of more able students taking on the role of the

instructor as they learn the material by teaching it. Likewise, the less able students model the learning strategies of their teammates (Abrami et al, 1993).

The generic based proposition papers in physical education (Mercier, 1992; Deline, 1991; Dunn and Wilson, 1991) have suggested that cooperative skills and values play as much a part in the gymnasium as they do in the 'regular' classroom. Dunn and Wilson (1991) stated that "physical educators can have as much success using cooperative learning in the physical education classroom as any contained classroom teacher" (p.23). Deline (1991) reported that the gymnasium provides an excellent medium for introducing a variety of cooperative values and skills and that these skills will greatly enhance any physical education program.

Cooperative Games

Cooperative games are defined by Orlick (1978, 1982) as games in which everybody cooperates, everybody wins and nobody loses. Children work together toward a common end, rather than against one another, giving each child at least partial responsibility for the accomplishment of a goal or successful outcome (Orlick, 1978). The main difference between cooperative games and cooperative learning is individual accountability. While cooperative games may have individual accountability, cooperative learning must have it (Abrami et al, 1993). However, the use of cooperative games in physical education has an important relation to cooperative learning. Decker (1990) stated that cooperative games: stress inclusion rather than exclusion of children, concentrate on each individual's abilities rather than their disabilities or deficiencies, tend to loosen the fear of failure, promote student problem solving, and foster positive

student interactions like communication, understanding, sharing, and trusting.

Glakas (1991) suggested that games with cooperative means and ends are the most helpful in developing cooperative skills. When designing games, the following variations should be incorporated:

1. Cooperative games with no losers - these games encourage 100 percent participation where everyone is a winner.
2. Collective score games - these games encourage two teams to work towards a common goal.
3. Reversal games - although this game deals with the traditional concept of win/loss, there is a reversal of the team scores or players.
4. Semi-cooperative games - in these games, maximization of activity and equal opportunity are emphasized.

Glakas (1991) proposed that if games are designed in this manner, they will promote cooperation, participation, acceptance and fun.

Grineski (1989) compared the prosocial behaviour interactions of kindergarten children during participation in both cooperatively and competitively structured games. Prosocial behaviour was defined as acts of generosity, altruism, sympathy, helping, cooperation, protection, physical comfort and sharing (Waxlor-Zahn & Yarrow-Radke, 1982). Grineski (1989) reported that there was a higher incidence of prosocial behaviour exhibited by children during cooperatively structured games. Of the 230 prosocial behaviours exhibited by all students, 228 (96%) were associated with the cooperative games (Grineski, 1989). These students appeared to be happy and enjoying themselves, while the competitively engaged children appeared quiet and anxious and often exhibited antisocial behaviour. Grineski (1989) suggested that because games can affect a child's prosocial behaviour, the teacher has the responsibility of selecting, modifying and/or

creating appropriate games. To help guide cooperative game development, Grineski (1989) posed the following questions:

1. Will the game allow the players to work together, share ideas, support each other, and make meaningful contributions to a goal that is achieved through collective effort?
2. Does the game present a challenging problem for the players to solve collectively?
3. Does the game have an educational purpose in developing psychomotor, cognitive and affective skills?
4. Is the game designed so that all players have numerous and equal opportunities to achieve the selected outcomes?
5. Is the game child-centered?

Teachers are responsible for the structure of their games. It is through the examination of this structure and the understanding of applicable games that children's prosocial behaviour will profit (Grineski, 1989).

Sport Education Model

Siedentop (1991) suggested that "the sport education curriculum model . . . represents a form of cooperative learning within the context of sport, and could easily be adapted to become a full-fledged cooperative learning model" (p.238). Originally proposed by Siedentop, Mand and Taggart (1986), and more recently formalized by Siedentop (1996), sport education is now part of the physical education curriculum in a number of schools in North America, Australia and New Zealand.

The sport education model adopts six primary features that are characteristic of institutionalized sport. These are (i) that sport is done by seasons, (ii) players are members of teams and remain in that team for the entire season, (iii) seasons are defined by formal competition, which is interspersed with practice sessions, (iv) there is a

culminating event to each season, (v) there is extensive record keeping, and (vi) there is a festive atmosphere in which the season takes place (Siedentop, 1994a). This model replicates organized sport in physical education with three exceptions. First of all, the team statistics are emphasized, but individual records are not kept. Secondly, modified games and/or modified forms of the sport are used as part of the formal schedule. Finally, although the teacher usually acts as the coach of all teams, student involvement is often used in decision making (e.g., scheduling of games, dispute resolution, coaching, refereeing, scorekeeping, collection of statistics). Siedentop (1996) reported that in the sport education model students learn to coordinate and manage their experiences as well as learn individual responsibility and group membership skills.

Grant (1992) studied the introduction of the sport education model in New Zealand secondary schools. The results showed that students accepted greater responsibility, low skilled students learned more, participation and attendance were higher, and teams became more cooperative than they did in the traditional approach (Grant, 1992). Education about sport helped students to understand and value the necessary attitudes and conduct required to make sport personally rewarding. It changed the way the students thought about themselves and their peers while improving their skill level and competence in sport. Grant (1992) concluded by saying that "the path marked sport education is educationally friendly and should not disadvantage teachers, students, school, or society" (p. 314).

Ormond, De Marco, Smith, Fischer (1995) compared a traditional basketball unit with a sport education basketball season in three ways: scores on teacher constructed

knowledge tests, students' attitude to basketball, and the quality of game play. The study examined one experienced male physical education teacher and his two co-ed grade nine classes. One class was assigned to the sport education model and the other the traditional unit approach. To measure the changes in students' basketball knowledge across the unit and the season, Ormond et al (1995) had classes complete a 15 item pre and post test comprising of 5 true/false and 10 multiple choice questions. Pre-test to post-test yielded similiar improvement between the two groups. Ormond et al (1995) found that the traditional unit approach group improved by 1.1 point (9.2 to 10.3) and the sport education group by 1.0 point (10.5 to 11.5).

The students' attitudes to basketball were assessed via written responses to the question 'How do you feel about basketball today?'. These responses were categorized into the three general categories of attitude, skill development and organizational structure. These statements were further categorized into the time periods of beginning, middle, and end of the unit and season. Ormond et al (1995) found that the positive attitudes for the sport education group increased from the beginning to the end of the season while the traditional unit group exhibited a slight decrease. Ormond et al (1995) also discovered that the sport education group was more concerned with team play and officiating than the traditional approach group. While the sport education group was concerned about ball distribution and teamwork, the traditional approach group was concerned with ball movement which allowed a player to shoot (Ormond et al, 1995). Likewise, individual skill statements from the traditional approach group focused on the shots that they had made during the game while the sport education students commented

on their need to work on specific basketball skills. Ormond et al (1995) reported that the total negative statements increased from the beginning to the end for the traditional approach group while they decreased for the sport education group. Finally, Ormond et al (1995) noted that the traditional approach group expressed a concern for the lack of facilities (e.g., lack of equipment, too many people at a basket). There were no such statements recorded for the sport education group.

Ormond et al (1995) designated a panel of experts to observe the quality of game play in videotaped sessions. The experts found that the traditional approach group exhibited little to no sembiance of team play and there was no attempt to improve it (Ormond et al, 1995). Game play sessions were similiar in that they resembled a pick-up, lacklustre style of play in which female students participated marginally. The traditional approach group also failed to self-monitor the game in terms of score and infractions (Ormond et al, 1995). A critique of the sport education model revealed gradual improvements in team play, overall participation, attempts to distribute the ball, and utilization of offensive and defensive strategies (Ormond et al, 1995). Higher skilled students demonstrated a willingness to pass off to lower skilled students and female students were also passed the ball regularly as the season progressed (Ormond et al, 1995).

Hastie (1994) examined student role involvement in a speedball unit in a sixth grade physical education class that used the sport education model. The purpose of the study was to determine the level of students' participation in the instructional task system, and also in their roles of coach, referee, statistician, and scorer. Hastie (1994)

examined 37 grade six boys in a middle school in Alabama who had never played speedball. The teacher was a physical education specialist who had been teaching speedball for five years. The 37 boys were divided into five teams selected by the teacher. This allowed for two matches to be played concurrently with the additional team serving the duties of refereeing, scoring and record keeping for both games. Data was collected over a three week period through the use of video cameras. A modified version of Siedentop, Tousignant and Parker's (1982) Academic Learning Time - Physical Education (ALT-PE) instrument was used during practices, scrimmages and game play to measure the students ' activity engagement. For the non-playing roles (e.g., scorer, statistician, and referee) specific categories determined their attention to or involvement in the game. Questionnaires, interviews and a teacher's diary were also used as part of the triangulation process involving student perceptions, teacher perceptions and the quantitative data on student performance.

Hastie's (1994) results showed that there was an increase in student engagement as the season progressed (21.3% - 51.2%). In the student-coach directed sessions and in game play, the off task behaviours were almost non-existent. These sessions were characterized by considerable activity, both as a player and as a coach. The students who performed the various roles of referee, statistician or scorer demonstrated high levels of task congruence (Hastie, 1994). During the tournament round the referee was actively involved 86% of the time, while the scorer and statistician were fully attentive 96% and 97% of the time, respectively (Hastie, 1994).

From a qualitative perspective, the data revealed that students wanted to be active

in physical education, especially when the outcome of that participation was meaningful (Hastie, 1994). Instead of waiting around for their team to play, students were quite prepared to take non-playing roles. He discovered that students valued the opportunities for social development associated with team affiliation. In this study, the issue was not the likeability of being on the same team for a whole unit, but rather the length of time that team composition would continue. Hastie (1994) also found that the students enjoyed and actually preferred having a student-coach over a regular physical education teacher. This preference for a student-coach was not only because of the age compatibility, but also the respect for their coach's knowledge and work ethic. Finally, after conducting interview sessions at the mid-season and end of season, he reported that most students believed their skills had improved. Hastie (1994) stated that "although sport education may not be the most efficient mechanism to develop skills, it is important to recognize students' perceptions of their skill performance and improvement" (p. 16).

Siedentop (1994a) suggested that the sport education model not only provides students with the opportunity to have fulfilling sport experiences, but it provides them with experiences necessary for life. This may be what is needed to revitalize physical education classes across North America.

## Methodology in Physical Education

This section describes the use of various methodologies which have been used to acquire teachers' perspectives and to observe the behaviours of teachers and students in

the gymnasium. The task structure system will be discussed and this will be followed by the value orientation inventory.

The Task Structure Observation System

In physical education, the teaching-learning process can be viewed as an ecology of three systems: managerial, instructional and social (Siedentop, 1994b). The interaction of these three systems form the ecology of the classroom. The managerial system includes those tasks that are necessary to create an environment where learning and instruction can take place (Jones, 1992). Examples of managerial tasks are: getting equipment, selecting teams, establishing rules and moving from one place to another. The instructional system involves the presentation and practice of subject matter (Jones, 1992). The social system is directed by the students' social agenda. Social tasks involve ways that students seek social interactions during class (Siedentop, 1994b). Thus, the task structure system provides a multidimensional means of analysis. The teacher presents a task to the class, students then respond to the task demands and finally the teacher responds to the students, holding or not holding them accountable for the task (Jones, 1992).

The task structure observation system provides a description of time, task, and student responses in the gymnasium (Siedentop, 1994b). The basic time divisions within the class are management, transition, warm-up, and instruction. Within the instructional episode the focus is on the instructional task as the primary unit of analysis. Instructional tasks include cognitive, informing, extending, refining, applying, and routine tasks. Student responses are also judged for congruence and appropriateness. In addition, the

teacher's methods of accountability are analyzed (Lund, 1992).

Doyle (1986) suggested that accountability drove the task system. Accountability refers to the strategies teachers use to establish and maintain student responsibility for appropriate behaviour, task involvement and outcomes. Without accountability there is no task, and students will only do as much as they are motivated to do by their own interests. Accountability appears in the form of tests that students perform for grades, teacher feedback, praise and reprimands, active supervision, challenges and competitions, public recognition of performance and records of student performance (Lund, 1992). Ultimately, task systems are defined by what teachers hold students accountable for, both in the managerial and instructional systems (Lund, 1992).

A line of inquiry has been conducted utilizing the task structure system in physical education (Dyson, 1994; Tousignant & Siedentop, 1983; Hastie & Pickwell, 1996; Jones, 1992; Lund, 1992; Rickard, 1992; Romar, 1995; Siedentop, Doutis, Tsangaridou, Ward, & Rauschenbach, 1994). Tousignant and Siedentop (1983) found that students were involved in one of four behaviours: on-task, modified task, deviant off-task, or off-task behaviour through competent bystanding. Students on the stated task listened to the teacher, started the task as soon as possible, and did as much as they could to work toward the improvement of their performance. From their observations, Tousignant and Siedentop (1983) discovered that students changed or modified the task requirements:

> The students who found the task too easy or experienced low rates were likely to drift toward a modified task. They changed the task by skipping parts, changing the rules, or improving new forms. . . The modified tasks

> were more challenging because they were better adapted to students' skills. Typically, the task modifications were "within the boundaries of the stated task," that is they received tacit or explicit acceptance from the teacher. (p. 49)

The third behaviour observed, off task behaviour, consisted of student involvement in activities which interfered with the on-going lesson. Students who were off-task may have been misusing equipment, talking during instruction, or fooling around. The fourth behaviour was the competent bystander, whose off-task behaviour was less conspicuous as it was displayed through the avoidance of participation. This behaviour was characterized by a student who would wait in line until it was his/her turn and then before making a turn would go to the back of the line to avoid an opportunity to respond. Tousignant and Siedentop (1983) found that the degree of congruence depended on the task presentation. In this study, explicit tasks typically led to a high rate of on-stated task behaviour. In addition they found that the students negotiated with the teacher depending on the task explanation, task difficulty and teacher monitoring.

Jones (1992) examined two elementary physical education classes using the task structure system. Her data supported the existence of managerial and instructional task systems along with an informal social task system. She found that the managerial system was the priority at the beginning of the year. The teachers studied generally presented informing tasks, added extensions, and then applied skills to modified game situations. Jones (1992) discovered that the teachers rarely asked their students to perform refining tasks; only three refining tasks were observed in 34 lessons. This is a common finding in many physical education classes (Dyson, 1994; Romar, 1995; Rink, 1993), despite

the literature emphasizing the importance of refining tasks in skill acquisition (Rink, 1993; Rikard, 1992). Finally, Jones (1992) found that at the elementary level a less formal accountability system was evident as the children were not involved in the formal grade exchange of performance.

A study by Romar (1995) described teachers' espoused theories of action and how they were represented in the gymnasium. He examined four experienced Finnish physical education teachers in the secondary setting. Romar (1995) discovered that the teachers were confident in their personal theories about physical education. These theories were effected by their personal background in sports, teacher education programs, and by professional experience.

Hastie and Pickwell (1996) examined the student social system within an coeducational elective physical education dance class. They discovered that the student social system proved to be a strong force in determining classroom events. Many boys would find ways to minimize work and to have fun while still doing enough to pass the course. Hastie and Pickwell (1996) found that as a result, the teacher demonstrated clear inequities in the treatment of the boys and the girls. This was evident through teacher-student interactions and different patterns of acceptable participation.

In a study of 11 high school teachers, Siedentop et al (1994) reported that only two teachers had students engaged in activity for 60% or more of the actual lesson. Dyson (1994) found that 43% of an elementary physical educator's class time was spent in engagement in a manipulatives unit, 62.4% in a cooperatives unit and 69.2% in a climbing unit. Romar (1995) discovered in his study of 4 secondary school teachers that

an average of only 51.4% of the class time was spent in engagement in units consisting of a varied mix of aerobics, dance, gymnastics and basketball.

However, engagement time does not ensure quantity or quality. The quantity of student responses to the instruction during engagement is coded as Opportunities to Respond (Siedentop, 1994b). For example, each time a student 'bumps' the ball in a volleyball lesson is considered an Opportunity to Respond. A study by Romar (1995) reported OTRs of 1.6 per minute in gymnastics to 3.3 per minute in a high school basketball unit. At the elementary level Dyson (1994) reported OTRs of 1.3 and 5.7 in manipulatives units and 2.4 in a fitness unit. Also, the quality of an Opportunity to Respond is coded as either appropriate or inappropriate (Siedentop, 1994b). For example, if a student bumped the ball with proper form, then it was coded as an appropriate OTR. Romar (1995) reported that responses were appropriate from 59.7% in a gymnastics skills to 83.1% in a basketball skills. Meanwhile, Dyson (1994) found appropriate responses of 77% in a fitness unit and 93% in a manipulatives unit. Given the research on student responses during engagement (Dyson, 1994; Romar, 1995), it would appear that the quality and quantity of student responses is varied and often depends on the subject matter.

Value Orientation Inventory

Ennis (1994) attempted to classify curriculum approaches in physical education through the use of value orientations. Ennis (1994) stated, "Value orientations represent educational values or beliefs influential in curricular decision-making. . . and determine, in part, which content topics will be emphasized during instruction and the extent to

which that content will be learned" (p.163).

The value orientations of disciplinary mastery, learning process, self-actualization, ecological integration and social reconstruction have been identified in the curriculum literature (Ennis, 1994; Ennis & Hooper, 1988; Ennis & Zhu, 1991; Jewett, Bain, and Ennis, 1995; Jewett & Ennis, 1990). Disciplinary mastery orientation places a priority on the mastery of the traditional body of knowledge within each subject area. The learning process teachers use knowledge as the foundation for the development of problem-solving and decision-making skills (Ennis, 1994). Both the disciplinary mastery and learning process focus on the body of knowledge within the discipline (Ennis, 1994).

The value orientations of self-actualization, ecological integration, social reconstruction, and social responsibility focus on the affective skills necessary for personal and social success (Ennis, 1994). In physical education, the self-actualization theory (Maslow, 1979) placed the focus on the needs and interests of the students as perceived by both the teacher and the students (Ennis, 1994). The ecological integration value orientation has a curricular balance on the student, the knowledge base and the social context (Jewett, Bain and Ennis, 1995). Social reconstruction teachers have students becoming aware of the inequities, developing a commitment to reform, and designing strategies for change (Ennis, 1994). Social responsibility advocates have students becoming involved in group activities, using their abilities to further group goals and interacting together to solve group problems. This value orientation best represents cooperative learning since "the curricular priority [is] on content and tasks that encourage

students to develop positive interdependence skill leading to social competence" (Ennis, 1994, p. 166).

## Research on Cooperative Learning in Physical Education

There has not been a great deal of research carried out on cooperative learning in physical education. There have been two studies which have examined cooperative learning and compared it to more traditional forms of learning (Johnson, Bjorkland, & Krotee, 1984; Dyson, 1995).

Johnson et al (1984) studied the relative effects of the cooperative, competitive and individualistic interaction patterns on achieving the skill of putting in golf. One-hundred and fifteen university students enrolled in five golf classes were pretested on putting ability. These students were then stratified into equal groups of high, medium and low skilled to ensure an equal number of the various skills in the three treatment groups (cooperative, competitive and individualistic). Johnson et al (1984) instructed cooperative condition subjects to work together as a group of four in attempting to compile the lowest score possible. Subjects were instructed to assist other members of the group by sharing techniques and giving encouragement. If their compiled score for the day was at least two strokes better than their previous best, each group member would receive a golf ball. The instructor praised this group as a whole for making criteria and/or working well together. Johnson et al (1984) had the competitive condition subjects assigned to homogeneous groups of four and instructed them to compete for the highest ranking. These students were to continuously compare his/her score to the

others, and to work towards being the best. The person with the best score at the end of the day would receive a golf ball. The instructors praised the winners of each competitive group for their performances. Johnson et al (1984) instructed the individualistic subjects to work alone, to ignore other students, and to be concerned only with their own scores. Individuals were awarded golf balls on the basis of whether they had been able to improve on their previous best. The instructor praised these students individually on their progress.

There were three tests used to measure achievement. This included a 12-hole putting course, a 15 foot accuracy and a 30 foot accuracy test (Johnson et al, 1984). The results showed that the students in the cooperative condition putted marginally better on the twelve-hole putting course and the 15-foot accuracy test than the students in the competitive or individualistic conditions. In the 30-foot accuracy test the cooperative students putted significantly better than the other two conditions. Johnson et al (1984) concluded that these results can be explained by the interaction that went on during the engagement of their condition. Attitude questionnaires revealed that cooperative students supported each other, gave each other advice, and encouraged each other to do better. Cooperative students felt more positive feelings towards, and more support from, both the instructor and their fellow peers than did students in the other conditions. Finally, the cooperative students had higher feelings of personal adequacy (Johnson et al, 1984). The authors suggested that the implementation of the cooperative goal structure may not be easy, and may receive some resistance by a body of students who have been competitively moulded throughout their academic careers.

Dyson (1995) examined the incorporation of a cooperative learning curriculum in an elementary physical education program. The study described and interpreted the curricular and organizational differences between two grade five/six classes in a volleyball unit. One of the classes incorporated a cooperative learning format and the other used a traditional format. Dyson (1995) found that the cooperative learning format contained lower instruction time, higher engagement time, and more refining tasks than did the traditional format. The students in the cooperative learning format exhibited more opportunities to respond, with a greater percentage of appropriate responses, than the students in the traditional learning format (Dyson, 1995). The teacher preferred the cooperative learning format over the traditional format because she found that it gave her more time to monitor groups of students and provide specific feedback to individuals. Dyson (1995) reported that the students in the cooperative learning format believed that they worked well together, felt responsible for each other, listened to each other and communicated well.

Although there is not an extensive amount of research on cooperative learning in physical education, the existing research does suggest that cooperative learning improves motor skills and develops a positive atmosphere in the class - towards the instructor, towards peers and towards cooperation. The present research is the next step in the line of inquiry and will help to further our understanding of cooperative learning by describing cooperative learning in a secondary setting.

## Chapter Summary

The research on cooperative learning has shown that there are many benefits with its implementation. Cooperative learning has shown to be more effective than competitive or individualistic forms of learning in increasing academic achievement (Johnson, Maruyama, Johnson, Nelson & Skon, 1981; Johnson & Johnson, 1989; Slavin, 1990a), improving interpersonal relationships and in improving the psychological well-being of its participants (Johnson, Johnson & Maruyama, 1983; Johnson & Johnson, 1989; Slavin, 1990a). Although there are many different strategies in cooperative learning, the common similarities rest on the essentials of positive interdependence and individual accountability (Kagan, 1990).

There has not been a great deal of research carried out on cooperative learning in the field of physical education. Most of the works done have been propositions guided by the generic field and then applied to physical education (Deline, 1991; Dunn and Wilson, 1991; Mercier, 1992). There has been only one study which has compared the effects of cooperative, competitive and individualistic goal structures (Johnson et al, 1984), which examined the ability of achieving the skill of putting. Johnson et al (1984) reported that the students in the cooperative condition putted marginally better on the twelve-hole putting course and the 15-foot accuracy test, and significantly better in the 30-foot accuracy test than the students in the competitive or individualistic conditions.

A study has been conducted on cooperative learning in the gymnasium (Dyson, 1995), which examined the incorporation of a cooperative learning format in an elementary physical education class. Dyson (1995) reported that the cooperative learning

format contained lower instruction time, higher engagement time, and more refining tasks than did the traditional format. He concluded his paper by suggesting that "it is time to look more closely at cooperative learning in physical education" (p. 17).

Fortunately, the recent incorporation of the sport education model (Siedentop, 1994a) into many physical education classes in North America, Australia and New Zealand has brought attention to the benefits of a competitive based model requiring intra-group cooperation to function effectively (Hastie, 1994; Ormond et al, 1995). When put into perspective with the benefits of other personal-social development models such as the critical thinking model (McBride, 1991; McBride, Gabbard, and Miller, 1990), self-responsibility model (Hellison, 1990, 1995) and teaching games for understanding approach (Almond, 1983; Griffin, 1996; Mitchell, 1996; Mitchell, Griffin, Oslin and Sariscsany, 1995; Turner, 1996; Werner, Thorpe and Bunker, 1996), it appears that the responsibility of physical educators may now include a social dimension. Siedentop (1992) has stated that "we need to think differently about what we do in the name of physical eduction" (p. 70). This may mean taking a serious look at what cooperative learning has to offer - to the student, to the teacher, and to society.

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# CHAPTER 2

# RESEARCH PAPER

The following section presents a summary of the research conducted in the cooperative learning physical education classes. As a preparation for journal publication, the research paper presents an introduction to cooperative learning, a purpose, methodology, results and discussion, and the summary and conclusion.

## Cooperative Learning and Generic Education

Since Dewey (1916, 1938) initiated the idea of student collaboration on projects, the notion of group learning has intrigued both educators and researchers. Cooperative learning has expanded on the idea of group learning and has provided methods, structures and activities to make student groups more efficient.

Cooperative learning has students working together in small groups to master subject material. What differentiates group learning from cooperative learning is the degree to which the group members learning depends on the students working together (Abrami, Chambers, Poulsen, Howden, d'Apollonia, De Simone, Kastelorizios, Wagner & Glashan, 1993). This is referred to as positive interdependence (Johnson & Johnson, 1994). In cooperative learning, student rewards are positively interdependent, such that the success of one student is positively related to the success of other students. Although group learning may have positive interdependence, it is a vital component of cooperative learning (Johnson, Johnson, & Johnson-Holubec, 1993).

In contrast, traditional methods of teaching incorporate either a competitive or

individualistic reward structure (Abrami et al, 1993). A competitive reward structure implies a state of negative interdependence between the students, where the success of one student decreases the chances of other students' success (Johnson & Johnson, 1994). An individualistic reward structure, used solely, or in conjunction with, the competitive reward structure, has independent student outcomes (Johnson & Johnson, 1994). In other words, each student's rewards are totally unrelated to the performance of other students.

Another difference between the traditional classroom and the cooperative learning classroom is the active interaction that occurs. In whole class instruction, students often spend a great deal of time listening to the teacher and working quietly by themselves. In the cooperative classroom, students are engaged in face-to-face interactions, learning and teaching one another (Johnson & Johnson, 1994). In the traditional class, the teacher has the role of the information giver and expert in that content area, spending a great deal of time instructing and controlling individual students (Abrami et al, 1993). In the cooperative classroom, the teacher plays the role of facilitator, spending a smaller portion of time directing students, introducing and summarizing the content (Abrami et al, 1993).

Considerable research has been conducted which has compared cooperative learning to traditional types of learning (Johnson & Johnson, 1989; Johnson, Johnson & Maruyama, 1983; Johnson, Maruyama, Johnson, Nelson & Skon, 1981; Kagan, 1990; Slavin, 1990a) This research has demonstrated the effectiveness of cooperative learning in increasing student achievement (Johnson & Johnson 1989; Johnson et al, 1983; Slavin, 1990a), improving interpersonal relations and improving the psychological well-

being of students (Johnson & Johnson, 1989; Johnson et al, 1981; Slavin, 1990a).

Slavin (1990a) found that cooperative learning can be an effective means of increasing student achievement, but only if group goals and individual accountability are integrated into the methodology. Kagan (1990) also stated that cooperative learning is characterized by specific group goals and individual accountability. Bennett, Rolheiser-Bennett, and Stevahn (1991) stated that individual accountability "is realised when every group member responsibly contributes to the accomplishment of group goals, can individually demonstrate what was learned from the cooperative endeavour, and supportively helps all members of the group learn successfully" (p. 92).

Johnson, Johnson and Johnson-Holubec (1993) recognized that if cooperative learning was to be successful it must also include face-to-face interaction, interpersonal and small group skills and group processing. Face-to-face interaction was simply a description of the structure of the students' learning environment. This physical proximity promotes learning because the students are more accessible to help, share with and encourage one another (Johnson, Johnson & Holubec, 1987). For example, if there was a group of four students in a tight circle facing each other, their physical arrangement would be more conducive to learning than would be a group of four students whose desks all faced the front of the classroom.

Abrami et al (1993) defined interpersonal skills as the "ability to engage in verbal and nonverbal interactions with others" (p. 142). Interpersonal and small group skills include leadership, decision-making, communication and conflict-management interactions. Thus, groups with positive interpersonal skills would display negotiating,

integration of ideas, active listening, acceptance of differences, encouraging, etc. (Bennett, Rolheiser-Bennett & Stevahn, 1991). Groups cannot function effectively without interpersonal skills, and teachers must teach these skills as they would academic skills (Johnson, Johnson & Johnson-Holubec 1993). Since these skills do not magically appear, they must be taught through the use of modelling, direct instruction and practice (Abrami et al, 1993).

Group processing is the "specific time to discuss how well the group members were at achieving their goals and maintaining effective working relationships" (Johnson, Johnson & Holubec, 1987, p. 1: 28). This may include discussing actions which enhanced or demoted the group's success and/or the teacher's feedback on the effectiveness of the groups.

Slavin (1990a) reported that the major pitfall of cooperative learning was that students could copy off or rely on other students to do their share of the work. This would result in "a free ride effect in which some group members do all or most of the work (and learning) while others go along for the ride" (Slavin, 1990a, p. 16). Slavin (1990a) suggested that each group member be made responsible for a unique part of the group's task and to have students individually accountable for their learning.

Sapon-Schevin (1994) in her critique of cooperative learning realized that embracing cooperative learning as a school-wide philosophy would require the revamping of curricula, grading and assessment procedures, and staffing. She suggested that educators incorporate the underlying principles of cooperative learning to "reinvent schools that embody social and educational equity and justice" (p. 189).

Although it is not without its shortcomings (Sapon-Schevin, 1994; Slavin, 1990a), the generic education research has suggested that if cooperative learning is used to its full extent, incorporating the basic elements of positive interdependence, individual accountability, face-to-face promotive interaction, interpersonal and small group skills, and group processing, then the benefits will far surpass those offered by traditional methods (Johnson & Johnson, 1989; Johnson, Johnson & Maruyama, 1983; Johnson, Maruyama, Johnson, Nelson & Skon, 1981; Slavin, 1990a)

## Cooperative Learning and Physical Education

In physical education there is little research on cooperative learning. Although many teachers have incorporated cooperative activities and cooperative games into their program, these programs cannot be defined as operational definitions of cooperative learning (Dyson, 1995). Although cooperative games and activities offer many benefits to its participants (Decker, 1990; Glakas, 1991; Grineski, 1989; Orlick, 1982), they do not meet a cooperative learning definition because they do contain the necessary elements of positive interdependence and individual accountability.

Mosston and Ashworth (1986, 1994) provided an early guide to cooperative learning in physical education. Through their spectrum of teaching styles, they identified the shifting of responsibilities from teacher to student. According to Mosston and Ashworth (1994), teaching styles may be placed along a continuum based on their emphasis of teacher-centered and student-centered decision making. The first five styles (command, practice, reciprocal, self-check, and inclusion) are characteristically teacher-centered. The remaining six styles (guided discovery, convergent discovery, divergent

production, learner's individual designed program, learner-initiated, and self-teaching) are characteristically student-centered. Based on the definition of cooperative learning, those styles specific to cooperative learning would include a combination of the reciprocal, inclusion, guided discovery, and/or divergent styles. The reciprocal style contributes the social skills of students working with and receiving feedback from peers. The inclusion style contributes the element of the inclusion of all learners. The discovery and divergent styles contribute the cognitive development where the student takes more responsibility for his/her learning.

In physical education, several proposition papers have promoted cooperative activities and/or cooperative learning. These have been based on findings from the generic education research and applied to physical education (Dunn & Wilson, 1991; Mercier 1992). Dunn and Wilson (1991) promoted cooperative learning in physical education suggesting the role of the teacher is to develop the cognitive, social and psychomotor capabilities of students in their classes. They defined the social dimensions of learning as involving: cooperating, listening, decision-making, supporting and providing feedback. Mercier (1992) also pointed to social skills as being the basis of a cooperative learning program. She suggested that the acquisition of social skills in the students would not be immediate upon the starting of a cooperative learning program. "It may take what appears to be a great deal of time in the beginning to reinforce social skills and practice" (Mercier, 1992, p. 86). She recommended that modelling of the skills by the teacher would be the biggest contributor to the success of teaching social skills.

The research on cooperative learning in physical education is limited (Dyson, 1995; Johnson, Bjorkland & Krotee, 1984). Johnson, Bjorkland and Krotee (1984), examined the effects of cooperative, competitive and individualistic interaction patterns on achieving the skill of putting in golf. Achievement for the three groups was measured by a 12-hole putting course, a 15 foot accuracy test and a 30 foot accuracy test. The results showed that the students in the cooperative condition putted marginally better on the 12-hole putting course and the 15-foot accuracy test than did the students in the competitive or individualistic conditions (Johnson et al, 1984). In the 30-foot accuracy test the cooperative students putted significantly better than either the competitive or individualistic conditions. Johnson et al (1984) discovered that the cooperative students had higher feelings of personal adequacy, and felt more positive feelings towards their instructor and fellow peers.

Dyson (1995) examined the incorporation of a cooperative learning curriculum in an elementary physical education program. The study described and interpreted the curricular and organizational differences between two grade five/six classes in a volleyball unit. One of the classes incorporated a cooperative learning format and the other used a traditional format. Dyson (1995) found that the cooperative learning format contained lower instruction time, higher engagement time, and more refining tasks than the traditional format. The students in the cooperative learning format exhibited more opportunities to respond, with a greater percentage of appropriate responses, than did the students in the traditional learning format (Dyson, 1995). The teacher preferred the cooperative learning format over the traditional format because she found that it gave her

more time to monitor students within the group and provide specific skill feedback to individuals. Dyson (1995) found that the students in the cooperative learning format believed that they worked well together, felt responsible for each other, listened to each other and communicated well.

Although there is not an extensive amount of research on cooperative learning in physical education, the existing research suggests that cooperative learning improves skills and creates a positive climate within the class. This study is the next step in the line of inquiry and helps to further our understanding of cooperative learning by describing cooperative learning in a secondary setting.

## Purpose

The purpose of this study was to describe and interpret cooperative learning in a secondary school physical education program. The following research questions provided a guideline for the study:

1. What were the curricular and organizational characteristics of the handball units?
    1.1. How was the content organized and presented through the instructional tasks?
    1.2. What were the students' motor responses during the physical education content?
2. What were the teacher's perceptions of the cooperative learning program?
3. What were the students' perceptions of the cooperative learning program?

## Method

This section attempts to describe how this study was accomplished by examining

the participants involved, data collection, data analysis, and reliability.

## Participants

### Teacher

This study examined two cooperative learning classes of one high school physical education teacher from the Protestant School Board of Greater Montreal. Mary Smith was selected based on her 'effectiveness', as indicated by evaluations from her colleagues, principal and university content experts. She had been a cooperating teacher for student teaching experiences for 18 years and was respected as a competent teacher by the university faculty. Mary was a physical education specialist with 23 years experience teaching physical education. For the past four years she has incorporated a cooperative learning format in her physical education classes. Mary's initial interest in cooperative learning came from seeing results in her own children who were involved in a cooperative learning based curriculum at an elementary school. She had read about cooperative learning, attended workshops and was now presenting workshops to other physical educators. Mary was chosen as a purposeful sample (Patton, 1990) because of her interest in innovative curriculum and her desire to better understand and improve her physical education program.

### Students

The two classes in this study consisted of 24 female grade eight students (aged 12-13) and 23 female grade eleven students (aged 16-17). The grade eleven students under this teacher have had cooperative learning physical education classes for three and

a half years. The grade eight class had cooperative learning physical education classes for one previous semester. All students in this study were from a diverse multicultural and moderate socio-economic group. Prior to the start of the study, students were subjectively classified by the teacher into low, average and high skill levels. This pool of various skilled students was then used to obtain a random selection of skill levels by the investigator during systematic observation of target students.

## Data Collection

The teacher and the students in the two classes were systematically observed for ten lessons each during a handball unit. The study involved non-participant observation of all grade eight classes and ten of the 20 lessons for the grade eleven handball unit. All lessons were videotaped and the teacher wore a wireless microphone which provided teacher verbal data. Both classes were taught the same handball content by the same teacher. Permission to participate in the study was obtained from both the parent and the child through written consent (Appendix A).

A multiple-method case study design was utilized to investigate the physical education environment. This included the use of both quantitative and qualitative lines of inquiry. The quantitative inquiry was utilized through a modified version of the task structure observational system (Siedentop, 1994b) and the value orientation inventory (Ennis, 1994). The qualitative inquiry included interviews, field notes and document analysis.

### Task Structure Observation System

The task structure observation system was the systematic instrument used to

describe the ecology of the physical education classes (Appendix B). The primary focus of the task structure observation system was the instructional episode, more specifically the instructional task, how it was organized and presented, and the way students reacted to that instruction. The task structure observation system analyzed teachers and students behaviours during teaching episodes and combined the use of duration and event recording (Siedentop, 1994b).

Value Orientation Inventory II

Mary completed the Value Orientation Inventory II (Ennis & Chen, 1993) at the beginning of the study. The Value Orientation Inventory II is provided in Appendix C. The purpose of this questionnaire was to measure "the extent to which physical educators make consistent decisions concerning curriculum and instruction that reflect value orientations in their belief systems" (Ennis & Zhu, 1991, p. 33). Value orientations represent educational beliefs influential in curricular decision-making and determine, in part, the content that will be emphasized and the extent to which that content will be learned (Ennis, 1994).

Interviews

The investigator used three types of interviews in this study: structured interviews, focus group interviews and informal interviews. All interviews, with the exception of the informal interviews, were audiotaped and transcribed for analysis. A structured interview occurred with the teacher at the beginning and the end of the unit. The purpose of the initial interview was to obtain biographical data about the teacher's experiences with cooperative learning, workshops, coaching, and related experiences.

The final interview was used to provide the teacher's purposes, goals, and perceptions of her physical education program.

Focus group interviews involving two to four students occurred after each lesson for approximately 10 minutes. Focus group interviews generally involve a facilitator (the investigator) and a small group of participants, which allows for a partially directed and non-directed discussion to take place with respect to a given topic (Stewart & Shamdasani, 1990). All students in the two classes were interviewed on at least one occasion. The interviews were conducted to answer questions related to the students' perceptions about the teacher's purposes and goals and their experiences in the lesson. Examples of interview questions were: What were your goals for today's lesson? What did you learn today? What were the positive/negative aspects of today's lesson? These were followed by questions to probe the students' answers.

Informal interviews occurred with the teacher and students before and after the lesson. Before the lesson the teacher talked about her goals and tasks for the lesson. At other times, informal discussions occurred related to the lessons taught, cooperative learning, and the physical education program.

Field Notes

Field notes were taken during each class session and after or during observations at the school. An organized method of taking and organizing field notes was implemented (Schatzman & Strauss, 1973) (Appendix D). Field notes were written up as soon as practically possible after the observation.

Documents

Several documents were gathered for information relevant to this study. This included unit and lesson plans, the teacher's daily and yearly schedule, written tests, and student projects. In addition, reflection questionnaires on both the grade eight and eleven units were completed by the teacher at the end of the study.

## Data Analysis

For this study, a multiple-method case study design, incorporating both qualitative and quantitative techniques, was used to describe and interpret cooperative learning physical education classes. Locke (1989) expressed that one of the challenges of qualitative research is to make sense of the massive amount of raw data that had been collected. In this study this was accomplished through inductive analysis and constant comparison (Glaser & Strauss, 1967; Strauss & Corbin, 1990). The analysis of the interview data, field notes and documents was an ongoing process throughout the research. As audiotapes of the interviews were transcribed, they were inductively analyzed by coding and categorizing the material into themes (Patton, 1990). This same process of analysis was used for the field notes and the documents. The number of categories were reduced through further analysis of the data, by reading and re-reading the data. The data collected was transferred into a database management program for easy access.

The quantitative data obtained from the modified task structure observation system (Dyson, 1994) was tabulated to provide an indication of the frequency, duration, types of various tasks, and student responses. It was another dimension which provided

information about cooperative learning in physical education. The observed tasks were first classified as to type, frequency and duration within the managerial and instructional categories. The instructional tasks were further classified into the specific categories of informing, extending, refining, applying, routine, or cognitive tasks. The students' responses to these tasks and their number of opportunities to respond were then recorded. An analysis of the relationships between the task systems was conducted through the identification of routines and patterns within the managerial and instructional categories (Jones, 1992).

The incorporation of a qualitative component in this study added to the quantitative methods by providing another "slice of reality." This method of collecting data through various data types is called data triangulation. Data triangulation results in stronger internal validity than would result from a single data type. Dobbert (1982) stated, "Multiple methods enhance validity and reliability through increasing the number of perspectives employed. Multiple perspectives permit checking of all types of data for accuracy and completeness . . . add(ing) to the depth and breadth of interpretation" (p. 265). In this study, data triangulation from videotaped observations, interviews, a questionnaire, document collection and fieldnotes provided the support or disconfirmation of data regarding the description and interpretation of cooperative learning in the gymnasium (Locke, 1989).

## Reliability

Inter-observer reliability for this study was conducted for 20% of the videotaped lessons. Inter-observer reliability, which implies an agreement between coders (Van der

Mars, 1989), was determined by one coder who independently coded 20% of the observed lessons. Two lessons from each class were randomly selected for inter-observer coding. The independent observer was trained by the investigator prior to the study on how to use the task structure instrument. Inter-observer reliability was calculated by a frequency count of (a) the number of coded events, and (b) the categories of teaching behaviours. Observers had a 89% agreement on the number of coded events and 93% agreement on the categories of teaching behaviours.

## Results and Discussion

The purpose of this study was to describe and interpret cooperative learning in physical education classes in a high school setting. In accordance with the purpose of this study three research questions drove this inquiry (p. 63). The results are presented as quantitative and qualitative inquiries. The quantitative inquiry will discuss the results of the teacher questionnaire and the task structure observation system. This will be followed by the qualitative inquiry which will examine the findings of the teacher's and the students' perceptions of their physical education program.

### Questionnaire

Prior to the study, the teacher completed the Value Orientation Inventory II (Ennis, 1994). The results indicated that this teacher assessed her own personal value orientations as high in social responsibility and low in disciplinary mastery. Ennis (1994) found that the social responsibility value orientation was influential in decision making for the urban secondary school teacher. The value orientations of learning

process, self-actualization and ecological integration were all assessed as neutral. Social responsibility advocates have students becoming involved in group activities, using their abilities to further group goals and interacting together to solve group problems. This value orientation best represents cooperative learning since "the curricular priority [is] on content and tasks that encourage students to develop positive interdependence skills leading to social competence" (Ennis, 1994, p. 166).

## The Task Structure Observation Instrument

In the ten lessons observed both the grade eight and grade eleven classes showed similiar findings in terms of curricular and organizational characteristics. These findings are broken down into overall task selection, engagement tasks and opportunities to respond.

### Task Selection

In the task structure observation system the first level was duration of teaching episodes. The grade eight and eleven classes had similiar lesson durations and time spent in management, transition, waiting, and warm-up. In the grade eight class, management time was spent at the beginning of seven of the ten grade eight lessons (Table 1). This was time spent to take attendance and/or to make announcements. Management, as a percentage of class time ranged from 0.8% to 2.4%, resulting in an average of 1.1%. For the grade eight class management served as a time for structuring and organizing the class before the lesson begun.

Table 1

Percentage of Lesson Time and Frequency of Tasks for Grade 8's

| Lesson # | Lesson Duration | Management | Transition | Wait Time | Instruction | Warm Up | Engaged Time |
|---|---|---|---|---|---|---|---|
| One | 36:17 (40) | - | 6.8% (10) | 2.0% (4) | 32.5% (13) | 7.0% (1) | 51.7% (12) |
| Two | 38:16 (33) | 2.4% (1) | 9.0% (6) | 10.5% (5) | 19.8% (12) | 4.6% (1) | 53.7% (8) |
| Three | 37:37 (41) | - | 5.3% (7) | 20.5% (4) | 25.3% (15) | 6.5% (2) | 42.5% (13) |
| Four | 32:30 (19) | 0.8% (1) | 5.0% (5) | 14.2% (3) | 13.3% (5) | - | 66.8% (5) |
| Five | 40:06 (29) | 2.0% (1) | 5.1% (7) | 3.9% (3) | 14.6% (9) | 5.0% (1) | 69.3% (8) |
| Six | 38:52 (28) | 1.5% (1) | 6.5% (7) | 21.3% (6) | 10.5% (4) | 6.9% (1) | 53.3% (9) |
| Seven | 38:51 (18) | 1.8% (1) | 5.5% (5) | 10.6% (2) | 13.3% (3) | - | 68.8% (7) |
| Eight | 39:56 (20) | - | 8.7% (6) | 8.5% (5) | 10.0% (2) | 5.2% (1) | 67.7% (6) |
| Nine | 39:17 (27) | 1.3% (1) | 6.7% (7) | 15.7% (6) | 9.6% (6) | 6.8% (1) | 59.9% (6) |
| Ten | 38:51 (24) | 1.4% (1) | 8.5% (7) | 9.3% (3) | 7.0% (7) | - | 73.8% (6) |
| Aver. | 38:03 (28) | 1.1% (1) | 6.7% (7) | 11.7% (4) | 15.6% (8) | 4.2% (1) | 60.8% (8) |

Instruction for the grade eight class had an overall average of 15.6%, ranging from 32.5% in the first lesson to 7.0% in the final lesson. In contrast, engaged time averaged 60.8% of lesson time, ranging from 51.7% in the first lesson to 73.8% in the final lesson.

For both the classes, the amount of time spent in management tasks was somewhat less than that found in the literature (Dyson, 1995; Jones, 1992; Romar, 1995). In the grade eleven class, there were only two episodes of management, consisting of 6.1% and 2.0% of the class time (Table 2). This resulted in an overall average of 0.8% of lesson time. Management time for the grade eleven class consisted of announcements related to school activities. In lesson three high management time (6.1%) was due to an announcement concerning a school-wide event. Normally, the teacher would take attendance for this class when they were involved in activity so that time could be used for productive engaged time. In contrast, the grade eight class, with Mary as their new teacher, was more structured with a regular allotment of time for attendance.

For both classes, the amount of time spent in instruction was substantially less than that identified by Romar (1995), who identified as much as 27% of the class time in instruction. Instruction for the grade eleven class had an average instruction time of 11.1%, somewhat lower than the grade eight class, ranging from 5.8% to 15.4%. Conversely, the average engaged time was slightly higher than the grade eight class with an average of 65.2%, ranging from 51.9% to 78.0% of lesson time. In both the grade eight and grade eleven classes, the amount of time spent in engagement was substantially

Table 2

Percentage of Lesson Time and Frequency of Tasks for Grade 11's

| Lesson # | Lesson Duration | Management | Transition | Wait Time | Instruction | Warm Up | Engaged Time |
|---|---|---|---|---|---|---|---|
| One | 38:46 (39) | - | 7.7% (11) | 2.3% (4) | 15.0% (11) | - | 75.0% (13) |
| Two | 39:40 (45) | - | 11.2% (14) | 3.2% (3) | 14.6% (15) | - | 71.0% (13) |
| Three | 36:52 (29) | 6.1% (1) | 9.1% (8) | 2.5% (3) | 15.4% (8) | 6.1% (1) | 60.8% (8) |
| Four | 40:30 (26) | - | 7.4% (5) | 5.3% (3) | 12.9% (9) | 4.2% (1) | 70.2% (8) |
| Five | 41:20 (29) | - | 8.5% (7) | 16.0% (5) | 10.9% (9) | 5.7% (1) | 58.8% (7) |
| Six | 41:50 (38) | - | 9.4% (8) | 17.3% (6) | 13.0% (11) | 4.6% (1) | 55.7% (12) |
| Seven | 37:45 (27) | 2.0% (1) | 7.5% (7) | 22.8% (5) | 9.8% (6) | 5.9% (1) | 51.9% (7) |
| Eight | 38:06 (16) | - | 5.4% (4) | 3.8% (2) | 5.8% (6) | 7.0% (1) | 78.0% (3) |
| Nine | 40:38 (23) | - | 5.9% (4) | 11.9% (4) | 6.8% (7) | 3.9% (1) | 71.6% (7) |
| Ten | 32:48 (23) | - | 4.4% (5) | 26.1% (6) | 6.3% (4) | 4.7% (1) | 58.6% (7) |
| Average | 38:50 (30) | 0.8% (0) | 7.7% (7) | 11.1% (4) | 11.1% (9) | 4.2% (1) | 65.2% (9) |

greater than results reported by Romar (1995), who cited an average of approximately 50% of the total class time.

Task Engagement

The second level of analysis in the task structure observation system was the task type that the teacher presented and the students responses to those tasks. The type of tasks - informing, refining, extending, applying and routine were first identified by Rink (1979). In addition, cognitive tasks played an important part in this cooperative learning curriculum.

Cognitive tasks were defined by Dyson (1994) as tasks that required students to ask or answer questions, problem solve, make a decision, strategize or discuss information related to lesson content during the lesson or in a debrief at the end of the lesson. There was no physical activity during the cognitive tasks. In this study cognitive tasks also happened prior to the activity. Implementation of strategy prior to the activity served as a means of discussing or clarifying some particular aspect of skill.

Informing tasks, which are the first tasks after the presentation of information, occurred in four lessons for the grade eight class (Table 3). Informing tasks averaged 3.5% of the total engaged time, ranging from 3.0% in lesson five to 13.5% in lesson three.

Refining tasks focus on the quality improvement of the task or strategy. For the grade eight class, refining tasks occurred in six of the ten lessons averaging 16.4% of the total engaged time. Rink (1993) has suggested the importance of refining tasks and its indication as a form of effective teaching. This concern

Table 3

Percentage and Frequency of Engaged Tasks for Grade 8 Handball Unit

| Lesson # | Engaged Time | Informing | Refining | Extending | Applying | Routine | Cognitive |
|---|---|---|---|---|---|---|---|
| One | 18:45 (12) | 8.9% (1) | 19.6% (2) | 20.7% (2) | 17.1% (1) | 24.3% (2) | 9.5% (4) |
| Two | 20:33 (8) | - | - | - | 41.9% (3) | 24.2% (2) | 33.8% (3) |
| Three | 15:59 (13) | 13.5% (1) | 26.4% (2) | 11.3% (1) | 28.9% (3) | - | 20.0% (6) |
| Four | 21:42 (5) | 9.7% (1) | - | - | 57.4% (2) | - | 32.9% (2) |
| Five | 27:47 (8) | 3.0% (1) | 30.6% (1) | 1.6% (1) | 47.6% (1) | - | 17.2% (4) |
| Six | 20:43 (9) | - | 34.3% (1) | - | 57.0% (4) | - | 8.7% (4) |
| Seven | 26:44 (6) | - | - | - | 61.8% (4) | - | 38.2% (2) |
| Eight | 27:01 (7) | - | 23.0% (1) | - | 68.1% (3) | - | 8.9% (3) |
| Nine | 23:31 (6) | - | - | - | 72.0% (3) | - | 28.0% (3) |
| Ten | 28:40 (6) | - | 30.1% (1) | - | 54.8% (2) | - | 15.1% (3) |
| Aver. | 23:09 (8) | 3.5% (0) | 16.4% (1) | 3.4% (0) | 50.7% (3) | 4.9% (0) | 21.2% (3) |

> for quality of student performance can be exhibited by teacher feedback to the class or individual students about how they are performing . . . [and] exhibited very clearly by teachers when they stop student practice and focus students on achieving particular movement qualities . . . Refining tasks can have a powerful impact on student performance when the teacher keeps the focus of improvement narrow and when students are held accountable for actually working within the focus of the refining task. (Rink, 1993, p. 101)

Rikard (1992) suggested that refining tasks were important to skill acquisition. She found that refining tasks resulted in moderate increases in low-skilled students when followed by specific feedback. In high-skilled students, practice success increased by 14% over extending and applying tasks when refining tasks were used (Rikard, 1992). Extending tasks, which change the conditions of practice to alter the focus of skill development, occurred in only three lessons for the grade eight class. Extending tasks averaged 3.4% of the total engaged time, ranging from 1.6% in lesson 5 to 20.7% in lesson one.

Applying tasks, which were modified games, occurred in all ten lessons for the grade eight class. The average time spent in applying tasks was 50.7% of lesson time, ranging from 17.1% in lesson one to 72.0% in lesson nine.

Routine tasks for both the classes involved a sub-unit of aerobic skipping. Students developed their aerobic capacity and skipping coordination as they attempted to skip for a pre-selected duration of time. For the grade eight class, routine tasks were observed in two of the lessons, averaging 4.9% of the engaged time.

One of the interesting findings in this study was the time spent in cognitive engagement. The grade eight class had cognitive tasks in all ten lessons, averaging

Table 4

Percentage and Frequency of Engaged Tasks for Grade 11 Handball Unit

| Lesson # | Engaged Time | Informing | Refining | Extending | Applying | Routine | Cognitive |
|---|---|---|---|---|---|---|---|
| One | 29:05 (13) | 17.0% (3) | 11.3% (1) | 9.5% (1) | - | 14.9% (4) | 47.3% (4) |
| Two | 28:09 (13) | 7.7% (1) | 10.7% (1) | - | 50.5% (5) | 22.3% (4) | 8.9% (2) |
| Three | 22:25 (8) | 11.9% (1) | - | - | 48.0% (3) | 21.9% (2) | 18.3% (2) |
| Four | 28:26 (8) | 8.0% (1) | - | 3.7% (1) | 54.9% (1) | 32.6% (4) | 0.8% (1) |
| Five | 24:19 (7) | 3.7% (1) | 29.1% (1) | - | 52.7% (2) | 8.2% (1) | 6.2% (2) |
| Six | 23:18 (12) | 5.3% (1) | 26.0% (1) | 4.0% (1) | 29.2% (3) | 21.9% (2) | 13.6% (4) |
| Seven | 19:35 (7) | 9.7% (1) | 42.8% (2) | 8.5% (1) | 33.0% (1) | - | 6.0% (2) |
| Eight | 29:43 (3) | - | - | - | 91.8% (1) | - | 8.2% (2) |
| Nine | 29:05 (7) | - | - | - | 56.0% (2) | - | 44.0% (5) |
| Ten | 19:13 (7) | - | 37.5% (1) | - | 50.6% (3) | - | 12.0%(3) |
| Average | 25:20 (9) | 6.3% (1) | 15.7% (1) | 2.6% (0) | 46.7% (2) | 12.2% (2) | 16.5% (3) |

21.2% of the total engaged time. This ranged from 8.7% in lesson six to 38.2% in lesson seven. Since the grade eight class was learning social skills they spent more time in situations where they could practice these skills.

The grade eleven class was similiar to the grade eight class in its task presentation (Table 4). For the grade eleven class the extending tasks averaging 2.6% of the total engaged time and refining tasks accounted for an average of 15.7% of the total engaged time.

The grade eleven class had seven lessons with informing tasks, averaging 6.3% of the total engaged time. Informing tasks ranging from 17% in lesson one to 3.7% in lesson five. This study contained fewer informing and extending tasks than did other studies using the task structure system (Dyson, 1995; Jones, 1992; Romar, 1995). This may be explained by the handball content and the cooperative learning approach to teaching. Although there were informing and extending tasks, students learned most of the skills cognitively and then applied them to the game situation. Drills in the form of informing and extending tasks were not used to the same extent that they would be used in a traditional approach.

Applying tasks for the grade eleven class were similiar to those of the grade eight class. Applying tasks occurred for the last nine lessons, averaging 46.7%, ranging from 29.2% in lesson six to 91.8% in lesson eight.

For the grade eleven class, a skipping unit accounted for the first six lessons and averaged 12.2% of the engaged time. The time was recorded as routine tasks and ranged from 8.2% to 32.6% of the engaged time. The grade eleven class spent more time in

routine tasks than did the grade eight class.

The grade eleven class spent less time in cognitive tasks than the grade eight class. Although cognitive tasks were a part of every lesson, they averaged only 16.5% of the total engaged time. This result is similar to what was reported by Dyson (1995). The amount of time spent in cognitive tasks ranged from 0.8% in lesson four to 47.3% in lesson one. In lesson one the students spent a good portion of the period planning a skipping routine that their respective groups would perform at a later date.

One difference between the two classes is the task explicitness during cognitive tasks. Tousignant and Siedentop (1983) defined an implicit task as one in which "the task presentation was done with no or very limited information; in such circumstances, students had to know from previous experiences how to play the roles of a participant in such tasks" (p. 53). A generally explicit task was defined as one in which "the task presentation included a general description of the form or the product of an expected response" (Tousignant & Siedentop, 1983, p. 53). A specifically explicit task was defined as one in which "the task definition included precise criteria to be used to determine the level of success" (Tousignant & Siedentop, 1983, p. 53). Although motor tasks were generally fully explicit for both classes, the cognitive tasks were given differently. For the grade eight class, the cognitive tasks were usually specifically explicit [Field Notes 8 (FN8), Lesson 1 (L1), p. 2]. For the grade eleven class, the cognitive tasks were usually generally explicit (FN11, L3, p. 9). The teacher attributed this to the fostering of social maturity. While the grade eight class needed guidance on what to do, the grade eleven class were at a level where the social learning was more

effective without constant teacher assistance [Mary, Interview 3 (I3), p. 3].

The importance of cognitive tasks in this study helps us to better understand the nature of the cooperative learning model. Evans (1990) commented that many forms of curriculum innovation emphasized the intellectual and cognitive elements of physical activity. Jewett, Bain, and Ennis (1995) identified the elements of the cognitive domain as knowledge, comprehension, application, analysis, synthesis, and evaluation.

Some physical educators have identified the importance of learning through tactical awareness (Almond, 1983; Bunker & Thorpe, 1982; Griffin, 1996; Mitchell, 1996; Mitchell, Griffin, Oslin and Sariscsany, 1995; Turner, 1996; Werner, Thorpe and Bunker, 1996). The tactical approach focuses on the "what to do?" within the game context before the question of "how to do?". In this manner, the students are involved in more decision making and understand how their learned skills are applied to the game situation. The sport education model (Siedentop, 1996) also has students involved in more decision making. Although the teacher usually acts as the coach of all teams, students' responsibilities include the scheduling of games, dispute resolution, coaching, refereeing, scorekeeping, and statistics. McBride (1991) has suggested taking a closer look at critical thinking in physical education because of the potential for teaching critical thinking in the psychomotor domain.

Students' Responses to Instruction

The third level of the task structure observation system was students' responses to instruction during the lessons. Opportunities to Respond was used as a measure. For example, each time a student threw a ball it was considered an Opportunity to Respond.

Table 5

Student's Opportunities to Respond (OTRs) and Appropriate Responses for Grade 8's

| Lesson # | Engaged Time | Total OTRs | OTRs A/I # | Appropriate % | OTRs #/Min |
|---|---|---|---|---|---|
| One | 18:45 | 85 | 75/10 | 88.2 | 4.5 |
| Two | 20:33 | 69 | 61/8 | 88.4 | 3.4 |
| Three | 15:59 | 82 | 71/11 | 86.6 | 5.1 |
| Four | 21:42 | 61 | 48/13 | 78.7 | 2.8 |
| Five | 27:47 | 122 | 104/18 | 85.2 | 4.4 |
| Six | 20:43 | 73 | 64/9 | 87.7 | 3.5 |
| Seven | 26:44 | 138 | 129/9 | 93.5 | 5.2 |
| Eight | 27:01 | 159 | 143/16 | 89.9 | 5.9 |
| Nine | 23:31 | 97 | 92/5 | 94.8 | 4.1 |
| Ten | 28:40 | 93 | 86/7 | 92.5 | 3.2 |
| Average | 23:09 | 98 | 87/11 | 88.6 | 4.2 |

Table 6

Student's Opportunities to Respond (OTRs) and Appropriate Responses for Grade 11's

| Lesson # | Engaged Time | Total OTRs | OTRs A/I # | Appropriate % | OTRs #/Min |
|---|---|---|---|---|---|
| One | 29:05 | 95 | 87/8 | 91.6 | 3.3 |
| Two | 28:09 | 111 | 102/9 | 91.1 | 3.9 |
| Three | 22:25 | 92 | 86/6 | 93.5 | 4.1 |
| Four | 28:26 | 101 | 94/7 | 93.1 | 3.6 |
| Five | 24:19 | 81 | 75/6 | 92.6 | 3.3 |
| Six | 23:18 | 107 | 99/8 | 92.5 | 4.6 |
| Seven | 19:35 | 114 | 103/11 | 90.4 | 5.8 |
| Eight | 29:43 | 132 | 125/7 | 94.7 | 4.4 |
| Nine | 29:05 | 141 | 131/10 | 92.9 | 4.8 |
| Ten | 19:13 | 116 | 111/5 | 95.7 | 6.0 |
| Average | 25:20 | 109 | 101/8 | 92.8 | 4.4 |

Opportunities to Respond included both offensive and defensive positioning, throwing the ball, catching the ball, running for the ball, running with the ball and attempting to block a shot. The students in the grade eight class had an average of 98 Opportunities to Respond (OTRs) per lesson (Table 5). Opportunities to Respond were either coded as appropriate or inappropriate. An appropriate response was one that had an acceptable working form and a high probability of successful engagement (Siedentop, 1994b). For example, if a student threw the ball with proper form so that it made it to the intended receiver, then it was coded as an appropriate OTR. For the grade eight class, the average percentage of appropriate OTRs was 88.6%. The OTRs were an average of 4.2 per minute of engaged time. This number ranged from 3.2 in lesson ten to 5.9 in lesson eight.

The grade eleven class had an average of 109 Opportunities to Respond per lesson (Table 6). The average percentage of appropriate OTRs was 92.8, somewhat higher than the grade eight class. The OTRs per minute was 4.4, similiar to that of the grade eight class.

In this study there was a higher number of Opportunities to Respond for both the grade eight and eleven classes than those reported in the literature (Dyson, 1994; Jones, 1992; Romar, 1995). The percentage of appropriate Opportunities to Respond was also very high for both classes when compared with similar studies (Jones, 1992; Rickard, 1992; Romar, 1995). The literature has supported the notion that high success with appropriate tasks is an indicator of achievement in physical education (Ashby, Lee & Landin, 1988; Silverman, 1991). Although for both classes there was only a small

amount of inappropriate responses, the grade eleven class exhibited more appropriate responses (92.8%) than the grade eight class (88.6%).

An explanation for these numbers being somewhat higher than those found in the literature (Dyson, 1995; Jones, 1992; Rickard, 1992; Romar, 1995) may have been related to the type of content that this study dealt with. Handball, compared to volleyball or gymnastics contains skills and movements that do not require as much precision, accounting for a high percentage of appropriate responses. For example, a closer examination of volleyball reveals that the skills involve defined, precise skills such as setting, passing, spiking and serving. These skills are easy to distinguish when performed as being either appropriate or inappropriate, based on the direction, height, and movement of the ball. Conversely, handball involves skills such as throwing, passing, blocking, and running that have a wider boundary of appropriate behaviour. In addition, volleyball does not offer many Opportunities to Respond in the game situation for elementary students (Dyson, 1995). A student may have one Opportunity to Respond in a one minute time period as he or she executes a forearm pass to a teammate. In handball, a student may receive the ball, run with the ball, and fire a shot in a brief time period, and thus, accumulate a total of three Opportunities to Respond. This study showed that handball offered many Opportunities to Respond in both practice and game situations.

## Teacher's Goals for the Program

This section discusses the physical education teacher's goals for the grade eight and eleven classes. Although most of the goals were common for both classes, there was

a difference in the degree that the motor and social skills were emphasized.

Mary's goals for the grade eight handball unit were for the students to respect one's peers, to learn responsibility, to improve their social skills, to develop cognitive skills, to actively participate, and to have fun. The acquisition of motor skills was not a prime focus. The teacher felt that by the end of the unit the grade eight class had met these goals [Document Article 1 (DA1), p. 1].

Since the presence of social skills was evident for the grade eleven class, the teacher put more of a focus on motor skills. The teacher's goals for the grade eleven handball unit were for the students to improve their motor skills, and to assume more responsibility by taking on the higher level social skill of leadership. Mary felt that by the end of the unit the grade eleven class had met these goals (DA2, p. 1).

A breakdown of the marks revealed that for the grade eight class the teacher placed the most importance on participation (60%), with the remaining composites in cooperation/attitude (20%), written test (10%) and uniform (10%). For the grade eleven class the written test component increased to 20% due to the addition of a major project. Consequently, the cooperation/attitude component was decreased to 10%.

Respecting One's Peers

Mary believed that respecting one's peers was the most important goal for her program. "Working together with other people and respecting those people benefits everybody, and I would say that this is my ultimate goal" (Mary, I1, p. 3). For Mary, respecting one's peers was a necessity for headway with the present grade eleven class. She explained:

> What caused me to get into cooperative learning more is that when the present grade elevens were in grade eight they were a very unruly, cliquish, racial group which made me feel very uncomfortable and nervous . . . It was the first time I had ever seen this type of thing. Teaching in a traditional teaching setup was not being effective. You had groups that would decide "I am not going to do it that way." You could see that it was a large group to deal with . . . You had to do something because you could see that this class was going to have one large division and that was very scary. (Mary, I2, p. 11)

For Mary, incorporating the social realm with a cooperative learning program meant benefits that extended beyond the classroom climate. Mary explained the importance of the social realm in cooperative learning.

> For the students to lead a happy normal life once they graduate from here, they need the communication skills, the listening skills, they need to be able to relate to other people and most importantly, they need to learn to respect everyone else. The only way to improve it is to teach it all over again. These are skills as well, although the learning may not be as measurable as the motor skills. (Mary, I1, p. 10)

The teaching of skills is very important. Mary stated, "There is a whole language that has to be taught to them . . . Learning to compliment each other - They come in here not knowing how to do that" (Mary, I1, p. 10).

One way Mary begins the path towards respect is by distinguishing friendship from respect. She reported, "Often I say to the kids, you don't have to be best friends with everyone in your group but you have to respect what they have to say" (Mary, I1, p. 10).

Teaching about respect and other social skills meant that leading by example was crucial.

> I think respect for anyone is important. One thing kids do easily is measure something that is fair and if two children misbehave and are

> treated differently, in terms of punishment, then they will be the first to say "that's not fair," and they are right. (Mary, I1, p. 10)

Respecting one's peers were of extra importance in Mary's grade eight class. Julia, one of Mary's grade eight students, had a condition of dwarfism. In a traditional class, Julia might be ostracized because of her needs and abilities. In Mary's class, Julia played an important role in the process of learning respect.

> It magnifies the need for respect for her special needs within the class. Maybe it makes them more easily identifiable for the kids. I think one issue of importance to me is that she should always be made to feel part of a group and not pushed aside because of need, size or ability. I think that the kids certainly have shown no side of that. This is where cooperative learning is really important. (Mary, I1, p. 12)

At the end of most classes, Mary would finish with a display of this respect between the teams by having them shake hands.

> Mary asked the teams to line up single file, one team facing one way, the other facing the opposite way (So that the front persons of each line are facing each other). "In the excellent tradition, let's shake hands." Both lines move forward, as each student from each team shakes the hand of each student from the other team. One student is heard commenting "Do we have to?". Most are excited to shake hands, most are laughing. (FN8, L6, p. 43).

Accepting Responsibility

Responsibility was another important goal in Mary's program. Mary believed that the more social skills students acquired, the more independent students became and the more responsibility they assumed in leadership roles. She attributed the lack of responsibility in teenagers to unrealistic expectations by society. "Learning to be responsible is very critical. You can't just expect kids once they turn 14 to suddenly be responsible without giving them an idea of how to do it" (Mary, I1, p. 14). The changes

in society have not resulted in changes in the curriculum.

> I think kids today are very individualistic in their lifestyle and they have a lot of responsibilities and don't necessarily know how to handle those responsibilities. Society has changed and I don't think we have equipped kids to adapt to those changes. (Mary, I1, p. 2)

In order to equip the students, "it is only fair to teach them the necessary skills" (Mary, I2, p. 6). Mary explained that the answer is not in giving them more responsibilities.

> One has to understand that responsibility is something that is taught. [Students] have to learn how to accept responsibility and what responsibility is - and once they have that concept, then how it works. But you can't just say "Today we are going to be responsible". You can get more responsible and give them more responsibilities but they really have to learn how. I think unfortunately that some people feel, " The kid's 14, [she] should be responsible". That's fine to say but again she probably carries the key of the front door around her neck. There's a little more to it than that. (Mary, I2, p. 7)

The process of teaching responsibility began with the group formation at the beginning of the year. When Mary put the groups together she arranged them heterogeneously both in terms of motor skills and social skills. She explained the group formation.

> They were allowed to choose a partner or someone else that they wanted on their particular team and that was the only thing that they were guaranteed. I then divided up the teams so that they would be equal from a few different standpoints. There was one or two leader type of kids, others that might need a bit of nurturing and a student who is perhaps reluctant to participate because of a self-esteem problem she had somewhere down the line and just figured that she couldn't contribute anything. (Mary, I1, p. 13)

It was not until grade eleven that Mary placed an emphasis on leadership roles. She stated, "My objective at the [grade eleven] level is to define/assign roles more

specific to cooperative learning. At this level coaches/leaders come into play" (DA2, p. 2). In the grade eleven class leaders had emerged and were identified for each group. "I have observed that the leaders within each group know what their role is. It is also apparent that the other group members know who they are and correspondingly fall into 'followership' roles" (FN11, L2, p. 7).

Mary felt that the allocation of leadership responsibilities to students within the class resulted in other social benefits for the student. Mary stated:

> Often if you respect the child who knows something and allow them to share it with someone else, it is good for everyone. It teaches them the respect issue, it gives that child self-esteem, it keeps them active and makes the child aware of their role within the class. (Mary, I1, pp. 12-13)

For teachers considering implementing a cooperative learning program, Mary felt that they often feel threatened by relinquishing power and shifting responsibility to the students. She explained:

> I think for some teachers they see cooperative learning as a threat because the teacher is giving the students more power . . . and from the teaching standpoint, you have a feeling that sometimes you are not in control because you are giving the responsibilities (and duties) to the kids. I still think that if it is fostered in the right way the teacher becomes the facilitator and regulates the control. (Mary, I1, pp. 6-7)

Mary admitted that "there is a danger at first of the kids getting off task but that with experience you learn to bring them back" (Mary, I2, p. 5).

Three and a half years after the incorporation of a cooperative learning program the teacher stated that this is one of the best classes she has ever taught. Now the students can play and get along with virtually everyone in the class. Mary added,

"Interestingly enough, the kids who were the worst in terms of causing the division, today are the leaders in the class" (Mary, I2, p. 12).

When other staff members were asked if they could see any benefits to the cooperative learning program, they pointed to the social improvement of this grade eleven class over the three and a half years. A classroom teacher stated, "If you could see that [grade eleven] class in grade eight, you would see that Mary's cooperative learning really works" (Steve, I1, p. 1).

Building Social Skills

Mary thought that the development of social skills was important in her program. For her this meant that students learned to: encourage and support one another, communicate with each other, be confident about themselves, and have a positive attitude towards life. According to Mary, the lack of social skills in the students could be attributed to the lifestyle of today's society.

> In today's society the whole communication as a skill is quickly being lost. You are sitting behind a computer when, before, you used to actually talk to a person. It is fine to go cyberspace but is not the same skill as actually sitting down and having a conversation. (Mary, I2, p. 3)

Mary stated that "the only way to improve that is to teach social skills all over again and show the importance of it" (Mary, I2, p. 3).

Mary felt that the social problems for the grade eight and grade eleven class were quite different. She explained:

> In grade eight it might be that someone forgot to give a borrowed pencil back, or that so and so is going out with Johnny. By the time the girls get to grade eleven they are dealing with a whole gammit from drugs to teenage pregnancy, you name it, so that's when you hope that the

> communication skills are there and that the kid knows that they are not alone in the situation. (Mary, I2, p. 10)

The students ability to talk about their problems was also different between the two classes. Mary believed that by grade eleven the students felt that they would talk to each other or the teacher about such problems. She commented, "The [grade eleven's] are more open and will talk about various problems because they value the importance of listening skills and expect that people will listen to what they have to say" (Mary, I1, p. 1-2).

By the end of grade eleven Mary expected that the students would be able to demonstrate a certain level of social skills.

> Students need to be able to communicate and say to somebody "how do you do?" and not be afraid to do that . . . I would also like to see each person [be able to] walk into a gym to a group of people and not have a fear of walking up and saying "I would like to play too." (Mary, I2, p. 3)

In Mary's opinion, another skill that the students have to learn is how to be polite when saying negative things.

> I really hope that through some of what we do the actual learning of how to have a conversation the person compliments someone or says in a positive way " I didn't like it because . . . " or "Could we do it this way?", "How's about trying it this way?" There's three ways to say something to someone that you'd like to take a chance to try something without saying "That sucks . . . " or one of those type of comments. There's different ways to say negative things. (Mary, I2, p. 3-4).

At the beginning of the unit the teacher felt that the grade eight students "were not extremely cohesive as a group and that positive, encouraging comments to each other were non-existent" (Mary, I2, p. 12). Upon completion of the unit, teamwork was evident as the students had developed positive attitudes towards each other and towards

the game (DA1, p. 1). The teacher felt that the grade eight class' social skills have improved dramatically. She commented:

> The attitude has turned from a few positive kids to one where all the kids are positive. They understand the importance of communication with the group and the relationship to the game we are playing but I don't think that they have reached the maturity level to realize that life is a game. (Mary, I2, p. 12)

Mary believed that although these students may have had affective feelings contained somewhere inside them, expressing them only came about as result of learning how to do so. In lesson one, the informing task had students throwing the ball to other members in their group (FN8, L1, p. 2). Of each group of four or five students, one student had the role of observer/encourager. This person's responsibility was to ensure that the other members of the group were throwing with proper technique. Mary's job as the teacher was to ensure that the observers were performing their role.

> "If they throw it well, tell them they are throwing it well." Mary noticed that one girl was not executing the proper technique and she confronted the observer. "Is Jackie throwing the ball properly?. . . Let her know where her hand is and where it should be. This is the only way she will learn." (FN8, L1, p. 2)

Mary felt that the way the students responded to cooperative learning was slightly different.

> At the beginning of grade eight, the class was taught to give positive responses to situations, whether it be "good play", "good game", etc. Since the students were not used to giving positive feedback, they really had to think about doing it . . . By grade eleven this had become second nature. The students' comments started to broaden as they moved from general positive feedback to skill specific feedback. (Mary, I2, p. 10, 11)

However, the routine of the curriculum sometimes contributed towards a lack of

enthusiasm in the grade eleven class (FN11, L5, p. 11). Mary suggested, "The grade eleven's probably weren't as enthusiastic because [cooperative learning] is more routine to them" (Mary, I2, p. 11).

Developing Cognitive Skills

An important element of Mary's cooperative learning program was the cognitive skills. She explained:

> The kids should be able to reflect at the end of or during a class on what is going well and what's not, but more importantly how they can fix or better what might not be going so well. Once they can do that, they are off and running. (Mary, I2, p. 4)

Mary felt that this decision-making involved both right and wrong decisions and that both were necessary for learning. "Decisions, you make right ones and you make wrong ones but the [students] have to at least sample and understand the consequences of the decision" (Mary, I1, p. 14).

Mary stated that students have an important role to play in cognitive tasks.

> Students feel proud of the fact that they can coach or correct someone. This is where the self-esteem aspect comes into play. [Students] may not be able to do the skill but they can analyze it to figure out if something is wrong and help someone out, then my job is done. (Mary, I1, p. 5).

Recent literature in physical education has emphasized the importance of critical thinking in the gymnasium (McBride, 1991; McBride, Gabbard, & Miller, 1990). In this study, the use of cognitive tasks were an important element of each lesson. Cognitive tasks were incorporated throughout the lesson for 5 reasons: to review the knowledge learned, to learn or review a skill, to implement a strategy, to refine a strategy and to reflect on a strategy.

To review the knowledge learned.

In this study the students got together to review the rules that they had learned about handball (FN8, L9, p. 59). This was in preparation for a test that they had the following week.

To learn/review the skill.

The students acquired the skills after examining the specific details of the skill or strategy. Students learned to throw and catch the ball as well as learning more complex strategies like offensive and defensive positioning.

> The teacher provided the groups with their folders and a pen. Inside the folders was a diagram of the goalie net and the crease. The students were asked to indicate where they thought the five players should be placed during their defensive positioning and as to what the purpose of those players was. Three of the four groups indicated that three players should be inside the crease and two players should be outside the crease. The players inside the crease had the job of defending and blocking while the players outside the crease were to intercept the pass. All positions were to be ready to break out into their offensive positions when they obtained possession of the ball. (FN8, L7, p. 29)

To implement a strategy (beginning of game).

Before a game, the teacher often had a designated time for planning strategy. The students would discuss or clarify a particular aspect or skill that they would work on or incorporate into the game. The teacher would guide the students by saying, "Take one minute to discuss what you are going to focus on in today's game" (FN11, 5, p. 15). The teacher asked for both social and psychomotor strategies. Field notes illustrate the implementation of a strategy.

> Come up with an immediate strategy as a group as to something your team will work on and how you are going to accomplish that. Make sure

> everyone understands it. That will be your focus for today." One team decided that they need more defense. They were going to accomplish this by a quick transition after they lost possession of the ball. The other team felt that they need more short passes in order to move the ball more effectively. They were going to accomplish this by more player movement. (FN11, L8, pp. 29-30)

To refine a strategy (during game).

During the game either the teacher or the students would call a time-out to refocus their team and to improve their quality of performance. The teacher-initiated refinement involved three general questions that were used consistently: What are we doing well? What do we need to improve? How are we going to improve it? This is similar to The Games For Understanding Approach advocated in the recent literature (Almond, 1983; Griffin, 1996; Mitchell, 1996; Mitchell, Griffin, Oslin and Sariscsany, 1995; Turner, 1996; Werner, Thorpe and Bunker, 1996).

The student initiated timeout was called when one of the players recognized that their strategy was not working, or when they realized that there was an improvement needed in the quality of performance. This type of timeout was only called out by the leader of one of the teams and only done in the grade eleven class (FN11, L6, p. 20).

Often Mary would use cognitive tasks to accomplish her goals. Once during a game she stopped the class for a cognitive refinement and incorporated the notion of teamwork.

> "You spell the word team, T-E-A-M. For each one of those letters, come up with a word necessary to have a team. When you are done that, choose one that your team has done well until now, one your team has to work on and how you are going to accomplish that." One team came up with Talking, Encouragement, All together and Membership. They felt that 'membership' was going well and 'all together' needed work. They were

> going to work on 'all together' by letting everyone have equal shares of the ball and by not giving them trouble when they messed up. The other team came up with Together, Equal, Arrangement and Member. The other team thought that 'arrangement' was going well and 'together' needed work. This was going to be accomplished by more ball movement, more short quick passes and more communication. When they were done the teacher informed them that they had six minutes left to work on these skills and that she really wanted to see proof of them. (FN8, L3, p. 9)

The students were held accountable for their plans for improvement as the teacher interacted with the students and provided feedback on both an individual's and team's performance. Feedback to the students was given during the game and after the game. Rikard (1992) showed that refining tasks combined with feedback resulted in modest increases in achievement.

To reflect on strategy/event (after game).

At the end of class, a debrief or reflection time occurred when both the students and the teacher assessed what went well during the game. The teacher used this time to check the students understanding of a concept or skill and to assess the results of each team's strategy. The teacher tried to "focus on the positive and to have the students leaving with a feeling that they did something right, bringing them back to another day" (Mary, I2, p. 8). In lesson six, Mary observed that

> the game had been very fast (today) and that [the students] had started to play better. During a debrief at the end of the lesson, she asked the students, "What made you play better?" One student said encouragement and another said short quick accurate passes. The teacher asked about their activity level when the game was going faster. The students felt that they ran more and that they were more active during the faster-paced game. (FN11, L6, p. 20)

One thing to add here is that all students participated in the cognitive

engagement, even if they were not 'dressed out' for that particular day (FN11, L3, p. 10). The teacher felt that everybody's contribution counted and a that a "hurt knee did not affect one's ability to contribute their ideas to their team" (Mary, I3, p. 2).

Actively Participating

Mary cited participation as an indicator of an effective physical education program. She stated

> The number one thing that you see in any [effective] physical education program is that at any given time you can walk in and not one kid is opting out. When you go to another school and you see a third of the kids sitting out, then there is something wrong with your program. (Mary, I1, p. 6)

In both classes there was high rates of student participation. Most classes involved total participation while other classes had one or two non-participants due to sickness or injury. Even during illness the students "participated in non-active roles, acting as coach for the day, coordinating the implementation and refinement of game strategy" (FN8, L2, p. 7). Mary confirmed this, "When children are unable to play due to illness or injury, they still have a role to play. They are just not going to be out on the floor" (Mary, I3, p. 1).

In Mary's physical education program, participation was an important component of the evaluation process and was looked upon highly. She held students accountable for actively participating in class by continuous observation and feedback. Mary stated, "I would like to have a physical education program where the kids want to participate, because if they want to participate my ultimate goal is to have active gym classes" (Mary, I1, p. 4).

Mary explained that participation would be possible only when the students were no longer intimidated by their environment.

> I want kids to feel comfortable in here and not to be afraid to try things that are new and different. I want the kids to enjoy themselves. I want them to achieve goals that are realistic. We can't all be superstars at every single sport but as long as they are willing to try and not to be afraid, that's all I ask of them. (Mary, I1, p. 9)

Mary compromised participation for the development of teamwork, teamspirit and social skills such as encouraging. In the first lesson for both classes, students participated in two half-court games. All other games were full court games. This meant that five or more students were often on the bench and were not actively participating. Mary explained her strategy:

> One game allows more time for the teacher to give feedback and reinforcement, positive comments, etc. I prefer that a few kids sit out because they have an important role to play. I want them to know that they are all part of a team and that they don't have to be running on the floor to be playing that role. (Mary, I3, p. 1)

One of the conditions of having participation as a department goal was that it had to be perceived by the students as a practice extending beyond physical education class.

> If it is seen as "I can only have 'phys. ed.' for 50 minutes every 2 or 3 days or whatever and it's not a welcome place other than that", then again there's a problem. The kids will then relate that to "O.K., obviously I only need that much physical activity in my life." (Mary, I2, p. 6)

Mary's school has opened the gymnasium at extra hours before and after school and during the lunch hour to accommodate the students wanting to participate in a game of pick-up soccer or basketball.

> Our gyms are busy all day long, 7:15 in the morning to 9:00 o'clock at night, so the kids obviously show that they want to be there. Therefore, if

> we use them to that extent, we have to want to be here. As long as there is that harmonious atmosphere, then everybody is happy. (Mary, I1, p. 8)

Developing Motor Skills

Mary felt that in her program, social skills took precedence over motor skills. She acknowledged that she "would rather spend time on the social side of it than the [motor] skill side although [she has] increased the skill yearly" (Mary, I2, p. 9). Mary's teaching progression from grade eight to grade eleven was from the social to the psychomotor. She explained, "I put social skills first at the grade eight level. As you progress through, the social skills are usually more developed so that now you can look more at the athletic balance" (Mary, I1, p. 14).

Mary's motor skill goals for the students were not exhaustive. She explained, "At the end of each unit, I would like each child to have the basic skills of that particular sport, recognizing that we can't do all of them perfectly" (Mary, I1, p. 11).

Although the teacher was not overly concerned with motor skills at the grade eight level, she felt that both the lower skilled and higher skilled students would show an increase in achievement. Mary explained the progression:

> The lower skilled kids will become higher skilled and there won't be a significant change with the higher skilled kids. I think that the equation will alter as they progress through to grade eleven. The higher skilled students will also increase as will the lower skilled but the gap [between them] will narrow. (Mary, I2, p. 9)

Mary believed the difference in skill acquisition between a traditional program and a cooperative learning program.

> In the very beginning you give up a bit of the skill acquisition. By the time they are finished , if you look at the four year progression, although I

> haven't measured it, I think they come out even. [However], the kids that have experienced the cooperative end up with more social skills than in the traditional [program]. (Mary, I1, p. 14)

Mary felt that in a cooperative learning program the higher skilled students received social benefits that the lower skilled students did not. Mary noted, "As teachers, the higher skilled students will receive benefits that the lower skilled do not. For them to be good at something and be able to teach someone else is good both for their knowledge and their self-esteem" (Mary, I2, p. 10).

At the end of the unit, Mary felt that the grade eight students' "skill levels could have improved more but [that] they would develop more quickly once a positive social environment had been established" (DA1, p. 1). She felt that the grade eleven class had increased their skills substantially (DA2, p. 2).

Mary reported that in both classes over the course of the handball unit "the demonstration of motor skill improvement was evident as the games continually became more 'competitive', although the 'win' never became the ultimate goal" (Mary, I3, p. 1). Mary added, "If you were to ask one member from each team which team they thought won the game, they would both respond by saying that their team did" (Mary, I3, p. 2).

Having Fun

Mary pointed out that one of her goals for the students was for them to have fun. Having fun in class meant that people were laughing, showing team spirit, and being positive about their physical education experiences. She explained why she thought this goal was met. "I think the students enjoy physical education. They certainly talk about it. I think they enjoy the social atmosphere" (Mary, I1, p. 11).

Mary's zeal for teaching also appeared to have an impact on the students. She explained her perspective.

> I like to think that the kids are having fun because I am having fun. I enjoy teaching, I enjoy working with kids and from my experience if you go in with a positive attitude, the kids come out with a positive attitude. (Mary, I1, p. 5)

Mary's enjoyment for her teaching was evident in her disposition.

> As the game went on, I could hear Mary laughing through my earphone, in between excerpts of general and skill feedback and refinement cues. She was having fun out there. At the same time she was doing what she considered to be so important, role modelling for the students. The [students] knew this and it seemed to carry on over to them. (FN11, L7, p. 24)

## Students Goals

After every lesson, students were interviewed to obtain their perceptions of the lesson and the cooperative learning program. Students were asked about their goals for the lesson, the teacher's goals, and the congruence between these goals.

The goals for both the grade eight class and the grade eleven class consisted of social and psychomotor goals. Students felt that cooperating, learning new motor skills, participating, communicating, showing team spirit, and having fun were important goals for every lesson. This section will represent the students goals by comparing the perceptions of the grade eleven class to the grade eight class.

### Cooperation

Cooperation was a goal emphasized by the students. They viewed cooperation as working together as a team and helping each other out. In both the grade eight and eleven classes, the students discussed the importance of cooperation. The students gave

various reasons for cooperating. At times cooperation was a goal in itself, whereas at other times, it was a means in reaching other goals. They believed that cooperation was used to create a positive learning environment, provide the opportunity to develop skill and to achieve both their personal and team goals.

Students realized that their group was composed of individuals who were different in terms of both social and psychomotor skills. Karen, a grade eight student commented, "She mixes the teams up so you have to learn to adapt to other people. Different people do things in different ways" [Student Interview grade 8 (SI8), number 9 (9), page 5]. Rebecca, a grade eleven student, stated her similar feelings, "[Cooperative learning] helps you learn to work with other people [with] different personalities and abilities than you" (SI11, 5, p. 4).

The students reported that working with their teams had helped them to get to know the other team members better. Chelsea, a grade eleven student explained, "It brings people closer because you learn more about other people. You have to work together - you can't be strangers" (SI11, 1, p. 3). Samantha, a grade eight student, felt that working with other members in her group was a necessity. She stated, "You learn to work with other people. Even if you don't like them you learn how to work with them. You kind of have to get along with them" (SI8, 4, p. 4).

The students also reported that it was more fun to work with other people than to do it yourself. Jenny, a grade eleven student remarked, "It's a lot funner working with other people. They can help you out. If you don't understand something or not doing something properly they can tell you what to do and how to do it" (SI11, 6, p. 3). Brynda,

a grade eight student, felt that the contribution of other group members' viewpoints was what made cooperative learning fun. She stated, "Working together - one person knows one thing, another person knows something else. It's more fun and easier to work together than having to do it all yourself" (SI8, 4, p. 2).

Cooperation for both classes was the reason for success or failure of the task at hand. Students met their goals on the basis of whether their team worked together to accomplish the goals. In addition, the students perceived that the teacher met her goals based on whether the team cooperated. Sally, a grade eight student, explained, "Well, she got her point across but sometimes it doesn't work because we don't work together as a team to accomplish it" (SI8, 4, p. 2). Students felt that working together distinguished this class from others. Candice, a grade eleven student remarked, "working together as a team, other classes don't do that. Other classes don't teach you how to work with people" (SI11, 7, p. 4).

Cooperation was important to the functioning of the cooperative learning program. Joanna, a grade eleven student pointed out, "[Cooperation] betters your self . . . When we come into the gym, whatever your differences are, you leave it outside. When you come inside everyone is friendly and having fun" (SI11, 9, p. 4).

Students in both classes have noticed changes in their respective classes since they have begun the cooperative learning program. Students reported that there is no longer any fighting or arguing between teams. Tracy, a grade eleven student, pointed out that the changes came as a result of the groups they were put in. She reported

> Our team has matured. From grade eight until last year everyone was

> more segregated. Nobody was playing like a team. There were arguments, bickering. This year we have left that all behind. It doesn't matter anymore . . . It was because of the groups we were put in at the beginning of the year. We all started bonding. (SI11, 8, p. 4)

Donna added, "We can talk to each other alot easier now. We have become really close-knit. My best friends come from phys. ed. class" (SI11, 10, p. 4).

The grade eight class have already noticed more cooperation within the classroom since the beginning of the year. "At the beginning we were all little groups of people. Now we are all friends" (SI8, 9, p. 5). Brittany added, "We used to call each other names. People used to argue all the time. We have forgotten about that stuff now" (SI8, 6, p. 5). During the unit "not one altercation [such as arguing or fighting] between students during class time was observed" (FN8, L10, p. 65). This was also true for the grade eleven class (FN11, L10, p. 45).

Although there was no major problems with the grade eight class, they were occasionally found in off-task behaviour. This was evident by more talking and fooling around during instructional and managerial episodes (FN8, L3, p. 7). Off-task behaviour in the grade eleven class was virtually non-existent (FN11, L4, 12).

Arissa, a high skilled grade eight student, pointed out the benefits of cooperation. "I think you learn more if you try to help someone than if you do it by yourself" (SI8, 1, p. 4). Susan, another grade eight student, added, "No team sports you play by yourself. It's more appropriate to play in groups and to learn to play well with them" (SI8, 5, p. 4). While the grade eight class saw the short term benefits of cooperative learning, the grade eleven students were more ready to see the long term benefits. Melanie pointed out,

"[Cooperative learning] helps when you have a job because you're learning to work with people. It makes your life a whole lot easier if you learn how to work with people" (SI11, 9, p. 5).

Learning New Motor Skills

The students identified the learning of new motor skills as one of their personal goals and as one of the teacher's goals. They were able to identify specific skills and strategies that they had learned. Students' skill related goals included learning to throw the ball, catch the ball, pass the ball, move with the ball, and to perform the appropriate offensive or defensive strategy. These goals were congruent with the teacher's goals. The students reported that both their goals and the teacher's goals were most often met.

Both classes found that their skill had improved over the period of the unit. This was evident by the efficiency of game play. In the grade eleven class "the game [was] becoming increasingly more technical. There [was] more passing, more shooting at opportune times, and more defensive coverage of players attempting a shot. The [result] was a much faster, more intense game" (FN11, L7, p. 24). By the end of the unit the grade eight class had also showed a "faster, more improved style of game play" (FN8, L10, p. 63).

Although both classes felt that their skills had improved, they differed between the two classes on their reasoning for improvement. At the grade eight level, regardless of ability, students cited their individual proficiency at passing and number of goals scored as evidence of improvement in skill. Sheri, a low skilled student, announced, "I got two goals and two assists today. It seems every time I play I am getting better. I

have definitely had more practice" (SI8, 3, p .2).

The grade eleven class often cited the same skills but gave more complex strategies as evidence of improvement. They appeared to answer in terms of team improvement, as opposed to individual improvement. Julie stated, "We are definitely passing alot better now than we were in the first few games" (SI11, 5, p. 1). Nikki, a high skilled student, exclaimed, "Did you see our zone defense today? It was pretty tough to beat" (SI11, 6, p. 2).

The grade eleven class was also more often to identify psychomotor results as a beneficiary of social skills. Kelly stated, "Our passing was better than usual today because we were communicating more" (SI11, 8, p. 2). Lorraine, another grade eleven student, cited teamwork as a reason for the recent success. "We are making alot more short quick passes than we used to and we are really increasing the speed of the game. It's because we are playing as a team and not five individuals" (SI11, 3, p. 1).

Participation

Students recognized that participation was an important goal for the teacher and included it as one of their goals. Participation meant that students were in class, on time, dressed in proper attire, and eager to take part in the lesson. During the handball units the students were rarely absent or unable to participate in physical education class (FN8, L4, p. 15; FN11, L6, p. 17).

The students viewed participation as being related to having fun. Louanne, a grade eight student commented, "I used to not try hard but I've realized that when you try hard, it's more fun" (SI8, 3, p. 2). Alicia, a skilful grade eleven student, questioned the

lack of participation in physical education. She believed that "it's more fun to participate and be part of a team than to say 'I don't want to play this game' and sit in the bleachers and watch everyone else play" (SI11, 4, p. 3).

The lack of participation was looked upon by the students as a negative aspect of what went on in the gymnasium. Often, there were some girls who chose not to play and just ended up sitting on the bench. This was a common theme in both the grade eight and eleven classes. Lydia, a grade eleven student, stated, "Some girls didn't want to play because they were lazy. They just wanted to sit there" (SI11, 6, p. 2). Sheena, a determined grade eight student, confirmed this problem. She cited a reason for its occurrence and suggested a solution to remedy it. "Some people are lazy and don't want to come on. Maybe they don't get enough encouragement. That's what we will have to work on next class" (SI8, 8, p. 3).

Both classes identified that it was the team's responsibility to ensure that everyone has equal time. Jennifer, a grade eight student stated, "We didn't rotate on and off today because some people did not feel like participating. They just wanted to sit out. [Next time] we have to time ourselves" (SI8, 5, p. 3). Leaf, a grade eleven leader, also suggested the incorporation of the time element. "I would have students play equally. Different groups - one group plays for five minutes, the other for five minutes. It is the student's responsibility but if they are not going to play what are you going to do?" (SI11, 8, p. 3). Adriana, a grade eight student, pointed at the coach for ensuring that team member's got equal time. "[Katie] was coaching us and she made sure everyone played equally and if someone was tired she'd call them off" (SI8, 9, p. 1).

Although the general consensus was that students did not want to come on the court, one student felt that some students did not want to come off. "You have to play equal time. A lot of people may not want to come off because they are enjoying the game. [They have to remember] that it's only fair that everyone gets to play equally" (SI11, 10, p. 3).

In both classes, the people on the court were always included into the game play (FN11, L7, p. 24). Leisha, a grade eight student, stated, "One of the benefits of this class is that everyone gets the ball and no one is left out" (SI8, 6, p. 5). In this respect participation and motor skill improvement worked together. Denise, a grade eleven student, commented, " Today, everyone was touching the ball because we were making lots of good short passes" (SI11, 7, p. 2).

Communication

Communication was another goal articulated by the students. The classes identified communication as a personal and teacher goal. Jody, a grade eight student, stated that her goal for the lesson "was to communicate because [until this year] I never did. Before I just sat there . . . [Today] I even encouraged the other team" (SI8, 10, p. 1).

Positive aspects of the class always involved communication. Communication was a goal in itself but also as a means to other goals. Communication involved verbal and physical signals to inform team members of specific offensive and/or defensive strategies, and to offer notes of encouragement and/or praise. Moira, a grade eight student, explained that "when you encourage people on your team by telling them they are doing good, that helps them a lot" (SI8, 3, p. 2). Tabby, a grade eleven girl,

commented on her team's secret communication signals. "We communicated well today. We used signals that are only known by our team" (SI11, 4, p. 2). In both classes the students were constantly communicating and encouraging each other.

> Students on the bench and on the court were shouting comments of encouragement. That's o.k. Karen, after a goal had been scored . . . That's it Jody, take a shot . . . I'm open Susan . . . I'm open Trina. 'Switch Jill', . . D-E-F-E-N-S-E. "Good work guys," shouted a girl from the bench . . . We'll get it back." Move with it Sarah . . . Good save Sharon. (FN8, L7, p. 31).

By the end of this unit, the grade eight class had come to value the importance of communication. Sarah stated, "Communication really helps because you encourage the other people and they have more confidence and they think they are playing better so they play harder" (SI8, 9, p.3).

The students could see the results of the lack of communication. Lesley, a grade eleven student commented, "Nobody was communicating today. [What resulted] was that everyone was moving slow and aimlessly. This means that it is easier for [the other team] to catch and block you" (SI11, 7, p. 3). Heather, a grade eight student, found that the lack of communication resulted in the lack of an offensive threat. She explained, "Nobody was communicating today. We ended up giving the ball away and spending most of our time on defense" (SI8, 7, p. 3).

The grade eleven class stated that one of the major changes that had occurred since grade eight was the development of communication skills. Jasmund said, "We communicate with each other and we can talk to each other a lot easier now" (SI11, 7, p. 4). Tricia identified some of the benefits of communication, "Everyone gets along,

everyone communicates. There is no fighting or arguing between teams" (SI11, 10, p.4).

Team Spirit

Another goal for both classes was to show team spirit. The students felt that they showed team spirit by enthusiasm, encouraging, supporting, cheering and clapping. When asked about the positive aspects of the lesson both classes recognized the team spirit in the atmosphere. Leisha remarked, "There was lots of enthusiasm, good support and lots of cheering" (SI8, 6, p. 2). Students in the grade eleven class recognized that spirit and team worked in conjunction with each other. Lesley, from the grade eleven class, stated, "We were all communicating, cheering each other, playing like a team" (SI11, 7, p. 2).

The students of both classes believed that team spirit improved their game play. Students believed that cheering was beneficial for all those involved. Donna, from the grade eleven class, suggested, "When you encourage people on your team by telling them what they are doing good, that helps them alot and they feel better about themselves" (SI11, 10, p. 4). Amber, a grade eight student, believed that the person cheering would also receive benefits. She commented, "It's more fun to cheer because it puts you in a good mood" (SI8, 5, p. 4). Team spirit was also evident as the students cheered and encouraged their teammates.

> After a goal had been scored, the team started a chant. All five girls on the bench stood up on the bench and in a synchronized manner and with choreographed moves repeated the chant, "She's a peach, she's a treat, she's a player on our team." After a few seconds of discussion they started another chant. Give me an F - 'F', give me an 'R' - 'R', give me . . . What's it spell? F-R-E-A-K-I-E-S! Who's the best? Freakies! This sparked the opposing team, and they started into various choruses to motivate their

team. (FN8, L6, p. 25)

A negative case (Locke, 1989) shows that the grade eight class was not always encouraging.

> The teacher tried to motivate the students during the game. When the teacher noticed that the encouragers were quiet, she said, "I can't hear you." The students on the bench followed with a chorus of encouragements. "YIP-EE, YIP-EE", "Way to go team, way to go!" "Nice pass Jill!" "Great shot Amber!" "Excellent save Karen!" These encouragements were obviously quite exaggerated, although it appeared to be done in a fun and positive manner. (FN8, L2, p. 3)

To have fun

Having fun was another one of the students' goals for physical education. Fun usually occurred in several ways in these units: a novel experience, a sense of achievement, or a feeling of ownership for the lesson. Both the grade eleven and eight classes consistently identified having fun as one of their goals and as one of the teacher's goals. The students were generally positive about their handball and physical education experiences. Jill, a grade eight student, commented on one of the lessons. "Everyone had a good time. Everyone was laughing and positive" (SI8, 1, p. 2). Rachel, a grade eleven student, confirmed this theme. "It was really fun today. I don't think there is ever anything negative about gym" (SI11, 8, p. 2).

Another common finding was that the students perceived their learning in physical education as being fun. Jackie, a grade eight student, stated, "Our class is different than math or science. It's cooperative and it's fun" (SI8, 3, p. 2). Erin, a grade eleven student, agreed. "I like the way we learn. It's different than other classes. Its definitely more exciting and a lot more fun" (SI11, 8, p.2).

In both classes, students appeared to constantly be having fun. In the grade eleven class students could often be found "laughing, smiling, cheering, hugging the opposition, and enjoying what they were doing" (FN11, L3, p. 9). In the grade eight class "students have seemed to take the idea of cooperative learning rather well. The students have a great time amongst their team and often with the other teams . . . and really show that they are excited and enthusiastic about physical education" (FN8, L4, p. 16.).

## Elements of Cooperative Learning

The basic elements of cooperative learning were found in both handball units. This included positive interdependence, individual accountability, face-to-face interaction, interpersonal and small group skills and group processing (Johnson, Johnson & Johnson-Holubec, 1993). An emphasis on interpersonal skills and group processing was evident in this high school gymnasium.

### Positive Interdependence

Positive interdependence was accomplished through mutual goals, shared resources, communication and assigned roles. Mutual goals were specified during the implementation and refinement of strategy. For example, if the group's goal was to improve their zone defense (FN11, L9, p. 34), it required that each member of the team worked together in order to make that goal possible.

Students in both classes shared resources during cognitive tasks and during practice time. During cognitive tasks students had one pencil and one folder with paper in order to write the answers down (FN8, L4, p. 16). During practice time, occasionally the group would have one ball for their team in which to practice their skills (FN11, L4,

p. 12).

Communication amongst team members played an important role in the two handball units. Communication was found in the cognitive tasks as group members tried to devise ways to improve their team play and to realize what they were doing well. During game play communication was essential to execute the strategies and to be aware of other players. This supports Shaw (1981) who reported that different communication networks lead to different types of interaction and to different patterns of interdependence. Abrami et al (1993) also stated that "communication networks in cooperative learning are usually based on group members having equal opportunity to interact with one another" (p. 121).

Although specific roles were not used all the time, the use of coaches, observers, timers, directors, and encouragers were regularly observed. These roles are similar to those identified in the literature on the sport education model (Grant, 1992; Hastie, 1994; Ormond et al, 1995; Siedentop, 1996). At the grade eight level coaches were not assigned. Students either volunteered or were selected by the teacher to lead the warm-up. At the grade eleven level students were leaders of their groups through the course of the unit. They were responsible for organizing their team, allocating responsibilities, and facilitating the learning of both motor and social skills. However, in some cases there was a dual leadership which consisted of a 'motor skill' leader and a 'social skill' leader (FN11, L6, p. 20). In this situation, the motor skill leader coordinated the drills and the strategy while the social skill leader motivated the team and promoted team spirit. This was often because all leaders were not endowed with both motor and social skills.

Observers were chosen to monitor the other group members' practice their skills during informing and extending tasks and advise them of proper/improper technique. Timers came into play in both classes immediately following the lessons in which students decided to not share time equally (FN8, L5, p. 20; FN11, L6, p. 18). One student from each team was responsible for ensuring the equal distribution of time for the two lines on each team. Directors had the role of communicating to their team what was happening on the court with their own team and with the other team. The goalie fulfilled this responsibility, as she had the best view of all events during the game play. Encouragers were students who were not out on the floor during game play although they were dressed to participate. They had the responsibility of encouraging their teammates during game play. In addition, during the skipping routines, students worked in pairs where one student would encourage while the other student attempted to skip for a required duration ranging from one to two minutes. According to Mosston and Ashworth (1994), this pairing would be classified as a reciprocal teaching style, an important strategy in the development of social skills.

Individual Accountability

Individual accountability was assessed in various ways throughout the unit. This included individual testing, member signatures and constant monitoring and interactions by Mary. At the end of the unit, both classes were administered a written test on some basic handball knowledge (FN8, L10, p. 71; FN11, L10, p. 47). Questions on the test related to strategy and rules of the game, in addition to what the students thought was the most important skill that they learned throughout the unit. An examination of the test

scores revealed that the students all received high marks (FN8, L10, p. 72; FN11, L10, p. 48).

In each class, each group had a folder in which they wrote down such things as how to throw/pass a ball, defensive positioning and the rules of the game during the cognitive tasks. On the outside of the folder was the names of the group members. The member signatures denoted the contribution to the subject matter for their group.

An analysis of accountability through the task structure observation system (Siedentop, 1994b) showed that Mary used monitoring plus interaction, post-task feedback, public recognition and grade exchange as means of holding the students accountable. During engagement she was involved in monitoring and interaction. Mary was constantly giving the students feedback on the demonstration of either their social or motor skills.

Gusthart and Sprigings (1989) reported that teacher feedback was important for developing accountability because it provided consistent information on the task focus and on the results of student practice. Rickard (1992) has suggested that "immediate, specific, and corrective feedback is important for skill acquisition when combined with other learning conditions" (p. 34).

The literature has stressed the importance of evaluation working together with goal setting (Lund, 1992; Veal, 1992; Lund & Veal, 1996; Matanin & Tannehill, 1994). Veal (1992) suggested that the kind of assessment used must first depend upon the purpose for assessing students. In this study participation and cooperative skills were assessed as important by the teacher and reflected in the marks. Although Lund (1992)

discredited the evaluation of 'cooperation' into the overall mark, in this case the cooperation mark was aimed at the evaluation of a skill (i.e., encouraging, communication, and so on), rather than a mark for 'appropriate' behaviour. Lund (1992) has also recommended the use of assignments as a means of evaluation in physical education. For the grade eleven class assignments contributed towards the final mark. In addition, the written test by both classes was used to assess the students' learning. Lund (1992) has suggested that forms of accountability other than grading can produce high student response frequencies. In this study, one of the most effective forms of accountability was through the students' peers. Lund & Veal (1996) suggested that students can hold each other accountable. In this study, this was accomplished through peer teaching and student-to-student feedback.

Face-to-Face Interaction

Face-to-face-interaction was a necessity when the groups were engaged in cognitive tasks. For the grade eight class, the teacher always specified that they sit in a small circle facing each other (FN8, L2, p. 4). The grade eleven class, after four years of cooperative learning assumed this positioning without any specific instruction from the teacher (FN11, L2, p. 7).

Interpersonal and Small Group Skills

Jewett, Bain, and Ennis (1995) have suggested that physical educators are concerned with student personal and social growth and the development of personal and interpersonal skills. Interpersonal and small group skills were skills that the teacher taught, or utilized during the course of the unit. During the unit social skills included

communication, leadership, decision-making and encouragement. These skills were utilized through cognitive tasks, game play, routine tasks and practice time. As the student interviews indicate, the most important things they learned in their units were the value of communication, encouragement and teamwork. On the test, a question asked 'What the most important thing you learned during the handball unit?'. An analysis of the test answers revealed that for both classes the top two answers dealt with teamwork and communication (FN8, L10, p. 65; FN11, L10, p. 47).

Group Processing

In this study group processing was the most utilized element of cooperative learning. Mercier (1992) has stated that group processing "is perhaps the most crucial [component] to successful student acquisition of the task and social skills" (p. 85). Recently in the physical education literature group processing time has been referred to as a "debrief" (Dyson & Pine, 1996). Group processing was primarily achieved through cognitive tasks. This was done through the refinement of the strategy during the game and the reflection of the strategy after the game. This reflection after the game served as an opportunity for the teacher to give feedback to the students on the lesson's events and, therefore, also served as a means of accountability.

## Summary and Conclusion

Task Structure Observation System

An examination of the time spent in instructional and managerial episodes confirmed that Mary was an effective teacher. When compared to Romar's (1995) study,

the students in these classes spent a large amount of time in engagement and a small amount of time in instruction. In this study little time was spent on non-functional tasks such as management, waiting, and transition, which generally consume at least one-third of the class time (Metzler, 1989). This study contained fewer informing and extending tasks, but more refining tasks than other studies (Dyson, 1995; Jones, 1992; Romar, 1995). The students in both classes experienced a high number of Opportunities to Respond and more appropriate responses than similar studies (Jones, 1992; Rickard, 1992; Romar, 1995).

Elements of Cooperative Learning

According to the generic literature, the five elements of cooperative learning involve: positive interdependence, individual accountability, face-to-face interaction, social and interpersonal skills and group processing (Johnson, Johnson, & Johnson-Holubec, 1993). This study showed that these five elements of cooperative learning were incorporated into the participant's classes.

In this study, group processing and face-to-face interaction were achieved through cognitive tasks. Positive interdependence, individual accountability, and social and interpersonal skills were achieved through both cognitive tasks and physical activity. Mary used the cognitive tasks to review the knowledge learned, to re-learn/review the skill, to implement a strategy, to refine a strategy and to reflect on a strategy or event.

Cognitive tasks in this study also functioned in conjunction with refining tasks. Although many teachers do not incorporate refining tasks (Jones, 1992; Romar, 1995), in this study refining tasks were an important part of the groups' acquisition of motor

skills. The refining tasks were initiated by cognitive tasks as the cognitive tasks focused on the necessary improvement in performance. The cognitive tasks involved the team discussing ways in which they could reach their social and motor goals. The time beginning at the conclusion of the cognitive time-out and finishing at the end of the game or activity was identified as a refinement task. This is different from a task refinement, which is initiated by the teacher, focuses on an improvement deemed necessary by the teacher, and does not normally occur during game time. This type of refinement may be more suitably referred to as a cognitive-based refinement.

Cooperative Learning Identity

The identification of a cooperative learning model in physical education has not been described in the physical education literature. In recent curriculum textbooks (Jewett, Bain, & Ennis, 1995) cooperative learning has not been identified as a physical education model, although several authors have suggested the benefits of physical education classes utilizing cooperative themes (Ennis, 1994; Hellison, 1995; Siedentop, 1994a). Ennis (1994) suggested that the teachers in her study viewed cooperation, teamwork and involvement as high curricular priorities, identifying these goals as part of a social responsibility value orientation. Hellison (1995) has promoted a self-responsibility model, which has been used with at-risk youth and in high school physical education programs in the United States. The recent introduction of the Sport Education Model (Siedentop, 1994a), which some have labelled as cooperative learning, has demonstrated many benefits in physical education programs (Grant, 1992; Hastie, 1994; Ormond et al, 1995).

The physical education literature has addressed the issues and concerns of moving towards Mosston and Ashworth's (1994) discovery types of learning. The critical thinking approach (McBride, 1991; McBride, Gabbard, & Miller, 1990) incorporates higher level thinking skills that are necessary to make decisions as students pursue solutions. McBride (1991) has suggested taking a closer look at critical thinking in physical education because of the potential for teaching critical thinking in the psychomotor domain. The Teaching Games for Understanding Approach (Almond, 1983; Griffin, 1996; Mitchell, 1996; Mitchell, Griffin, Oslin and Sariscsany, 1995; Turner, 1996; Werner, Thorpe and Bunker, 1996) also utilizes cognitive skills as students attempt to identify the skills that are needed to address a tactical problem before learning how to perform the skill (Mitchell et al, 1995).

In this study cooperative learning in physical education incorporated the psychomotor, cognitive, and social elements of learning. Although the psychomotor element is important for healthy living, it is the latter two elements that are necessary if students are ever to survive in our rapidly changing world. Recently, a survey of national businesses, labour unions, and educational institutions found that employers valued five types of skills: verbal communication, responsibility, initiative, teamwork, decision making, and interpersonal skills (McLaughlin, 1992). The survey found that 90% of the people were fired from their jobs for poor attitudes, poor personal relationships and inappropriate behaviour. Being fired for the lack of basic and technical skills was infrequent.

Taking these statistics into account, the lack of social and cognitive skills is

obviously an area of needed improvement. It is the cognitive and social elements that make cooperative learning a unique and worthwhile approach to teaching physical education. The incorporation of a cooperative learning physical education program addresses the social and psychological needs of students, and brings with it benefits for the students which extend far beyond the walls of the gymnasium. Siedentop (1992) stated, "we need to think differently about what we do in the name of physical eduction" (p. 70). Perhaps it is time that we give cooperative learning a closer examination.

Further Research

This study suggested that there may have been a cooperative learning model present in Mary's physical education program. An integral part of the cooperative learning in this study were the cognitive tasks which were a factor in producing social and psychomotor improvements. Further research could involve looking at cognitive time more closely and assessing whether this time is more beneficial than that of teacher instruction. A line of investigation in cooperative learning could also examine achievement differences (between traditional and cooperative classes), gender differences, and differences in ability level. Finally, time has to be spent in examining cooperative learning and assessing whether it is a curriculum model or an innovative strategy.

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# APPENDIX A

Kevin Strachan
McGill University
Department of Physical Education
475 Pine Ave. W.
H2W 1S4
398-4189

Dear Parent;

I am a graduate student in the Department of Physical Education working under the direction of Prof. Ben Dyson in the area of Pedagogy. Our study is an examination of the ecology of a cooperative learning class. The purpose of the study is to describe, interpret and compare the grade 8 and grade 11 cooperative learning physical education classes. This study will not necessitate any type of intervention on teachers or students, it will simply involve observing them in their natural setting. In order to interpret observed classes, we must videotape them since the analysis will be done at a later date. The instrument used will describe the teacher's and students' behaviour during instruction. Finally, interviews will be used to elicit the teacher's and students' perceptions of the cooperative learning program and achievement levels. Students' physical or psychological attributes will not be discussed.

Information collected will be confidential and anonymous. The students' names will not be used in the study. In order to obtain a complete picture of cooperative learning in physical education classes, it is essential to involve students in our study. I hope that you will give permission for your son/ daughter to participate in this study so that we can work toward the further development of this innovative curriculum of cooperative learning in physical education.

Please sign the form and return it to us as soon as possible. If you have any questions, please do not hesitate to phone me at McGill. Thank you for your cooperation.

Sincerely,

Kevin Strachan

___ Yes, I give my son/daughter permission to participate in the study. I also understand that I can withdraw my son/daughter from the study at any time with no consequences.

___ No, I do not give my son/daughter permission to participate in the study.

_____ _____

Parent's Signature Student's Signature

Kevin Strachan
McGill University
Department of Physical Education
475 Pine Ave. W.
H2W 1S4
398-4189

Dear Teacher,

I am a graduate student in the Department of Physical Education working under the direction of Prof. Ben Dyson in the area of Pedagogy. Our study is an examination of the ecology of a cooperative learning class. The purpose of the study is to describe, interpret and compare the grade 8 and grade 11 cooperative learning physical education classes. This study will not necessitate any type of intervention on teachers or students, it will simply involve observing them in their natural setting. In order to interpret observed classes, we must videotape them since the analysis will be done at a later date. The instrument used will describe the teacher's and students' behaviour during instruction. Finally, interviews will be used to elicit the teacher's and students' perceptions of the cooperative learning program and achievement levels. Students physical or psychological attributes will not be discussed

Information collected will be confidential and anonymous. I hope that you will be willing to participate in this study so that we can work toward the further development of this innovative curriculum of cooperative learning in physical education.

Please sign the form and return it to us as soon as possible. If you have any questions, please do not hesitate to phone me at McGill. Thank you for your cooperation.

Sincerely,

Kevin Strachan

____ I agree to participate in the study. I also understand that I can withdraw from the study at any time with no consequences.

____ I do not agree to participate in the study.

_____

Teacher's Signature

# APPENDIX B

# TASK STRUCTURE OBSERVATION INSTRUMENT

## CODING SYMBOLS

### Episode Identification

| | |
|---|---|
| M | Management |
| T | Transition |
| W | Waiting |
| WU | Warm-up |
| I | Instruction |

### Task Explicitness

| | |
|---|---|
| FXT | Fully Explicit |
| PXT | Partially Explicit |
| IT | Implicit |

### Task Type

| | |
|---|---|
| C | Cognitive |
| I | Informing |
| R | Refining |
| E | Extending |
| A | Applying |
| R | Routine |

### Congruency Analysis

| | |
|---|---|
| ST | On stated Task |
| M+ | Modified Up |
| M- | Modified Down |
| OT | Off task |

### Student Response

| | |
|---|---|
| A | Appropriate |
| I | Inappropriate |

### Accountability

| | |
|---|---|
| 0 | No Supervision |
| M | Monitoring |
| MI | Monitoring and Interaction |
| FB | Post-Task Feedback |
| PR | Public Recognition |

### Student Coded

| | |
|---|---|
| H | High Skilled |
| M | Medium Skilled |
| L | Low Skilled |
| M | Male |
| F | Female |

TASK STRUCTURE OBSERVATIONAL INSTRUMENT

CODING SHEET

---

TIME:_____

EPISODE:_____

TASK TYPE:_____

EXPLICITNESS:_____

ACCOUNT:_____

STUDENT CODED:_____

---

TIME:_____

EPISODE:_____

TASK TYPE:_____

EXPLICITNESS:_____

ACCOUNT:_____

STUDENT CODED:_____

---

# APPENDIX C

Value Orientation Inventory II:

Please give each statement in the set a different number (1-5). (5 is most important, 1 is least important).

SET I:

1. __ I teach students rules and strategies for efficient performance in games and sport.

2. __ I teach students to use ball handling skills to score by themselves or assist teammates.

3. __ I teach students that disruptive behaviour limits others' abilities to learn.

4. __ I teach students to select goals consistent with their unique abilities.

5. __ I teach students to solve problems by modifying movements and skills based on the demands of a given situation.

SET II:

6. __ I encourage students to balance their personal ability to score goals with our class goal of helping more students to be involved in the game.

7. __ I teach students to work together to solve class problems.

8. __ I teach students the processes associated with learning new skills.

9. __ I teach students to select tasks that they value and enjoy.

10. __ I teach students to move effectively when performing skill and fitness tasks.

SET III:

11. __ I teach students to move effectively when performing skill and fitness tasks.

12. __ I encourage students to take control of themselves.

13. __ I teach students to share equipment so that each person has a chance to improve their skill or fitness level.

14. __ I require students to practice the sport and fitness activities that I introduce in class.

15. __ I plan so that tasks become progressively more difficult.

SET IV.

16. __ I teach students the basic concepts necessary for effective performance in games, sport, or fitness activities.

17. __ I urge students to be patient with others who are learning new skills or strategies.

18. __ I teach students to appreciate efficient performance in skill, sport, and fitness activities.

19. __ I teach students lifetime recreational or dance activities so that they can feel comfortable socializing in the future.

20. __ I teach students to complete tasks so that they can learn personal responsibility.

SET V.

21. __ I allow each student to express personal preferences for class activities.

22. __ I plan carefully when selecting games/sports and making rules to ensure that everyone has a chance to play.

23. __ I plan classes so that students can select from different activities to find those that are meaningful to them.

24. __ I teach students to apply their understanding of basic movement, skill and fitness concepts to the development of their own sport and exercise program.

25. __ I include grade-appropriate information about moving and exercise from such areas as anatomy, kinesiology and exercise physiology.

SET VI.

26. __ I teach students to use skills leaned in class to help their team.

27. __ I encourage students to participate in a variety of activities to gain a greater understanding of themselves.

28. __ I teach students skills so they will enjoy playing sports and games.

29. __ I teach students to observe their partners' movements and offer feedback to improve performance.

30. __ I talk with students about problems they sometimes have with their classmates and help them to work out solutions.

SET VII.

31. __ I sequence tasks so that students can understand how each physical activity contributes to their fitness or skill performance.

32. __ I teach students to be positive and supportive when speaking with other students.

33. __ I teach students games, sport and fitness activities so they can participate with others.

34. __ I teach student to select activities that are important to them.

35. __ I encourage students to allow everyone in the group to play their favourite position at least once during the unit.

SET VIII.

36. __ I teach students that group goals, at times, are more important than their own individual needs.

37. __ I encourage student to enjoy learning skills, games, and fitness activities.

38. __ I teach students to look to the future and learn activities to enhance their lives after they finish school.

39. __ I encourage students to feel good about themselves.

40. __ I teach students how to correct their own mistakes.

SET IX.

41. __ I plan so that students must combine several movements or skills to solve movement problems.

42. __ I teach students to work together to make our class a better place to be.

43. __ I teach students about principles and concepts of exercise and movement that

everyone needs to know to lead a healthy life.

44. __ I teach students to make decisions about activities they would like to learn for the future.

45. __ I encourage students to be patient with their own physical limits.

SET X.

46. __ I plan so that classes reflect an emphasis on social interaction and skilled performance.

47. __ I teach students to appreciate the benefits of movement, skills, and fitness in an active, healthy lifestyle.

48. __ I plan units so that students add new performance skills and knowledge to those that were learned in earlier units.

49. __ I encourage students to experience new activities that they have never tried before.

50. __ I teach students to respect differences in ability in our class.

SET XI.

51. __ I encourage students to apply fitness knowledge to improve their personal health.

52. __ I challenge students to learn new things about themselves.

53. __ I teach students to use many forms of feedback to improve their movement, skill and fitness performance.

54. __ I teach students to create a better class environment by talking through problems rather than fighting.

55. __ I teach students to become skilled and fit.

SET XII.

56. __ I teach students the most effective way to perform specific movements and skills.

57. __ I teach students to become skilled and fit.

58. __ I teach students that gradually increasing task difficulty will lead to improved performance.

59. __ I teach students to try new activities to find ones they enjoy.

60. __ I teach students to use their personal skills to assist their team to be successful.

SET XIII.

61. __ I encourage students to work together to accomplish group and class goals.

62. __ I teach students to find activities that they enjoy doing or find useful.

63. __ I point out to students ways in which a new is similiar to a skill we have already learned.

64. __ I include activities that represent specific interests and abilities and of students in my classes.

65. __ I teach questions to perform exercise skills and movement fundamentals correctly.

SET XIV.

66. __ I teach students to test themselves to identify their own strengths and weaknesses.

67. __ I create a class environment where students learn to plan and prepare for a healthy, active future.

68. __ I teach students to monitor and improve their own performance based on specific criteria.

69. __ I guide students to assume responsibility within our class community.

70. __ I teach students why skills are best performed using specific techniques.

SET XV.

71. __ I plan group activities so that students from different backgrounds will learn to respect each other.

72. __ I require students to spend class time practicing games, skill, and fitness activities emphasized in the daily objectives.

73. __ I talk with students about their concerns and help them participate in activities they feel are most important.

74. __ I teach students to explore different ways to perform to discover ones they enjoy.

75. __ I teach students to apply skills in appropriate game and exercise situations.

SET XVI.

76. __ I teach students to explore many alternatives to discover an effective way to perform.

77. __ I encourage students to try new activities that they may find useful or enjoyable.

78. __ I teach students about the positive effects of exercise on their bodies.

79. __ I encourage students to be personally responsible for their own actions.

80. __ I plan for student participation by assigning each student a specific task or position.

SET XVII.

81. __ I encourage students to be sensitive to other students' problems and work to help them.

82. __ I teach students to perform complex skills by combining simple movements.

83. __ I teach students to select the best option or strategy to balance their needs with those of their team.

84. __ I teach students to be self-directed and keep themselves going in the right direction.

85. __ I plan so that students exercise at optimal frequency, intensity, and duration levels to improve their fitness.

SET XVIII.

86. __ I plan so that students are practicing skills, games, or fitness tasks.

87. __ I teach students how to break down movement, skill, and fitness tasks to

emphasize the most critical components for learning.

88. __ I teach students that group goals are sometimes more important than personal needs.

89. __ I teach students to use the abilities of every member on their team.

90. __ I plan so that students may select the most challenging and relevant tasks from among several options.

VOI Scoring

| DM | LP | SA | EI | SR |
|---|---|---|---|---|
| 1__ | 5__ | 4__ | 2__ | 3__ |
| 10__ | 8__ | 9__ | 6__ | 7__ |
| 14__ | 15__ | 12__ | 13__ | 11__ |
| 18__ | 16__ | 20__ | 19__ | 17__ |
| 25__ | 24__ | 21__ | 23__ | 22__ |
| 28__ | 29__ | 27__ | 26__ | 30__ |
| 33__ | 31__ | 34__ | 35__ | 32__ |
| 37__ | 40__ | 39__ | 38__ | 36__ |
| 43__ | 41__ | 45__ | 44__ | 42__ |
| 47__ | 48__ | 49__ | 46__ | 50__ |
| 55__ | 53__ | 52__ | 51__ | 54__ |
| 56__ | 58__ | 57__ | 59__ | 60__ |
| 65__ | 63__ | 64__ | 62__ | 61__ |
| 70__ | 68__ | 66__ | 67__ | 69__ |
| 72__ | 75__ | 73__ | 74__ | 71__ |
| 78__ | 76__ | 79__ | 77__ | 80__ |
| 85__ | 82__ | 84__ | 83__ | 81__ |
| 86__ | 87__ | 90__ | 89__ | 88__ |

# APPENDIX D

## Field Notes

Field notes will be taken during each class session and after or during observations at the school. An organized method of taking and organizing field notes was implemented (Schatzman & Strauss, 1973). This method of taking field notes organized material according to whether the researcher deemed the observation to be an "Observational Note" (ON), "Theoretical Note" (TN) or "Methodological Note" (MN). Observational notes were statements about events experienced primarily through watching and listening. They contained as little interpretation as possible and were as accurate as the observer constructed them. Theoretical notes were self-conscious controlled attempts to derive meaning from any one or several observation notes. A methodological note was a statement that reflected an operational act completed or planned, an instruction to oneself, a reminder, or a critique of the researcher's tactics or biases. It noted timing, sequencing, stationing, stage setting, or maneuvering. Field notes were written up as soon as possible after the observation.

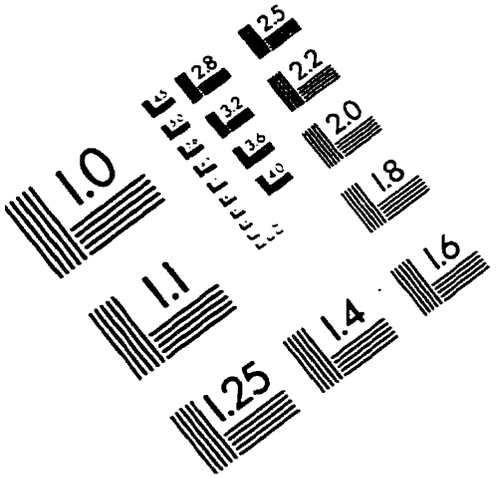
# APPENDIX E

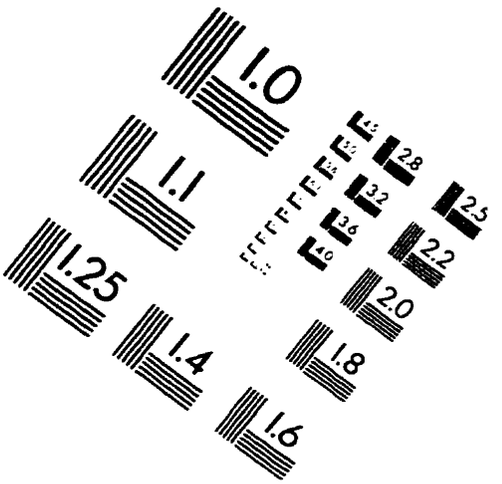
## Delimitations and Limitations

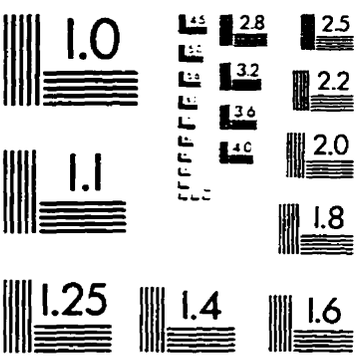
This study was confined to the population of high school physical education teachers that incorporate a cooperative learning based curriculum. The results of this study cannot be generalized to all physical educators and the classes they teach. There were several limitations to this study.

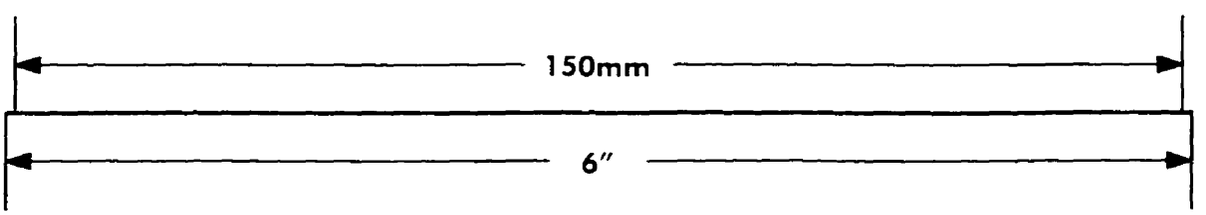
1. The physical education classes that were observed were from a school in the Greater Montreal area and do not necessarily reflect what happens in other schools in Montreal or in other geographical areas.
2. Only indoor physical education classes were observed.
3. This study only reflects what happened at this particular time in the year in the observed content areas.
4. Only females were observed.
5. Students in this study were from a moderate social background.
6. This study only reflects what occurred in the classes of the participant.

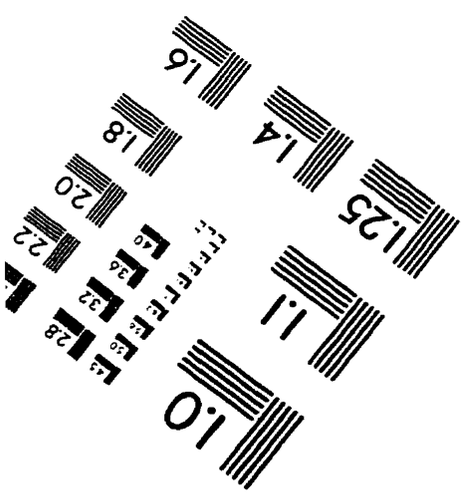
# IMAGE EVALUATION
# TEST TARGET (QA-3)

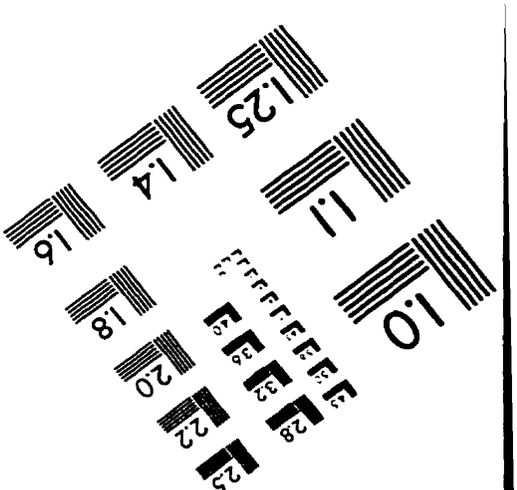



APPLIED IMAGE, Inc
1653 East Main Street
Rochester, NY 14609 USA
Phone: 716/482-0300
Fax: 716/288-5989