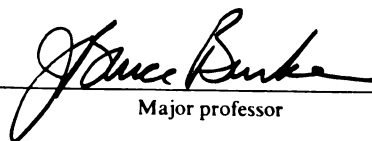This is to certify that the

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THE EFFECT OF AN INSTRUCTIONAL SELF-TALK PROGRAM ON LEARNING A MOTOR SKILL: THE OVERHAND THROW

By

Andy Thomas Anderson

A DISSERTATION

Submitted to
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ABSTRACT

THE EFFECT OF AN INSTRUCTIONAL SELF-TALK PROGRAM ON LEARNING A MOTOR SKILL: THE OVERHAND THROW

By

Andy   Thomas   Anderson

The purpose of this study was to determine the effects of an instructional self-talk program upon the performance of a one hand overhand throw, among male and female subjects, 8 and 9 years of age. The 3 week program consisted of 9 - 15 minutes sessions. The 46 subjects were assigned to one of three groups; self-talk (n=16), traditional (n=13), and demonstration only (n=17) before demographic and pretest performance ratings were determined.

The self-talk program consisted of an introduction to the use of self-talk followed by a videotaped demonstration, plus explanation of the key details of the throw using metaphoric language such as "spread the wings of the eagle" to describe various body actions. During practice, subjects routinely verbalized specific phrases such as the example above, to direct and monitor their performance. The traditional group viewed a videotaped demonstration plus explanation without metaphoric language, e.g. "Hold your arms up as high as your shoulders". Verbalizations were not included as part of the practice routine. The demonstration group received the same videotaped demonstration as the traditional group, but the sound

was turned down. Verbalizations were not included as part of the practice routine.

The data were statistically analyzed utilizing an ANOVA on the pretest performance measures, the mean difference performance ratings for all three treatment groups, and mean improvement ratings within groups and by gender.

Scheffe tests showed self-talk superior to traditional treatment, and traditional superior to demonstration treatment, both beyond the .01 level. These results indicate the self-talk treatment is an effective and superior approach for learning the overhand throw among 8-9 year olds over traditional and demonstration only treatments. There was, however, no significant main effect of gender (.1) and no significant gender by treatment interaction (.1) .

Within the limitations of this study, it was concluded that:
(a) Self-talk is an effective strategy for teaching 8 and 9 year olds a motor skill such as, the overhand throw.
(b) Gender is not a factor in learning the overhand throw with instruction and treatment groups similar to those used in the study.
(c) Since the self-talk group, in most cases, used the words presented on the instructional video for their self-talk, instructor choice of metaphors, analogies and/or descriptive may be very important for learning.
(d) Eight and nine year old children remain happy and confident about their throwing skills regardless of the treatment and/or performance outcomes.

DEDICATION

I would like to dedicate this dissertation to four very important
people:
my wife, Bonnie who has put things in her life on hold and waited
patiently for me to finish this work; my daughter Alanna who shared
with me discussions about her 'inside person', offered her insights
about how to throw and use self-talk, demonstrated self-talk and the
overhand throw on the instructional videotape, and patiently allowed
me time to work on this research when we should have been playing;
and my parents who always encouraged me to go to school, to work
hard, and to do my best.

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LIST OF TABLES

List of Tables (cont'd)

LIST OF FIGURES

Chapter 1
THE PROBLEM AND ITS SIGNIFICANCE
I. Introduction

The self-talk learning strategy, studied in this dissertation, is linked psychologically with cognitive perspectives on the teaching/learning process. However, pedagogically, many physical education teachers rely largely on behaviorist approaches to teaching that focus on shaping student behavior by reinforcing desired responses, or demonstrations followed by application of skill in 'game' situations with the assumption that through use the skill will be learned. The literature on cognitive perspectives on the teaching/learning process suggest limitations on both teaching and learning imposed by a behavioristic perspective. Therefore, the first section of this chapter is devoted to describing the pitfalls and limitations associated with behaviorist approaches to instruction in physical education. A discussion of cognitive and constructivist perspectives on the learning process and how cognitive learning strategies can work routinely into programs and instruction aimed at the development of independent, lifelong learners will follow. Finally, a self-talk learning strategy is introduced and the significance of its study is outlined.

II. Limitations of Behaviorism

Process-product research conducted in the 1960's and 1970's identified a number of teacher behaviors that correlated highly with gains on standardized achievement tests. This codified body of knowledge on teaching enhanced the status of teaching by providing

scientific evidence that teaching does make a difference in terms of student achievement on standardized tests. In many instances, lists of teacher behaviors became evaluation criteria that supervisors used to assess teacher competency in all subject areas, including physical education, and for all student populations.

The development of generic teaching behaviors was, in part, an attempt by educators to reduce some of the uncertainty, ambiguity and complexity associated with teaching. Generic techniques appeal to teachers and teacher educators in physical education in part because they require a relatively short preparation period and are easy to implement as long as the teachers understand the methods and are motivated (Siedentop, 1983). Typically, the behavioristic instructional process consists of: a demonstration, a brief explanation of the key features of the task, followed by individual or small group practice. The teacher observes and assesses student performance to provide appropriate kinds and amounts of feedback. For some children, this procedure may be sufficient to learn a motor skill, while for others it appears insufficient.

Motor skill learning is a complicated and often perplexing process. Attempts to simplify teaching through the use of a discrete set of teaching behaviors, may distract educators from attempting to understand the learning process, particularly the cognitive involvement of learners that may be an integral part of most learning. Until physical educators go beyond the limiting effects of behaviorism, alternative approaches to instruction may be missed. The main problems associated with using only a behaviorist perspective are that: (a) the learners, the learning process and the

school context are ignored, (b) indicators of instructional effectiveness tend to be focused on teacher actions and on observable student outcomes or products measured only by periodic standardized tests, to the exclusion of continuous student progress found in relation to clear learning outcomes, and (c) learners tend to be passive, relying largely on the teacher for direction, diagnosis, and feedback about their performance instead of actively engaging in the process of understanding and creating knowledge for themselves.

An overemphasis on prescriptive techniques coupled with concerns about accountability and efficiency often result in the rigid application of these recommended instructional formats while considerations for the learner, principles of learning, the context and the nature of the subject-matter are overlooked. Shulman (1986a) offers an explanation as to why the use of behavioral techniques tends to be narrow and inflexible. He reasons that behavioristic techniques were often unprincipled, lacking both the logical and theoretical rationales needed to justify and guide their application. To adapt generic techniques to local circumstances and varied student needs teachers must have the ability to make discriminating choices relative to, for example, the selection of learning activities. As the teacher reflects on the events of a class, judgements must be made concerning the selection of these activities in light of student responses, local culture, and in relation to the theoretical foundations upon which the techniques were built. Inability to reason and defend instructional approaches to teaching suggests that teachers may be poorly equipped to evaluate means/ends relationships and

their consequences, and thereby be susceptible to educational bandwagons and gimmickry.

Instructional approaches can be compared to fishing nets. Each approach (net) has the potential to capture certain learners, but some fish require special nets, if they are to be landed. In like manner, for all learners to achieve success, teachers must know, improvise, adapt and be prepared to invent ways of teaching to accommodate a variety of learners. (Wilson, Shulman and Richert, 1986) Mastering a finite set of generic teaching behaviors may be a start towards helping teachers develop the skills and inclinations needed to analyze situations, design learning experiences according to learner needs, and select appropriate instructional activities for various content. The question: What sorts of activities help grade 3 children in a socio-economically poor neighborhood learn beginning gymnastic skills? cannot be answered adequately using 'pure' behavioristic teaching techniques. Learning to teach with technical precision (the 'right' way) does not enable teachers to think critically about their practice, to question whether they are teaching content accurately and adequately, or analyze student responses to determine if the material presented is appropriate for the learners and the circumstances.

Traditionally, physical educators have based their approaches to teaching on behaviorist theories of learning which focus primarily on training the body to replicate modeled performances. Teachers make decisions about the need for practice on the basis of physical outcomes displayed by the learner. In a behaviorist environment, what the teacher does and what the learners do, preoccupies the

teacher's and the learner's attention. Under these circumstances, the thinking processes of both the teacher and the learner may be undervalued and underemployed. Performance outcomes, however, are not always reliable sources of information about the causes of behavior. Consider the influence of prior experience and student thinking on student performance. For example, a young student is trying to execute a cartwheel on the balance beam. On the floor mats, the student performs the task easily, but on the beam her form degenerates and success is minimal. Using strictly a behaviorist approach, the instructor might remind the student to: "Keep your hips over the beam", and then instruct the student to try again. Teachers must, however, be alert to other signs of learning difficulty, in this instance, expressions of frustration. By asking the student what was on her mind as she was working on this challenge the teacher learned that she kept thinking about falling off the beam and as a result she thought about trying not to get hurt. Apparently, the student's perception of the task was to not fall off the beam and avoid hurting herself. Instead of thinking about what she should do to be successful, she worried about negative outcomes. Knowing what the student was thinking, the teacher decided to have the student work on a low beam and concentrate on one key element of the skill at a time until her form and confidence grew. In this example, student thinking influenced actions. When bound by strictly behaviorist approaches to teaching and learning, physical educators may not use deliberate and systematic attempts to tap student thinking about tasks. Teachers unable to accept student

thinking as a legitimate source of knowledge may overlook opportunities to appropriately guide the learning process.

Another concern is centered around the behaviorist's focus on the teaching process, while failing to recognize the impact of the learner and the intellectual engagement that can contribute to learning motor skills. Behaviorist teachers tend to view learners as passive consumers of information, believing the purpose of learning is to accumulate a store of knowledge, or to replicate, as demonstrated, a repertoire of desirable skills. In contrast, cognitivists and constructivists cast learners as creators of knowledge, using prior knowledge and experience, to take greater responsibility for the construction and management of their own knowledge. Instead of relying exclusively on the teacher for direction and training, the students are encouraged to manage themselves during the learning process. In other words, it is hoped that students develop the intellectual capacities needed for self-regulated learning.

In addition to knowing how to manage learning, students need to know how to apply skills to novel and real-life situations. The application of skill involves knowing what skills are appropriate, to what degree they are needed, and in what form will they be most effective, given certain circumstances. Unless learners have the capacity to interpret situations and make judgements on their own, dependence on the teacher will persist and perhaps debilitate the learner. Consider the case of Miami High coach Ernie Seiler. During a 1924 football game, Seiler wanted to give quarterback Froggy Buchannan help in calling the plays. Seiler lined up three water

buckets on the sideline and kicked over the appropriate one to indicate run, pass or punt. With Miami on the opponents 18 yard line, Seiler accidently kicked over the wrong bucket. Without thinking (for himself), Froggy punted the ball out of the end zone and into a store across the street. The annals of sports history are full of anecdotes such as the one above, where athletes have performed unwittingly and where blind obedience to the directions of the coaches have cost them more than just a victory.

Cognitivists believe the use of learning strategies during the early stages of learning can lead to self-regulated performance and to enhanced independent reasoning about tasks during the application and refinement stages of skill development. The discussions above suggest that behaviorist perspectives may distract educators from the complexities associated with the learning process. The capacity to self-regulate learning and apply knowledge and skills to real-world problems are important goals for everyone. In addition to mastering a prearranged set of techniques, teachers and students are encouraged to explore the teaching/learning process and to work as partners in a joint effort to understand experiences. It is believed that effective learning is achieved when teachers go beyond behavioristic, or rule-bound methods of teaching and include cognitive approaches that foster the capacity of learners (teacher-as-learner, student- as-learner) to understand means/ends relationships, interpret situations, monitor events as they unfold, anticipate, predict and reflect on outcomes.

III. Cognitivist Perspectives on Teaching and Learning

In the 1970's a different approach to the study of human learning evolved: information-processing. In contrast to behaviorist approaches to learning, cognitivists believe learning is an active process that occurs "within the learner and which can be influenced by the learner" (Weinstein and Mayer, 1986, p. 316). Three mechanisms are at work in this system: the sensory or intake mechanisms, short-term memory, and long-term memory. Cognitive theorists emphasize internal processes and knowledge representations which are impossible to observe directly, but which are inferred. Accordingly, instruction is focused on outcomes jointly dependent on what information is presented and how the learner processes that information. These two foci have lead to the development of a number of teaching strategies geared to presenting information relative to particular content material, e.g. teaching mathematics to primary children using manipulatives. An assortment of learning devices or strategies have evolved based on the notion that learners must mentally interact with content for it to be meaningful. Learning strategies are defined as "behaviors and thoughts that a learner engages in during learning that are intended to influence the learner's encoding process" (Weinstein and Mayer. 1986, p. 315). Encoding involves the selection, acquisition, organization and integration of new knowledge. Mnemonics, self-talk, generating summaries of textual material, notetaking from lectures, and mental imaging are examples of learning strategies based on the notion that learning is a learner-activated, thoughtful

process. The use of learning strategies holds great promise for the development of intellectually competent learners.

Researchers in academic subjects such as reading, mathematics, science and language, continue to explore and support the use of a variety of learning strategies that enable learners to cognitively control knowledge and skill acquisition (Schunk, 1986; Bereiter & Scardamalia, 1987; Meichenbaum & Beimiller, 1990) . One way to think about gaining mastery is to look at the research literature on experts; what it takes to become an expert and how experts work with what they already know. Meichenbaum and Beimiller, (1990) contend that experts, in any field, differ from novices in three distinct ways. First, experts possess a more extensive systematized and organized domain of knowledge in their area of expertise. Experts recognize patterns, see relationships and can describe what is going on in a richer and more elaborate way than novices. Second, experts can access and use task knowledge faster and more efficiently than novices. Apparently what experts know is not only in greater quantity but is also organized in a more coherent and usable way. Third, experts have a more varied, flexible and efficient set of strategies to perform domain- specific tasks. It appears, experts not only know more, they have what they know organized for ready retrieval, and have a number of strategies at their disposal to make use of their knowledge in new situations.

Often, students who experience success using cognitive learning strategies, understand the nature of their growth, and recognize the role and contribution they as learners have played in the growth process. According to Winne,(1985) and Schunk,(1986)

learners aware of their own learning powers may persist in their efforts to achieve further competency and may attempt other challenges. In addition, according to Palinscar and Brown, (1988) educators recognize that cognitive strategies serve as a window on the thought processes, feelings and interpretations developed by the learner. Knowing what the learner is thinking, according to Palinscar and Brown, can help the teacher correct misperceptions about the content, and match instruction with learner needs, interests and levels of ability.

Insights into students' thought patterns have lead a number of investigators to consider the relationship between the development of metacognitive skills and subject matter learning (Brown, 1980; Brown et al, 1986; Brown, 1987; Flavell, 1985). These researchers found that students can become more aware of how they learn, how to monitor the use of various strategies, and how to use particular strategies deliberately to influence performance. Educationally, these studies have been important because they have been systematic, well designed, and conducted in classroom settings as opposed to laboratories. Findings show children are quite capable of using strategies of learning and, interestingly, their use progresses developmentally. Apparently, as students mature, they become able to plan learning, check progress toward goals, monitor the effectiveness of a strategy and try another, if necessary. Meichenbaum and Beimiller, (1990) hypothesize that to function efficiently with what they know, and to supervise independently their own learning, expert learners must use metacognitive skills

such as planning, self-monitoring revision of goals and methods, and need several 'fix-up' strategies.

While this progress may emerge in students without intervention, it is possible and perhaps necessary to intervene. Palinscar and Brown, (1984) have termed this intervention reciprocal teaching. Reciprocal teaching involves teaching the strategies while students are learning instructional content. It is important for teachers not only to help learners understand a body of useful content knowledge but also to teach them self-conscious strategies for learning and bringing knowledge to bear on relevant issues. As students learn how to learn they will achieve greater cognitive control over their thinking and actions which, in turn, improves content learning and vice versa. In other words the relationship is reciprocal.

Wittrock, (1986) argues, "good teaching includes teaching students how to learn, how to remember and how to motivate themselves" (p.315). Likewise, Norman, (1980) makes the same point when he writes:

> It is strange that we expect students to learn yet seldom teach them about learning. We expect students to solve problems yet seldom teach them about problem-solving. And similarly, we sometimes require students to remember a considerable body of material yet seldom teach them the art of memory. We need to develop the general principles of how to learn, how to remember, how to solve problems and then to develop applied courses and then to establish the place of these methods in an academic curriculum (p.315).

Pijing (1981) agrees that learners should be capable of learning self-sustaining strategies. Students should be able to learn how to learn and develop skills that make acquiring other skills possible. This point of view conceives the learner as an independent problem-solver, capable of actively processing information rather than merely consuming it.

Constructivists have extended cognitivist's notion of information- processing a step further. Resnick, (1989) believes learners actively construct knowledge for themselves through interaction with the environment and reorganization of their own mental constructs. Instruction may affect what children learn, but it does not determine it. Children interpret knowledge, put structure into it, and assimilate it in light of their own mental frameworks or schema. Schemata are mental patterns or ways the mind has stored knowledge. Learners may have data as well as strategic schemata. Consider this conversation between a physical education teacher and his primary grade student. The teacher asks, "What should you remember to do when you throw? The children replies, "Get it high and get it to your partner." These were responses given after the child had been working specifically on the qualitative aspects of the throw: stand sideways, feet apart, elbow up and away from the body, and so on. This child has perhaps developed an attentional bias imposed on him by the world around him. Audiences, for example, watching baseball on television or in the ball park, cheer for strikes and 90 miles per hour fastballs, not mechanical proficiency. These responses impress in the child beliefs about what constitutes a 'good' throw. In physical education class, it may be a struggle to persuade

youngsters to work on proficiency when their minds are set on throwing the ball fast and a long distance.

Paying attention to what interests the learner is an important way of attending to what's on the learner's mind. Student interests can provide important clues that guide approaches to instruction and practice. Returning to the example above, the teacher might suggest the learner will be able to throw faster if he concentrates on a particular aspect of his form such as taking a step as he throws and keeping his elbow up and away from his body. As this example illustrates, to be effective, teachers may need to create learning environments that integrate the learner's conception of the task with what the teacher has identified as the unrefined aspects of the students' throws. The teacher must be devoted, however, to working with the learners' bodies and their minds.

The primary goal in physical education, according to Espiritu (1987), is to produce moving, thinking and feeling persons who are willing and able to engage in active lifestyles as youth and as adults. Lawson and Placek, (1981) would persuade us that it is only when learners self-consciously understand the movement that they will be able to effectively adopt it into their lifestyle. "It is through the integration of the psychomotor, cognitive, and affective behaviors that [understanding and continued participation] can best be achieved (p.40). Singer, (1986) contends that while experts and novices may readily agree that an active lifestyle is best attained through an ideal harmony of mind, emotions and performance, he comments, "techniques to manage thought process are rarely

discussed, especially with young athletes and physical education students" (p. 8).

Unwittingly, teachers may already be using cognitive learning strategies with their classes. Teachers and coaches acknowledge, for example, the use of exciting stories as a way to motivate participants, but trivialize its use, explaining the use of story as part of an instructor's style or personality, not as a cognitive learning strategy. Others may dabble in the use of relaxation techniques and imaging as novelty exercises intended perhaps to break the monotony of repetitive drills. Unless teachers and their students value the use of cognitive learning strategies, their effectiveness will be reduced. I spoke recently with the coach of the Canadian National Ski Academy about the use of mental training programs. He indicated it was difficult to convince his athletes to use mental training techniques because the athletes did not believe, wholeheartedly, that their use would make a difference in performance. According to Weiner, (1972) athletes frequently attribute success to effort, ability, task difficulty, and, luck. In the paragraphs that follow, a presentation is made that emphasizes the importance and need for a precise and deliberate use of cognitive strategies in physical education. Embedded in this presentation is a discussion of the notion that student thinking is a legitimate source of knowledge for teachers and for students, and as such should be incorporated deliberately into curriculum planning and instructional design.

One way teachers can and do show they recognize that learners process knowledge cognitively is through the use of metaphoric language. The use of metaphoric language, demonstrates the

educator's intuitive sense that learners need to think about movement in relative terms or images. Technical language may be meaningless and even intimidating because the terms are not familiar and, as a result, make no sense to the uneducated ear. In contrast, technical information, represented in the form of metaphors, analogies, stories, and personal anecdotes, may help learners make connections with prior knowledge and experiences, therefore, enabling them to grasp, store, and recall information more readily and accurately, which will enable them to use it to monitor and modify performances.

For example, a group of students in Grade 4 learning the forehand ground stroke in tennis used the phrase, "sweep the crumbs off the kitchen table" to remember the forehand ground stroke action. Cue words and imagery phrases are used frequently to help learners produce specific actions, pace performance and control the degree of intensity with which a skill is executed. Dancers, for instance, use image words to help control the pace of activity and also the expression of ideas and feelings. Coaches frequently attempt to inspire athletes to compete at peak capacity through the use of metaphoric language, and stories that exemplify effort and determination to play well.

Why do people understand information better when they put it into their own terms? Neeland, (1984) suggests people put information into manageable language forms that sensitize students to similarities across knowledge domains. Reconstructing information and experience into forms of knowledge that individuals can understand and that they are familiar with is a way of becoming

involved practically and sensually with the world around us. Neeland reasons people do not ordinarily function at street-level as physicists, historians, sociologists, or environmental scientists, rather they see the world at a vernacular level. The importance of this is that learners already possess a good deal of knowledge about the world at the vernacular level and can use that knowledge to make sense of new experiences. Teachers aware of the learners' prior experience as a valuable learning resource can make it possible to bridge the familiar with the unfamiliar by using prior knowledge and experience as a reference point for understanding new concepts and terms.

Therefore, what exactly teachers call attention to cognitively and emotionally in relation to motor learning and skilled performance influences the learner's capacity to perform properly. Consider the reminder youngsters are given before they go skiing? Usually it is about being careful, avoiding a bad fall, watching out for trees, and so on. How many times have teachers (and that includes parents) told their students to watch out for something, but neglected to explain how to effectively manage the situation. The instruction, "Watch out!" cues the learner to the negative aspects of the activity perhaps heightening the skier's anxiety. Unfortunately, information that the learner could use to regulate and enhance performance is not provided. Skiers, in addition to knowing how to attend to the qualitative aspects of skiing, need to know how plan a safe route to travel, how to avoid obstacles and how to react in dangerous situations.

Teachers may defend their instructional methods on the grounds "that's the way I do things around here". This gives the impression there is no rational body of knowledge that warrants and justifies practice, that personal preference takes precedence over logic and authoritative evidence, or that 'good' teachers are born and cannot be made. Experiences and strategies that enhance learning cannot be left to chance or caprice. An important challenge for educators involves making decisions about what form content and learning strategies should take for student learning. Educators, who understand the need to attend to learner's cognitive processes, sense of task efficacy, and understanding of the task-completion requirements ask questions such as: What metaphors, analogies, or illustrations adequately represent the desired action for a particular learner or group of learners? What does the teacher have to know about a skill to decide if a particular metaphor is accurate and complete? What does the teacher have to know about the learners to appropriately transform technical content knowledge into student-relevant language? What skills are a prerequisite to particular skill development? What effect does knowing about the learning process have on students' self-efficacy and skill development? These questions are puzzling. The study of cognitive learning strategies in regular physical education classrooms can benefit from a closer and more careful consideration of these questions.

Cognitive learning strategies invite a conception of teaching as an evocative process rather than a performing art. As such, the teaching process involves probing understanding by tracking the mental activity of the learner. Effective teachers are not content to

rely on nodding heads as a sign of understanding, they expect to investigate the learner's comprehension, to think about ways to adjust content, and to invent ways to help students learn.

According to Bereiter and Scardamalia, (1987) learning strategies may help students understand the connection between the use of a learning strategy and outcomes. Students need to learn that their own learning is controllable and that their behaviors can be regulated by their thought processes (Baker & Brown,1984) . When students assume greater ownership for their learning by using particular learning strategies they begin to perceive of themselves as learners and how learning is enhanced by using appropriate heuristic strategies (Borkowski & Cavanaugh,1979; Meichenbaum & Beimiller,1990) . Furthermore, Beireter and Scardamalia, (1987) have found that students among various age groups, learning to read by using learning strategies, are invariably more aware of, and interested, in their own thought processes and as a result can identify with a particular type of learning.

The central purpose of teaching, in any subject, is to impart knowledge and help learners act with understanding (Feimen-Nemser & Buchmann, 1987). The knowledge that learners need to become competent and confident lifelong learners includes both subject matter content knowledge and strategic knowledge. Strategic knowledge includes knowing when and how to use knowledge in varied and unfamiliar situations (Meichenbaum & Beimiller, 1990) . Strategic knowledge can help the learner in three ways: (a) to transfer prior knowledge to new but related situations; (b) to create

new knowledge; and (c) to guide performance during learning and while under stress.

The degree to which the effectiveness of cognitive learning strategies pertain to motor learning is unknown. Student thinking, as a legitimate source of knowledge used by teachers and students to guide practice and to regulate progress, is a relatively new concept and an unrefined process for physical educators. It appears, however, that for student thinking to have an impact upon instruction and learning in physical education, teachers need: (a) interactive tools that allow them to probe understanding and cognitively track student progress, (b) designed experiences that help their learners understand how to use learning strategies while they are learning motor skills, and (c) instructional approaches that include procedures for embedding learning strategies in the presentation of content knowledge. In other words, physical educators should try to incorporate the use of cognitive learning strategies explicitly as an additional outcome while teaching content. —The goals of physical education programs and instruction should systematically incorporate learning cognitive strategies in addition to mastering specific motor and/or personal social behaviours.

IV. Self-Talk as a Learning Strategy

Self-talk may be one of the learning strategies that teachers can plan to use to enhance motor learning. Self-talk, by definition, involves the use of statements, words, or cues by the subjects to publicly or privately direct or guide preparation, execution, analysis and feedback relative to an individual's performance of either parts

or the whole of a particular motor skill in relation to a desired outcome.

The term self-talk has been used in different ways by various researchers. For example, Vygotsky, who was probably one of the first notable researchers to examine and consider the influence of self-talk as an instructional variable, used the term private speech. Private speech, according to Vygotsky, referred to the dialogue persons have with themselves to self-consciously direct, monitor and reflect on their behavior. Verbal rehearsal and self-instruction are other terms used to describe the use of self-talk to plan thoughts and behavior.

Self-talk is derived from cognitivist's and constructivist's perspectives on learning which view the learner as an active processor and producer of knowledge versus behavioristic perspectives which tend to view the learner as a passive consumer of information. Cognitivist's recognize self-talk as a way to enhance the individual's capacity to encode information and experience. Constructivists realize how important self-talk can be as a source of information about how learners have constructed knowledge about the movement task in relation to their own experience and prior knowledge. Learning strategies such as self-talk may be "self initiated or externally imposed ways of directing information leading to decisions for purposeful behavior" (Singer & Gerson, (1979). Self-talk may be considered an integral part of the learning process because of the contribution it makes towards the individual's ability to perceive, comprehend and construct understanding of the task, which in turn influences the quality of learning outcomes.

Cognitive learning theories assume that even when instruction is done very well, it is the learners themselves who must acquire the knowledge, insights and skills. (Resnick, 1987; Brown, 1987) Effective teaching behaviors must therefore be considered, selected and mediated in light of the way particular learners attend to and make sense of instruction. In order to activate learners cognitively, teachers are encouraged to combine product-oriented behaviorist approaches to teaching with process-oriented cognitive notions about learning.

Self-instruction, often used interchangeably with instructional self-talk, is one of the cognitive-behavioral interventions which has been found to be effective on an experimental basis. (Meichenbaum, 1977; Meichenbaum & Cameron, 1974) In a sense, cognitive-behavioral theories include both operant conditioning and cognitive perceptions based on cognitive learning theories. The two are blended together to form what Meichenbaum (1977) believes is a stronger intervention procedure than either taken singly, namely, cognitive behavior modification.

There is very little research conducted on the use of self-talk as an instructional strategy for motor learning. Most research studies related to psychomotor improvement and self-talk have focused on mature performers and refinement of athletic performance, rather than working with youngsters during the early stages of motor learning (Orlick, 1986). Accordingly, little is known about the words that can be used with self-talk to learn a skill, and the words used to describe feelings about using self-talk within a physical education setting.

This investigation should be seen as the first step in what could be a series of exploratory studies to systematically examine self-talk or other learning strategies as they pertain to learning motor skills in regular physical education settings.

The purpose of this chapter has been to caution physical educators not to confine their practice to behavioristic notions of teaching. The importance of cognitive approaches to learning with special emphasis on cognitive learning strategies was examined, and the notion of self-talk was introduced and connected with cognitive and constructivist perspectives on learning. Finally a rationale was launched for further study into the practical use of self-talk and motor learning in regular physical education settings.

Chapter 2
INSTRUCTIONAL SELF-TALK AND MOTOR LEARNING:
A REVIEW OF LITERATURE

I. A Review of Literature on Self Talk

Instructional self-talk has been used effectively in both clinical and instructional settings for nearly two decades. Self-talk has helped subjects: control aggressive and impulsive behavior (Meichenbaum & Cameron, 1974; Meichenbaum & Goodman, 1971), cope with phobias (Meichenbaum,1977), facilitate improvements in problem-solving in mathematics (Schonfield, 1983;), improve writing skills (Bereiter & Scardamalia, 1987; Scardamalia & Bereiter, 1983; Englert, et al, 1991), overcome writers block (Boice,1985), and manage performance stress among elite athletes (Feltz,1982; Ravizza & Rotella, 1981; Nideffer, 1980). Recent theoretical accounts of learning which view the learners as active seekers and processors of information have considered the use of techniques such as think aloud and self-talk as a means of monitoring how individuals perceive and process information (Brown and Palinscar, 1989), as a way of training subjects in the development and use of metacognitive skills (Chi & Bassock, 1989; Collins et al,1989; Brown & Palinscar, 1989) and towards enhancing perceptions of adequacy in relation to skill performance (Bershad & DiMella, 1984; Weaver & Cotrell, 1987). However, the potential self-talk holds for helping youngsters learn motor skills remains largely unexplored.

23

Theoretical perspectives

Self-talk or private speech refers to speech that has self-regulatory function but is not socially communicative (Fuson, 1979). Private speech is speech that is directed toward self (Harris, 1982). The content of private speech may include information to be remembered, rules, strategies, or beliefs about the individual's abilities to learn or perform a skill. It should be noted that private speech includes both public and private speech that occurs during engagement on motor, cognitive and perceptual tasks (Harris, 1982).

The role of private speech in cognitive development

Vygotsky, (1934) reasoned that children are able to use private speech to function at more advanced levels of cognition. He hypothesized that children use private speech to organize their behavior and to help them understand situations, surmount difficulties and govern their responses. According to Vygotsky, inner speech or egocentric speech, terms which are terms also synonymous with self-talk, emerges as a result of the social dialogues between adults or significant others and the learner. Children apparently listen to the ways adults interact with each other and then try to imitate modeled speech patterns and behaviors. For example, children playing on a toy telephone sometimes reproduce the content, gestures, protocol, and the tonal expressions that are typical of mature versions of telephone conversation.

Interestingly, when children are confronted with a problem they can not solve, they turn to an adult. An adult may show or

verbally describe a method the children had not discovered on their own. Vygotsky reasoned that eventually social speech that takes place between people can be turned toward the self. Vygotsky noticed that when children encounter obstacles and difficulties, the incidence of egocentric speech nearly doubled. It appeared to him that children were trying to solve their problems by talking to themselves. Because of these observations, Vygotsky came to view egocentric speech as a link in the transition from public self-talk to private self-talk and thinking. Thus, he concluded that egocentric speech was "communication with the self" for self-guidance and self-direction and has it origins in social communication.

Vygotsky viewed children's intellectual development as a progression beginning with egocentric speech first following the child's actions; then egocentric speech accompanying the child's actions simultaneously; finally, speech preceding the child's actions and it then becomes internalized. Luria, (1961) following Vygotsky's theories, proposed three stages in the development of verbal control of motor behavior. Initially, (ages 1.5 -2.5) the speech of others is responsible primarily for directing the child's behavior. From ages 3-4 the child's public verbalizations are used to initiate motor behaviors. It is not however, until the child is between the ages of 4.5 and 5.5 that private speech is capable of initiating, directing, and inhibiting motor behaviors.

Berk (1985) describes similar developmental progress in relation to how children characteristically draw and describe their art work. First, children draw the picture, and then describe what it is about. Later still, the children will name their drawing as they

work. Finally, children decide before they begin what their picture is going to be about. In this way, children plan, organize, make decisions and solve problems. According to Berk, "children come to use language to solve problems, to overcome impulsive action, to plan solutions ahead of time, and to master their behavior" (p.48) .

Diaz (1984) conducted a study which asked a group of mothers to teach their young children how to build a 3-D puzzle. The mothers' verbal teaching behaviors were strikingly similar to the preschoolers private speech when they did the task themselves. These findings confirm Vygotsky's beliefs that young children's private speech grows out of social experiences modelled by a significant adult and intended to support and provide assistance in guiding the child's behavior.

Mead (1934) supports social learning theories based on her observations of children at play. She believed children become more aware of their actions when they attempt to communicate. As children are engaged in communication with others, they call out in themselves the responses they get from others. This process she contends leads to a "two-part self - a speaking self and a self-talked to" which communicate with each other. Gallwey, (1974) uses the names "self one" and "self two" to identify the two voices. Gradually, private conversation with self becomes internal thought or private speech. Luria (1961) says that when public speech becomes private it has gone "underground". Kohlberg et al (1968) described the transition or public to private speech as moving from outer-directed to inner-directed private speech.

Self-talk is not confined to youngsters. In many instances, self-talk has a self-guiding influence on adults as well. For example, people use self-talk spontaneously and perhaps unconsciously when faced with difficult tasks, risky situations, confused about how to proceed or when they are concerned about making errors (Deutsch & Stein, 1972; Dickie, 1973; Goodman, 1975; Zivin, 1972). Parallel parking is often sited as one of the occasions when adults remind themselves, out loud, what they are supposed to do to accomplish the task. Following recipes and preparing to write examinations are other common situations where self-talk is used to ensure precision or boost confidence.

Cognitive strategies can be an effective and integral part of the teaching/learning process

Theory and research on instructional processes provides yet another way to demonstrate that self-talk contributes to learning. Educators recognize that, to a large extent, what students pay attention to during instruction is a function of the type of learning environment the teacher has created for their students. The students themselves however, have a mediating influence on the learning process (Shulman, 1986a). The questions students ask, for example, are an indication of how much and what students understand about the task. A number of cognitive strategies have been studied and are available to help to improve both instruction and learning.

Schunk, (1986) reviewed the relationship between verbalization and children's self-regulated learning and concluded

that verbalization helps children to develop self-regulated learning of cognitive skills such as attending, coding, associating, rehearsing and monitoring. Students who have difficulty attending to, or recalling information benefit from verbalization. Self-talk apparently enhances the learner's capacity to code, store and retain information which the learner can recall for use in applied situations. In addition to the effects listed above, self-talk, as a systematic approach for improving learning, can change a student's attitude by raising self-efficacy, persistence, and a willingness to accept more instruction and new challenges (Winne, 1985; Asarnow & Meichenbaum, 1979).

Englert et al, (1991) examined the effects of interventions, such as self-talk, designed to increase students' expository writing abilities and their students' abilities to generalize their knowledge to write expository texts using novel text structures. The investigators found that students using dialogic instruction did improve their expository writing performance. Students showed greater awareness of their own writing style, increased sensitivity to their audience, perceived themselves as having greater ownership and control over the writing process, and an ability to generalize to less structured writing situations. Dialogue about the writing process in the experimental classrooms provided "further opportunities for teachers to provide models for the students and to allow students a voice in asking and responding to other author's questions". (p.366)

In the instances described above, self-talk appears to provide teachers with an important way of involving and perpetuating students' engagement with content. Schunk and Rice, (1984) studied

the effects of self-talk with remedial readers in grades 2 to 4. Students received instruction and practice in a listening comprehension strategy that included general steps such as: What is it I have to do?" and specific steps such as: "I must find the correct picture". Strategy self-talk led to higher self-efficacy across grades and improved performance among third and fourth graders.

In a follow-up study, (Schunk & Rice, 1985) children in grades 4 and 5 received instruction and practice in reading comprehension. Half the subjects verbalized strategic steps prior to applying them to sections of a text. Strategy verbalization resulted in higher reading comprehension and self-efficacy. Interestingly, children using the verbalization strategies attributed success to their ability.

Self-talk appears to help students focus their attention on the important features of a task rather than on irrelevant information According to Fuson, (1979) verbal rehearsal serves to selectively focus children's attention on only the task appropriate cues and remember what to do. Fuson affirmed that in the case of children seven years of age and younger, who do not spontaneously rehearse information, prompting to rehearse verbally appears to be a necessary procedure for effective motor reproduction.

Further empirical research would be useful however, in determining the precise organization and implementation of learning strategies such as self-talk as it applies to motor learning in regular gymnasium settings.

A review of literature on motor learning precedes an examination of of how self-talk might apply to motor learning.

II. A Review of Literature on Motor Learning

At the beginning of the motor learning process, the learner receives input or information about a skill or task. For throwing a ball, the information might include the size of the ball, the weight of the ball, and the distance to the target. Verbal instructions and a demonstration are considered primary input.

Marten, Burwitz & Zucherman (1976) remind physical educators that "modeling research has given no consideration as to whether the observer can discriminate between the relevant and irrelevant cues presented in a rapidly performed series of complex actions or whether s/he has the capacity and inclination to imitate the model". (p. 278) Thomas, (1980) theorizes that motor acquisition and performance require the individual to attend to instructional input in order to plan the correct movement, monitor and assess performance, and then make the necessary changes for the next performance. Information gathering and planning are, however, dependent on cognition.

Social learning theories developed by Bandura, (1977), recognize that in order for a model to be effective the following conditions are essential. The observer must:

(1) selectively attend to the modeled actions,

(2) actively rehearse the information in order to retain it in long term memory,

(3) possess the motoric capabilities for executing the required movements and finally,

(4) be adequately motivated to overtly reproduce the demonstrated action.

It appears, from the discussion above, that learner's capacity to perceive incoming information will determine whether or not the learner will use it to modify their actions. Several researchers (e.g. Singer & Gerson, 1979; Singer, 1982; Sage, 1984; Shasby, 1983/84; Haubenstricker & Seefeldt, 1986; Thomas & Gallagher, 1986) have reviewed the literature on perceptual motor learning. The version presented here is a brief summary of their insights and conclusions.

First, a learner must search and select pertinent information from the data presented and then compare this data to existing mental models or schema established through previous experiences. Meaningful linkages between what is known and what is not known are formed as the learner attempts to represent new knowledge typically in the form of images, analogies, metaphors and/or word descriptions. The process of converting the knowledge into a usable form or image however, involves considerable mental activity on the part of the learner because s/he is expected to assimilate and transform the information into his/her own terms. Inaccurate or incomplete interpretation may interfere with the learner's ability to make adequate and appropriate judgements about performance outcomes and as a result choose inappropriate terms.

Therefore, fundamental to all motor learning is the ability of the individual to produce an appropriate sequence in motor commands or in other words to generate a motor program.

The learner needs to know what to do, how to do it, the goal of the movement, and the means by which the goal is accomplished. Only then can an overall image or internalized representation provide the basis for forming a plan or a scheme that will guide movement.
(Sage, 1984, p. 286)

According to Sage, (1984) movement plans are created by the learner to help them execute desired movement and evaluate outcomes. The learner attends closely to the movement itself to promote self analysis and self-evaluation. Self-evaluation becomes feedback and may result in a revision of the movement plan. However, unless attention is cued on important and specific aspects of the task, the learners will be unable and perhaps unwilling to change what they are doing. Inefficient motor patterns may result from inadequate attention to relevant features of the task and progress will probably be delayed.

The construction of any plan is dependent on the individual's capacity to recall and use information wisely. Cognitive researchers have identified three categories associated with process-oriented learning.

(1) Cognitive processing activities include: structuring, relating, analyzing, applying, selecting and memorizing (Marton, 1988; Kolb, 1984; Vermunt, 1987).

Structuring: trying to impose order or develop a sense of structure for the learning content.

Relating: looking for connections between action demonstrated and prior knowledge or experience.

Analyzing: breaking a larger whole into parts.

Applying: using knowledge in particular situations.

Selecting: choosing what is important to pay attention to for learning. Memorizing: imprinting information and rehearsing subject matter.

(2) Affective processing activities include: attributing, motivating, concentrating, judging oneself, appraising, exerting effort, generating emotions, and expecting. (Boekaerts, 1988; Corno, 1986; McCombs, 1988)

Attributing: determining cause and effect relationships.

Motivating: establishing and maintaining the will to learn.

Concentrating: directing attention to task-relevant aspects and coping with distractions.

Judging oneself: assessing personal outcomes relative to performance standards.

Appraising: subjective evaluation of learning outcomes.

Exerting effort: constructive mental effort or mindfulness relative to task performance.

Generating emotions: building self-esteem, confidence coping with anxieties, fears and doubts.

Expecting: estimating about outcomes

(3) Metacognitive regulation activities include: orienting, planning, monitoring, testing, diagnosing, repairing, evaluating and reflecting. (Brown, Armbruster & Baker, 1986; Friedrich & Mandl, 1986)

Orienting: becoming familiar with the features of the task.

Planning: deciding on a plan of action based on information presented.

Monitoring: keeping track of progress. Does progress proceed according to plan?

Testing: check for understanding. Can the learner apply the skill to real-life situations.

Diagnosing: error detection

Repairing: modifying the original plan based on monitoring, testing and a diagnosis of performance.

Evaluating: comparing results with intentions.

Reflecting: review the learning process.

The cognitive activities listed and described briefly above, have the potential to empower learners with the capabilities to access, understand, and effectively use content knowledge in varied and practical situations. Meichenbaum & Beimiller, (1990) add that knowing which strategy is most suitable and when it should be used are other important application components. If the insights and theories discussed above are considered in the design of practice, instructional practice must include the following: (1) content, e.g. the overhand throw; (2) ways to learn that content, e.g. self-talk; and (3) an explanation about why a learning strategy such as self-talk apply in this situation, e.g. self-talk helps you remember key details about the throw so you can teach yourself to throw properly. Process-oriented teaching and learning shifts the learners focus from outcomes in absolute terms to outcomes relative to thinking processes. The learners may also consider the use of self-talk in other contexts, by asking themselves, for example, the question: "Should I use self-talk to help me improve my putting skills in golf?"

Singer & Gerson's (1979) sort out the relationship between the cognitive processes associated with the human body's neuropsychological mechanisms and the particular functions and purposes these mechanisms perform. Table 2.1 is an excerpt of their description.

Table 2.1   An excerpt of Singer and Gerson's (1979) interpretation of the relationship between cognitive processes and neuropsychological mechanisms

Mechanisms	Cognitive processes	Functions & purposes

Perceptual mechanism	•selectively attend
	•recognize
	
	•make meaning of
		•analyze features
		•match present
		  cues with
		  stored information
		  information

Short term storage	•plan program
	•execution
		•determine parameters
		  (location, speed,
		  direction, amplitude,
		  force, effort) in which
		  program is to operate

Movement generator	•initiate program	•cue appropriate musculature

Effectors	•receive command
	•activate feedback
	  sources
		•execute observable
		  performance
		•provide information
		  for future use
		
		•provide information to
		  influence arousal and
		  attitudinal states

(Singer & Gerson, 1979, p. 225)

In sum, motor learning is the conscious act of an individual attempting to impose a sense of order on ideas, events and

experience which is, in turn, translated into particular actions or behaviors. There is no research evidence, however, to show that children can predictably and intentionally regulate the mechanisms responsible for controlled motor performance. Learners need a good deal of help in addition to demonstrations and explanations. Youngsters, not familiar with the task-relevant features of the skill, may have difficulty attending, remembering, organizing and monitoring themselves such that learning occurs. Educators in physical education are uncertain about what strategies young learners might use effectively and independently to manage their progress. Some metacognitive strategies seem helpful to students' learning when the subject is reading, writing or mathematical computation. The question remains is self-talk an effective strategy for young students to use while they learn a motor skill?

III. How is Self-Talk Connected to Motor Learning?

Process-oriented learning helps educators make a case for self-talk as a distinctive heuristic process that has educational benefits, therefore, a tool in the educational tool box of the evocative teacher. Advocates of process-oriented approaches to learning theorize that the deliberate use of consciousness control strategies improves the functional capacity of the individual. For example, learning strategies help learners increase their short term memory store by imposing an organizing structure on the information being processed (Sage, 1986). When teachers use learning strategies they first teach their students the process and then expect their students to manage their learning independently. As a result, learners come to think

systematically and coherently about what to do and are successful in tasks such as writing, mathematics computations, and reading comprehension (Palinscar & Brown, 1988; Englert et al, 1991). The results of studies conducted on the use of self-talk in academic settings points to the presumption that learners who are equipped with strategies for learning are empowered with the skills and dispositions needed to learn what ever they want, on their own, in their own way and at their own rate.

Cognitive learning strategies are developed in a special way. The procedures used to teach cognitive learning strategies are unique and therefore, demand careful planning and design according to content, the learner's age and stage of development. For example, much of the scientific literature on memory development and cognitive processing activities shows that giving relevant names to parts of a task can enhance motor skill performance in young children (Winthers & Thomas, 1981) and that prompting children to rehearse information actively can lead to performance improvements to a level equal to that of older children (Gallagher & Thomas, 1984). When Thomas (1980) reviewed the literature on processing differences between adults and children he emphasized the need for the use of prompted rehearsal as a means of facilitating children's motor skill acquisition. He stated that verbal repetition, verbal labeling and verbal self-instruction can help young children in their attempts to recall and perform motor skills. Thomas contends verbal rehearsal should be used to help learners selectively attend to relevant task components and remember the specific order in which a series of skills should be performed.

Sage (1986), indicates that mental practice techniques which include self talk, are more efficient especially with beginners, because at this stage the cognitive aspects of the task are salient. As learners attempt to construct an image of the goal, of the task and how to accomplish it they need to identify the key features of performance. This he suggests has good potential for correcting errors in execution, increasing concentration, helping to gain perceptual insights and assisting in strategy rehearsal.

Past research suggests using self-talk as a learning strategy requires in the initial stage direct teacher input in the form of induced statements. Generally, students are unable to identify the key features of the task on their own. Therefore the words and phrases the students use in self talk should be provided or *induced* by the teacher or in cooperation with students rather than formed through *free* association by the students themselves. Weiss (1982) observed that "children do not spontaneously generate verbal rehearsal strategies or engage in verbal self-instruction to help remember or guide performance. Instead they can use verbal strategies and labels only if they are prompted or instructed to do so." (p.49) As children become competent using cue words they can be encouraged to co-produce metaphors and movement stories to represent movement patterns. When this occurs, according to Scardamalia and Bereiter, (1983) children learn to operate not only as sources but also as seekers and interpreters of information and events. Cooperative interaction involves sharing ownership for progress which in turn elevates task commitment and self-esteem.

Joint efforts by the teacher and the students to promote learning through the use of learning strategies can facilitate:

(1) A better understanding of the task demands. Self-talk helps the learner structure the task in words and images that are familiar. Learners are encouraged to think about the task in ways that make sense to them (Meichenbaum, 1977) . Identification and use of key images promotes more complete task comprehension and more frequent carry-over use of the strategy in other situations.

(2) Planful and thoughtful preparation and execution of the skill. Self- talk gives the learner a chance to mentally rehearse or recite the movement sequence in advance (Shasby, 1986; Weiss & Klint, 1987) . Each practice trial is, therefore, higher in quality.

Weiss and Klint, (1987) studied the developmental differences of modeling and verbal rehearsal on performance of a sequential motor task among two age groups, 5.0 to 6.11 and 8.0 to 9.11. They support the belief that vocalization helps concentration and memory. They found that a visual model may not be a sufficient means of instruction, but rather verbal rehearsal strategies are also needed to help children selectively attend to relevant task components and remember the specific order in which skills should be executed.

(3) Transfer to related movement challenges and to direct skill acquisition in novel situations. Learning strategies become, for self-directed learners, an intellectual 'way of life'. Said differently, when faced with any movement challenge proficient learners tend to find and use learning strategies that will help them meet the demands of the task.

Meichenbaum and Beimiller's (1990) study of student expertise made the following conclusions. Self-directed learners not only seem to have more information about assigned tasks, but they also reason with the information or in some instances modify, substitute or refine the information on their own to accommodate the context. Strategic knowledge appeared to enable the learners to work with a minimum of teacher direction and prompting. Self-directed learners also appeared to have higher levels of self efficacy and expectations for success which in turn influenced task commitment and perseverance.

(4) Heighten awareness of the need for and impact of learning strategies Beireter & Scardamalia, (1987). As students become comfortable using learning strategies, they learn that they can have an impact on their progress.

(5) Regulation of learning through an enhanced capacity to self monitor, self analyze and self evaluate progress. Self-directed learners are better able to think about their performance. Using what they already know about the task they are able to reflect on the merits of their performance in relation to previously establish criteria. Metacognitive processing activities such as evaluating and reflecting allow the learner to learn from experience and trust the validity of their own insights. Students who are able to use strategies such as self talk are more likely to learn from their mistakes as well as their successes. Students also learn to attribute outcomes to themselves instead of uncontrollable factors such as chance or innate ability. Vermunt, (1987)

(6) Two-way teaching. Listening to children's self-talk enables the teacher to hear the mental operations that are governing behavior. The learner is expected to participate in a conversation with the teacher about performance. The learners are in turn encouraged to contribute to the dialogue about the task and make suggestions. The teacher under these conditions intends to act as a co-investigator and facilitator with the learners. Access to the learner's thinking can help guide the design of individual and group learning experiences.

Strategy education aims to be intellectually moving and have an enabling effect on learners. Over time, strategy users, in addition to improving their skill levels, begin to regard themselves as learners capable of deliberate, critical and objective analysis of their own thoughts and actions. According to Bershad & DiMella, (1984) and Weaver & Cotrell, (1987) the use of strategies such as self talk serves also to enhance perceptions of adequacy in relation to skill performance and to improve the frequency and nature of metacognitive activity during performance.

Factors to Consider

When people have experimented using the self-talk technique, they have abandoned traditional ways of interacting with students and used a more collaborative, facilitating method of engagement. A 5 step model that follows Gagne's mental activities is offered here as a guide for using self-talk.

1. *Analyze:* Identify the key features of the task. Decide how to represent each element of the skill in relevant terms and experiences.

The teacher is initially responsible for this component. During adolescent years the teacher and the student may collaborate on this task. The teacher will need to know the skill well to assess the adequacy and appropriateness of student's suggestions.

2. *Plan:* Formulate a learning plan that outlines skill development sequences, time, activities and the key words students might use during self talk.

3. *Implement:* At each step, the learner uses self talk or some other suitable strategy to enhance performance and progress.

4. *Monitor:* The teacher and learners assess the learning process, the degree to which actions have matched intentions, and the effectiveness of using the self talk strategy.

5. *Modify:* Based on assessment of outcomes new perceptions are formed. The teacher and learner may need to re-evaluate and modify some or all of the above steps.

After considering the above model, for a physical education setting, there appears to be a number of factors that pertain to the

organization and administration of a self talk program. The following are some of those factors.

Probably the first piece of information learners receive about a given task is a demonstration. Visual information according to Bird and Rikli, (1983) functions primarily to imprint a mental image or mental template of the motor skill. Bandura's (1977) suggests the model provides information so that the observers can cognitively organize and rehearse what they saw and later, translate encoded information into action.

Good and Brophy, (1984) point out that the demonstration must not only show, but also explain the thinking that lies behind the movements. "Unless you know enough to figure out each step independently, watching your demonstrator may give them [the students] no more information about what you are doing and how you are doing it than they would get from watching a magician perform a baffling trick" (p.180). In other words, unless the model or teacher gives reasons, or identifies the relevant cues, the intellectual processes will be hidden from the students.

Other factors that influence the learners willingness to attend and sense of efficacy involve, according to Weiss (1983):

(1) task characteristics (Gould, 1978). Is the skill appealing to the learner? Does the task appear too difficult to the learner? Does the task appear to the learner to be too complex?

(2) model characteristics. Models who are the same relative age, size and gender enhance the learner's sense of efficacy regarding their ability to perform the task. (Gould& Weiss, 1981; Schunk and Hanson,1985)

Instructional self-talk is not a chant (Meichenbaum,1977) . In other words, the subjects will be discouraged from merely rhyming off the reminders like they would recite a jingle. The students will be encouraged to verbalize exactly and only, what is on their mind as they are preparing, executing and reflecting on the skill. For example, if a child says, "turn your target toes out" but does not do this, the teacher can remind the child they are talking to their body parts and that they must think about what they are saying throughout the self-talk episode.

Dialogue revealed through self-talk is an overt expression of the learners' thought processes (Palinscar & Brown, 1988) . Under these conditions, the teacher has an opportunity to intellectually eavesdrop on students' thinking. Error analysis for the teacher is consequently much more precise and relevant.

To develop ease and familiarity using self-talk techniques, Meichenbaum (1977) agrees that students should start with comfortable, non-threatening tasks and progressing to more complex activities. In this way, the learners begin to associate self-talk with learning. Eventually, students can develop their own self talk related to the task demonstrated. The learner may translate the mechanical information into cue words or phrases that conjure up images that guide appropriate behavioral patterns. The instructor may ask the learners what their self-talk means to them. A word may represent several operations, therefore, to ensure complete comprehension, the teacher must ask the learners to explain what their words mean to them. Preparing a self-talk conversation serves as advance organizer and a vehicle for reflection.

According to Vygotsky, (1934) self-talk may be subvocalized but it may still be 'on their minds'. During the early stages of skill acquisition the students are not conscious of what to attend to, but with self-talk students are provided cues that help them focus on specific and relevant aspects of the skill (Weiss, 1982). When this occurs a single word may replace sentences. Eventually, however, the skill is performed automatically. The cue word may be used privately or not at all. It may still be valuable, however, to talk about the words that direct their actions.

According to Seefeldt, (1984) children can not use self-talk or any other learning strategy to acquire skills beyond their intellectual and psychomotor development. In other words, students must be physically and mentally ready to learn specific skills. Modified versions of the mature form of a skill may be a useful precursor to advanced movement patterns. It will however be up to the teacher to decide to what degree of proficiency the learner is capable of achieving at this time .

Learners need to observe how self talk is used to handle mistakes. Meichenbaum (1977) recommends that the model include a mistake followed by a positive means of handling and coping with the incident of failure. Self-correction comments should be specific. Schunk (1986) hypothesized that the reason children discontinue the use of self talk is because they may believe effort expended and time available are more important than strategy usage. Borkowski & Cavanaugh, (1979) suggests teachers need to inform users of the linkage between verbalization and improved performance, how to monitor performance critically and to expand their education on

when and where a strategy such as self-talk may be useful. Linking success with the proper implementation of a particular strategy may invigorate the learning process. Students begin to realize they have the capacity to achieve if they put their mind to it and try hard.

Schunk, (1985) recommends keeping self-talk statements succinct and precise. The words or phrases the student uses need to capture the essence of what the learner is supposed to be paying attention to during practice. Reminders may be also be displayed in pictoral form on charts near the students work areas.

The above factors have emerged from research on self-talk as it relates to self-regulated learning in academic fields of study such as mathematics, reading and science. The nature of the subject matter content is apparently an important consideration as are the students and the context. The nature of the use of self talk is therefore tempered by a consideration of the above factors in relation to circumstances and learners.

How to teach self-talk

Based on Meichenbaum's research (1977) a self-talk training program would consist of phrases and/or key word messages that contain instructional, and motivational information relative to the important aspects of the skill during all three phases of the skill. The first phase involves preparation for the action. During execution, self- talk focuses attention on relevant features of the task. So as not to interfere with the flow, few image producing words should be used. Following execution, the participant would examine and identify aspects of the movement that were perceived uncomfortable

or aspects identified as less than successful. Decisions are made relevant to these reflections and affirmation statements help reinforce the learner's potential for success.

IV. Summary

The literature on self-talk and perspectives on motor learning encourage further explorations into the effectiveness of self-talk as a learning strategy for learning a motor skill. Self-talk procedures appear to be linked closely with process-oriented learning. Self-talk may help learners attend more closely to the relevant features of the skill, to plan their performances more carefully and thoughtfully, to self-analyze results, and to feel more responsible for their own learning which, in turn, may elevate self-esteem and self-efficacy. Self-talk may provide an important way for teachers to access student thinking about motor skills which may help educators connect content and learners. It remains uncertain, however, how educators might plan and organize the use of self-talk in conjunction with skill development and how procedures might fit the logistics of a regular physical education classroom.

Chapter 3
DESIGN, METHODOLOGY, AND PROCEDURES

I. Introduction

The purpose of this study was to investigate the effects of an instructional self-talk program, consisting of 9 sessions,15 minutes in length (5 minutes of instruction followed by 10 minutes of practice), over a three week period of time, upon the performance of a one hand overhand throw, among male and female subjects, 8 and 9 years of age. This study was designed to answer the following questions:

Question #1 Are there significant differences within and among 3 treatment groups (self-talk, traditional, and demonstration only) over three weeks of treatment?

Question #2 With regard to the three treatment groups used in this study, is gender a factor in learning a motor skill?

Question #3 What words do learners use to guide their self-talk?

Question #4 How do the learners feel about using self-talk?

Question #5 How do the learners feel about their ability to throw a ball overhand compared to (a) the start of the study, and (b) other groups of learners?

This chapter includes sections on each of the following: (a) the research design; (b) selection of subjects; (c) elements of effective instruction; (d) demographic inventories; (e) data collection procedures; (g) statistical analyses; and (h) chapter summary.

II. Background

As an integral part of instruction and practice, self-talk may help youngsters become more self-reliant, improve their motor skills, and enhance their self-confidence as learners in physical education. This study may provide physical educators with important instructional information that may be used to help youngsters engage in motor learning activities more planfully and thoughtfully. The effect on learning may not be the result of the self-talk technique alone, but in the learning environment in which it is embedded. The self-talk learning environment may help students learn how to manage their own learning by empowering them with the capacity to assume greater cognitive control over their movement-related actions. Instructionally, this involves a shift from a teacher-dominated instructional format to a more learner-centered and process-oriented approach to teaching and learning. Process-oriented approaches to teaching and learning are concerned with the way the learner understands content and uses information to guide thoughts and actions. As discussed in chapter one, the notion that learning is a constructive, cognitive process is a compelling concept that has not been thoroughly examined in the context of the 'regular' physical education classroom. The pedagogical content knowledge and procedural information gathered from this study may, therefore, impact curriculum planning, instructional organization and management, teacher-pupil interaction patterns, and teacher education in physical education.

Classes were assigned to specific treatment groups to determine treatment effects as they might occur in a 'typical' physical education class. According to Peterson and Swing (1983) many of the problems associated with application of cognitive strategy instruction can only be solved by research in an actual classroom setting. Furthermore, variables controlled in laboratory setting may vary and interact differently and in complex ways in the classroom. Uncontrolled variables may cause a cognitive learning strategy to lose its effectiveness when it is transferred from the laboratory to the classroom. Therefore, the intent of this study is to investigate if self-talk is effective in teaching the overhand throw with 8 and 9 year old boys and girls, under typical classroom conditions.

The effects of the self-talk program in relation to gender are also worthy of examination. Regardless of the research evidence, physical educators persist in differential and preferential treatment of males over females (Housner, Layne and Griffey,1984). Following examination of evaluative feedback in junior high school physical education classes, they found that female teachers gave more negative feedback about skills to girls (75%) than to boys (60.5%), while giving more negative feedback about conduct to boys (39.5%) than to girls (25%). Positive feedback about skills was higher for boys (30%) than for girls (19.3%) . Yet, according to Knapp (1963), sex is not a factor in skill development. Females have the same ability to achieve skill success as males, however, females tend to lag behind males in skill acquisition. Motivation and opportunity may

be limiting factors, but these factors are based on social rather than innate differences (Knapp, 1963; Mead, 1935) .

Attention to the quantitative aspects of the throw, such as the distance the ball is thrown, may distract both teachers and participants from considering the technical or qualitative merits of a throwing performance. Teachers who have insufficient knowledge of the mechanical aspects of the overhand throw further hamper attempts to improve the qualitative aspects of the throw. Examining the results of the use of the self-talk learning strategy, as it pertains to the development of a quality overhand throw, may yield further evidence to support Knapp's conclusions and Mead's observations. It may also strengthen teachers' and students' willingness to attend to the mechanical aspects of performance, improve their abilities to monitor, and improve the proficiency and outcomes aspects of the overhand throw.

The amount of time devoted to the treatment is also important. Nine, 15 minute sessions involving 5 minutes of instruction followed by 10 minutes of practice were offered to all three groups, over the three week time period. The amount and proportion of time devoted to instruction and practice was meant to represent a concentrated version of a year long effort to improve throwing skills in a regular school program. The exposure to instruction that subjects had over the three week study period was thought to be comparable to a single year of physical education class instruction on the overhand throw at the third grade level. Compared with similar studies aimed at examining the effects of different teaching methods and the use of learning strategies in the classroom, the length of the program in this

study appeared manageable and appropriate for the regular classroom (Palinscar and Brown, 1984).

The subjects in this study were drawn from four grade 3 classes. This grade level was selected for three reasons. First, students in grade 3 are able to participate in instructional/practice sessions of 10-15 minutes duration and remain focused. Second, according to Vygotsky (1934) children, by the ages of 4.5 and 5.5, are capable of using verbalizations to initiate, direct and inhibit motor behaviours. Third, other studies using verbalization strategies to improve academic results, with children in grades 2 to 4, conducted by Schunk and Rice, (1984) and again by Schunk and Rice (1985), have produced positive results. Accordingly, it appears that self-talk can be used appropriately in a regular classroom setting, and that the results obtained could generalize to other physical education settings.

In this experiment, the aspects of a mature throwing pattern, detailed in the performance criteria found in Appendix C, are thought to be reasonable and achieveable expectations for grade three children. The performance expectations instructors have for children, 8 and 9 years of age in an athletic program may exceed the levels accepted here.

•Note: Normally, classes in this school area last 30 minutes. During the last 15 minutes of class the subjects will participate in folk dance. Each treatment group will participate in the same folk dance activities for the duration of class time.

II. Research Design

The following three treatment groups were constituted as follows:

(1) a demonstration, explanation with metaphoric language and self-talk, and practice with self-talk group;

(2) a demonstration, explanation without metaphoric language and without self-talk, and practice without self-talk group;

(3) a third group employed a commonly used instructional strategy that involves demonstration without any explanation at all followed by practice. The **demonstration** group received a throwing performance pretest, a pre-experiment interview to determine the subjects' feelings about their ability to throw overhand, videotaped demonstrations of the task, weekly performance tests to determine progress, and a post-treatment interview about their feelings about their ability to throw overhand. The **demonstration, explanation, and practice group (DEP)** received the same demonstrations as the self-talk group, explanations of the skill in non-metaphoric language, and the same amount of practice time as the other intervention groups. The DEP group received a skill performance pretest prior to treatment, a pre-experiment interview to determine their feelings about their ability to throw overhand prior to treatment, weekly skill performance tests and a post experiment interview about their feelings about their ability to throw overhand. The **demonstration, explanation with metaphoric language and self-talk, and practice with self-talk group (ST)** received the same video demonstration and tests as the DEP group, however,

the information presented to the self-talk group was in metaphoric language appropriate for use as self-talk to guide practice time. In addition, the self-talk group was interviewed to determine the words they used as self-talk and their feelings about using self-talk to learn how to throw.

Feedback for each group was different. The self-talk group received feedback aimed at promoting the use of self-talk as it applied specifically to a particular feature of the throw. For example, "You did a good job remembering to tell yourself to spread the wings of the eagle as you prepared to throw". "Remember to tell yourself to lift the front leg". "Did you remember to start facing the target?" In contrast the traditional group receiving an explanation without metaphoric language and received feedback confined to the qualitative aspects of performance. For example, "Hold your arms up as high as your shoulders". "Did you put weight on the rear leg?" "Did you stand sideways?" The demonstration only group received no feedback at all. The instructor merely supervised to ensure the subjects remained on-task. For example, the instructor might say: "Continue practicing your throw." "Keep practicing." For an overview of the research design refer to Tables 3.1 and 3.2 .

Table 3.1 An Overview of the Research Design According to Treatment Groups

Subjects	Pretest	Treatment	Weekly Test	Post Test
Self-talk treatment group	•Record words used to describe their feelings about their ability to throw. •Demographic inventory. •3-trial throw performance	Demo + Explain* + Self-talk. 9 sessions/3 X a wk/ 3wks/15 min. each (5 min. instruction + 10 min. practice)	3-trial throw performance recorded at the end of each wk.	•Record words used as self-talk. •Record words used to descibe their feelings about using self-talk. •Record words used to describe their feelings about their ability to throw. •3-trial throw performance.
Tradition treatment group	•Record words used to describe their feelings about their ability to throw. Demographic inventory. •3-trial throw performance.	Demo + Explain 9 sessions/ 3 X a wk/ 3 wks/15 min. each (5 min. instruction + 10 min. practice)	3-trial throw performance recorded at the end of each wk.	•Record words used to describe their feelings about their ability to throw. •3-trial throw performance.
Demo Only treatment group	•Record words used to describe their feelings about their ability to throw. Demographic inventory. •3-trial throw performance.	Demonstration only 9 sessions/ 3 X a wk/ 3 wks/15 min. each (5 min. instruction + 10 min. practice)	3-trial throw recorded at end of each wk.	•Record words used to describe their feelings about their ability to throw. •3-trial throw performance.

*Explanation for self-talk group uses metaphoric language to describe the action.

Table 3.2 Research Design According to Research Questions

Question	Instrument	Collection	Analysis	Presentation
#1 Are there significant differences within and among groups over three weeks of treatment?	•3 trial throw performance	•videotape	•descriptive statistics •ANOVA	•line graph •statistical analysis •narrative •results tables
#2 With regard to the three treatments used in this study, is gender a factor in learning a motor skill: the overhand throw?	•3 trial throw performance	•videotape	•descriptive statistics •ANOVA	•line graph •statistical analysis •narrative •results tables
#3 What words do the learners use to guide their self-talk?	•interview	•written record	•researcher interpretation	•anecdotal accounts
#4 How do the learners feel about using self-talk?	•interview at the end of study	•written record	•researcher interpretation	•anecdotal accounts
#5 How do the learners in the feel about their ability to throw a ball overhand compared to: (a) the start of the study, and (b) other groups of learners?	•interview pre and post treatment	•written record	•researcher interpretation	•anecdotal accounts

IV. Subjects

The subjects for this study were enrolled in an elementary school located in a rural area in Southwestern Ontario. Forty-six subjects returned 'permission to participate' forms (see Appendix A) making them eligible for participation in the study. The class with 16 subjects was chosen as the self-talk treatment group. The class with 13 subjects was chosen as the traditional group. The class that returned 6 permission to participate forms was chosen as the demonstration group. Eleven subjects from a fourth class were added to the demonstration group to increase the sample size. Arrangements were made for the 11 subjects to attend physical education classes with the other 6 demonstration group members. The fact the demonstration group was a combination of two classes was not considered influential in obtaining different treatment effects.

The classes were put into groups without regard for any special characteristics for two reasons. First, the regular physical education teacher indicated the groups were, for the most part, similar demographically and in relation to skill development and behavior. The second reason was that, as much as possible, the subjects should interact as a regular class. Therefore, efforts were made to avoid alterations in the regular timetable and member composition of the class. The first class with 16 subjects in it, normally had a physical education class first period in the morning and was chosen, partly for convenience sake, as the self-talk group. The class that normally had physical education second period was chosen as the traditional group. This class had 13 subjects return their forms. In like manner, the

third class with a combined total of 17 (6 +11) subjects became the demonstration group.

V. Elements of Effective Instruction Considered in this Study

Five instructional considerations, identified and supported in the literature as essential elements of an effective physical education lesson, support the organization and instructional design of the classes.

(1) Whole-part-whole method of instruction. "Generally, it is agreed that complex skills be taught to students in their logical parts before being presented in their entirety" (Gabbard, et al,1987, p.48) . The video for the self-talk group and the demonstration plus explanation group began with a demonstration of the 'whole' skill that the subjects worked on for that particular week. The skill was broken into 3 learning phases, each phase highlighting certain aspects of the skill. After watching the video of the 'phase' for the week, a student pretending to be the teacher explained the throw with the teacher following the student's directions. After the student explanation, the subjects practiced throwing for 10 minutes. This process was repeated for the three classes that week. Each week a new phase was presented with additional information demonstrated and explained.

Having no preconceived notion of whether the effects of treatment would be immediate or require prolonged use to be effective, it was decided logically and logistically to try to teach each phase in 3 - ten minute sessions, totalling 9 sessions for the study.

The reason the skill is broken into 3 phases is as follows. Each phase contains a limited number of 'parts' because the students are usually not capable of handling all the information at once. Each phase includes execution of the complete throw because students need to connect the 'parts' to the 'whole' throw. It was unreasonable to expect the students to, for example, practice standing in the ready position without allowing them to continue and execute the throw. The three phases used were as follows: Phase 1: pivot from a frontal position to a sideways position, extension of the arms and hip rotation. Weight transfer was not emphasized at this point. Phase 2: works on weight transfer from the rear leg to the front leg. Phase 3: arm action and the follow through. The 3 phases of the overhand throw are more clearly described including self-talk words or phrases in Table 3.3 .

The demonstration only group viewed the 'whole' skill as demonstrated for Phase 1, 2, and 3 during the assigned week. The demonstration only group viewed the same video as the DEP group but without the recorded soundtrack.

(2) Time-on-task. "High rates of on-task behavior are extremely important if learning is to take place" (Siedentop, Mand & Taggart, 1986, p. 379) . In this study, the subjects in all the groups were allotted a specified and equal amount of time devoted exclusively to practice (10 minutes each class) .

Table 3.3   Three phases of the overhand throw described using self-talk words or phrases

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Week 1
Phase 1
•part 1
   1-stand sideways
   2-spread the wings of the eagle
   3-turn and throw
•part 2
   1-face the target
   2-pivot to sideways
   3-spread the wings of the eagle
   4-turn and throw

Week 2
Phase 2
•Phase 1 plus
   1-load up the back leg
   2-step over the line
   3-turn and throw

Week 3
Phase 3
•Phase 1
•Phase 2 plus
   1-elbow up and away from the body (statue arm)
   2-scratch your leg

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(3) Feedback. "It is not practice, but practice the results of which are known that makes perfect". (Bartlett, 1932)   According to Sage, (1984) informational feedback is critical for the learner to be able to compare and contrast practice trials with what the learner perceives as the intended motor responses.   It is through this process that the learner is able to abstract relationships and modify behavior.   The teacher provided feedback comments to only members of the self-talk, and the demonstration plus explanation groups, according to their specific needs.

The demonstration group did not receive any feedback or explanations throughout the three week period. For ethical reasons, the demonstration only group received self-talk treatment as needed following the final collection of data.

(4) Consistent expectations. All students should be treated equally regardless of gender, appearance, ethnicity, present skill level, social class or treatment group. "Teachers can and should communicate high expectations directly. Students should understand very clearly that teachers expect them to improve." (Siedentop, Mand & Taggart,1986, p.381) In this study, attempts were made to communicate with the subjects in a business-like and friendly manner.

(5) Demonstrations alone are not enough (Good and Brophy,1987; Bandura, 1977). Explanations are needed to help the learners focus on the key elements of the task. The demonstration, explanation and practice group (DEP), and the demonstration, explanation, self-talk and practice group (ST) received not only demonstrations but also task-specific information about what to pay attention to for improvements in proficiency during practice. The demonstration only group served as a comparison group for the other two treatments as well as providing information about the effects of learning by observation.

The self-talk group heard the explanation in phrases that facilitated the use of self-talk. The difference in the use of language is described in item number six which follows. The demonstration group was given no explanation or further clarification in addition to the video demonstration.

(6) Metaphors and analogies enhance the use of self-talk. According to Neelands, (1984) figurative language serves to represent the action in a form the learner can relate to and, therefore, interpret it in a meaningful way. Shulman, (1986b) refers to metaphors, illustrations, and analogies as pedagogical content knowledge. Information represented in a meaningful way can help learners mentally relate with prior experience and form new understandings that enable the learner to grasp unfamiliar and complex concepts in their own terms. However, the teacher must consider the learners' background and interests to find suitable words and images that convey the appropriate meaning and in the case of physical education, to describe the precise movement patterns.

A thorough understanding of the proper mechanics of the movement are needed: (a) to select useful and powerful metaphors that accurately represent the action, and (b) to judge the suitability of metaphors that the learners might choose. In this study, metaphors such as: spread the wings of the eagle, are used to depict the initial arm position, and were pilot tested to determine their suitability for use with 8 and 9 year old subjects. Metaphoric language was used only with the self-talk group because it is more conducive to the use of self-talk than technical language (Orlick, 1986).

For example, self-talkers heard and were prompted to use the phrase, "spread the wings of the eagle", to describe and initiate proper arm positioning for preparation of the throw. The demonstration, explanation group heard: "hold your arms out from your body and up to your shoulder height". The demonstration

group heard nothing. They saw the same number of videotaped demonstrations, the same number of times as the previous two groups, but, without sound.

A model for strategy training, based on cognitive science, reciprocal teaching, modeling and reinforcement is reported by West, et al, (1991). They recommend beginning with a demonstration of the strategy along with the content. In other words, the subjects should see the overhand throw while they hear the self-talk words that are associated with the details of throw. Next, the subjects should perform the throw using self-talk under the guidance of the instructor. Guidance is faded and feedback is given relative to results (how well they used self-talk and performed proficiently). If a student experienced difficulty, the instructional sequence or part of it were repeated. For example, a student who is not standing sideways even after the prompt, "Did you remember to tell yourself to stand sideways" could be instructed to watch the teacher or the video repeat the demonstration and self-talk for this aspect of the throw or the subject could be asked to instruct the teacher. Finally, the student performs without guidance practicing the strategy independently. The scope of this study does not include the use of self-talk for skills other than the overhand throw. Generally, however, this eclectic model drawn from behaviorism, social learning theory and cognitive science is reflected procedurally in this study.

VI. Demographic Inventory

The following demographic data was collected to help describe the subjects and to help interpret the results. The regular classroom teacher was asked to rate each subject in each of the following categories: students' language competencies-- reading, verbal, and written; attention ability; and impulsive/reflective tendency (see Appendix F). These ratings were based on the teachers' contacts with students over the last 7 months of school. No other measures of language competency or attention ability or impulsive/reflective tendency were obtained.

The ratings were given according to the following guidelines:

a) Language Competency. Each students' academic level of achievement was rated by asking the teachers to give each subject in their class a score of 1, 2, 3, 4 or 5 . A score of 5 indicated high levels of achievement in general academic tasks such as reading, and language use, both written and oral (general ability to articulate thoughts, age appropriate speech patterns, conversation ability). A score of 1 indicated low levels of achievement and the child has been identified psychometically and placed in an appropriate special education class.

b) Attention levels. The teachers rated each student's general ability to attend to instruction and assigned tasks, according to scores of 1, 2, 3, 4 or 5. A score of 1 is high, and a 5 is extremely low (the child may be diagnosed as having an attention deficit disorder).

c) Impulsive/reflective character. Each student was rated by the classroom teacher on a scale from 1 to 5. A score of 1 indicated a

tendency toward impulsivity (tends not to think before he/she acts). A score of 5 is a tendency toward reflectivity (he/she is thoughtful and planful about actions).

VII. Procedures Used to Collect and Evaluate
Baseline Data

Before an accurate assessment of each subject's throw could be made, a performance criteria and rating scale for each criterion had to be determined. The performance criteria and rating scale for the overhand throw selected for use in this study was designed originally by Vogel and Seefeldt (1990). Ten key elements of performance for the overhand throw are identified (See Performance Criteria in Appendix C) . The descriptions for each of the criteria were modified slightly during the rating process to ease interpretation of the varied throwing patterns exhibited initially by the subjects. The final version used in the study is found in Appendix C.

Each key element of the throw was rated according to the following description. Zero points were awarded if none of the expected features of the particular element was present; one point was awarded if the subject demonstrated a partial ability to perform the task but could still benefit from instruction; and two points were given if all the details required for the element were present. Note, the performance expectations are considered appropriate for grade 3 children practicing in the context of a regular physical education setting, not athletes preparing for sport participation. Before the raters viewed the video tapes in slow motion they were told the

performances they were about to rate were beginners practicing just the overhand throw. The students are not practicing baseball, they are practicing the overhand throw.

A perfect score on the performance rating scale equals 20 points. An example of the rating chart is shown in Table 3.4 .

Table 3.4   Sample Performance Rating Chart

Group : Self-Talk

Subject #:   Rater #:

	a(1)	a(2)	b	c	d	e	f	g	h	i	total
pretest	1	0	0	1	0	0	0	0	0	0	2/20
wk 1	2	1	1	1	0	0	0	0	0	0	5/20
wk 2	2	2	2	2	1	1	1	0	0	0	11/20
wk 3	2	2	2	2	1	1	2	2	1	0	15/20

Two graduate students in physical education from the University of Western Ontario served as independent raters for the study. The raters worked together to evaluate baseline test results. Encounters with the data gave them an opportunity to discuss how they would interpret unique throwing styles according to the performance criteria. Test 1, 2, and 3 video tapes were rated separately. When raters differed in total, the throw was reviewed and the raters discussed their differences until a consensus rating was reached. If raters were in doubt about a subject's performance a lower rating was given.

Testing would follow this instructional period and ratings would be displayed according to the format described in table 3.4.

The procedures used to collect baseline data are as follows. As a group, the subjects were introduced to the investigator and given

an explanation of how and where the testing would occur. They were also shown a schedule that indicated the times and days they would be tested.

Following the introduction, each student was individually interviewed to help both the subject and the instructor become more familiar with each other and determine the students' perceptions of their ability to throw a ball. Interview questions are included in Appendix E . Five facial expressions: very happy, happy, indifferent, sad and very sad were thought to be more appropriate for youngsters, 8 and 9 years of age, than using numbers or word phrases. Facial expressions were thought to help the subjects indicate their feelings about throwing more accurately.

The testing process took place on the stage at the school behind the curtains to provide each individual with an opportunity to throw, free from interferences, and at their own pace. After a review of the procedure and a warm-up of 5 throws, each subject threw a bean bag three times. Each subject's throws were videotaped. The best of the three throws was rated. The best throw of the three trials was usually not too difficult to determine. Typically, the subjects second or third throw was better than their first. The raters viewed the three throws, estimated which throw was best of the three, then proceded to rate according to the performance criteria. At the end of each treatment week, the videotaping and rating procedures were repeated for each subject. The procedures above were selected for two reasons. First, operating in this manner allowed each subject, an uninterrupted opportunity to demonstrate their present level of skill. Second, Siedentop,(1976) recommends that in order to effectively

distinguish a pattern, "the observer should stay with one student for enough trials to get a good idea of the performance" (p. 234) . Five warmups followed by 3 performance trials was thought to be enough.

Using the performance criteria and rating scale found in Appendix C , a pretest rating out of a possible 20 was calculated for each subject. Performance measurements were taken on those subjects whose baseline scores showed no more than '1' on performance criteria items #1, #2, #6, and #7 and if their scores were less than 12 out of 20. The reason for selecting subjects who score less than '1' on test items #1, 2, 6, and 7 was because some subjects were already performing the throw at or near mastery levels. Instruction about the basic throw would therefore be redundant. Test criteria items #1, 2, 6, and 7 are common omissions unless the participant has received instruction and practiced often.

Ratings received in all categories were recorded to determine which categories subjects improved and in which categories progress appeared to be troublesome.

VIII.   Procedures for the Self Talk Treatment Group

Before the subjects in the self talk group assembled in the gym they received a brief lecture on the use of self talk. According to Bereiter & Scardamalia, (1987) the subjects need to know that self talk is natural and a useful way to remember what to do to learn the skill. Following the introductory remarks, a demonstration of the use of self talk was provided. The subjects viewed a clip from the movie Home Alone in which the youngster who stars in this movie is talking to himself about the chores he has assigned himself that day.   The instructor took a few moments to discuss with the subjects what the boy in the movie said to himself, why it is useful, and why he was talking to himself in the first place. Next, the subjects discussed what sorts of self talk might be harmful. For example, some individuals criticize themselves with their 'inner' voice. They may tell themselves they are terrible throwers. Criticism is not appropriate instructional self-talk and the instructor showed the subjects how to deal with negative self-talk. Instead of saying: "Your a terrible thrower", tell yourself what you should do to become a better thrower, "spread the wings of the eagle, stretch the shoulder".

The instructor solicited, from the subjects, other examples of the use of self talk that they had already noticed in everyday experiences. For example, parents, and athletes frequently use self talk to caution or remind themselves to do certain things. The subjects also needed to know that sometimes simply one word is all that is necessary to remind the individual what to do. Key words can represent complex actions. The subjects were then reminded that in

the upcoming class they would be expected to listen for and use key words the instructor uses to focus on the important parts of the skill they are learning. They were told to be prepared to tell the instructor what phrases they remembered or created, to instruct themselves about how to perform the task perfectly.

The instructional procedures for the self-talk group are described in the following table.

Table 3.5 Phase 1 - Instructional Sequence

Step 1: Demonstration of the 'whole' skill - twice.

Step 2: Explanation of the 'parts' of phase 1 - once.

> Phase 1- part 1 •stand sideways to the target
> •spread the wings of the eagle
> •turn and throw

Step 3: Demonstrate the throw with self-talk-twice

Step 4: The teacher performs the throw once with a subject who volunteers to pretend to be the teacher and gives instructions using self-talk phrases.

Step 4: Practice time: Allow the subjects 10 minutes to perform the throw at the target using self-talk to guide and monitor performance.

The teacher asked a volunteer from the group to instruct or tell the throwing story to the teacher who then performed the throw accordingly. The reason this activity was included was to determine whether the subjects understood the information. According to Anderson & Roth, (1988) investigators can determine whether students understand a concept or not by asking the students to explain or describe the skill in their own words. The subjects may use the key words used by the instructor or the key words used to describe the action may be selected by the subject. As students

explain in their own words, teachers have the opportunity to assess the adequacy, accuracy and appropriateness of the words the student uses to direct and monitor their actions. Just remembering the key words is not enough. Teachers should ensure that the movement story is in the proper sequence. Rhyming off the key words like a chant is not acceptable (Meichenbaum, 1977) . A student who volunteers to describe the action but has difficulty finding the words or who forgets information can get ideas from other students until the movement story is complete. When a subject substitutes their own words with or without prompt, and the words are appropriate, the subject is permitted to use their own words. In this way, the subjects can personalize their self-talk and demonstrate to the instructor whether the subject is accurately attending to the skill component. The teacher should encourage the creation of metaphors that are meaningful to the individual, but these should be screened by the teacher to ensure accuracy, adequacy, and appropriateness.

Teaching students to explain the skill like a teacher prepares them for the role they play as their own teacher telling themselves, outloud, what to do. As a student of their own instruction, they must try to perform exactly as they have instructed themselves. Following these procedures, the subjects were dispersed to practice on their own for 10 minutes.

The instructor listened and encouraged the use of self talk as well as providing feedback about the use of self-talk related to the qualitative aspects of performance. The procedure described above was repeated each class for 15 minutes (5 minutes of video instruction plus 10 minutes of practice). During the second week

students repeated the procedure but concentrated on new elements of the throw introduced on the phase 2 video. During the third week, students again repeat the procedure focusing on elements of the throw introduced on the phase 3 video.

Each subject completed nine - 10 minute practice sessions over the three week period for a total of 90 minutes of practice time. No subjects missed a session due to illness.

Throughout the practice period, feedback was selected from two categories: high priority category or a low priority category. High priority feedback pertains to the components of the skill just provided in class. Examples of instructional feedback for the self talk group relative to the throwing action might be: "You're doing a good job remembering to tell yourself to keep your elbow up." or "Did you remember to tell yourself to stretch your back shoulder?"

For the traditional instruction group the feedback might be: "Did you keep your elbow up?" "You're doing a good job stretching your back shoulder."

Low priority feedback would be related to prior or future phases. For example, subjects just instructed about the arm action receive low priority feedback on their hip rotation. Errors relative to features of the throw not yet introduced although a high priority item later on are considered a low priority concern during other phases of the skill development.

The instructor made feedback comments to each subject during practice. No attempt was made to record the amount and content of feedback statements during this study. It would be interesting to

determine how teachers' use of feedback changes after their students are taught to use self-talk.

IX. Procedures for the Traditional Treatment Group

The procedures for the traditional - demonstration, explanation, and practice, class were exactly the same as for the self-talk class except the explanation words were different and the subjects were not encouraged to self-talk during practice. For example, instead of saying: "spread the wings of the eagle", the video instructed the subjects to "hold your arms up as high as your shoulders". The instructor provided instructional feedback of a technical nature only.

A summary of Phase 1 instruction for the traditional group are displayed in Table 3.6.

Table 3.6 Instructions for Traditional group

Step 1: Demonstrate the whole skill - twice.

Step 2: Explain the 'parts' of Phase 1 - once.

    Phase 1 -part 1•stand sideways to the target
                •hold your arms up to shoulder height
                •turn and throw

Step 3: Teacher performs the throw once with a subject who volunteers to pretend to be the teacher and gives instructions using non-metaphor words from the video.

Step 4: Practice: Allow the subjects opportunities to practice the throw for 10 minutes.

X. Procedures for the Demonstration Treatment Group

The subjects viewed the video as a group. On the video, the class saw a demonstration of the mature throwing pattern used as Phase 3 in the other two groups. Each class, the subjects viewed the same, phase 3, video demonstrations that was used with the traditional group but the sound was turned down. Over the three week period, the demonstration group saw the video the same number of times as the other two groups. The subjects did not receive an explanation of the skill. The subjects in this group did not receive feedback about their performance. After the three week study period, this group did receive additional treatment as needed to acquire throwing skill similar to the other groups. If the traditional or self-talk group appeared in need of remedial instruction, they would also have received a make-up class.

XI. Data Collection Procedures

Pre-experimental testing of the individual subjects was completed in the following order: human subjects approval, collection of informed consent; collection of demographic data; record the words all subjects use before the experiment to describe their feelings about their ability to throw; video tape a 3-trial throw performance pretest; video tape a 3-trial throw at the end of each week; record on video tape the words the self-talk group used as self-talk; record the words the self-talk group used to describe their feelings about using self-talk; record the words all groups use to describe their feelings about their ability to throw.

XII. Method of Recording Data

Informed Consent (see Appendix A), each subject for the study was informed of the nature of the study and what was expected of each subject group in terms of testing, time and procedures. The subjects received in the mail, information about the procedures, purposes and benefits of the study, along with a request to complete the consent sheet.

Demographic (see Appendix F) Each classroom teacher was asked to provide information by circling the number that most accurately described each subject under the headings provided.

3-Trial Throw Performance

Each subject was given an separate opportunity to perform three throws. The subjects came to a designated area in the school where they could be videotaped privately, without distractions and at their own pace. The best of the three throws was rated using the Performance Standards Evaluation Form (Appendix C) .

Words Used to Describe their Feelings About their Ability to Throw

Before and after treatment, each subject was interviewed (see Appendix G) in at a station set up outside the class and asked to describe their feelings about their ability to throw. Their words were recorded on paper.

Words used as Self-Talk

At the end of the three week treatment period the subjects in the self- talk group were interviewed, individually. During this time, each subject was asked to describe in their own words, what words they used to guide themselves to perform the task. This information was recorded on paper.

Words Used to Describe their Feelings about Using Self-Talk

During the interview at the end of the experiment, the subjects in the self-talk group were asked to tell the researcher how they felt about using self-talk to learn to throw. This information was recorded on paper.

XIII.   Summary

The purpose of this chapter has been to present the design, methodology, and procedures used in this study for the purposes of experimental replication.

Chapter 4
ANALYSIS AND DISCUSSION
I. Introduction

The purpose of this study was to investigate the effects of an instructional self-talk program upon the performance of a one hand overhand throw, among male and female subjects, 8 and 9 years of age. The 3 week program consisted of 9 sessions, 15 minutes in length (5 minutes of instruction followed by 10 minutes of practice). The potential the self-talk instructional strategy has to enhance motor skill acquisition is explained in terms of the following guiding questions:

Question #1 Are there significant differences within and among groups over three weeks of treatment?

Question #2 With regard to the three treatments used in this study, is gender a factor in learning a motor skill: the overhand throw?

Question #3 What words do the learners use to guide their self-talk?

Question #4 How do the learners feel about using self-talk?

Question #5 How do the learners in the self-talk group feel about their ability to throw a ball overhand compared to (a) the start of the study, and (b) other groups of learners?

This chapter is organized under the following headings: (a) Demographic Data, (b) Research Question 1, (c) Research Question 2, (d) Research Question 3, (e) Research Question 4, (f) Research Question 5, (g) Interview highlights with the subjects' physical education teacher, (h) Summary of Results.

II. Demographic Data Collection

Forty-six grade three students, twenty-eight females and eighteen males, took part in the study. All students attended a kindergarten to grade 5 public school located in a small, rural village in southwestern Ontario. Two thirds of the students in the school are from the village and one-third of the students are bused to the school from the surrounding rural area. None of the students used in the study had been diagnosed as having physical, emotional, behavioural or psychological disabilities.

Classes rather than individuals were assigned to particular treatment groups in an attempt to replicate the normal class structure. Prior to assigning classes to specific treatment groups, the regular physical education teacher was interviewed to determine whether there were any special characteristics or concerns associated with any of the classes that might interfere with assigning the classes to particular groups. She indicated there were none. In terms of motor skill ability, she indicated that based on her observations of the students' performances during skill development games throughout the year, the classes were similar. She felt that all the children in all the classes enjoyed physical education and would participate eagerly. In her view, each class had a number of cooperative and willing students and a few youngsters who occasionally needed to be reminded to stay on task.

Based of this informal analysis of subjects, there did not appear to be any differences demographically, academically or motorically across the classes. It was decided to assign the treatment groups and

control groups by chance. Permission forms were distributed to each student in each of the three classes. Unfortunately, only 6 students from the one class designated as the demonstration group returned their permission forms. Permission forms were distributed to a fourth grade 3 class. Eleven subjects from the fourth grade 3 class returned their forms and arrangements were made for these eleven individuals to have physical education at the same time with the other 6 subjects already assigned to the demonstration group. Accordingly, the demonstration group is a combination of students from two different classes.

Later, it was determined using an ANOVA that there were no significant differences in the three groups before treatments. After examining the demographic data it appears the students were similar. Further analysis and discussion of the demographic data is offered later in this chapter.

Following collection and calculation of baseline ratings it was determined that each class had 2 or 3 youngsters who could already demonstrate a proficient throw. As was discussed in the methodology chapter, subjects who scored greater than 12 in total, or were rated a 2 on criteria items #1, #2, #6, and #7, on the performance rating scale were not included in the calculation of the results. These skilled youngsters participated in the classes along with their classmates but their performance ratings were not included in the calculations and analysis of data.

For this study, indices of the capacity to competently use verbal strategies are: the subjects' language competencies --verbal, written, and reading; the ability to attend to instruction; and

impulsive/reflective tendencies. These indices were selected logically although some studies have considered impulsivity/ refectivity and attention control as variables which self-talk was aimed at influencing (Meichenbaum, 1977; Berk and Garvin, 1984; Rubin, 1987; Palinscar and Brown, 1984). In this study, however, these concerns are not included as a way to group students for the purposes of detecting differential effects of treatment. Instead, these concerns help describe the subjects.

Demographic information pertaining to the subjects' verbal competency is found in Table 4.1 . Demographic information pertaining to the subjects' ability to attend to instruction is found in Table 4.2 . Demographic information pertaining to the subjects' tendencies to be either impulsive or reflective are found in Table 4.3.

The classes were assigned to one of the three treatment groups before considering the teachers' ratings on these student characteristics. In fact, the teachers' ratings were not completed until the middle of the second week of the treatment program. No further tests were conducted to confirm the teachers' diagnosis because the demographic data was intended only to describe characteristics of the subjects thought to be important to the study.

Using the categories and rating scale found in Appendix F, the regular classroom teacher was asked to rate each child on a 5 point scale. A rating of 1 under the Language Competency headings: reading, writing, verbal indicates the child is receiving special education classes specifically for a weakness in reading. A rating of 5, indicates the child is demonstrating high levels of achievement. A rating of 1, in the attention category indicates the child has an

Table 4.1   Percentage Rankings for Language Competency Categories According To Treatment Groups and Gender

Treatment Group: Self-Talk

Language Competency

Gender	oral rating					written rating					reading rating				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
male n=7	14%	0%	43%	29%	14%	29%	0%	29%	29%	13%	14%	0%	57%	14%	15%
			$\bar{x}$=3.28*					$\bar{x}$=3.0					$\bar{x}$=3.14		
female n=9	22%	11%	33%	22%	12%	22%	11%	33%	22%	12%	22%	11%	33%	22%	11%
			$\bar{x}$=2.88					$\bar{x}$=2.88					$\bar{x}$=2.88		

Treatment Group: Traditional

Language Competency

Gender	oral rating					written rating					reading rating				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
male n=6	0%	0%	33%	50%	17%	0%	17%	66%	0%	17%	0%	17%	33%	33%	17%
			$\bar{x}$=3.83					$\bar{x}$=3.17					$\bar{x}$=3.5		
female n=7	0%	28%	14%	58%	0%	28%	14%	14%	44%	0%	28%	0%	28%	44%	0%
			$\bar{x}$=3.28					$\bar{x}$=2.7					$\bar{x}$=2..6		

$\bar{x}$ represents the mean rating for each category

Table 4.1 continued

Treatment Group: Demonstration

Gender	Language Competency														
	oral rating					written rating					reading rating				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
male n=5	0%	0%	40%	20%	40%	0%	0%	40%	40%	20%	0%	0%	60%	20%	20%
			x̄=4.0					x̄=3.8					x̄=3.6		
female n=12	0%	0%	33%	33%	34%	9%	0%	33%	33%	25%	9%	0%	25%	33%	33%
			x̄=4.0					x̄=3.67					x̄=3.8		

Table 4.2 Percentage Rankings for the Ability to Attend Category According to Treatment Groups and Gender

Treatment Group: Self-talk

Gender	Attention rating				
	1	2	3	4	5
males n=7	0%	0%	57%	0%	43%
			x̄=3.9		
females n=9	0%	11%	23%	33%	33%
			x̄=4.1		

Treatment Group: Traditional

Gender	Attention rating				
	1	2	3	4	5
males n=6	0%	33%	17%	33%	17%
			x̄=3.3		
females n=7	14%	14%	14%	58%	0%
			x̄=3.14		

Treatment Group: Demonstration

Gender	Attention rating				
	1	2	3	4	5
males n=5	0%	0%	40%	0%	60%
			x̄=4.2		
females n=12	0%	0%	25%	42%	33%
			x̄=4.1		

Table 4.3   Percentage Rankings for Impulsive/Reflective Category According To Treatment Groups and Gender

Treatment Group: Self-talk

Gender	Impulsive/Reflective ratings				
	1	2	3	4	5
males n=7	0%	14%	28%	0%	57%
			x̄=4..0*		
females n=9	0%	11%	33%	11%	45%
			x̄=3.9		

Treatment Group: Traditional

Gender	Impulsive/Reflective ratings				
	1	2	3	4	5
males n=6	0%	50%	16%	34%	0%
			x̄=2.8		
females n=7	14%	14%	15%	57%	0%
			x̄=3.14		

Treatment Group: Demonstration

Gender	Impulsive/Reflective ratings				
	1	2	3	4	5
males n=5	0%	20%	20%	20%	40%
			x̄=3.8		
females n=12	0%	0%	25%	25%	50%
			x̄=4.25		

x̄ represents the mean rating

attention deficit disorder. A rating of 5, in the attention category indicates high levels of attentiveness. In the impulsive/reflective category, a rating of 1, indicates the child has a tendency not to think before s/he acts. A rating of 5, in this category indicates the child tends to be thoughtful and planful about his/her actions.

The teachers' subjective ratings for these categories are based on the daily contact the regular classroom teachers have had with each of these students over the past 7 months. Official records of students achievement were not available for use in this study.

The demographic data displayed in Tables 4.1, 4.2, and 4.3 indicate that the majority of the students in each of the three groups were experiencing success in the language arts categories at their respective grade levels. A score of three or better indicates the subject is working at or above grade level of achievement. The self-talk group had the greatest number of students (25%) who were identified as receiving special education in language arts categories. Only one subject in the traditional group had been diagnosed psychometrically as having an attention deficit and two children in the traditional group were receiving special education assistance in language arts at the time of the study. Only one of the students in the demonstration group was rated as requiring special education and no child in this group was described as having an attention deficit.

The demonstration group had the greatest number of subjects (100%) who were rated better than or equal to 3 in the Language Arts categories of oral, written, or reading. The demonstration group

recorded the greatest number of subjects with a rating of 3 or better on ability to attend and reflectivity (100%) .

III. Question #1:

Are there significant differences within and among groups over three weeks of treatment?

To determine the progress that subjects achieved in each group, performance ratings were calculated before treatment and at the end of each week of the study. Using the procedures discussed in the methods section, three throws for each subject were video taped, replayed in slow motion and given a rating out of a possible 20 points. Pretest throws were very difficult to rate because of the idiosyncratic nature of the throws. The raters worked together during this time to decide how they would interpret various arm actions and sideways orientations to the target. However, for the tests at the end of week 1, 2, and 3 the raters worked independently.

Interestingly, the raters level of consistency improved as the subjects experienced instruction. When ratings for all treatment groups were examined at pretest time, the raters gave the same ratings for the subjects 78% of the time. At the end of week 1, the raters had the same ratings 81% of the time, week 2- 85% and by week 3 - 93%. Apparently, as the throws began to conform more closely with the standards, the raters ability to identify and rate aspects of performance also increased.

The demonstration group proved to be the most difficult group to rate throughout the study. These subjects' throws continued to be idiosyncratic throughout the study and as a result the raters had less consistent ratings for these individuals. Table 4.4 shows the levels of consistency for the raters over the three week study period and for each treatment group.

Table 4.4   Percentage Levels of Rater Consistency over Test Periods and According to Treatment Groups

Group	pretest	test 1	test 2	test 3	mean
Self-talk	78%	84%	88%	98%	87%
Traditional	80%	80%	85%	95%	85%
Demonstration	77%	80%	82%	86%	80%

To calculate the raters levels of consistency, a Pearson correlation calculation of Rater 1 with Rater 2 was conducted. Correlation results are as follows: Pretest = .98, Test 1 = .97, Test 2 = .99, and for Test 3 = .99 . The reason ratings correlated so high is because the raters were evaluating highly objective performance criteria and participants were taught to the performance criteria used to evaluate their throws. Consequently, as performances came closer to the expected standards, the ability of the raters to objectively rate performance coincided more frequently. No further tests or checks of rating consistency were conducted because of the high correlations between the two raters on the Pearson correlation calculation.

To determine group performance results, descriptive statistics including mean ratings were calculated. The data for these calculations are displayed in Table 4.5 .

Table 4.5   Descriptive Statistics According to Treatment Group and Test Periods

Self-Talk

Factor	Level	N	Group Mean 1	SD2	Max3	Min4
period	pretest	16	7.6	2.9	11.0	2.0
	week 1	16	11.4	1.6	14.0	9.0
	week 2	16	14.1	1.7	17.0	11.0
	week 3	16	16.0	1.2	18.0	14.0

Traditional

Factor	Level	N	Group Mean	SD	Max	Min
period	pretest	13	8.4	3.3	12.0	2.0
	week 1	13	9.5	2.9	14.0	4.0
	week 2	13	12.5	2.5	16.0	7.0
	week 3	13	13.5	2.0	17.0	11.0

Demonstration

Factor	Level	N	Group Mean	SD	Max	Min
period	pretest	17	8.4	3.4	12.0	2.0
	week 1	17	10.2	2.8	15.0	4.0
	week 2	17	10.3	3.9	16.0	3.0
	week 3	17	10.6	4.1	15.0	3.0

1 Mean figures shown in this table indicate the mean number of rating points for all the subjects in the treatment group scored out of a possible 20 points on the best 1 of 3 throws.
2 SD = standard deviation.
3 Max = maximum rating
4 Min= minimum rating

Pretest ratings show slight numeric differences in mean values between the groups, however an analysis of variance indicated there was no statistically significant difference in the groups in terms of achievement (p < .01) at pretest time. An analysis of covariance (ANCOVA) was run but no significant difference was found in the

tests for the crucial interaction. Subsequent tests were, therefore, limited to analysis of variance.

As revealed by the mean ratings observed for each comparison group improved each week for the three week treatment period. The self-talk group means exceeded the mean scores of the other two groups the first week of treatment and continued to make steady gains each week that were greater than the other two groups. Examination of the mean ratings for each group across the three weeks revealed the self-talk group began the study with the lowest mean rating (7.6) and completed the treatment period with the highest mean rating (16.0). The demonstration group started the program with the highest mean rating (8.4) and completed the treatment program with the lowest overall mean rating (10.6).

Mean ratings by groups plotted at the end of each test period are displayed in Figure 4.1 . By the end of the treatment period, the self-talk group made the largest improvement in throwing ability. Traditional instruction was the next most effective treatment. The self-talk group displays a steady, steep increase in performance over the three test periods. The traditional group exhibits a more gradual improvement beginning slowly the first week but climbing abruptly the second week. The demonstration group improves the first week but results plateau the second week and level off to the end of the treatment which suggests all that can be learned from demonstration comes after the first week of instruction.

When a new skill or a new way to perform a skill is introduced, it is not uncommon for participants to be somewhat confused by the new technique and experience a decline in performance (Sage, 1984;

Knapp, 1963). This is sometimes referred to as a learning dip. In other words, things get worse before they get better. This phenomenon may account for the traditional groups slower progress at the beginning of the treatment program. Interestingly, the self-talk and demonstration groups did not experience a similar effect on performance.

The demonstration group showed promising improvement initially, but reached a plateau after the first week of treatment and showed little improvement for the duration of the study. The abrupt change upward for the demonstration group after the treatment period was completed was the result of the application of self talk treatment for one 30 minute class. As discussed in the methods chapter, the demonstration group was not expected to improve as much as the other groups but for ethical reasons the demonstration group was given self-talk instruction after the study period was completed.

During the single class, post treatment (30 minutes) the subjects received a modified introduction to self-talk, instructor demonstrations, and the metaphoric language used as self-talk. Each phase of the throw were introduced and practiced for 10 minutes using self-talk. Following the class each subject was videotaped. Results were rated using the criteria and rating scale found in Appendix C. An analysis of variance (ANOVA) of demonstration group mean ratings from week 3 to test 4 showed a significant period by group interaction (F (4, 60) = 20.38, p < .01) .
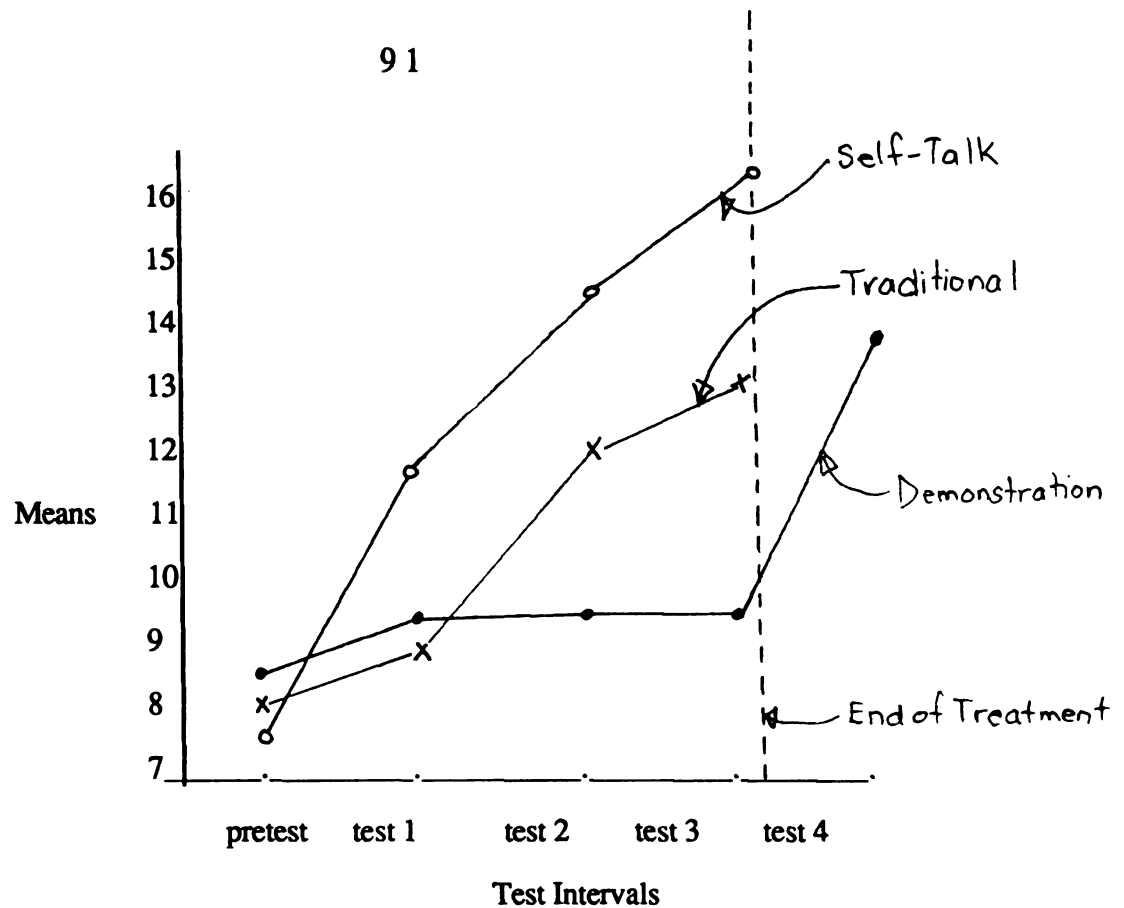
Figure 4.1 Treatment Group Ratings According to Test Intervals

The trend over the 3 week period followed by a sudden increase during the post treatment phase is most likely to have occurred as a result of treatment.

The demonstration groups' remarkable increase after the self-talk lesson shows how much the subjects benefit from an explanation of the key details of the skill. As you will remember, during the study, the demonstration group viewed the video with the sound turned down. The students were curious about what was being said on the tape. When they did have a chance to hear about the important details of the throw their interest was peaked achievement results were very positive.

Another interesting way to examine the data is to calculate the mean difference performance ratings for each group. This calculation is made by subtracting pretest rating results from the week 3 test results. Figure 4.2 displays the results graphically. The self-talk group average mean rating improvement over the study period was 8.4 . The traditional group average mean rating improvement was 5.3 . The demonstration group experienced the least improvement of the three groups, 2.1 mean rating points.

To determine whether there are any statistically significant differences within each groups mean difference, a one way analysis of variance (ANOVA) was performed. This analysis yielded a significant effect of treatment ($F_{(2,43)} = 21.21$, $p < .01$) MSE = 6.993. Two Scheffe tests showed self-talk was superior to traditional treatment ($F_{(1,28)} = 10.5835$, $p < .01$) and traditional was superior to demonstration treatment ($F_{(1,28)} = 9.8962$, $p < .01$).

These results indicate that the self-talk treatment is more effective than the traditional and demonstration approach for learning the overhand throw among 8-9 year olds in a natural gymnasium setting over traditional and demonstration only methods of instruction.

A useful way to look at the rating data was in relation to each key performance element. The results in each category helps show the progress in relation to the phases of instruction and according to different treatments. The number of students who were rated 0 or 1 for each of the 10 key elements, at the time of each test according to treatment groups is shown below in table 4.6 . The frequency distribution shows the number of subjects in each group that could
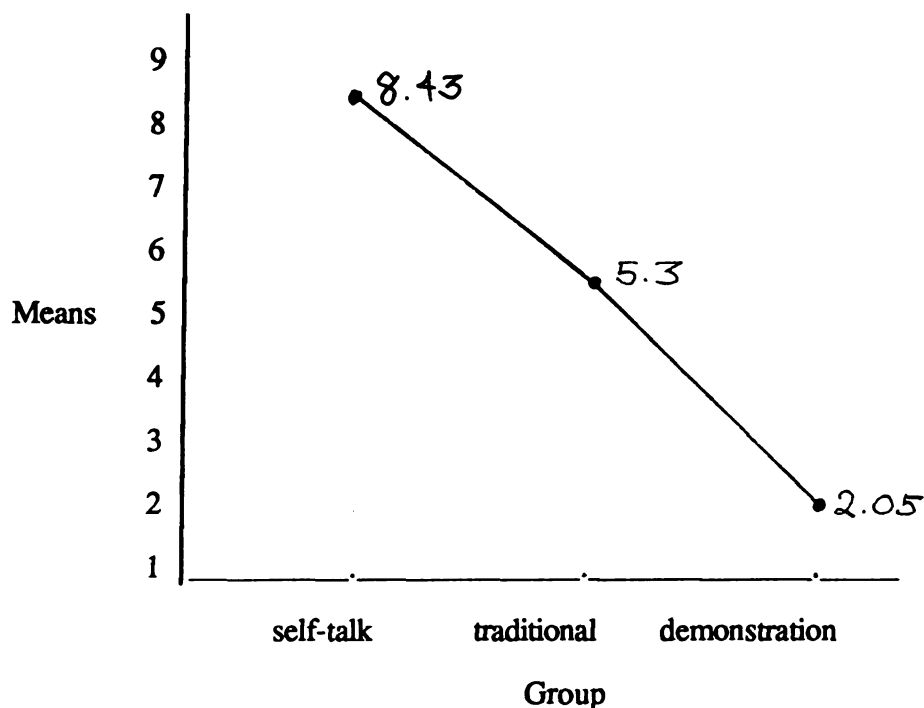
Figure 4.2 Mean Difference Ratings According to Treatment Group

benefit from instruction (were rated < 2) according to each element of the task.

By the end of the treatment program, the self-talk group had a number of subjects (at least one third of the class) who could benefit from instruction in 4 performance categories: c, e, f, and i. In the other categories only 2-4 students needed further instruction. By the end of the treatment program, the traditional group had a number of subjects (at least one third of the class) who could benefit from instruction in all performance categories except a(1) . By the end of the treatment program, the demonstration group had a number of subjects (at least one third of the class) who could benefit from instruction in all performance categories.

Table 4.6 The Number of Subjects in each Treatment Group Who Received a Rating 0 or 1 According to Each Key Performance Element

Self-Talk   N=16

	a(1)	a(2)	b	c	d	e	f	g	h	i
pretest	16	16	17	15	11	13	17	10	14	17
wk 1	2	8	13	13	11	15	15	7	10	17
wk 2	2	7	4	8	3	9	13	10	6	15
wk 3	0	4	3	10	4	9	12	2	2	15

Traditional   N=13

	a(1)	a(2)	b	c	d	e	f	g	h	i
base	11	13	10	11	6	10	12	11	10	12
wk 1	4	9	11	12	10	12	13	11	9	13
wk 2	4	10	3	11	3	12	12	10	7	12
wk 3	1	6	8	12	7	11	10	5	9	13

Demonstration N=17

	a(1)	a(2)	b	c	d	e	f	g	h	i
base	15	16	16	16	10	16	16	13	14	15
wk 1	6	16	15	15	8	17	17	15	13	17
wk 2	6	15	11	15	7	15	17	14	13	17
wk 3	6	16	10	14	8	16	17	9	12	17
test	4	0	8	5	13	7	12	15	11	9	15

In each category for the self-talk group there is a consistent decline in the number of students who are rated in need of further instruction (the students who received a rating of 0 or 1). However, in the other two groups the number of students rated as requiring

further instruction does not follow a similar pattern. For example, in the traditional group in category 'd' , the number of subjects who received a rating of 0 or 1 at the pretest time was 6. This number increases to 10 at the end of week 1, drops to 3 at the end of week 2, and then increases again to 7 at the end of week 3. The demonstration group had similar results for this category. On the pretest, the number of subjects in the demonstration group who received a rating of 0 or 1 for category 'd' was 10. At the end of week 1 this number was 8. At the end of week 2 the number was 7. Week 3 the number was 8 again.

It should be noted that only specific performance elements were emphasized during instruction during week 1, 2, 3. During week one Phase I of the skill was taught. Phase I included pivoting to a sideways position, extension of the arms, and body rotation. Week two instruction added weight transfer to the performance of the skill. In the third week, instruction concentrated on the arm action. The improvements the self-talk group achieved appear to be connected to the addition of new information. As time passes scores in the categories 'd' to 'i' begin to lower. Instruction relative to key elements d, e, f, g, & h are obviously affected. This affect is difficult to distinguish in the other two groups. The demonstration group, for example appears to make no improvement in category 'a(2)' which was shown during the first week until self-talk treatment is applied. In category 'f' the number of demonstration subjects who could benefit from instruction actually increased and remained constant until self-talk was introduced. The test 4 results for the demonstration group show self-talk treatment to have had an effect

similar to the original self-talk group. That is, the number of subjects receiving a rating of 0 or 1 diminished in all the categories except for category 'g' .

The arm action, as identified in categories 'f' and 'g' (see Appendix C), appears to be a particularly troublesome part of the development of a proficient throwing pattern. Many of the subjects used a short arm action during the wind-up. The subjects had less difficulty assuming the extended arm position identified in category a(2) . However, as the subjects prepared to execute the throw, instead of keeping the arm extended to the rear, they tended to curl the arm behind the head. The arm action also proved to be a particularly difficult aspect to rate consistently and accurately. Perhaps attention to the arm action should be introduced sooner and rehearsed in each of the three instructional phases. If this study were to be repeated a skill development sequence that incorporates attention to the arm action during phase 1 would be worthwhile and interesting to analyse.

Subjects identified as special education students for language arts and subjects identified as having an attention deficit did not appear to experience any difficulties in the treatment groups. The subjects who were rated the lowest in the groups were not necessarily students attending special education classes. It would have been interesting to carefully examine the effectiveness of self-talk by learning characteristic. The relationship between the use of self-talk and students level of ability in for example, language arts was not a focus of this study. The fact that special education students did not appear to experience difficulty using self-talk

encourages one to consider further research that would pertain to the effects of self-talk and motor skill learning, for children attending special education classes.

IV. Question #2.

With regard to the three treatments used in this study, is gender a factor in learning a motor skill: the overhand throw?

According to the research on the relationship between teachers' expectations and student performance, female students are frequently treated differently than male students in the physical education setting. As discussed in the review of literature females tend to receive more negative feedback about their skills and less positive feedback (Stranzulla, 1986; Housner, Layne & Griffey, 1984). Unconsciously, physical educators may believe males will profit more from instruction as they are more likely to need and use the skills taught in physical education classes during their spare time and on athletic teams. There is no evidence, however to support the notion that sex is a factor in motor learning (Knapp, 1963) . To determine the effects males and females experienced by group and over time, mean ratings according to gender, treatment group and for each test period were calculated and are displayed in Table 4.7.

Table 4.7 Mean Ratings for Males and Females, for each Treatment Group, for each Test Period

Self-Talk Factor	Level	Males N	Group Mean[1]	SD[2]
period	pretest	7	8.0	2.8
	week 1	7	11.6	1.6
	week 2	7	14.4	1.8
	week 3	7	16.1	1.5

Self-Talk Factor	Level	Females N	Group Mean	SD
period	pretest	9	7.3	3.0
	week 1	9	11.3	1.7
	week 2	9	13.9	1.8
	week 3	9	16.0	1.0

Traditional Factor	Level	Males N	Group Mean	SD
period	pretest	6	9.7	2.5
	week 1	6	10.7	2.8
	week 2	6	13.7	1.6
	week 3	6	14.0	2.7

Traditional Factor	Level	Females N	Mean	Group SD
period	pretest	7	7.3	3.6
	week1	7	8.4	2.8
	week 2	7	11.4	2.9
	week 3	7	13.1	1.3

Demonstration Factor	Level	Males N	Group Mean	SD
period	pretest	5	10.0	1.0
	week 1	5	12.6	1.9
	week 2	5	13.0	2.2
	week 3	5	13.0	2.1

| Demonstration Factor	Level	Females N	Mean	Group SD
period	pretest	12	7.8	3.9
	week 1	12	9.2	2.5
	week 2	12	9.2	4.0
	week 3	12	9.6	4.0

1 Mean rating = Group mean rating according to performance criteria and scale found in Appendix C.
2 SD = Standard Deviation

The males in the self-talk group began the study with the lowest mean ratings when compared to the males in the other groups (8.0) and finished the three week treatment program with the highest mean ratings (16.1). Over the treatment period, the self-talk males improved their mean ratings 8.1 points (8.0 to 16.1). The traditional group of males improved 4.3 mean points overall (9.7 to 14.0) . The males in the demonstration group started with the highest mean ratings (10.0) but finished with the lowest mean ratings for males 13.0.

The females in the self-talk group received a pretest mean rating of 7.3 which fell between the female demonstration group's mean of 7.8 and the female traditional group's mean score of 7.28. The self-talk females finished the program with the highest mean rating (16.0) of the three groups of females. The females improved 8.7 mean rating points (7.3 to16.0) over the course of the program. The females in the traditional group improved the next greatest gain with 5.9 mean points (7.3 to13.1) for the treatment period. The females in the demonstration group began the program with the highest female mean ratings (7.8) and completed the program with the lowest female mean ratings (9.8) .

Figures 4.3 displays the results according to gender, treatment and period. Both the male and female subjects in the self-talk treatment group appear to have experienced improvements that are steady and consistently positive. The males and females in the self-talk group began the study with lower mean ratings but completed the treatment program with the highest mean ratings when compared with the other treatment groups. Improvements for
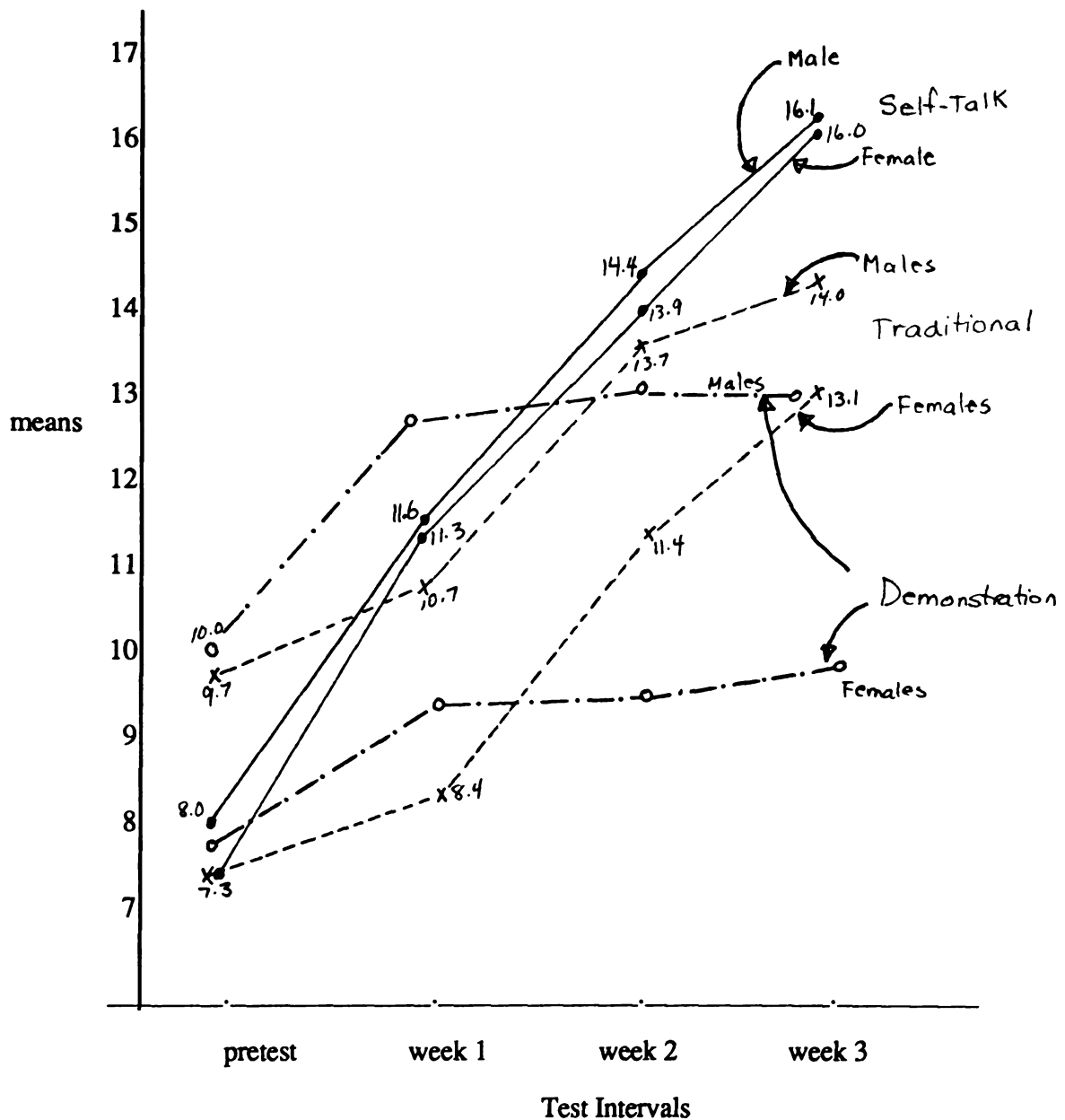
Males : period X group interaction (F (6,45) = 4.13, p , .01)

Females : period X group interaction (F (6,75) = 8.64 , p < .01)

Figure 4.3   A Comparison of the Three Treatment Groups' Mean Ratings for Males and Females over the 3 Week Study Period

traditional male and female subjects did not appear to begin until after the second week of instruction.

The mean improvement males and females experienced over the treatment time period were calculated by subtracting the pretest mean ratings for males from their week 3 mean ratings. The same calculation was made for the females' mean ratings. Table 4.8 below displays these results.

Table 4.8 Male & Female Mean Improvement Ratings According to Treatment

Group	male	female
self-talk	8.1	8.7
traditional	4.3	5.9
demonstration	3.0	1.8

The results show slight numerical differences between males and females. The self-talk group appears to show the least difference between gender (8.7 - 8.1 = .6) . The traditional treatment group shows the greatest mean rating difference (5.9 - 4.3 = 1.6).

A two (gender) by three (treatment) ANOVA was performed on the improvement scores. There was a significant main effect of treatment $(F (2, 40) = 17.81, p < .001)$. There was, however, no significant main effect of gender ($F (1,40) = 0.17, p > .1$). Also there was no significant gender by treatment interaction ($F (2,40) = 1.01, p > .1$) . These results indicated that males and females are equally responsive to the self-talk treatment, traditional treatment and demonstration treatment. Accordingly, gender does not appear to be a factor in learning the overhand throw. These results appear to be

consistent with the findings made by Knapp, (1963) that gender is not a factor in motor learning. These findings are not consistent, however, with later research (Haubenstricker and Seefeldt, 1986) which recorded gender differences in favour of males whether the assessment was qualitative or quantitative in nature. "Although some of the tasks may be culturally biased toward boys (e.g. the use of bats) others, such as serving a volleyball or striking one-handed with a racquet, do not appear to favour boys. Yet the gender differences existed. It is likely that influences other than culture were contributing to these differences". (p. 76)

An analysis of covariance (ANCOVA) using verbal competencies as a covariate was run. There were no differences between the groups initially. There was still a significant F for the period by treatment interaction.

Until now, gender effects as they might occur in a natural setting and in association with particular learning strategies have not been thoroughly examined. This dissertation study has added an important piece of evidence to the literature on the practical and qualitative effects of a self-talk program for males and females as it applies to learning a motor skill: the overhand throw.

An examination of results across groups according to gender shows numerically interesting outcomes. For example, the mean number of rating points achieved by the traditional group (males and females) at the end of the study was 13.5 . At the end of week three, the demonstration group achieved a mean rating of 10.6 . Numerically this difference does not appear to be significant. However, when the mean rating results for the females are

examined, greater numerical differences appear. The traditional group females completed the study with a mean rating of 13.1 . The demonstration group completed the program with a mean rating of 9.6 . In this instance, the numerical difference is more substantial. These results might lead one to assume that males can learn with less effective instruction than females. The literature on learning styles supports the notion that certain learners respond better to presentations that emphasize reason while other may prefer a sequential exposure to content, but there is little evidence to support beliefs that these preferences are related to gender (Gregoric,1982; Renzulli & Smith,1978; Dunn & Dunn,1975). Kolb, (1976) cautions against rigid and mechanical ideas about learning styles. Educators must deal with real, dynamic, and complex persons affected by their social, ethnic, and cultural environments. Kolb believes learners differ in the ways they perceive the world, represent it, and respond to it but these differences are in degree and are not unbridgeable. Just as learners are varied and unique so also must the teacher's instructional presentations be adaptive and responsive to the varying needs, abilities, characteristics, ages and stages of development, and learning styles. The educators work is to determine what methods help their learners improve (Wilson, Shulman & Richert, 1987)

V. Question #3:

What Words do the Learners Use to Guide their Self-Talk?

Interview with Self-Talk Group

After the treatment period was complete for all groups, to determine whether the subjects in the three treatment groups used other learning and performance enhancing strategies such as imaging or role playing, the subjects were asked two questions. The first was: **What goes through your mind as you are practicing throwing the ball?** The responses shown in Table 4.9 below are the direct quotes the subjects used in response to the question. Each response is categorized according to whether the subjects were concerned about the qualitative aspects of their throw i.e. proper form, or about quantitative aspects of the throw i.e. the results - distance, accuracy, speed.

Almost all the responses were about results. The subjects appear to be concerned more about results such as accuracy as a measure of success and progress than about form. Eight of the subjects made mention of the importance of hitting or getting the ball to the target. It is interesting to note that according to the responses given it appears the traditional group is more concerned with form than with results compared to the self-talk group and the demonstration group (see table 4.11) . However, in view of the responses to the next question the subjects were asked, it was apparent the students did indeed think about a number of key

elements of the throw, but according to the responses to the first question it would appear that this was not the case.

Table 4.9 Self-Talk Group Responses to the Question: What goes through your mind as you are practicing throwing the ball?

Qualitative	Quantitative
Proper technique	I think about where the
Think to use self-talk	ball is going
Statue of Liberty	Think you'll hit the
Snakey	target
Make sure I talk to myself	Just throw
	Target (8)
	Being in the major
	leagues
	How the pros do it 2
	Think I'm in a baseball
	game
	Not too high
	Straight (2)
	That I can do it

(Beside some quotes are the number of times a particular phrase was given in response to the question.)

The second question states: **What do you say to yourself to help you remember to throw well?** This question was asked to determine specifically what words or phrases students used as self-talk. As Weiss, (1982) points out, "children do not spontaneously generate verbal rehearsal strategies or engage in verbal self-instruction to help remember or guide performance. Instead they can use verbal strategies and labels only if they are prompted or instructed to do so" (p. 49) . Accordingly, in this study self-talk words were provided for the subjects, but the questions remain: Did the subjects, under these study circumstances, use exactly the same words as the instructor and demonstrator? and, If they changed the

self-talk words, what words did they select for personal use? These two question helps address the following concern: Are the self-talk subjects willing and able to use their own self-talk during the early stages of learning a motor skill, when self-talk is a relatively new learning strategy? The words the subjects responded with are quoted in Table 4.10:

Table 4.10 Self-Talk Group Responses to the Question: What do you say to yourself to help you remember to throw well?

Qualitative	Quantitative
sideways	
look at the target (3)	
wings (10)	
centre (10)	
load up (8)	
naval attack (3)	
stretch (9)	
scratch (9)	
step over the line (2)	
statue arm (4)	
toes at target (2)	
turn and throw (8)	
parachute arms (2)	
snakey (1)	
do all the stuff correctly	
self talk	
I remember the scratch but don't always have time to say it.	

(Beside each quote are the number of times a particular phrase was given as a response to the question.)

In total 74 responses were given, an average of 4.6 responses per student. In almost all cases the subjects used the words that they had heard on the instructional video. Two of the students, both males, decided to use different terms to describe the position for the arms. One boy described the arm position with the word "parachute"

, another boy picked up on his idea and used it as well. A different boy decided to use the word "snakey" because he thought his arms stretched out like a long snake and the ball was held at the tail of the snake. The researcher had the boys tell the class what words they were using and encouraged the others to invent names for the various body positions and actions but the students continued to use the words offered on the instructional video.

All the words were instructional. None of the words were critical of either form or performance or were considered motivational. The subjects used single words or short phrases such as "spread the wings". None of the subjects used sentences or a story format to remind, guide or monitor performance.

The physical education teacher, during an interview, revealed that the students, in some cases, repeated the key words in their heads. In a regular classroom setting it is difficult to track the way all students are using self-talk. It is therefore important to sample students interpretations of the use of self-talk during practice. If the physical education teacher were able to have the students keep a journal to report their progress, and to conference with the students about their skill development, important and relevant information would be available for the instructional use of the teacher.

Interview with the Traditional Group

Each subject in the traditional group was interviewed separately and asked the the same two questions as the self-talk group. The first question was: **What goes through your mind as you are practicing throwing a ball?** The subjects were asked

this question to determine if they were using any learning strategy such as mental imagery, mental rehearsal, or role playing to enhance performance. The traditional group made a total of 9 comments related to the technical aspects of the throw that had been discussed over the three week period. Six comments were made about throwing results, that is, throwing fast, straight, or hitting the target. Interestingly 7 subjects said "nothing" . The subjects' responses are quoted below in Table 4.11 .

Table 4.11 Traditional Group Responses to the Question: What goes through your mind as you are practicing throwing a ball?

Qualitative	Quantitative	Other
the steps	hitting the target (3)	nothing (7)
arms up (2)	aim it	
how I am going to throw it properly	fast	
look at the target	get it nice & straight	
weight on back leg		
make hips turn		
keep arms straight when I'm about to throw it		
the throwing stuff you taught (unable to articulate in words)		

The subjects were asked the second question: **What do you say to yourself to help you remember to throw well?** to determine if they were using self-talk incidently. The traditional groups responses to the question are quoted below in Table 4.12 .

Table 4.12 Traditional Group Responses to the Question: What do you say to yourself to help you remember to throw well?

- nothing (13)
- come on M..... throw it where you are supposed to
- hit the target - say it in your mind
- say not to miss

Apparently, few children had developed, on their own, any sort of strategy for attending to the task. These results might persuade educators that learning strategies need to be incorporated with content and practice to enhance performance. Unless learners have the tools for learning what and how they attend to instruction is left to chance. Misperceptions about the way motor skills are learned may persist, and students may attribute success to innate factors and luck rather than to deliberate preparation.

Interview with Demonstration Group

Each subject in the demonstration group was interviewed separately and asked the same two questions that were asked of the other two groups. The first question asked was: **What goes through your mind as you are practicing throwing the ball?** The subjects were asked this question to determine if they were using any learning strategy such as mental imagery, mental

rehearsal, or role playing to enhance performance. Table 4.13 shows that ten of the thirteen subjects indicated that they thought about either hitting the target, getting it to the receiver or throwing the ball far. In other words, results were of prime interest to these subjects. Five of the subjects said "nothing" goes through their mind as they are practicing throwing the ball. Only three comments were made relative to form. The numbers beside the subject's words or phrases indicate the number of times a particular response was given.

Table 4.13 Demonstration Groups Responses to the Question: What goes through your mind as you are practicing throwing the ball?

Qualitative	Quantitative	Other
stay steady	hit the target (6)	nothing (5)
throw it properly	far	don't know
keep your eyes where you are throwing the ball	get it to the person (3)	fun
		that I am good at throwing
		pretend to be a pitcher

Next the subjects were asked the question **What do you say to yourself to help you remember to throw well?** to determine if incidentally they were using a self-talk learning strategy. The words listed below in Table 4.14 are direct quotes:

Table 4.14 Demonstration Group Responses to the Question: What do you say to yourself to help you remember to throw well?

_____

* **nothing (12)**
* be like a pitcher and throw it across the plate
* get it to the person
* wish I could throw it further
* keep arm straight
* watch where throwing

_____

Interestingly, twelve of the subjects said, "nothing", the others referred to results such as throwing it far, straight, across the plate or to a partner. It appears that unless students are taught strategies for learning it is unlikely they will develop them on their own. As Meichenbaum and Beimiller, (1990) have shown, capable learners know how to go about their learning tasks planfully, independently and confidently. For less capable learners to operate in a similar fashion self-regulatory strategies can not be left to chance, rather they must be taught systematically and practiced under supervision. If progress is to occur and the habits associated with self-regulatory behaviour are to be learned, educators must plan opportunities for their development in conjunction with subject matter acquisition.

All three groups responses to the question: **What goes through your mind as you are practicing throwing the ball?** seem to indicate that the youngsters in this study were particularly concerned about the quantitative aspects of their throw. The students frequently used how far, how fast and how accurately they threw the ball as indicators of success. It appears, that if physical educators want their students to focus on aspects of form in motor

learning then specific attention to form needs to be emphasized during instruction and feedback. If the purpose of practice is to improve skill technique then the way content is presented and the way the skills are rehearsed must be carefully managed to maintain that purpose and intent.

VI. Question #4
How do the Learners Feel About Using Self-Talk?

Each subject in the self-talk group was interviewed separately and asked the following question: **How do you feel about using self-talk?** Invariably the students responses to this question were positive. Five of the subjects associated self-talk with their improvement, "self-talk helped me throw better". Three of the subjects associated self-talk with an enhanced ability to remember information, "self-talk helps me remember stuff". One of the subjects felt self-talk helped him to concentrate better. One subject felt self-talk reduced confusion. Four subjects said it was fun using self-talk.

Each unique response to the question was recorded and is displayed below in Table 4.15 . Each response is a direct quote. Where a comment is repeated a number indicating the frequency has been added.

Table 4.15   Self-talk Individual Responses to the Question: How do you feel about using self-talk?

Subject # 01

• really neat

• it (self-talk) changed how I was throwing

• it (self-talk) got me better

Subject # 02

• I liked it (3)

• I thought it was a pretty interesting way to throw a ball and it is not the normal way.

Subject # 03

• good (6)

Subject # 04

• self-talk makes you remember what you are supposed to do

Subject # 05

• it (self-talk) was helping me throw better (4)

Subject # 06

• I like self-talk

• it (self-talk) gets my brain to work

• come on brain are you in there, you're not acting like it

Subject # 07

• I liked it (self-talk) a lot

• self-talk helped me

• self-talk helped me concentrate

• it (self-talk) was fun (4)

Subject # 08

• it (self-talk) made it (the details) easier to remember

• I did better throwing

Table 15 (Cont'd)

Subject # 09

• it (self-talk) felt really good

Subject # 10

• better than the other way

(unable to describe what the other way is)

Subject #11

• I keep getting all mixed up the way I used to throw

• self-talk taught me how to throw

Subject #12

• self-talk helps me remember stuff

Subject #13

• I like it (self-talk) because I like to talk to myself

Subject #14

• It was fun

• It helped me throw better

Subject #15

• It helped me to remember to do things

• It was fun to tell yourself to do it

Subject #16

• It helped me to learn to throw better

• It was fun to do in class

In an attempt to further clarify subjects' feelings about the use of self-talk, the following question was asked: **If someone asked you to explain what self-talk is, what would you say?** Seven of the self-talk subjects indicated self-talk helped them to throw better. Eleven of the subjects indicated they felt self-talk helped them remember better. One subject made the comment, "self-talk helps yourself do stuff". The results, using direct quotes, are presented in Table 4.16 . The number of repeat responses are indicated by a bracketed number.

Table 4.16 Self-Talk Group Responses to the Question: If someone asked you to explain what self-talk is, what would you say?

---

* it (self-talk) helps to cheer yourself on while you throw

* self-talk helps to tell you to throw better (3)

* how to throw a ball better (2)

* helps to learn to throw better

* **to remember better (7)**

* help to do things better

* help have better overhand throw

* to have more fun playing (3)

* **help yourself do stuff**

* **remind yourself to do something (4)**

* just remember the words to get it right

* it works

* if you tried it you could do better

* if having troubles might think about it

* help you get better at throwing than if someone is beside you

---

When asked if they might use self-talk in other sports they answered affirmatively in all cases. They listed the following sports that self-talk could apply to: soccer, skating, hockey, dance, gymnastics, baseball. One youngster admitted that he had began to use self-talk while he played video games.

During the treatment period many of the self-talk subjects had shared stories of how they had used self-talk in their daily lives and how they had listened in on other people's self-talk during the study. They told the investigator about the self-talk their older and younger siblings used, about their parents self-talk and their teacher's use of self-talk. For the subjects this experience had become a game of "investigative eavesdropping" and it had provided the self-talk subjects with additional concrete evidence that showed that many people are naturally inclined to use self-talk. This experience perhaps helped convince the subjects that self-talk was acceptable and relevant as a strategy for focusing attention and learning. The other groups, if asked to listen in on self-talk conversations could have probably found the same results, but at this time, the traditional groups and demonstration groups had no need to know what self-talk is and how it works.

Self-talk, in addition to improving performance, encourages the learner's to discuss the task using relevant terms. According to Neelands, (1984) using terms both the learner and the teacher have agreed will represent the concepts enhances the communication of ideas and the ability to monitor performance. Speaking in the same language allows the learner to be more involved in the conversations about the task. Two-way learning is afforded. In many other

instructional approaches, only the teacher is telling. The self-talk approach appears to encourages and fosters two-way interaction.

VII.   Question #5

How do the Learners in the Self-talk Group Feel about their Ability to Throw a ball overhand compared to (a) the start of the study, and (b) other groups of learners?

Prior to the commencement of the study all the subjects were interviewed, individually, using the Questionnaire found in Appendix E . Following the completion of the study each subject was individually interviewed using the same questions. Rather than have the children attempt to describe their feelings in words, different facial expressions were provided for selection. Question #1 is shown here as an example:

How do you feel about your ability to throw a ball?

very happy   happy   undecided   sad   very sad

The 4 interview questions were asked to help determine whether the subjects in the various treatment groups felt satisfied with their ability to throw and whether these feelings were different at the end of the treatment period.

Generally, the students in all the groups, at the beginning of the study were optimistic about their ability to throw well. By the completion of all three treatment programs, the number of selections in the undecided, sad and very sad categories declined for all treatment groups except the traditional group. For the self-talk group, 100% of the subjects chose a very happy face as their

response to the question: How do you feel about your ability to throw? The other groups responses were not much different rating their ability to throw higher than at the beginning of the study. For example, before the treatment began, in response to question #4: How do you feel about your ability to throw a ball to a partner? 6% of the self-talk subjects chose a sad face and 25% of the subjects chose an undecided face. At the completion of the self-talk program, 0% were sad, and 0% were undecided. In the traditional group, in response to question #4, the number of subjects who chose a very happy face declined from 85% to 62%. The number of subjects who chose a happy face after treatment increased from 15% to 31%. The number of undecided faces selected by the traditional group increased from 0% to 7%.

Interestingly, the traditional group experienced a shift in confidence after treatment. For example, in response to question #4, before the treatment program began, 41% of the subjects selected a very happy face, 12% chose a sad face, and 6% chose a very sad face. After the treatment program, 64% selected a very happy face, 0% a sad face and 0% a very sad face.

The results of the interview about the subjects feelings about their ability to throw are displayed in Table 4.17 .

Table 4.17 Interview Responses Before and After Treatment Programs

Self-Talk

	Before treatment	After treatment

Question #1: How do you feel about your ability to throw a ball?

vh*	h*	u*	s*	vs*	vh	h	u	s	vs
9	6	1	0	0	16	0	0	0	0
56%	38%	6%	0%	0%	100%	0%	0%	0%	0%

Question #2: How do you feel about your ability to throw a ball a long ways?

vh	h	u	s	vs	vh	h	u	s	vs
8	6	2	0	0	12	4	0	0	0
50%	38%	12%	0%	0%	75%	25%	0%	0%	0%

Question #3: How do you feel about your ability to hit a target the size of a TV screen on the wall at the front of our classroom?

vh	h	u	s	vs	vh	h	u	s	vs
3	7	3	0	3	11	5	0	0	0
19%	43%	19%	0%	19%	69%	31%	0%	0%	0%

Question #4: How do you feel about your ability to throw a ball to a partner?

	vh	h	u	s	vs	vh	h	u	s	vs
	10	1	4	1	0	12	4	0	0	0
	63%	6%	25%	6%	0%	75%	25%	0%	0%	0%
Totals	30	20	10	1	3	51	13	0	0	0

---

* vh = very happy; h = happy; u = undecided; s = sad; vs = very sad.

Traditional

	Before treatment	After treatment

Question #1: How do you feel about your ability to throw a ball?

vh	h	u	s	vs	vh	h	u	s	vs
9	3	0	1	0	10	2	1	0	0
69%	23%	0%	7%	0%	77%	15%	7%	0%	0%

Table 4.17 (cont'd).

Question #2: How do you feel about your ability to throw a ball a long ways?

vh	h	u	s	vs	vh	h	u	s	vs
8	3	1	0	1	8	3	2	0	0
62%	23%	7%	0%	7%	62%	23%	15%	0%	0%

Question #3: How do you feel about your ability to hit a target the size of a TV screen on the wall at the front of our classroom?

vh	h	u	s	vs	vh	h	u	s	vs
5	5	1	2	0	8	4	0	1	0
38%	38%	7%	15%	0%	62%	31%	0%	7%	0%

Question #4: How do you feel about your ability to throw a ball to a partner?

vh	h	u	s	vs	vh	h	u	s	vs
11	2	0	0	0	8	4	1	0	0
85%	15%	0%	0%	0%	62%	31%	7%	0%	0%

| Totals | 33 | 13 | 2 | 3 | 1 | 34 | 13 | 6 | 1 | 0 |

Table 4.17 (cont'd)

Demonstration Only

Before treatment	After treatment

Question #1: How do you feel about your ability to throw a ball?

vh	h	u	s	vs	vh	h	u	s	vs
10	5	2	0	0	13	4	0	0	0
59%	29%	12%	0%	0%	76%	24%	0%	0%	0%

Question #2: How do you feel about your ability to throw a ball a long ways?

vh	h	u	s	vs	vh	h	u	s	vs
3	9	3	2	0	6	9	2	0	0
18%	52%	18%	12%	0%	36%	52%	12%	0%	0%

Question #3: How do you feel about your ability to hit a target the size of a TV screen on the wall at the front of our classroom?

vh	h	u	s	vs	vh	h	u	s	vs
4	5	6	1	1	11	3	3	0	0
24%	29%	36%	6%	6%	64%	18%	18%	0%	0%

Question #4: How do you feel about your ability to throw a ball to a partner?

vh	h	u	s	vs	vh	h	u	s	vs
7	4	3	2	1	11	4	2	0	0
41%	24%	18%	12%	6%	64%	24%	12%	0%	0%

Totals	24	24	14	5	2	41	20	7	0	0

VIII. Interview Highlights with the Subjects' Physical Education Teacher

The regular physical education teacher was present strictly as an observer during the treatment programs for all three groups. Following some of the treatment sessions, she made a number of interesting comments about the way the classes and specific students were responding to the programs. She has worked with the all the students in the school as their physical education teacher for the last 7 months and has come to know the ability levels of the students, their attitudes towards physical activity and their feelings of confidence. It seemed appropriate to conduct an interview with the physical education teacher, at the end of the study, so that her comments might be shared. It was felt that her observations and insights might help other educators understand the effects of the self-talk, traditional and demonstration treatment programs. She was asked to reflect on the events of the last three weeks and to share her observations and insights about the three instructional approaches. A complete transcript of the interview is found in Appendix I.

The following are highlights of the interview. The physical education teacher's comments are quoted directly and are indicated by the letter 'H' . Where appropriate, inferences and implications are made in response to her comments.

According to the physical education teacher self-talk helped the subjects stay on task much better than the other two treatments.

H: The self-talk group were able to attend much better than any of the other two groups whether it was the traditional or demonstration only. They (self-talk) were really interested in what they were doing and that's partly because they could use their own language. You said spread the wings of the eagle and then you said they could use what ever (language) you want to and they thought that was really neat and came up with their own (words)

H: They (self-talkers) stayed on task much more than the rest of them. When the demo (video) was on they (the subjects) were looking up at the ceiling they couldn't attend because there was no noise, J... for instance had to fill in the noise with comments because he was so uncomfortable with not having anything said. They(demo only) don't get the stretch, they don't follow the steps very well. They (demo only) were probably the least on task of all the groups. Traditional (subjects) some of them pick it (proper technique) up and some of them didn't. They (traditional group) didn't seem to pick up a whole lot more than the group that was demo only.

The remarks about the use of demonstration only are worth discussing. Many physical educators rely on demonstrations to communicate how skills are to be performed. In some instances, the teacher is unable to find the right words to explain or describe the body actions and must therefore rely exclusively on a demonstration. Clearly, based on the teacher's remarks and the outcomes of this study, demonstration is not enough. The recommendations made by Bandura, (1977) and Good & Brophy, (1984) support the physical education teacher's observations that the students need to become aware of the specifics of the task if they are to improve. Better still, if students have a motor plan (Sage, 1984) they are better equipped to manage and monitor their own progress.

The physical education teacher indicated self-talkers were more attentive to instruction. She comments as follows:

H: They (self-talkers) are really attending and they (self-talkers) are really attending to the self-talk because they really knew the stuff.

According to the physical education teacher, demonstration only subjects appeared less inclined to pay attention to instruction and stay on task. Regarding the subjects response to demonstration only treatment, the physical education teacher had these comments.

H: They need language along with it, they don't know how to watch something without any language involved with it. They have a hard time transferring that to their own bodies. If they (demo group) made any gains at all it would be just by chance.

According to Fuson,1979; Schunk & Rice, 1984; Schunk & Rice, 1985; Weiss & Klint, 1987, when students are equipped with strategies that enable them to attend to the relevant features of a skill the quality of their practice and their persistance with the task increases, while the incidence of off-task behaviour declines. The physical education teacher's remarks appear to corroborate these earlier findings. In addition to providing relevant cues that promote self-management, the teacher must also consider the length of time students are expected to maintain focus on tasks, the timing of instruction, and the provision of practice situations that facilitate the desired outcomes and boost interest (Siedentop,1983). Fortunately, the 30 minute classes provided just enough time to complete the video presentation and allow a 10 minute practice session. The remainder of the class time was devoted to creative movement activities and organizational details.

Special education students used self-talk as well as the other subjects in the self-talk group.

H: It was remarkable how well everyone of them (subjects in self-talk group) even the special ed kids who have problems retaining knowledge knew each step and could do it (the throw) and they (self-talkers) were really interested in the whole process.
H: And even the special ed kids like M and K picked up things really quickly, and really enjoyed it.

Although the question the teacher asked could be perceived as biased it still has some value. Judgements about the appropriateness of any strategy are frequently scrutinized by the children. Teachers may, in many cases, select and continue particular instructional approaches on the basis of whether or not the children appeared to enjoy it. When the pupils dislike an activity or methodology they show disfavour often through on-task behaviours. In this instance, the teacher had an opportunity to casually survey student opinions and found that pupil response to self-talk was positive.

Positive pupil responses may encourage physical educators to use self-talk not only because it promotes progress but also because the students enjoy using it.

One of the students who frequently experiences frustration with motor learning had good success learning the overhand throw using self-talk. Using self-talk this student appeared to be less frustrated and was able to persist in his attempts to improve without much prompting during the program.

H: As far as individuals, A... specifically, who has problems in regular p.e. classes, attending to things and doing them, often cries and goes

off to the side; but with this (self-talk) he could use his own imagination and he thought that was really neat and he really improved and he didn't have any problems participating and you don't find that in his regular classes.

Schunk & Rice (1984) were able to show how self-talk learning strategies enhanced remedial readers ability to comprehend text and enhance their levels of self-efficacy. According to the comments made by the physical education teachers A... had found the use of self-talk to be a powerful, meaningful and "user friendly" way to work on his throwing skills. It would be interesting to further explore the effects of the self-talk strategy with learners who generally experience motor learning difficulties. Adapting the skills for mentally and physically challenged learners coupled with the use of self-talk may be an important and effective way to improve motor skill development.

The subjects rated themselves high in confidence. The physical education teacher was surprised with these results.

H: I don't feel they are that confident about their skills. (Because the girls do not consider their throwing skills to be as good as the boys)

Children may have an unrealistic view of their ability to perform certain tasks. Examination of the comments students made about throwing, indicated an overemphasis on the quantitative aspects of performance such as throwing hard and far. Using distance as a criteria for 'good' performance, girls might be more likely to be perceived as poor throwers regardless of how well they perform the task qualitatively. An emphasis on the qualitative aspects of a skill during the early stages of learning could perhaps

encourage additional perspectives about what counts as a 'good' throw. Praise and feedback for the use of proper technique might alter the tendency to judge the merits of a throw exclusively on outcomes such as distance.

Unless learners are aware of and dedicated to the development of proper technique, development may be delayed. How often has the term 'a natural athlete' been used to describe a skilled athlete. If children believe they have to be born with the ability to throw well, then what incentive is there for them to practice and attend carefully to the details of technique? Understanding and recognizing the important aspects of a skill such as the overhand throw not only empowers the learners with the knowledge that he/she can use to monitor their own practice, but it is also motivating. When the learner realizes the capacity to throw well is within his/her power to achieve, they are more likely to want to practice diligently and deliberately to achieve that outcome.

The words used to describe the body positions and body actions interested the physical education teacher. She feels that letting the subjects use their own language, if possible, was a useful procedure. Subjects who use their own language may remember the details better and boost confidence.

H: Well I was just sitting back thinking about the way that I teach and the words that I use. Do they really pick up from what I say (what they are supposed to). I use my adult language and whether it really registers with them or not, I don't know. When you use self-talk they can come up with their own words and they can internalize that and remember that and I think that really helps with their

retention of what they've learned. If they (the students) can come up with their own (words) they will remember that.

And the creative one's like A..... who may not feel very adequate with his physical ability, but can come up with his own associations, he can internalize it and he can try it, that gives him confidence.

The physical education teacher made comments about using self-talk with younger children at her school.

H: I've been thinking about some of the things I say, like right arm up and left leg out, and you're saying this to grade ones or even grade threes and I know right there they don't know their right from their left. But if you said something more in tune with what they are familiar, learning would be better.

The above two quotes indicate some of the considerations that must be taken into account for staff development. Current research on teacher learning promotes the notion of teacher-as-learner (Feimen-Nemser and Buchmann, 1986) For a teacher to be able to carefully study his/her practice with the aim of improving it, the tools of inquiry and a disposition toward thoughtful practice are necessary. Studying children's use of self-talk is an opportunity for teachers to examine more closely the learning process. Accessing the learners' use of words to describe their body actions can be an interesting way to track the mental activity of the learners and assess the effectiveness of instructions used in class. The physical education teacher interviewed here, has called into question the language she has been using with the students. She had become more interested in monitoring her own interaction patterns more carefully as a way of examining the effectiveness of her current instructional approaches. Workshops that detail the use of self-talk

will be discussed in the next chapter, but it seems the use of learning strategies might put teachers in an important position for self-study and the analysis of practice.

During the study a student who had been absent for 5 of the sessions returned to class. A fellow student helped her catch-up. The self-talk student appeared confident about the elements of the throw that needed to be learned. The subject remembered the details in the proper order, used the same language as in the instructional video and shared her knowledge of the task with her friend without prompt from the instructor. Although the researcher had to discount the absentee subject from the study, the physical education teacher's observation of the two subjects working together is discussed in the following passage:

H: She (self-talk student) had a lot of confidence about what she was saying. Usually when a child is away and the others update them they get a really sketchy view of what you've done but she didn't, she had the steps right down, and she was very eagerly telling her friend what she had learned and K (self-talk subject who had been absent) was eagerly learning from what she was saying to her and that was really neat.

A study that examines the use of reciprocal teaching using self-talk would be a worthwhile project. Putnam and Burke (1992) discuss the notion of learning communities. One of the dispositions they describe for an effective learning community is the capacity to help and be helped by others. Students in a learning community are urged to consider themselves as legitimate sources of knowledge, capable of making decisions. The use of self-talk as it might

contribute to the development of a learning community deserves further study.

Regarding the instructions about self-talk used at the beginning and throughout the study, the physical education teacher made these comments:

H: The introduction you used with Home Alone really appeals to the kids. That's a real ice breaker, they feel comfortable with you. That got them thinking about situations where they talk to themselves. If you know skill break downs then I think you can do it and it was good to see how you broke the skill into steps and how you added a certain amount each time. It would take me a lot of time to do it, I mean I would have to sit down and think specifically the pace I want to go. If you put too much in, it would be difficult.

The physical education teacher observed details about the self-talk subjects' use of self-talk that the researcher had not noticed. The following are excerpts of impromptu conversations the physical education teacher had with various students.

H: It was interesting, I said to some of the kids your not using self-talk and they said but were using it in our heads. I said that to T... and a few other girls, its obvious they are thinking about the steps but she said were not saying it out loud were going through it in our heads every time when we do it.

When asked about differences between the sexes, the physical education teacher made these comments about the students willingness to attend to instruction, and ability to stay on task.

H: The girls seemed to attend to it much better. They seemed to like the stages of it better. Some of the boys (in the demonstration and traditional groups) still just wanted to throw it as hard as possible. Some of the boys

(in the traditional and demonstration groups) didn't think they needed to belittle themselves by going through the stages. We don't need to stoop to that level so they didn't attend to it (instructional video). The four that are really weak (academically) really responded well to it.

The self-talkers were really enjoying it and attentive compared to the others. We didn't have to say don't throw at the curtains and stay on task that really wasn't an issue with the self-talkers. Their behaviour was totally different and its not that they are any better than the other ones either. This class can just as easily get off-task as the others. This time they were much better.

A number of explanations might be made regarding the observed differences between the males and the females during the study. The major caution regarding reliance on observed behaviours is that it may not capture the child's thinking. Females who perhaps may have more mature language skills at this age may be more at ease and inclined to express their inner thoughts than males. This does not mean males are not engaging in the use of self-talk. The interviews with the males and females showed both males and females used self-talk extensively during the treatment period and both agreed self-talk was useful way to learn to throw. Without more thorough data collection procedures and more accurate measures, it is not possible to draw appropriate conclusions about gender differences in the use of self-talk.

The physical education teacher indicated to the interviewer she had learned a lot about her own teaching by watching the use of self-talk. She began thinking more carefully about the language she uses with the children to describe actions and body positions and about the children's need for learning tools. The learner has to have

something to work with as they are practicing. Attentional cuing through the use of self-talk in her view is appropriate, effective, efficient and enjoyable. These comments are in agreement with the findings reported by Weiss and Klint, (1987); and Good and Brophy, (1984). Students need relevant cues to help students guide and monitor their practice. The students appeared to enjoy using self-talk and the teacher felt she had already begun to think about how she would incorporate the use of self-talk into her way of teaching.

IX. Summary of Results

The results of this investigation are summarized as follows:

1. The difference in the pre-test to post-test subject group mean ratings for the overhand throw were found to be statistically significant for the self-talk group at the .01 level. This was true for both males and females when the analysis was conducted separately. On average, the self-talk group improved their performance ratings more than the traditional and demonstration groups over the three week period. Self-talk is an effective strategy for teaching 8-9 year olds the overhand throw.

2. With regard to the three treatment groups used in this study, gender is not a factor in learning the overhand throw.

3. The self-talk group felt positive and confident about using self-talk to learn the overhand throw.

4. The self-talk group, in most cases, used the words presented on the instructional video for their self-talk.

5. The subjects in all three groups were, for the most part, happy and confident about their throwing skills both before and after

treatments. The self-talk subjects gave a greater number of comments about the qualitative aspects of the performance of the throw.

6. The physical education teacher felt the self-talk group was on-task longer and more often, displayed greater interest in practice, was more confident about their ability to throw, more knowledgeable about the key elements of the throw, and listened to instructions more carefully than the other two groups. She also found that students who normally exhibit learning difficulties participated regularly, willingly and felt positive about being able to use their imaginations while practicing.

The results showed that the subjects in the self-talk treatment group demonstrated a statistically significant improvement in the performance measure of the overhand throw as compared to the traditional and demonstration groups. Self-talk, although it has been used successfully in a number of clinical and academic situations, (Meichenbaum, 1977) has not, until now, been confirmed effective with youngsters in a motor learning environment.

The subjects were expected to manage their own progress. Based on the comments students made (i.e. it helped me throw better) the subjects perhaps came to expect that they were controlling the progress and monitoring the performance. The self-talk subjects were expected to be more than a witness. They were expected to be their own teachers, in charge of their own learning.

For the three treatments used in this study, gender does not appear to be a factor in learning the overhand throw. If females do not throw well it is because they have not been taught. Females with

sufficient practice and instruction can throw qualitatively as well as males.

Chapter 5

CONCLUSIONS, IMPLICATIONS FOR STAFF DEVELOPMENT AND INSTRUCTIONAL DESIGN, AND RECOMMENDATIONS FOR FURTHER STUDY

I. Introduction

The purpose of this study was to investigate the effects of an instructional self-talk program, consisting of 9 sessions, 15 minutes in length (5 minutes of instruction followed by 10 minutes of practice), over a three week period of time, upon the performance of a one hand overhand throw, among male and female subjects, 8 and 9 years of age.

This chapter was designed to summarize (a) conclusions based upon the analysis of data collected, (b) discuss the implication these results have for staff development, curriculum and instructional design, and (c) make recommendations for further study.

II. Conclusions

1. Self-talk was a superior approach to motor learning than either traditional or demonstration approaches for youngsters 8 to 9 years of age.

2. With regard to the three treatment groups used in this study, gender was not a factor in learning the overhand throw.

3. The subjects in this study responded favorably to the use of the self-talk treatment. Teaching students cue words and phrases relative to the overhand throw, and showing them how to use self-

talk during practice was an effective learning process for 8 and 9 year old students.

4. In almost all cases, the subjects used the self-talk words provided by the instructional video.

5. Almost all subjects, in all groups, were confident about their ability to throw before and after treatment.

I believe self-talk to be an effective approach to motor learning for whole class instruction for youngsters 8-9 years of age in a regular school physical education setting. I hold these beliefs for the following reasons:

(a) Although the instructional time required for the self-talk approach was comparable to traditional and demonstration-only approaches, the results as measured on the performance rating scale for the self-talk group were superior and significant.

(b) Rival hypotheses, such as the maturing process or the time of day are not likely to account for the consistent and steep improvement experienced by the self-talk group. Seefeldt, (1979) points out that a mature throwing pattern will not occur simply as a matter of growth. Many adults cannot throw properly because they have not been taught to do so rather than because they have not had the opportunity to practice.

Equally dubious would be the rival hypothesis that children at the first of the day learn faster and better than those during the second period or third period. Early day and late day learners are distributed across the population and therefore within each class there will be a variety learners. Physical educators seldom have the

luxury of chosing the time of day they would like a certain group of learners to attend class. Usually, the timetable is set by the administration. Physical educators have to make the best of each situation and provide a quality program for all learners.

III. Implications for Staff Development

The findings from this research project challenge traditional notions about what students need to know to be physically educated. Physical educators tend to concentrate on achieving motor competency by focusing attention on the physical aspects of performance. Too little attention is paid to the cognitive processes that enable the students to learn on their own. From my position, this research adds an important piece of evidence to the puzzle that is in search of an answer to the question: How do children respond to a situation where they are expected to exercise authority over the learning process. The success of this research supports the argument that strategies for learning must woven into instruction and practice in physical education. Academics must also recognize that the physical education classroom is not only a place to learn motor skills but also a place to learn more about the learning process. This research demonstrates that the integration of subject matter knowledge with cognitive learning strategies enables students to assert more authority and responsibility for managing themselves in the learning process.

Staff developers need to provide opportunities for teachers to understand the importance of self-talk as it applies to real-world activities. The best place to begin is with a thorough understanding

of the subject matter content, the motor skills (or other content) being taught, the learners, the nature, theory and methodology of self-talk.

Learning to use self-talk is a gradual process. It will be necessary for teachers to plan systematically for self-talk use in class. By carefully wording the explanations, and by expecting students to talk to themselves during practice the students eventually become adept at using self-talk to manage their learning. In like manner, as the teacher becomes familiar with the process confidence and competence will increase. Further study regarding changes in teacher behaviour that occur as a result of cognitive approaches such as self-talk, would be interesting and may provide useful information for staff development.

IV. Implications for Instructional Design and Presentation

Understanding the effects of self-talk should encourage educators to consider the use of such learning strategies in their physical education programs. As educators prepare learning experiences, cognitive strategies can be written into the objectives as conditions for learning. In this way, learning to learn strategies integrated into the skill development process enhances skill acquisition and extends the knowledge students have about the learning process and who controls it.

Working in pairs has a potentially positive effects. During this study, a student was absent for over a week. When she returned her classmate immediately began to teach her what she had missed. She performed this teaching function so effectively that I chose not

interfere. This leads me to suspect that self-talk can be an effect strategy to use in a reciprocal learning situation or for cooperative learning. Further study into the use and effects of self-talk in, for example, a reciprocal learning situation would be interesting.

V. A Procedure for Using Self-Talk

The following is a description of how the self-talk strategy might be used with students and the conversations the teacher might initiate. From this procedure, it is clear that the learners are to take responsibility for achievement and that the teacher is there to help the learners understand (a) the task requirements, and (b) how to direct and monitor their progress. Clearly students are learning about the overhand throw and a strategy for self-learning.

1. Inform students that self-talk is natural and can help them remember and concentrate on the task. Unless learners appreciate the benefits of a learning strategy they are unlikely to use self-talk regularly and attentively, such that progress is enhanced. Therefore, before students can accurately and appropriately use self-talk, they need to learn that self-talk can be an effective learning tool. The introduction to self-talk used in this study, proved to be an effective way to initiate youngsters to self-talk. As Gould & Weiss,(1981); Schunk and Hanson, (1985) indicated in their studies concerning the use of learning strategies, the use of demonstrators similar in age and ability is an effective way to help demonstrate to the subjects that the task is achievable and that self-talk looks and sounds appropriate.

Discuss how people use self-talk in their daily encounters. Encourge students to look and listen for self-talk. Find out what people say to themselves and report back. What kinds of self-talk are helpful? What kinds of self-talk are harmful? Let's focus on saying things to ourselves that are meaningful and helpful.

2. Break the skill into components or steps (if necessary).

3. Collaboratively develop a movement story using cue words, metaphors, or analogies to help students connect novel tasks with familiar actions. Cue words or prompts can be words, gestures or pictures.

4. Model the action in combination with the movement story or self talk cue words. Think-aloud during the performance of the task gives learners the inside story. The conversation should occassionally include a negative comment or concerns about failure followed immediately by self-talk about how to handle or reverse those negative thoughts. For example, "I'm afraid I'll strike out and everyone will laugh at me. Stop that kind of talk. Remember what the teacher said, get into a sideways position, hold the bat off my shoulder ready to swing, and watch the ball come out of the pitchers hand, then focus on the seams of the ball".

5. Let the student instruct the teacher. Following a demonstration and explanation with self-talk language, invite a student to be the teacher. Students enjoy this opportunity to role play and it sets the stage for the kind of participation they are expected to engage in on their own.

As they practice, the students are told to be their own teachers guiding their own progress.

6. Let the students perform the skill using self-talk. Encourage the students to tell their body parts what to do and to think about being their own teacher. Tell the students to talk out loud so the teacher can listen to the story too.

7. Praise the use of the strategy. "You did a good job telling your feet to get ready before you start the throw". Be alert to difficulties that might require a repeat demonstration and explanation with self-talk.

8. Discuss what the student is thinking about. "What do you tell yourself to do to get ready to throw?"

9. Probe the students' understanding of the task requirements. "What should your arm look like when you throw the ball?" "What could you say to yourself to help you remember to keep your arm bent?"

10. Determine what the student finds difficult. "What part of the skill do you still find confusing?" "What goes through your mind as you are practicing?"

11. Encourage the students to articulate clearly their thoughts and actions. "You be my teacher; tell me what I'm supposed to do to throw the ball properly."

12. Talk to students about how they like using self talk. "What do you find interesting about using self-talk?" "What could you tell your friends about self-talk?"

13. Challenge the students to find other occassions where they can use self talk. "We have been using self-talk for the overhand throw, could self-talk help as you learn other skills?" "What skills might self-talk help?"

VI. Limitations for the use of Self-talk

Self-talk is not a panacea for all the problems associated with teaching motor skills to beginners. The use of self-talk is limited by the teacher's ability to appropriately sequence the task such that learners are not overloaded with information. Time for practice is equally important. Unless students have sufficient and quality time to practice the skill become familiar and comfortable using self-talk, progress will be hampered. As well, educators can not expect students who use self-talk or any other learning strategy to acquire skill beyond their intellectual and psychomotor development. In other words, unless the children are ready, mentally and physically, for the task, outcomes will be unsuccessful.

To achieve self-regulation over the learning process, students need time to understand when and under what circumstances they might choose to use self-talk. In this study, self-talk was induced. For self-regulated learning to occur, learners must be able to analyze the task requirements, and assess whether they have enough information, be abe to perform the task, and then decide what strategies they may employ to promote progress (Meichenbaum and Beimiller, 1990) . These metacognitive and application functions can be developed through cognitive coaching programs (Collins, et al, 1989). Paris and Byres (1989) define self-regulated learner as one

who seeks challenges, overcomes obstacles, sets realistic goals, and utilizes a battery of resources in approaching tasks with confidence and purpose. However, it appears from the research literature that learning strategies contribute toward the development of a self-regulated learner only when they exist as part of the learning objectives and are a regular and routine way of learning. Learning strategies need to be taught in conjunction <u>with</u> the subject-matter content. In other words, learning strategies are content and context sensitive and, therefore, have greater impact when they are woven into the instructional approach and the procedures for practice. Taking the above point into consideration, self-talk should not be regarded only as a technique that can be applied to throwing, but may be used effectively in a variety of situations and with other subject matter as well. Essentially, self-talk is a way of thinking about content.

VII. Recommendations for further study

I have written the following recommendations for future research involving instructional self-talk and motor learning. These recommendations seem justified on the basis of the results reported in this dissertation.

1. The study could be replicated with a larger population in other contexts, e.g. sport programs; and using other content, e.g. basketball skills.

2. The study could be replicated using special groups of learners, e.g. developmentally handicapped children, adults.

3. The study could be modified to involve pairs of students and observe the reciprocity involved.

4. The study could be modified to examine the progressive transfer to students for the responsibility of developing the self-talk words to describe the body positions and actions while learning a new skill.

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147

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149

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150

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151

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155

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156

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APPENDIX A

Letter of Information

Project title: The Effect of an Instructional Self-Talk Program on Learning a Motor Skill: the Overhand Throw.

Spring 1992

Dear Parents,

I am conducting a study of the effects of self-talk on motor learning with grade two-three children. I am particularly interested in finding out whether self-talk in the form of movement stories will help children independently learn skills such as throwing overhand and feel better about their ability to use these skills during play. Movement stories are simply descriptions of the action in terms children can relate to instead of using technical terms. For example, to remember the proper motion for the forehand ground stroke in tennis children might say: "Sweep the crumbs off the kitchen table."

I am asking for permission to test your child's proficiency for the overhand throw and for participation in this study. Participation is voluntary and the child may withdraw at any time without jeopardy to his/her academic standing.

The activities involved in the project are intended for basically healthy children. Any health condition that may preclude participation should be communicated to either the principal or myself. In the unlikely event of physical injury resulting from

158

participation, emergency medical treatment for injuries or illness is available according to Local School procedures.

The skill instruction and assessment will take place at Local School during school time, lasting approximately 30 minutes for each session every other day for approximately 3 weeks. These sessions will begin in the spring of 1992.

To guarantee privacy of information, identification numbers will be used in place of names. Videotaped results will be used exclusively by the researcher for data collection and analysis and are not intended for public broadcast. Following completion of the study the videotapes will be used for educational purposes only. Any data used for publication purposes will be summarized for groups of participants so that anonymity will be protected. Please indicate your agreement to your child's participation by completing and returning the attached consent form to: Principal of Local School, London, Ontario, before March,1992.

If you have any questions, concerns or complaints please call the school or myself at 661-2034. I appreciate your help and look forward to sharing the results with you later this spring.

Sincerely,

Consent Form for Parents and Subjects

Project Title: The Effect of an Instructional Self-Talk Program on Learning a Motor Skill: the Overhand Throw.

I have read the Letter of Information and agree to give

_____ permission to participate in the

(student's name)

study conducted at _____ School conducted by Andy Anderson. All questions regarding this study have been answered to my satisfaction.

_____

(parent/guardian signature)

_____

(child's signature)

Letter of Information for Teachers

Project title: The Effect of an Instructional Self-Talk Program on Learning a Motor Skill: the Overhand Throw.

Spring 1992

Dear Teachers,

I am conducting a study of the effects of self-talk on motor learning with grade two-three children. I am particularly interested in finding out whether self-talk in the form of movement stories will help children learn independently skills such as throwing overhand and feel better about their ability to use these skills during play. Movement stories are simply descriptions of the action in terms children can relate to instead of using technical terms. For example, to remember the proper motion for the forehand ground stroke in tennis children might say: "Sweep the crumbs off the kitchen table."

I am asking for permission to test the children in your class to determine their proficiency for the overhand throw and for participation in my study. Participation is voluntary and the child may withdraw at any time.

The skill instruction and assessment will take place at school during school time, lasting approximately 30 minutes for each session every other day for approximately 3 weeks. These sessions will begin in the spring of 1992.

To guarantee privacy of information, identification numbers are used in place of names. Videotaped results will be used

exclusively by the researchers for data collection and educational instruction. The videos are not intended for public broadcast.

If you have any questions please call the school or myself at The University of Western Ontario, 661-2034. I appreciate your help and look forward to sharing the results with you later this spring.

Sincerely,

APPENDIX B

Instructional Format Used to Test for Baseline Skill Levels

Introduction and Warm-up

A. Instructor says: Hi. How are you today? My name
is_____. What's your name?

B. Sample Warm-up Questions.

•Do you like to watch the Blue Jays (Tigers) play baseball?

•Are you a fan?

•Do you play on any baseball teams?

•Do you play throwing and catching games with your friends or
family in your spare time?

•Pretend I know nothing about throwing. Describe to me how to
throw a ball overhand.

•You will be helping me find out more about how to teach children to
throw properly. It is important therefore that you pay attention to
what I say, ask questions so you are clear about what to do, and
share with me any information about the how you feel about
learning this way. I am very interested in what's on your mind.

C. Instructor says: Watch how I throw the ball. I want you to throw
the ball overhand the way I did. Do you understand what I want you
to do? Now you try it.

The subject is given three warm-up throws. For baseline
scoring, the subject executes 3 consecutive one hand overhand
throws. The best throw is according to the Performance Standards
Form - Appendix C.

APPENDIX C

Performance Standards - Overhand Throw

<u>Key Elements of Performance</u>	<u>Scoring Criteria</u>

A. Ready position Part 1
- 0 - ipsolateral arm-foot, facing the target
- 1 - a) stand sideways-whole body (feet/upper body) 30-90°
  b) feet less than 15 cm apart
- 2 - a) stand sideways (90°), contralateral
  b) feet shoulder width (15 to 30 cm)
  c) aiming foot turned out

Part 2
- 0 - arms held at sides
- 1 - a) arms held out above shoulder or below 45° at shoulder level, before fwd transfer of weight, fly arm action
- 1 - b) no attempt to extend arms before fwd weight transfer
- 2 - a) rear arm between 45° - 90° below shoulder

B. Loading up the power leg
- 0 - weight on both feet
- 1 - partial shift of weight to back foot
- 2 - a) front foot comes off the ground during the windup
  b) rear leg bent and front foot > 10 cm off ground

C. Body rotation
- 0 - little or no body rotation (<20°)
- 1 - a) simultaneous or partial rotation of hips and shoulders
  b) point front foot at target during rotation
- 2 - rotate hips then shoulders

D Step forward from ready position over a line with appropriate foot on the floor in sequence
- 0 - no step taken
- 1 - step taken is hesitant or < 10 cm
- 2 - step is at least 10 cm from original placement

E. Shift body weight to the appropriate front foot
- 0 - no shift of weight forward to the foot opposite the throwing arm
- 1 - shift of weight to the front foot, but the knee is kept straight
- 2 - shift of weight to the front foot with the knee flexing and then slightly extending as the arm moves forward (bracing action for de-rotation)

F. Extend the throwing arm
- 0 - elbow stays at 90 degrees or less during the windup
- 1 - elbow moves to a position > 90 degrees but < 160 degrees
- 2 - elbow moves to a position of 160 -180 degrees

G. Elbow is up and away from the body (align the elbow of the throwing arm & both shoulders when the arm nears the point of ball release
- 0 - dart throwing motion
- 1 - elbow significantly above or below (> 10 degrees) a line passing thru both shoulders
- 2 - elbow near parallel (+/- 10 degrees) to a line passing through both shoulders

H. Follow through
- 0 - follow through does not cross midline
- 1 - follow through is down & slightly across the body but with minimum hip flexion (< 20 degrees)
- 2 - throwing arm follows-through to opposite side & below waist with > 20 degrees of hip flexion

L Complete all key elements with appropriate form in a smooth throwing motion
- 0 - segmented motion during the windup force production and follow thru
- 1 - smooth motion of less than all key elements
- 2 - smooth/coordinated action of all key elements from windup

* When in doubt about a rating go to the lower number.
* Any time the raters have a dispute about a score the supervisor and the two raters will review the video in slow motion and decide on the appropriate rating.

APPENDIX D

Instructional Format Used to Teach each 'Part" of the Overhand Throw

Part 1

Ready Position

A. *Instructor says:* What I want to show you is how to prepare to throw a ball with perfect form. Watch the video carefully and listen for the words used by the youngster in the video to talk to herself or to tell herself a story about how to get ready.

B. *Instructor shows the video of:* the **phase one** basic throw including the metaphors and analogies that help to make the action explicit.

C. Following this demonstration, one of the subjects was asked to pretend to be the teacher and give the instructions to the adult teacher.

Instructor says: What I want you to do is to pretend you are teaching me how to throw properly. Tell me the story about what I should do. This is important so try not to forget anything. Ready? Let's begin.

D. After the instructor has thrown the ball with the subject giving the instructions, the subjects were allowed to begin to practice. The subjects in the self talk group were instructed to pretend to be their own teacher using their inside voice to tell their body parts what to do. The subjects were told key words such as: sideways, eyes, eagle

165

wings, turn, and throw may be used to replace phrases. Each student practiced throwing with self-talk for 10 minutes.

• Only Part 1 is described because the rest of the material is presented through a similar procedure.

Appendix   E

Perceptions of Ability to Throw Overhand

Name_____Age____ M__F__

School_____

Interview Questions:

1. How do you feel about your ability to throw a ball?

😄 😊 😐 😖 😣

2. Do you feel about your ability to throw a ball a long ways?

😄 😊 😐 😖 😣

3. Do you feel about your ability to hit a target the size of a TV screen on the wall at the front of our classroom?

😄 😊 😐 😖 😣

4. How do you feel about your ability to throw a ball to a partner?

😄 😊 😐 😖 😣

5. What goes through your mind as you are practicing throwing the ball?

6. What do you say to yourself to help you remember to throw well?

Appendix F

Teachers' s Subjective Rating of Subjects' Verbal Abilities Attentiveness & Impulsive/Reflective Tendencies

Subjects Name & # Sex	Language Oral	Written	Competency Reading	Attention	Impulsive/Reflective
	12345	12345	12345	12345	12345
	12345	12345	12345	12345	12345
	12345	12345	12345	12345	12345
	12345	12345	12345	12345	12345
	12345	12345	12345	12345	12345
	12345	12345	12345	12345	12345
	12345	12345	12345	12345	12345
	12345	12345	12345	12345	12345

a) I.Q. - Give each subject in the class a score of 1, 2, 3, 4 or 5 . A score of 5 indicates high levels of achievement in general academic tasks such as reading, and language use, both written and oral (general ability to articulate thoughts, age appropriate speech patterns, conversation ability). A score of 1 indicates low levels of achievement and the child has been identified psychometrically and place in the appropriate special education class.

b) Attention levels. - Rate each student's general ability to attend to instruction and assigned tasks, according to scores of 1, 2, 3, 4 or 5. A score of 5 is high, and a 1 is extremely low (the child may be diagnosed as having an attention deficit disorder).

c) Impulsive/reflective character. Rated each student on a scale from 1 to 5. A score of 1 indicates a tendency toward impulsivity (tends not to think before he/she acts). A score of 5 is a tendency toward reflectivity (he/she is thoughtful and planful about actions).

d) Sex. Males are coded by the number 1. Females are coded by the number 2.

APPENDIX G

Self-Talk Subjects' Responses to the Question: If someone asked you to explain what self-talk is about what would you say?

Numbers in brackets indicate how many times this response was given.

- helps to cheer yourself on while you throw
- helps to tell you to throw better (3)
- how to throw a ball better (2)
- helps to learn to throw better
- remind you what to do (3)
- to remember better (7)
- help to do things better
- help have better overhand throw
- to have more fun playing (3)
- help yourself do stuff
- remind yourself to do something
- just remember the words to get it right
- it works
- if you tried it you could do better
- if having troubles might think about it
- help you get better at throwing than if someone is beside you!!!!

These are direct quotes recorded on paper.

APPENDIX H

Self-Talk Subjects' Responses to the Question: If you were watching two children from our school outside, throwing and catching a ball, and a one was a good thrower and the other was a poor thrower, what would the good thrower be doing that the poor thrower would not be doing?

Numbers in brackets indicate how many times this response was given.

• remember how to do it the good way, you know center, pivot scratch, look at the target

• look at the target

• throw at the target

• hit the target

• throw it straight (3)

• step over the line

• remember to scratch (3)

• stand sideways (2)

• using self-talk

• loading up (2)

• pivoting

• have statue arm (2)

• throw it further

• talk to yourself

• say what needs to say to do the right moves - say naval attack, scratch

- lift power leg

- naval attack

- spread wings (8)

Poor throwers

- stand wrong

- don't center

- don't spread wings

- don't step over the line

- don't look at the target

- don't statue arm

- not using self-talk

- forget to scratch

- forget the wings

- forget the statue

- might not know self-talk terms

- forget stuff- center load up, arm might be crouched into the body

- throw to the ground

These are direct quotes recorded on paper.

Traditional Group Subjects' Responses to the Question: If you were watching two children from our school outside, throwing and catching a ball, and a one was a good thrower and the other was a poor thrower, what would the good thrower be doing that the poor thrower would not be doing?

Numbers in brackets indicate how many time this response was given.

- straighten the arms more (6)
- hit the target right in the middle
- far (5)
- put weight on back foot (3)
- nothing (3)
- get them out if you are a pitcher
- get into a better position
- take a step and throw
- not always in a rush
- have proper things
- better aim
- ankle points out
- everything working together
- get taught to throw

Demonstration Group Subjects' Responses to the Question: If you were watching two children from our school outside, throwing and catching a ball, and a one was a good thrower and the other was a poor thrower, what would the good thrower be doing that the poor thrower would not be doing?

Numbers in brackets indicate how many times this response was given.

- nothing (7)
- further (10)
- harder (4)
- get it to partner (5)
- faster (2)
- accurately
- hit target (3)
- straight (2)
- how to throw it in the right position
- concentrate more
- stretch in the arm
- higher (3)

APPENDIX I

Interview with Physical Education Teacher

The physical education teachers observations and reflections about the study were audio taped and are transcribed below. The letter 'A' is used to identify what the interviewer said. The letter 'H' is used to identify what the physical education teacher said during the interview.

A: You have been telling me some things about the class that were remarkable, you thought were interesting about the process. Can you tell me some things about what you have seen that are noteworthy.

H: The self-talk group were able to attend much better than any of the other two groups whether it was the traditional or demonstration only. They (self-talk) were really interested in what they were doing and that's partly because they could use their own language. You said spread the wings of the eagle and then you said but they can use what ever (language) you want to and they thought that was really neat and came up with their own and it was remarkable how well everyone of them even the special ed kids who have problems retaining knowledge knew each step and could do it and they were really interested in the whole process. They stayed on task versus the rest of them that were doing the same sort of activity, they stayed on task much more than the rest of them. Demo only it was really interesting watching them when the demo was on they were looking up at the ceiling they couldn't attend because there was no

174

noise, Joey for instance had to fill in the noise with comments because he was so uncomfortable with not having anything said and watching them they just don't have it , they don't get the stretch, they don't follow the steps very well. They (demo only) were probably the least on task of all the groups. Traditional some of them pick it up and some of them didn't. They didn't seem to pick up a whole lot more than the group that was demo only.

As far as individuals, Alan specifically, who has problems in regular p.e. classes attending to things and doing them and often he cries and goes off to the side and I'm not sure where its coming from whether its attention seeking but with this he could use his own imagination and he thought that was really neat and he really improved and he didn't have any problems participating and you don't find that in his regular classes. And even the special ed kids like M and K picked up things really quickly, and really enjoyed it and I talked to some of the kids about how they felt about their throw and they were much more confident. I asked them do you feel better about your throw since you started self talk and they said yes.

A: Some of the students indicated on the rating scale that they were fairly confident about the throw, that was a surprise to you. You thought they would have rated themselves much lower.

H: We were doing ball skills with all the classes, boys against the girls, and the girls said we're not even going to try because we can't win against the boys; they felt totally inadequate so I'm really

surprised , I don't feel they are that confident about their skills. And I have spoken to them about it and I said I would be on their team and they said they weren't even interested.

A: Even watching Alanna throw on the tape, the boys were not willing to accept that a girl was able to throw that well. The boys didn't want to give her credit for being able to throw as well or better than they could throw.

H: Yes that was very interesting. That's a very common attitude. A lot of the stereotypes are still their. Girls feel inadequate and I think that's partly how their socialized. And so when they see Alanna throw they think she can't throw. Perhaps the girls have come to internalize that they are not as good as the boys and therefore don't expect themselves to throw well and don't try as hard I don't know. That's why I can't understand why they circled the happy face whether it was because they liked the happy face and chose it for that reason I don't know.

A: You said something about the words that we used provided some sort of an association.

H: Well I was just sitting back thinking about the way that I teach and the words that I use and the kids listen and they may be able to follow but do they really pick up from what I say and I use my adult language and whether it really registers with them or not, whereas when ou use self-talk they can come up with their own words and

they can internalize that and remember that and I think that really helps with their retention of what they've learned whereas when they use my language Oh ya Mrs. Jansen said this so I'll do it, but from day to day will they keep that? Whereas if they can come up with their own they will remember that.

And the creative one's like Alan I'm sure he will, he the imaginative kind of kid who he may not feel very adequate with his physical ability to do throwing but if he can come up with his own associations, him I really noticed because you can touch him or get to him in physical ways because I don't think he is socialized in that way, I think he really feels not very confident, so this has given him the creative and he can internalize it and he can try it, that gives him confidence.

A: Would you feel comfortable developing a self-talk language for another skill say for example gymnastics. Could you see yourself developing self-talk language for particular types of movement.

H: Yes. I've been thinking about some of the things I say like right arm up and left leg out and you're saying this to grade ones or even grade threes and I know right there they don't know their right from their left. But if you said something more in tune with what they are familiar learning would be better.

A: If I came along with this self-talk technique would it be difficult for you to use this approach with your classes?

H: No but I would have to wait for a while to build up the kids trust and a rapport and used to what I are like.

A: We say an instance to today with E who has been away in Florida and now that she has returned T began teaching her using the self-talk words. What were your thoughts about that situation.

H: She (T) had a lot of confidence about what she was saying. It wasn't kind of like this... Usually when a child is away and the others update them they get a really sketchy view of what you've done and she (T) didn't she had the steps right down, and she was very eagerly telling her what she had learned and K was eagerly learning from what she (T) was saying to her and that was really neat. I have done that often in teaching where I said instructions and then I say to them what did I say and half of them would say I have no idea, that a way of seeing whether they are really attending and they (self-talkers) are really attending to the self-talk because they really knew the stuff and I thought it was so neat that she was so eager to share it and K wanted to try it and she did do some refining as a result of the instruction so she did (K) attend to the steps.

A: What are your views on the effectiveness of the demo?

H: They need language along with it, they can't watch theyre all over, they don't know how to watch something without any language involved with it they have a hard time transfering that to their own bodies. The skilled ones pick up a few things but not the others. If

they made any gains at all it would be just by chance. I mean just watch (J) the way he filled in the noise.

A: What additional teacher aids are needed to help teachers use self-talk regularly.

H: The introduction you used with Home Alone that you used or with Charlotte's Web if you read a passage from it that really appeals to the kids would be neat for them to see so that they would be really comfortable that they really do talk to themselves and other people do that they respect like in Home Alone. That's a real ice breaker. And they feel comfortable with you. That got them thinking about situations where they talk to themselves. If you know skill break downs then I think you can do it and it was good to see how you broke the skill into steps and how you added a certain amount each time. It would take me a lot of time to do it I mean I would have to sit down and think specifically the pace I want to go. If you put too much in it would be difficult.

A: The other concern that I have is that the kids will use self-talk like a chant and not really listen to the words and follow it.

H: Perhaps if you did it too long, but for what you did with them no they were, when they said it they did it.

A: Some of them started dropping the self-talk words on their own and towards the end many of them were just concentrating on the statue and scratch so they had only a few words to say.

H: It was interesting, I said to soime of the kids your not using self-talk and they said but were using it in our heads.

A: Good I didn't know that.

H: I said that to T and a few other girls its obvious they are thinking about the steps but she said were not saying it outloud were going through it in our heads everytime when we do it.

A: Any differences between the sexes.

H: The girls seemed to attend to it much better. They seemed to like the stages of it better. Some of the boys did. Some of the boys still just wanted to throw it as hard as possible. Some of the boys didn't think they needed to belittle themselves by going through the stages. We don't need to stoop to that level so they didn't attend to it. The four that are really weak (academically) really responded well to it. The self-talkers were really enjoying it and attentive overall compared to the others. We didn't have to say don't throw at the curtains and stay on task that really wasn't an issue with the self-talkers. Their behaviour was totally different and its not that they are any better than the other ones either. This class can just as off-task as the others. This time they were much better.