AN ABSTRACT OF THE DISSERTATION OF

Daniel W.S. Tindall for the degree of Doctor of Philosophy in Human Performance

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Title: The Effects of Three Knowledge Interventions on Novice Volunteer Tutors' Teaching Performance with Children with Developmental Disabilities in a Motor Development Lab Setting.

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According to Block (1999), the greatest problem with inclusion in physical education is the lack of personnel support. Most help comes in the form of teacher assistants such as peer-tutors and paraprofessional who receive very little, if any, direction from the general physical education teacher. However, what remains unknown are the knowledge and teaching behaviors these assistants possess in order to engage children with developmental disabilities within the physical activity setting.

The purpose of this investigation was two fold: a) To determine the impact an training consisting of knowledge development and practice has on the interactions of volunteer tutors working with children with developmental disabilities, and b) To determine if the order of presenting training content targeting specific dimensions of teacher knowledge has a differential effect on the teaching performance of the same volunteer tutors.

Participants for this study were seven volunteer tutors between the ages of 18-23 each paired with a high functioning child (5-14 yrs.) with a development disability.

Volunteer tutors engaged in weekly 30 minute training sessions throughout the academic year, focusing on the development of content knowledge (CK), pedagogical knowledge (PK), and pedagogical content knowledge (PCK). A hybrid research design was implemented combining a basic single-subject reversal design with an Alternate Control Treatment Group Research Design. Data collection consisted of event recording of data as captured via audio and videotaped recordings of the volunteer's behavior during a gym-based activity session covering the physical skills of throwing, catching, kicking, and striking an object. Findings regarding the order of the training sessions suggest pedagogical knowledge followed by content knowledge had some encouraging results, but were not as effective as just focusing on PCK. Teachers looking to incorporate peer volunteers into the physical activity setting to assist children with developmental disabilities may consider implementing short training sessions that focus on pedagogical content knowledge.

The Effects of Three Knowledge Interventions on Novice Volunteer Tutors' Teaching Performance with Children with Developmental Disabilities in a Motor Development Lab Setting

by
Daniel W.S. Tindall

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Approved:

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Major Professor, representing Exercise and Sport Science

Redacted for Privacy

Chair of the Department of Exercise and Sport Science

Redacted for Privacy

Dean of the Graduate School

I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

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Daniel W.S. Tindall, Author

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CHAPTER 1: INTRODUCTION

BACKGROUND

The quality of general physical education programs, the elimination of adapted physical education programs and teachers, and the lack of support in the instructional setting have been identified as the primary problems with including children with disabilities into a general physical education setting (Block, 1999). According to Block, the greatest problem with inclusion in physical education is lack of personnel support. Most help comes in the form of teacher assistants who received very little, if any, direction from the general physical education teacher. Physical education teachers are asked to create and facilitate an inclusive environment that meets the needs of all children, regardless of their ability. Current curricular approaches to undergraduate physical education programs provide minimal preparation in disability issues for undergraduate students. According to research conducted by DePauw & Goc Karp (1994) and DePauw & Sherrill (1994) for the past 30 years those trained in adapted physical education have been educated and equipped with the necessary skills for teaching students with disabilities in specialized settings. However, the preparation of physical education teachers (i.e., those providing the majority of physical activity instruction to students with disabilities) is significantly inadequate. Therefore, the issue then becomes what resources can be made available

for those who instruct the majority of children with disabilities in the general physical education setting?

It has been demonstrated that including children with disabilities into the general physical education setting has no effect on the performance (i.e. skill improvement and physical activity of their nondisabled peers (Block & Zeman, 1996). When teachers are developing their physical education curricula, students with disabilities should be given equal consideration. They must be allowed to successfully participate in all aspects of a well-designed, thorough and appropriate physical education program. Notwithstanding ability, all children should be introduced to a physical education curriculum that can be modified to meet their specific needs (Block, 2000). According to Yell (1995), no definition exists that effectively determines what essentially constitutes an "appropriate" education, or how the "least restrictive" environment should actually be constructed. Every student has individual challenges. As a result, physical education teachers are often left frustrated when trying to provide a program that accurately meets the needs of all students regardless of ability (LaMaster, Gall, Kinchin, & Siedentop, 1998). Factors usually addressed in the development of a good curriculum generally take into account the size of the class, the availability of equipment and facilities, the frequency in which the class meets, and lastly, the students' skill level and interests (Yun, Shapiro, & Kennedy, 2000). When including a child with a disability into the general physical education setting the design of the curriculum may be altered significantly.

The use of volunteer teaching assistants, peer-tutors, and paraprofessionals to assist children with disabilities participate in the physical education setting has

become an alternative and popular resource for teachers who experience this situation. However, what remains unknown are the knowledge and teaching skills these individuals need to possess in order to enable children to engage within the physical education setting.

Within the domain of physical education teacher education (PETE) the development of teacher knowledge is an important concept critical to the development of effective and well-trained teachers. Yet, aspects of "teacher knowledge" (content knowledge, pedagogical knowledge, and pedagogical content knowledge) are generally unknown and less emphasized in the preparation of individuals who work with children with disabilities in a voluntary or paraprofessional capacity. According to Darst & Pangrazi (2002), the success or failure of including a child with a disability into the general physical education setting depends fundamentally upon the quality of the teacher and their ability to interact with the student. The same should hold true for volunteers working in the setting.

In physical education, peer-tutors, volunteer teaching assistants and paraprofessionals, for the most part, are "trained" by the teacher and subsequently used to assist the teacher to conduct lessons which include students with disabilities (Block, Oberweiser, & Bain, 1995; DePaepe, 1985; Houston-Wilson, Dunn, van der Mars, & McCubbin, 1997; Houston-Wilson, Lieberman, Horton, & Kasser, 1997; Pangrazi, 2001; Webster, 1987). In actuality, content of this training is unclear to say the least, and quite varied. Though paraprofessionals may have received more structured forms of training, physical education teachers generally train volunteers and peer-tutors.

Training to become an effective physical education teacher involves many crucial components. In general, exposure to and the retention of teaching strategies known to be effective, as well as the opportunity to practice and receive performance feedback are major factors in determining the effectiveness of a teacher. Likewise, having a solid knowledge base in content and pedagogy, as well as an understanding of appropriate learning progression in the areas of psychomotor skill, movement concept, and activity, will further assist physical education teachers to design and implement an effective, instructional environment (Johnson, Kasser, & Nichols, 2002). In many instances, volunteers, peer-tutors and paraprofessionals do not receive such extensive training and rely exclusively on past personal experiences when assisting a child with a disability (Block, 2000; Doyle, 1997). Paraprofessionals in particular, have many barriers to overcome concerning effective training practices and supervision from professionals in the field (Giancreco, Edelman, Broer, & Doyle, 2001). How much more effective could these "assistants" be if they were provided with more formalized training, similar to that of physical education teachers?

In general, to be considered a trained paraprofessional, volunteer, or potential peer-tutor, the only tangible characteristic required is the desire and time available for the individual to assist a student with a disability (Block, 2000). In the case of paraprofessionals and volunteer teaching assistants, responsibilities normally include non-instructional and instructional duties. Non-instructional duties revolve primarily around clerical and organizational tasks. Instructional duties are described as those tasks that assist the teacher in conducting the class (Block, 2000; Pangrazi, 2001). At best, this is very ambiguous. In some cases, professionals have relinquished much of

their traditional educational roles and responsibilities to both highly trained and minimally trained paraprofessionals (Giancreco, et. al, 2001). The knowledge base, with regard to the use of peer tutors in the educational setting, is defined a bit more clearly. The benefits of peer-tutors in both the adapted and regular physical education setting have been documented extensively (Block, Oberweiser, & Bain, 1995; Houston-Wilson, Dunn, van der Mars, & McCubbin, 1997; Houston-Wilson, Lieberman, Horton, & Kasser, 1997; Webster, 1987). According to Block, (2000, p.178) "training is critical to the success of peer tutors." Moreover, if done correctly, "a peer tutoring program should include such topics as disability awareness, teaching techniques, reinforcement techniques, skill analysis, and data collection."(p.178).

Pangrazi (2001) wrote, "Aides are not used to reduce the need of teacher involvement; rather they are there to implement instruction strategies that have been organized and developed by the professional educator." (p. 133). As such, the success or failure of an individual working with a student with a disability in regular physical education depends primarily on the teachers' ability to help develop the needed pedagogical skills in the volunteers. This is dependent, in part, on the opportunity for the volunteer to practice the skills and develop the pertinent knowledge; pedagogical knowledge, content knowledge, and pedagogical content knowledge (Shulman, 1987).

RATIONALE

The training and knowledge that licensure teachers receive in their professional development should serve as a starting point, or model, for the basic training and knowledge provided to volunteer teaching assistants. By developing short, effective interventions (such as tutoring workshops) teachers may help volunteers create the

skills and knowledge necessary to successfully assist in the inclusive physical education setting. Thus, one goal of this study was to determine the effectiveness of such interventions in developing teacher knowledge, training, and the efficient use of specific teaching skills (Rink, 1996; Siedentop & Tannehill, 2000) in volunteer teaching assistants who work with children with disabilities. Specifically, could training in a specific knowledge area better help a volunteer assistant employ basic teaching skills in an adapted physical activity setting? Using this question as a guide, the purpose of this investigation became twofold: One, to determine the impact of three different interventions, each aimed at a different area of teacher knowledge development, has on the interactions of volunteer tutors working with children with developmental disabilities. And two, to determine if the order of presenting these interventions affects the teaching performance of these volunteer tutors differentially. If successful, these interventions could apply to all individuals, whether they are peer tutors, paraprofessionals, or community volunteers, who wish to assist a student with disabilities in self-contained or regular physical education settings.

CHAPTER 2: THE EFFECTS OF THREE KNOWLEDGE INTERVENTIONS ON NOVICE VOLUNTEER TUTORS' TEACHING PERFORMANCE WITH CHILDREN WITH DEVELOPMENTAL DISABILITIES IN A MOTOR DEVELOPMENT LAB SETTING

Abstract

According to Block (1999), the greatest problem with inclusion in physical education is the lack of personnel support. Most help comes in the form of teacher assistants such as peer-tutors and paraprofessional who receive very little, if any, direction from the general physical education teacher. However, what remains unknown are the knowledge and teaching behaviors these assistants possess in order to engage children with developmental disabilities within the physical activity setting.

The purpose of this investigation was two fold: a) To determine the impact an training consisting of knowledge development and practice has on the interactions of volunteer tutors working with children with developmental disabilities, and b) To determine if the order of presenting training content targeting specific dimensions of teacher knowledge has a differential effect on the teaching performance of the same volunteer tutors.

Participants for this study were seven volunteer tutors between the ages of 18-23 each paired with a high functioning child (5-14 yrs.) with a development disability. Volunteer tutors engaged in weekly 30 minute training sessions throughout the academic year, focusing on the development of content knowledge (CK), pedagogical knowledge (PK), and pedagogical content knowledge (PCK). A hybrid research design was implemented combining a basic single-subject reversal design with an Alternate Control Treatment Group Research Design. Data collection consisted of

event recording of data as captured via audio and videotaped recordings of the volunteer's behavior during a gym-based activity session covering the physical skills of throwing, catching, kicking, and striking an object. Findings regarding the order of the training sessions suggest pedagogical knowledge followed by content knowledge had some encouraging results, but were not as effective as just focusing on PCK. Teachers looking to incorporate peer volunteers into the physical activity setting to assist children with developmental disabilities may consider implementing short training sessions that focus on pedagogical content knowledge.

Introduction

The primary problems with including children with disabilities into a general physical education setting have been identified as the quality of general physical education programs, the elimination of adapted physical education programs and specialists, and the lack of support in the instructional setting (Block, 1999). Physical education teachers are asked to create and facilitate an inclusive environment that meets the needs of all children, regardless of their ability. Current curricular approaches to undergraduate physical education programs provide minimal preparation in disability issues for undergraduate students. According to research conducted by DePauw & Goc Karp (1994) and DePauw & Sherrill (1994) for the past 30 years those trained in adapted physical education have been educated and equipped with the necessary skills for teaching students with disabilities in specialized settings. However, the preparation of general physical education teachers (i.e., those providing the majority of physical activity instruction to students with disabilities) is

significantly inadequate (Block & Rizzo, 1995; Rizzo & Kirkendall, 1995; Rizzo & Vispoel, 1991). Therefore, the issue then becomes what resources, or training, are essential for teachers of mainstreamed children with disabilities in general physical education settings?

Teacher Knowledge:

Within the domain of physical education teacher education (PETE) the development of "teacher knowledge" (content knowledge, pedagogical knowledge, and pedagogical content knowledge) is an important concept critical to the development of effective and well-trained teachers (Berliner, 2000; Placek & Locke, 1986; Rink, 1995; Shulman, 1987).

Yet, aspects of teacher knowledge are generally unknown and less emphasized in the preparation of individuals who work with children with disabilities in a voluntary or paraprofessional capacity. In physical education, peer-tutors, volunteer teaching assistants and paraprofessionals, for the most part, are "trained" by the teacher and subsequently used to assist the teacher to conduct a lesson (Block, Oberweiser, & Bain, 1995; DePaepe, 1985; Houston-Wilson, Dunn, van der Mars, & McCubbin, 1997; Houston-Wilson, Lieberman, Horton, & Kasser, 1997; Pangrazi, 2001; Webster, 1987). In actuality, content of this training is unclear and quite varied. Though paraprofessionals may have received structured form of training, the physical education teacher generally trains volunteers and peer-tutors, and therefore, if the teacher is unclear or unprepared in how to provide instruction to children with disabilities, so will the volunteer assistant.

Issues of Effective Training:

Training to become an effective physical education teacher involves many crucial components. In general, exposure to and the retention of teaching strategies known to be effective, as well as the opportunity to practice such skills in front of peers and students alike is a major factor in determining the effectiveness of a teacher. Likewise, having a solid knowledge base in content and pedagogy, as well as an understanding of appropriate learning progression in the areas of psychomotor skill, movement concept, and activity, will further assist physical education teachers to design and implement an effective, instructional environment (Johnson, Kasser, & Nichols, 2002). In many instances, volunteers, peer-tutors and paraprofessionals do not receive such extensive training and rely exclusively on past personal experiences when assisting a child with a disability (Block, 2000; Doyle, 1997). Paraprofessionals in particular, have many barriers to overcome concerning effective training practices and supervision from professionals in the field (Giancreco, Edelman, Broer, & Doyle, 2001). How much more effective could these "assistants" be if they were exposed to limited, yet formalized, training similar to physical education teachers?

In general, to be considered a trained paraprofessional, volunteer, or potential peer-tutor, the only tangible characteristic required is the desire and time available for the individual to assist a student with a disability (Block, 2000). Responsibilities of paraprofessionals and volunteer teaching assistants normally include non-instructional and instructional duties. Non-instructional duties revolve primarily around clerical and organizational tasks. Instructional duties are described as those tasks that assist the teacher in conducting the class (Block, 2000; Pangrazi, 2001). In some cases,

professionals have relinquished much of their traditional educational roles and responsibilities to both highly trained and minimally trained paraprofessionals (Giancreco, et. al, 2001).

The knowledge base, with regard to the use of peer tutors in the educational setting, is defined a bit more clearly. The benefits of peer-tutors in both the self-contained and general physical education setting have been documented extensively (Block, Oberweiser, & Bain, 1995; Houston-Wilson, Dunn, van der Mars, & McCubbin, 1997; Houston-Wilson, Lieberman, Horton, & Kasser, 1997; Webster, 1987). According to Block (2000, p.178), "training is critical to the success of peer tutors." Moreover, if done correctly, Block continues, "a peer tutoring program should include such topics as disability awareness, teaching techniques, reinforcement techniques, skill analysis, and data collection." (Block, 2000, p. 178). The peer tutoring program utilized in this study did not include all of these topics, but did cover the areas of disability awareness, reinforcement techniques, and skill analysis.

Pangrazi (2001, p.133) stated, "Aides are not used to reduce the need of teacher involvement; rather they are there to implement instruction strategies that have been organized and developed by the professional educator." As such, the success or failure of an individual working with a student with a disability in the general physical education setting depends primarily on the ability of the teacher to apply the type of pedagogical skills appropriately to the volunteer. This is dependent, in part, on the opportunity for the volunteer to practice the skills and develop the pertinent knowledge; pedagogical knowledge, content knowledge, and pedagogical content knowledge (Shulman, 1987).

The training and knowledge that licensure teachers receive in their professional development should serve as a starting point, or model, for the basic training and knowledge provided to peer tutors. By developing short, effective interventions (such as tutoring workshops) teachers may help volunteers create the skills and knowledge necessary to successfully assist in the inclusive physical education setting. Thus, one goal of this study is to determine the effectiveness of such interventions as they may apply in developing teacher knowledge, training, and the efficient use of specific teaching skills (Rink, 1996; Siedentop & Tannehill, 2000) in volunteer teaching assistants who work with children with disabilities. Specifically, could training in a specific knowledge area better help a volunteer assistant employ basic elements of teacher effectiveness in the adapted physical activity setting? Using this question as a guide, the purpose of this investigation became twofold: One, to determine the impact of three different interventions, each consisting of different areas of teacher knowledge development, has on the interactions of volunteer tutors working with children with developmental disabilities, and two, to determine if the order of presenting these interventions has a differential effect on the teaching performance of the volunteer tutors. If successful, these interventions could apply to all individuals, whether they are peer tutors, paraprofessionals, or community volunteers, who wish to assist a student with disabilities in adapted or regular physical education settings.

Methods

Participants:

Tutors: Seven volunteer tutors, each paired with a child with a mental retardation during a community-based motor development program served as participants. The tutors (18-25 yrs.) were students at a university located in the Pacific Northwest. The participant population was not restricted to any gender, ethnic group, social class, or ability. However, a target population of freshmen and sophomores was heavily recruited to ensure that all participants had little or no exposure to instruction in pedagogical methodology and/or experience in teaching physical skills. In addition, volunteers having previous experience working with a particular child with a disability participating in the study were excluded from the study or asked to work with a different child. All volunteers were required to fill out applications in order to participate in the program. These applications were reviewed to determine potential eligibility in the study. Prior familiarity in any of the following areas of pedagogical knowledge (i.e., positive specific feedback, prompting, modeling, time management, organization, equipment use and modification, etc.), advanced content knowledge in the targeted skills (i.e. critical elements of pre-determined motor tasks such as striking, catching, kicking, and throwing), and pedagogical content knowledge developed from past physical education settings or experiences (Graber, 1995, 2001; Rovegno, 1993; Schempp, 1993) formed the basis for inclusion in the study as tutor. If they were familiar with these forms of teacher knowledge, they were not recruited for this study. From the completed clinic volunteer application, students having extensive experience

working with children with developmental disabilities, a highly athletic background (i.e. athletes), and/or experience as a teacher or coach, were excluded from the study.

***Children*:** Seven children (5-14 yrs.), each paired with a volunteer tutor, also served as participants. The student participant group consisted of children with developmental disabilities, including mental retardation and Down syndrome, identified as having the level of ambulation required to perform the highlighted motor tasks of striking, catching, throwing, and kicking. The children were not restricted to participate in the study due to gender, ethnic group, or social class. Because of issues of restroom use and locker room transitions both to and from the pool facility, children were paired with same gender volunteer tutors.

Setting:

The weekly motor development program was offered the fall, winter, and spring terms of the academic year for children with disabilities. Each term began with an initial "in-service" meeting for new volunteers held during the first Friday. On the following Fridays, gym and pool sessions were held on eight of the following nine Fridays throughout the term. Periodically, breaks occur during the quarter due to a planned holiday (Memorial Day, Thanksgiving, Easter Holiday, etc.). Students in the program received individualized physical activity programs, which emphasized physical fitness, gross motor development, and aquatic skills. Group leaders developed these individualized physical activity programs for each participant, based on initial screening, on-going motor assessment, and consultation with parents. However, for the purpose of this study skills in the area of aquatics were not included and the researcher helped develop portions of the individualized physical activity program in

conjunction with the group leaders. Trained novice volunteer peer tutors provided instruction in a variety of gymnasium settings.

Dependent Variables:

For this study, five specific dependent variables, or target teaching behaviors, were selected: a) The use of Verbal Skill Feedback (as a means of positive reinforcement), b) Positive Nonverbal Feedback, c) Prompting, d) Modeling, and e) Physical Assistance. Collectively, these five teaching behaviors formulated a teaching structure resembling what is referred to in the research literature as the "system of least prompts".

According to Houston-Wilson, Lieberman, Horton, & Kasser (1997) the system of least prompts is an appropriate approach to instruction, which is often used in the special education environment. In this system, the objective is to encourage students to perform skills or elicit desirable behaviors with as little intervention from the teacher as possible. The system of least prompts has three basic components: the use of verbal cuing, the ability of the teacher to visually model a desirable skill or behavior, and lastly, the ability of the teacher to physically assist the student with a disability to perform the skill or behavior.

There are three examples of feedback that can be used as positive reinforcement in the peer-tutoring model: corrective feedback, positive general feedback, and positive specific feedback (Houston-Wilson, Lieberman, Horton, & Kasser, 1997; van Houten, 1980, 1998). Positive specific feedback is a commendatory explicit verbal statement by the teacher reflecting a positive value judgment of a student's behavioral performance or motor skill response. For the purpose of this

study, only the positive specific form of verbal feedback was investigated. Examples would include, "Courtney, I like how you dribble the soccer ball close to your feet" or "Morgan, your batting stance was perfect."

Positive nonverbal feedback includes those commendatory nonverbal moves with the body by the teacher that reflects a positive value judgment of a students' performance on a motor skill response and/or management task. A positive nonverbal feedback can occur in conjunction with a positive verbal feedback statement. Take the last positive verbal feedback example given above. The statement, "Morgan, your batting stance was perfect" spoken as the teacher displays a 'thumb's up' gesture would be a good example of a positive nonverbal feedback episode.

Siedentop & Tannehill (2000, p.273) wrote, "Prompts are often brief, typically single cue words or phrases." Verbal prompting, or cuing, is a way in which teachers build upon their reinforcement behavior by reminding students of previously acquired motor skills or general conduct behaviors before the student(s) begin to do something else. Examples are as follows; "Remember, next time keep your eye on the target when you throw." or "Don't forget to check the board before you leave today".

With regard to modeling and physical assistance, both these teaching skills are similar to those defined by Houston-Wilson, Lieberman, Horton, & Kasser, (1997). Modeling is a form of demonstration that encourages a student to engage in an activity or behavior if verbal prompting or feedback fails to do so. Modeling is best used in conjunction with a verbal prompt or followed by some sort of feedback if using a student to act as a model, praising their ability, effort, or behavior. An example of

teacher modeling would be if the teacher demonstrated the skill of hitting while at the same time making the statement, "Tito, swing the bat level, like this."

Physical assistance is the final teaching behavior targeted in this study. A final stage of the least prompts system, this behavior is primarily a combination of the cuing/feedback and modeling stage but in this instance the teacher physically touches the student in an attempt to help them perform the skill or behavior. Using the example of Tito and striking with a bat, the teacher might stand behind the student and physically assist with the swinging motion of hitting (i.e., physical foot placement, hand placement on equipment, or move student's body to experience follow through).

Data Collection:

Direct systematic observation data were collected from recorded videotapes of tutors working individually with pre-assigned children with developmental disabilities. Each week the data collection took place during the time that the volunteer tutor was instructing the child on the skill that was the focus of the volunteer tutor's workshop for that week. Motor tasks were determined based on "typical" activities presented within the motor fitness program in the past. A different motor task was introduced each week.

Event recording was used because it is the best method of collecting data on short-duration discrete behaviors (van der Mars, 1989a). The definition of a discrete behavior or event is that which has a distinct and identifiable beginning and ending and is relatively short in its natural duration. Event recording provided the researcher with "a numerical account' of the occurrence of behaviors or events. The raw data

were converted to rate per minute, to account for the varying session lengths, thereby allowing for an analysis of behavior changes across intervention sessions.

In conjunction with these videos, volunteer tutors each wore a separate wireless microphone connected to a corresponding tape recorder capturing all verbal interactions with students. When the volunteer was ready to begin recorded instruction, he or she turned to the camera and said their name and the word "Go" so coders could determine when to begin taking data.

Pilot work had been conducted to shed light on two specific areas of interest; one, the typical number of interactions given between non-participating volunteer tutors and their students during instruction on a pre-determined motor task in the gym, and two, the potential obtrusiveness of the observer, a video camera, and a wireless microphone worn by the volunteer tutor within the setting. To explore these issues, preliminary data were gathered through live observation then observed from audio and videotaped recordings of the activity sessions. Because of the potential obtrusiveness of the observer, the introduction of a video camera and wireless microphone in the setting, pilot work was conducted in order to established the extent wherein potential changes in the behavior of tutors might occur thus affecting the number and rate at which interactions were given to the student (Kazdin, 1979). Results of the pilot work suggested that typical interaction rates of the volunteer tutors were very low. The presence of an observer, video camera, and wireless microphone were not obtrusive to the environment and did not need to be significantly controlled.

Research Design:

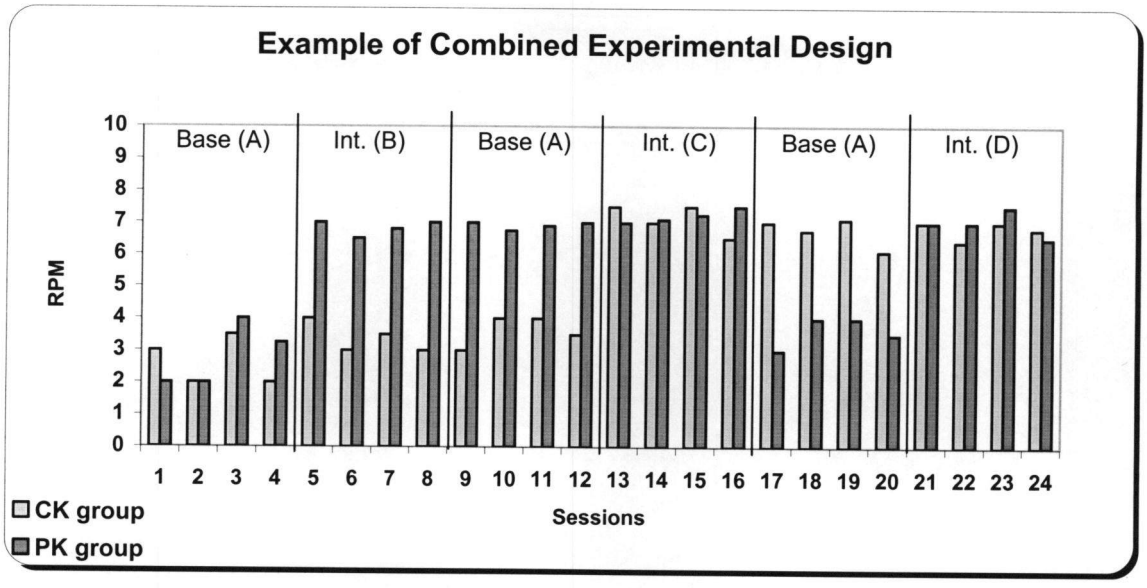
Choosing an appropriate research design that involves individuals with disabilities elevates the complexity of the task to an even higher level. When working with individuals with disabilities, obtaining a significant number of study participants often becomes a difficult obstacle. Finding eligible and desirable students to be paired with volunteer tutors is much harder than it seems in a self-contained physical activity setting. Moreover, because knowledge obtained by the tutors was subjective and cannot be "unlearned" the choice of research design was carefully considered. For this study a combination of a Reversal Design (Heward, 1987b; Ulman & Sulzer-Azaroff, 1975) and the Alternate Control Treatment Group Research Design (Barlow & Hayes, 1979; Borg, 1984; van der Mars, 1990) was utilized.

According to Heward (1987b), the reversal design, or A-B-A-B design, "entails repeated measurement of behavior in a given setting during three consecutive phases of an experiment." (p. 164). The phases are broken down into the baseline phase, the intervention phase, and a second baseline phase. During the baseline phase, the independent variable is withheld from the behavior. During the intervention phase, the independent variable is introduced to the behavior and subsequent changes are observed and noted. When the independent variable is reintroduced after the second baseline phase (a second intervention phase) the analysis may be significantly strengthen. Heward contends, "The A-B-A-B reversal design is the most straightforward and powerful single-subject design for demonstrating a functional relation between an environmental manipulation and behavior." (p. 165). For this study, a modification of the A-B-A-B design was used involving a second intervention

that was introduced in the same way as the first but contain different content. The reversal design, when coupled with the alternate control treatment group research design, was then identified as a combination of an A-B-A-C-A-D and A-C-A-B-A-D design. "A" referred to the absence of the treatment whereas "B", "C", and "D" referred to the three different treatments introduced to the two groups, but at different times. For a graphic example of the research design see Table 1.

This combination of both designs has a number of advantages. One, the groups of volunteers acted as each other's controls. Two, it allowed for all participants (volunteer tutors and children) to benefit from both interventions. Three, it addressed issues of internal validity within subjects or groups (Heward, 1987a). And four, it addressed issues of prediction, verification, and replication which is critical to single-subject designs. With regard to the reversal design aspect of the study, this design allowed the researcher to first establish baseline levels of the target behaviors (i.e., verbal positive specific feedback, modeling, prompting, and physical assistance) as well as determine changes of these behaviors within volunteer tutors across the two groups during three equally perceived intervention sessions.

Table 1: Example of both an "A-B-A-C-A-D" and "A-C-A-B-A-D" Design



Intervention:

Volunteer peer tutors were placed into one of two separate groups based on the initial focus of the intervention, using Shulman's general categories of pedagogical knowledge and content knowledge (1987). Group #1 constituted the "Content Knowledge" (CK) group. During the first intervention phase this group only received instruction on the specific critical elements, skill phases, and developmental levels of the targeted motor skills to be covered during the lessons of the gym portion of the motor development clinic.

The "Pedagogical Knowledge" (PK) group made up Group #2. During the first intervention phase these individuals only received instruction on the specific elements of effective teaching strategies, regardless of the content. Each group received training in the particular knowledge area once a week for 30 minutes.

"Content Knowledge" (CK) Group. The sequence of experimental phases for this CK group was as follows: Baseline – Content Knowledge Sessions – Baseline –

Pedagogical Knowledge sessions – Baseline – Pedagogical Content Knowledge sessions. During the Content Knowledge sessions, volunteer tutors received information on the critical elements of fundamental motor tasks (content knowledge) covered that week and throughout the quarter. These motor tasks included throwing, catching, kicking and striking. Since the clinic met eight times per academic quarter, each movement pattern was introduced to the children twice. The critical elements of each motor task were determined from instructional texts in the physical education teacher education field (Darst & Pangrazi, 2002) and used as a basic framework for instruction. Likewise, instructional texts in the area of adapted physical education were also utilized (Auxter, Pyfer, & Huettig, 2005; Block, 2000; Dunn, 1997). Modifications were made for individual children participating in the study.

To ensure the accuracy of the content, videotaped performances were also utilized when instructing volunteer tutors during this intervention session. These videotaped performances contained various stages of each motor task starting with level one (beginner) and ending with level five (advanced). All video segments lasted approximately 3-4 minutes and were played for the group a minimum of three times each with accompanying explanations. Volunteer tutors were exposed to one motor task per week during this phase of the study. While viewing the videotaped performances the volunteer tutors were instructed to write down as many physical critical elements of the motor task as they could recognize as the performances moved from level one to level five. These responses were written on a piece of paper supplied by the researcher. Once completed, volunteer tutors were given a master sheet of critical elements for the highlighted motor task checking their responses to

this "Gold Standard". Any answers given by the volunteer tutor that were similar to the master sheet were noted and circled. The second component of this intervention involved the use of note cards. After comparisons were made between the master sheet and the responses of volunteer tutors the participants were instructed to write the critical elements of the motor task on a 3x5 inch note card. A note card for throwing, for example, included such critical elements as: eyes on target, point non-throwing hand to target, step with opposite foot, turn sideways, etc. These cards served as visual cues for the volunteer tutors to implement critical elements of the motor task with their children during the following clinic session.

During this first phase of the intervention, tutors attempted to instruct students on the critical elements of the highlighted skill for the week. Instruction lasted for as long as the volunteer could keep their child engaged in the motor task. Data were gathered from both audio and videotape records, capturing the frequency with which tutors in the CK group employed all the target skills.

Pedagogical Knowledge (PK) Group. Volunteers in the PK group also experienced a three-pronged intervention series. This group also received instructional sessions, but they were held separately from those with the CK group. The instructional focus for this group centered only on elements of effective teaching strategies (pedagogical knowledge). Each week, during this intervention phase, tutors were introduced to the targeted teaching skills highlighted in this study by viewing videotapes of master teachers utilizing the teaching behaviors. Like the content intervention, tutors coded the teaching performances using event recording forms.

These results were used to evaluate their ability to recognize the teaching behavior when compared to the "Gold Standard" (the researcher).

This group did not receive any instruction on the critical elements of the motor task for that week. Though the instructional sessions were conducted in the same lab as the CK group, no overlap occurred in scheduling and the groups were instructed at separate times in the day. In order to maximize consistency in pedagogical instruction, videotaped examples of desired teaching skills were utilized. These videotaped examples were of performances conducted by experienced physical education teachers, as selected by the researcher.

During this intervention phase the PK group also developed note cards. The note cards, like those used for the CK group, included a short, specific list of reminders for the volunteer tutor to use the targeted teaching skills when their teaching student. Information on the cards served as cues for the volunteer tutor to provide positive specific verbal feedback to the student whenever possible, provide positive nonverbal feedback, examples of prompting the student, modeling for the student, and to physically assist the student whenever appropriate.

Other elements of teacher effectiveness that were covered included teacher positioning (relative to where to stand compared to the student, issues of safety with regard to the motor skill, and the importance of providing opportunities for the student to engage in appropriate practice. Again, data were gathered through both audio and videotape capturing the frequency volunteer tutors in this group provided positive verbal or nonverbal feedback reinforcement to the student, prompting the student,

modeling any of the critical elements of the motor task or desired behavior, and/or physically assisting the student in performing the motor task or desired behavior.

Reversal of Treatment. Following the initial baseline phase, both groups of volunteer tutors spent 4-5 sessions receiving training on either Pedagogical Knowledge or Content Knowledge. Next, participants returned to a baseline condition which lasted between 2-4 sessions depending on participant or student attendance.

The same intervention treatments were then re-introduced but to opposite groups constituting the second intervention phase. Thus, during this time, the CK group was exposed only to pedagogical instruction, while the PK group was exposed to instruction only in the content of previous motor tasks. The length of this experimental phase ranged from 3 to 5 sessions, again dictated by participant absenteeism.

This was then followed by another short series of Baseline class sessions that were not preceded by any training sessions. During this phase volunteers tutors continued to teach their weekly lessons. This phase was then followed by the final intervention phase, called the Pedagogical Content Knowledge Phase.

Pedagogical Content Knowledge (PCK) Intervention Phase. During this final phase both groups met at the same time in the gymnasium to receive specific instruction from the researcher on everything presented throughout the course of this study; critical elements of the motor skills to be covered that week in conjunction with a review of previously highlighted teaching skills. In addition, volunteer tutors were now allowed to view charts highlighting their performances across all phases and all behaviors. After viewing their performance data, volunteer tutors were given

questionnaires designed to help them reflect on the academic year; evaluate their performance across the two previous intervention treatments; and to set goals for the final four sessions of the study. This constituted the beginnings of their development of pedagogical content knowledge, or PCK, where the individual volunteer attempted to combine the elements of content knowledge with that of pedagogical knowledge.

The questionnaires provided volunteer tutors the opportunity to reflect on their previous performances in earlier sessions. Volunteer tutors were also asked to recall the critical elements of the highlighted motor task, testing their content knowledge and retention. Likewise, they were also asked to define teacher behaviors introduced over the course of the study and provide specific examples. Finally, volunteer tutors were asked to set goals focusing on their teaching behavior for the up coming session. This continued throughout the remainder of the study at which time each volunteer tutor scheduled a final meeting with the researcher serving as a debriefing session. It was at this time participants could view results of their final performance, review their performances over the academic year, and ask any questions they had concerning the study.

Fidelity of Treatment:

Instructional sessions with both groups were videotaped and coded to ensure consistency in the teacher educator (researcher) and to provide accurate information to both the CK and PK groups. Likewise, the teacher educator developed specific lesson plans for conducting the training sessions with both groups. In doing so, the teacher educator minimized the element of instructional variability across all treatments. Also, prior to each instructional session the teacher educator reviewed both the

videotape and lesson plan of previous sessions in order to reduce the variability of instruction for both groups. The teacher educator focused only on the motor task to be presented that week with regard to content instruction and only focused on one or two teaching skills per week with regard to pedagogical instruction.

Observer Training and Reliability:

According to Repp, Deitz, Boles, Deitz, & Repp (1976, p. 109) "In most applied studies, experimenters attempt to increase the probability that data accurately reflect the subject's behavior by assessing the degree to which two observers agree that responding has occurred." As such, for this study the investigator enlisted the assistance of one other individual experienced in the use of systematic observation techniques, specifically in the concepts and practice of event recording, to minimize experimenter bias in order to reliably identify that a behavior had occurred during the observation period (van der Mars, 1989a).

To ensure observer reliability, a second trained observer coded 20% of all videotaped sessions for the purpose of calculating interobserver agreement (IOA) percentages. The selected sessions were selected at random across volunteers in both groups and experimental phases. The minimum IOA percentage criterion was set at 90% (van der Mars, 1989b). Furthermore, the second coder was not told if the volunteer tutor was in either a baseline or treatment phase of the study to minimize observer bias.

In the beginning, due to a low frequency of occurrence inherent in the behaviors of nonverbal positive feedback, prompting, and modeling much of the IOA became hard to determine. In all of these cases, the coder and researcher were only

off by as little as one number, but in doing so the IOA exhibited a large discrepancy. This was attributed to the numbers of occurrences being low to begin with. After a revisit of the behavior definitions a second review of these tapes was conducted. The outcome of this analysis resulted in both the coder and researcher reaching IOA levels of well over 90% (see Table 2).

Data Analysis:

Visual analysis is considered the primary means of determining the presence and reliability of experimental effect in applied behavior analysis (Heward, 1987c; Parsonson & Baer, 1978, 1992). Visual analysis of the data was used for this study to determine the following events: a) The actual presence of desired behaviors (dependent variables) in the tutors, b) Evidence of baseline stability before the implementation of the intervention, c) Evidence of changes in any or all behaviors under examination of the tutors during intervention phases, d) Evidence that these changes corresponded with the experimental manipulation of either intervention across participants, and e) Evidence that the order of the intervention phases affected the tutors' overall ability to demonstrate any or all of the targeted teaching skills. Data were plotted for each tutor combining all five behaviors across each phase of the study.

The specific criteria that were used to analyze the graphical display consisted of the visual examination of baselines (stable, ascending, descending, or variable), the overlap of data between phases, changes in level from one phase to the next, the variability within and between phases, and the trends within and between phases (Heward, 1987a; Ulman & Sulzer-Azaroff, 1975).

Table 2: Report of Interobserver Agreement (IOA) Values

			VPSFB	NVPFB	Prompting	Modeling	P.A.	Total IOA's
Group #1 (CK)	Danielle	*rpm*	.066	.200	1.550	.786	.822	5 sessions
		IOA %	100%	100%	100%	100%	100%	
	Michelle	*rpm*	.034	1.060	1.293	.474	.000	5 sessions
		IOA %	100%	100%	100%	100%	100%	
	Naomi	*rpm*	.210	.556	1.612	.790	.240	5 sessions
		IOA %	100%	100%	100%	100%	100%	
Group #2 (PK)	Chandler	*rpm*	.301	.476	3.473	1.600	.326	7 sessions
		IOA %	100%	95.8-100%	92-100%	100%	100%	
	Jennifer	*rpm*	.703	.125	1.210	.998	.055	6 sessions
		IOA %	100%	100%	90-100%	100%	100%	
	Delilah	*rpm*	.140	.693	1.476	1.021	.433	7 sessions
		IOA %	100%	100%	90.4-100%	100%	100%	
	Rex	*rpm*	.282	.784	2.366	.870	.082	5 sessions
		IOA %	100%	100%	91.6-100%	94.3-100%	100%	

Results

Fidelity of Treatment:

Results of videotape analysis of the PK and CK intervention sessions for both groups suggested that the treatment intervention was implemented faithfully by the researcher. When engaged in a PK intervention session, the researcher only focused on the teaching behavior(s) introduced for that week with a rate per minute of 4.45 and eluded to issues of content at an average rate per minute of .09. Likewise, when the researcher introduced the CK intervention, mention of issues relating to pedagogical skill or behavior averaged at a rate per minute of .07, while the rate per minute for content knowledge was much higher at 3.96.

Intervention Results:

Results for each volunteer tutor across each phase are presented graphically beginning with the group that first received instruction in content knowledge (CK). Phases differed in length for various participants because of periodic absences. Tutors are identified by way of an alias.

CK Group: (Figure 1)

Danielle

An examination of the combined RPM for all the teaching behaviors for Danielle during the initial baseline phase was very stable. Conversely, across the subsequent phases, combined rates per minute were highly erratic. Some of this can be attributed to sessions where no data could be gathered thus leaving only limited data points especially during the second baseline phase. However, a closer

examination of the spike during the CK intervention can be directly attributed to Danielle's dramatic increase of prompting. RPM's within this behavior ranged from a low of .67 to a high of 6.68. In any event, Danielle's performance was indeed better for the duration of both the PK and PCK phases. Her RPMs were much higher during these phases, as indicated by the minimal or lack of overlap when compared to the initial baseline phase.

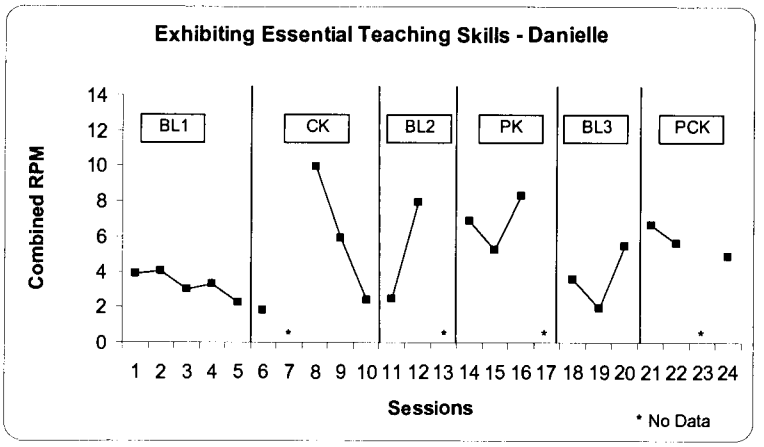
Michelle

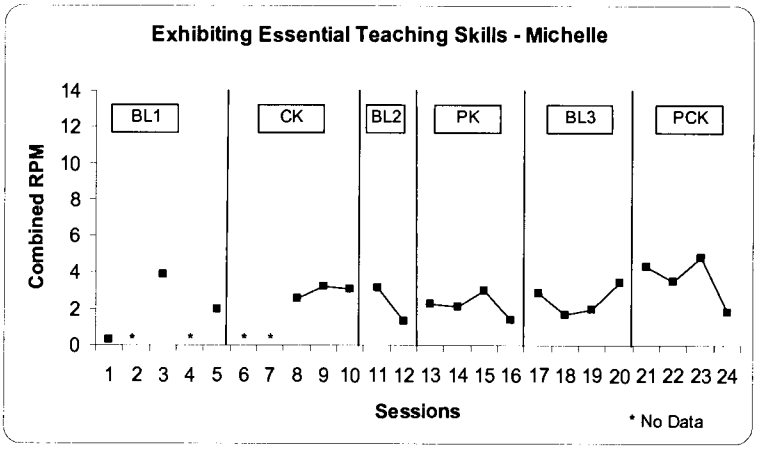
Simply stated, for Michelle there was too much overlap between phases to argue that there was any appreciable change in her behavior. Combined RPMs ranged from a low of .28 to a high of 3.88. These held steady across both the CK and PK interventions, with the greatest overall performance taking place during the final PCK intervention (4.84 combined RPM). In this phase, noticeable increases initially occurred in the teaching behaviors of VPSFB, modeling, and to a lesser degree, physical assistance, but fell in the last session toward baseline levels, thus produced greater data overlap.

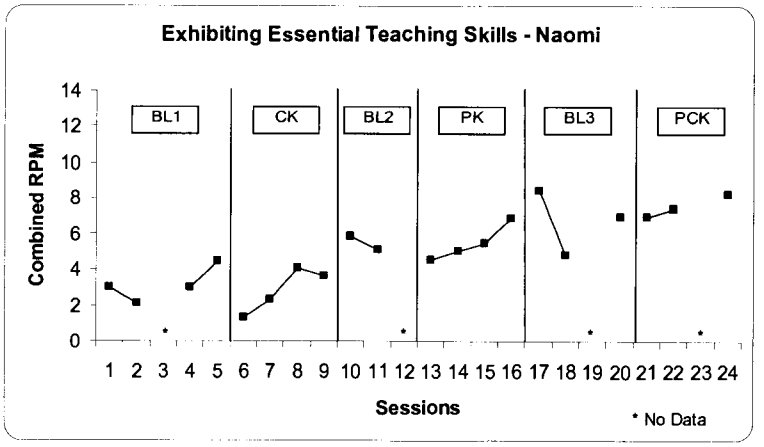
Naomi

Naomi exhibited a steady combined RPM increase across each phase of the study. Combined RPMs during the PK intervention (4.55 to 6.89) were much higher than those during the CK intervention (1.32 to 4.1). The PCK intervention, though, had the greatest effect as Naomi recorded combined RPMs of 6.99, 7.37, and 8.22, respectively. During this final phase, Naomi demonstrated noticeable increases in VPSFB (ranging from .43 to 1.74) and prompting (ranging from 3.26 to 4.0).

Figure 1: Combined Rate per Minute of Essential Teaching Skills for Content Knowledge Group Across Conditions.







PK Group: (Figure 2)

Chandler

After the initial baseline phase, each subsequent baseline phase was extremely unstable. This was directly related to having only limited sessions to collect data and severe increases during sessions 12 and 20 in which Chandler engaged in an unusually high rate per minute of prompting (5.15 and 7.26, respectively). A visual inspection of the data suggests both the PK and CK interventions had similar effects. However, the PK intervention did have more of an upward trend before entering the next baseline phase, climbing from a low RPM of 2.22 to a high of 6.29. The CK intervention produced a downward trend before entering the final baseline phase peaking at 6.15 then dropping to 4.08. This peak can be attributed to a spike during one session within the VPSFB behavior. Conversely, the PCK intervention was the most effective with combined RPM for Chandler ranging from 5.41 to 8.21.

Jennifer

Jennifer displayed a strong and steady combined rate per minute across each phase of the study with noticeable increases occurring in the final PCK intervention phase. Combined RPMs during the PK intervention (ranging from 1.7 to 4.98) were roughly similar to those during the CK intervention (1.78 to 6.99). The PCK intervention had the stronger impact, as Jennifer recorded combined RPMs of 5.86, 3.0, and 6.1, respectively. During this final phase Naomi demonstrated particular increases in the VPSFB teaching behavior ranging from .97 to 1.83, the highest rates per minute recorded throughout the course of the study for this behavior.

Delilah

Combined RPMs only slightly increased during the PK phase (ranging from 1.04 to 3.82). With the introduction of the CK intervention, combined RPMs rose dramatically, ranging from 4.37 to 8.0, with substantial improvements occurring in the NVPFB, prompting, and modeling behaviors. This trend continued into the final baseline phase signifying a classic example of irreversibility in her performance. Though there were severe issues of overlap, the PCK intervention had the greatest overall effect as Delilah recorded combined RPMs of 6.03, 8.11, and 5.45. Like Jennifer, during this final phase Delilah demonstrated noticeable increases in the VPSFB teaching behavior ranging from 1.06 to 2.2. Again, similar to Jennifer, Delilah' performance during this portion of the study produced the highest rates per minute recorded throughout the course of the study for this behavior.

Rex

Overall, the initial baseline phase for Rex was stable with a single spike (2.7) occurring during the second session within the NVPFB behavior. Following this phase, combined RPMs during the PK intervention (ranging from 5.29 to 7.32) were roughly similar to those during both the second baseline phase and the CK intervention (5.96 to 8.54) with clear increases taking place in Rex's prompting behavior. With the introduction of the CK intervention, RPMs rose drastically for the modeling behavior (1.61 and 2.48, respectively) before dropping quickly to a low of .49. Like the other in this group, the PCK intervention had the greatest overall effect as Rex recorded combined RPMs ranging from 9.34 to 11.75, with tremendous improvements in the teaching behaviors of VPSFB, modeling, and physical assistance.

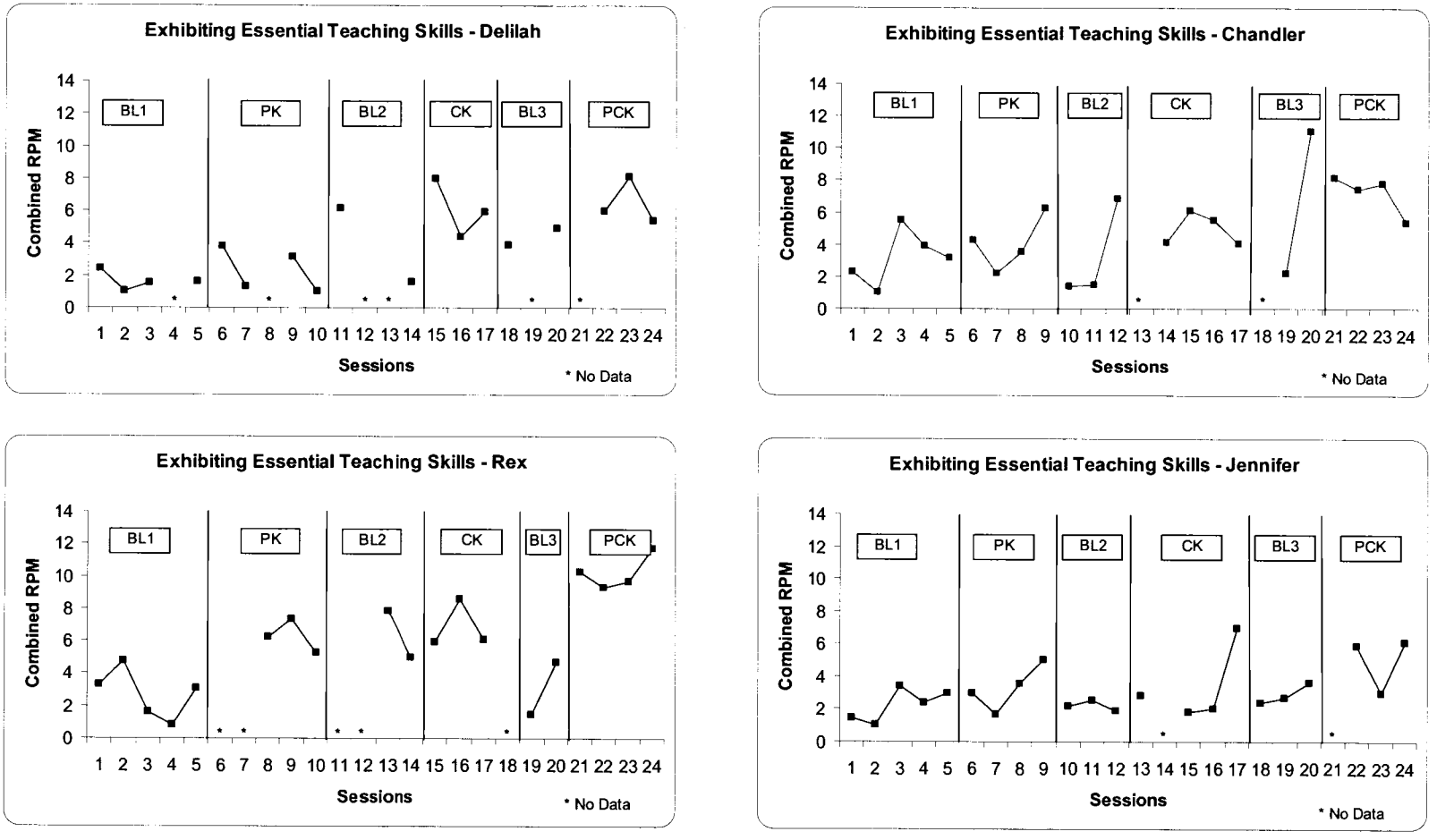


Figure 2: Combined Rate per Minute of Essential Teaching Skills for Pedagogical Knowledge Group Across Conditions.

Discussion

There is limited research on the specific training and performance of novice peer and volunteer tutors and their ability to exhibit effective teaching behaviors in the adapted physical activity setting. As a result, literature in the area of teacher development was examined in order to promote discussion of the findings for this study and draw meaningful conclusions from the work.

The purpose of this investigation was twofold: First, to determine the impact of three different teacher knowledge development interventions on select teaching skills of novice volunteer tutors working with children with developmental disabilities. And second, to determine if the order of presenting these interventions had a differential effect on the emergence of the teaching skills.

Impact of Interventions:

The visual examination of data for the three female volunteer tutors in group #1 (CK group) and two female and two male volunteer tutors in group #2 (PK group) revealed that focusing instruction only on content knowledge or pedagogical knowledge appeared to be of little help to the beginners as a group. Content knowledge seemed to facilitate an increase in modeling behavior within volunteer tutors as well as an increase in their willingness to physically assist their children. One could expect this given that these two behaviors appeared to be easily understood once the novice volunteer tutors were exposed to the basic critical elements of the motor task to be taught.

Basic critical elements, or what Rovegno (1992b) referred to as "surface level concepts or activities", were easier for beginning pre-service teachers to teach. Like

the volunteer tutors in this study, beginners tended to have a very limited knowledge of the content; unable to make connections to the bigger picture of specific movements or activities (Rovegno, 1992a). As such, they engaged in a narrow focus of the critical elements. For these novice volunteer tutors modeling and physically assistance were much easier to do when these beginners could recognize elements of the basic movement or motor task. However, this only occurred when prior exposures to the critical elements were introduced to the volunteer tutors. Simply telling the volunteer tutor what motor task would be taught did not result in these beginners correctly modeling or physically assisting their children. It was beneficial for volunteer tutors, at the most basic level, to have the critical elements at their disposal with regard to modeling and physical assistance, but not so much for verbal and nonverbal feedback, and prompting.

As for the remaining teaching behaviors, a treatment consisting of only content knowledge instruction did little to increase their employment of the target teaching skills. With the exception of some outliers, behavior patterns were too erratic to conclude that the content intervention was effective. It was likely that these behaviors were not as easily grasped by the volunteer tutors because in doing so required a higher cognitive processing to be developed and utilized. Volunteer tutors could not identify how the development of motor skills could be enhanced through prompting and feedback. While volunteer tutors could model and physically assist children in practicing and performing the critical elements of certain motor tasks, providing appropriate or correct verbal and nonverbal feedback and prompting required volunteer tutors to know the difference between good and bad performances. If they

did know the differences, this would suggest they could understand the bigger picture and correctly prompt or utilize more effective feedback behaviors. Being novices, these individuals did not possess the background knowledge to differentiate between correct and incorrect performance. As a result, peer tutors were unable to interact effectively with the children. These findings are similar to those established by Stroot & Oslin (1993). In their study of instructional statements used by pre-service teachers, researchers found that when these individuals were able to recognize varying levels of performance efficiency in the components of an over arm throw their ability to provide specific and meaningful feedback to students improved significantly.

With regard to the pedagogical intervention, one would expect that focusing specific instruction on the teaching behaviors under investigation would lead to increases in the ability of novice volunteer tutors to use such behaviors. Surprisingly, when the focus of the intervention consisted solely of pedagogical knowledge improvement had only occurred in two of the five dependent variables, verbal positive specific feedback and prompting. This improvement was minor, to say the least.

According to Rink (1996, p.189), "The use of specific feedback to learners continues to be recommended by most experts in pedagogy." Though a considerable amount of research suggests that teacher feedback in the physical education environment has only a limited effect, it should be noted that such assertions were made concerning feedback and its effect on student learning, particularly in large groups (Lee, Keh, & Magill, 1993). The use of feedback for smaller groups had not been researched as extensively; nor had it done so involving children with developmental delays. The intervention focusing on feedback that was both positive

and specific allowed volunteer tutors' the ability to increase interactions with their children. However, because the volunteer tutors were true novices working with non-traditional learners, such increases should be examined more closely.

As for prompting, in the physical education setting frequent prompting may be one of the more critical teaching behaviors when provided during a student's opportunity to perform or practice (Siedentop & Tannehill, 2000). Within adapted physical education, Auxter, Pyfer, & Huettig (2005) believed that providing only necessary prompts led to successful student outcomes, both physically and behaviorally. Though occurrences of this behavior were highly variable, prompting appeared to be an effective tool for all but one of the volunteer tutors. By itself, this behavior allowed these novice volunteer tutors to increase interactions with their children. Producing higher rates of this teaching skill, it was deduced, would help learners develop the highlighted motor skill more quickly and efficiently.

Of the remaining three behaviors, no change occurred in the volunteer tutors' ability to provide nonverbal positive feedback to their children, or in their ability to model or provide physical assistance when necessary. It is unclear why such results occurred. Two explanations could be possible; volunteer tutors were either uncomfortable or unclear of how to model or provide physical assistance and nonverbal positive feedback to their children. Not knowing how to model could be traced back to how effectively the role and importance of modeling was introduced in the intervention workshop. During the content intervention, most volunteer tutors had a better understanding of how to model and provide physical assistance when the focus of the intervention highlighted the critical elements of a motor task. With the

introduction of the PCK intervention, modeling rates were similar or better when compared to those in the content intervention for all of the participants. This would suggest that the participants did understand the modeling behavior but may have felt it unnecessary to utilize it with their children. Results were similar for both physical assistance and nonverbal positive feedback. They could make connections and draw conclusions on a basic level of how to interact with children through modeling and physical assistance.

The pedagogical intervention seemed to have a similar effect but only on the behaviors of verbal positive specific feedback and prompting. While the volunteer tutors may not have grasped the bigger picture of using these behaviors as they might apply to the various motor tasks they did utilize the behaviors on a basic level, though without regard to context. This level was similar to that experienced by the volunteer tutors and their exposure to the content knowledge, both instances aligning with the definition of a "novice" as identified by Berliner (1988, p.2) Novices are considered those individuals just beginning to develop awareness in teaching through their initial experiences.

Pedagogical content knowledge is the most difficult aspect of teacher development to understand, practice, and improve upon. Shulman (1987, p.7) wrote, "Teaching necessarily begins with a teacher's understanding of what is to be learned and how it is to be taught." However, in many instances this is easier said than done. According to research conducted by Graber (1995), the ability of student-teachers to combine content knowledge and pedagogical knowledge is somewhat limited in the beginning, influenced primarily by mentor teachers or teacher educators. As such,

there is a high tendency in student-teachers to imitate what they are exposed to during their initial professional development, hindering their ability to build up sound PCK practices. Consequently, student-teachers have a hard time at first understanding how to integrate knowledge structures to facilitate an effective learning relationship with their students in an appropriate environment (Barrett & Collie, 1996; Newell, 1986; Rovegno, 1992b). In short, these student teachers have not yet had the time to develop their expertise in the area of pedagogical content knowledge.

This seemed evident in the volunteer tutors participating in the study. While many of their written reports to their group leaders appeared to center on appropriate goals for their children, the construction of an appropriate learning environment seemed lacking. Armed with the knowledge of the critical elements for all four motor tasks and the targeted teaching behaviors highlighted throughout the study, novice volunteer tutors seemed to revert back to what they experienced during the final intervention phase, conducted by the researcher.

This is supported through the minimal improvement of performance within volunteer tutors across both groups. The PCK development intervention had a noticeable effect on their capacity to improve their performance for roughly three of the five dependent variables, or teaching behaviors. Both groups initially responded well to this treatment, increasing the rate at which they provided verbal positive specific feedback and physical assistance to their children. However, with regard to their aptitude to provide nonverbal positive feedback only individuals in group #2 (the PK group) appeared to benefit from this treatment.

In the remaining two teaching behaviors, prompting and modeling, data indicated that volunteer tutors performed equally, or even better, when the intervention treatment focused either on content knowledge or pedagogical knowledge. While they may have started to cognitively develop elements of PCK, their ability to physically demonstrate such knowledge was only slightly apparent during the videotaped data collection sessions. It is difficult to explain why this occurred. The problem may have been within the introduction of the intervention, or possibly these two behaviors were not applicable for the volunteer tutors to implement with their children during this final stage of the study. More than likely, it was the volunteer tutor's ability, or lack thereof, to understand and contextualize the behavior in an appropriate learning environment (Barrett & Collie, 1996). It was hoped that the volunteer tutors would begin to understand and demonstrate elements of PCK. However, even though levels of performance did not noticeably extend higher then those in previous intervention treatment sessions it could be said with confidence that some development did occur during this phase of the study. A more likely explanation may be that volunteer tutors, similar to pre-service teachers, did not understand how to effectively combine pedagogical skill with content knowledge as suggested in previous studies (Barrett & Collie, 1996; Graber, 1995; Rovegno, 1992a, 1992b).

Order of Interventions:

The analysis on the effect of the order of interventions was a second purpose for conducting this study and may have played a significant role in the development and performance of the volunteer tutors across the academic year. The order of the treatments was critical in addressing the identified problem, the ability of novice

volunteer tutors to increase their instructional interactions with children with developmental delays in an adapted physical activity setting. Briefly, if limited to a short period of time to prepare potential volunteer tutors, which area of knowledge should serve as the focus of in-service training sessions for these individuals?

The literature focusing on specific knowledge and its application upon training for volunteer tutors is relatively non-existent in this area. While peer-tutoring programs have proven extremely effective in numerous physical education settings (Barfield, Hannigan-Downs, & Lieberman, 1998; Block, Oberweiser, & Bain, 1995; Houston-Wilson, Dunn, van der Mars, & McCubbin, 1997; Houston-Wilson, Lieberman, Horton, & Kasser, 1997; Lieberman, Dunn, van der Mars, & McCubbin, 2000; Webster, 1987), the specifics of the training these individuals receive is not detailed, to say the least. The same appears true for paraprofessionals in the adapted physical education setting (Doyle, 1997; Giancreco, Edelman, Broer, & Doyle, 2001; Kelly & Havlicek, 1982). While studies and teacher development textbooks agree that these individuals are useful (Auxter, Pyfer, & Huettig, 2005; Block, 2000), the training and practice these individuals experience remains unclear, or at best incomplete. If a choice had to be made, given a limited amount of time for training, what should be the focus of training for persons willing to assist in the adapted physical education setting? Moreover, does focusing on one form of knowledge produce greater instructional interactions in volunteers assisting students with developmental delays in such a setting? Results from this study suggest focusing on certain areas of "teacher knowledge" led to increases in interactions for some, but not all, of the dependent variables.

When the intervention focused on pedagogical knowledge first, volunteer tutors showed an initial increase in their ability to provide verbal positive specific feedback (VPSFB) and physically assisting their children when necessary. Modeling also seemed to improve, but for only half of this group. When presented second, after content knowledge had been introduced first, the PK intervention had absolutely no effect on this group of volunteer tutors.

As for the group experiencing the content knowledge intervention first, only one behavior appeared to be effected positively, prompting. The remaining four behaviors were not affected, as volunteer tutors showed no increases from the first baseline phase. When presented second in the intervention order, content knowledge proved a bit more effective as peer tutors increased in their modeling for the child and ability to physically assist them when appropriate. This could be attributed to the volunteer tutor's ability to understand the context of the motor tasks and apply the behaviors more effectively. However, their capacity to provide VPSFB, nonverbal positive feedback (NVPFB), and prompting was unchanged as a result of the intervention.

With regard to the intervention geared at developing pedagogical content knowledge (PCK) order appeared to be significant for three of the five dependent variables, or behaviors. Order had no noticeable effect on the behaviors of VPSFB or prompting. Regardless of order, both interventions were effective in increasing the VPSFB in the volunteer tutors. Conversely, both types of interventions had no effect on the volunteer's ability to prompt in front of their children, again in spite of order.

The remaining three behaviors demonstrated slightly different results than those of VPSFB and prompting. When the order of the interventions consisted of PK first and CK second, and increase in behavior was visually observed in data paths for positive feedback that was nonverbal (NVPFB), modeling, and the physical assistance of a volunteer tutor helping their student. In all three cases, an intervention consisting first of pedagogical knowledge appeared to have a greater impact for volunteer tutors than an intervention beginning with content knowledge.

What does all this mean with regard to developing pedagogical content knowledge in volunteer tutors? The idea driving this intervention phase was the notion that individuals armed with two basic forms of knowledge in teacher development could create some basic level of PCK, appropriate for assisting children with developmental delays in the adapted physical activity setting. Though experience plays a major role in PCK development (Graber, 1995; Rovegno, 1993, 1995; Schempp, 1993; Schempp, Manross, Tan, & Fincher, 1998), the study of each knowledge area and the order of which they were introduced became an important question for this population of potential educational assistants. Results of this study suggest that order may not be as effective as hypothesized for all of the behaviors under investigation, but was extremely important for most. Focusing on both forms of teacher knowledge has always proven valuable in the development of those who wish to instruct, regardless of the learner. The order of training, in this format, is of major consequence and should be given considerable weight in the development of volunteer tutors working with children with development delays. Nevertheless, what remains central is the notion that both forms of teacher knowledge are equally important and

should be presented as such together on a consistent basis. In doing so, the development of effective teaching assistants in the adapted physical activity setting will prove to be an even more powerful resource for physical education teachers searching for ways to provide an appropriate and inclusive learning environment.

It is important to note that future research is needed, continuing to focus on knowledge structures and their development in novices working with children with disabilities. Clearly, information is lacking on how well assistants in the adapted physical activity setting are trained before entering the educational environment. The conclusions of this study offer a foundation to build upon in terms of finding solutions to these important issues. By determining if one form of teacher knowledge should be emphasized over another, not ignored, teachers in the adapted and regular physical education settings may better train peer-tutors and volunteers to assist children needing special attention.

As the results of this study suggest, volunteer tutors increase in their interactions with children when the focus of the intervention contains elements of desirable teacher behaviors, pedagogical knowledge, followed by elements of content knowledge. One would hope that further work in this area could better equip teachers in training potential assistants in the inclusive or adapted setting, moving away from individuals who serve primarily as baby-sitters charged with nothing more than keeping a student with a disability safe and/or out of trouble. There is so much more a sufficiently trained assistant can offer to the learning environment other than a pair of eyes for the teacher.

Conclusions

Within the limitations of the design of this study and its results the following conclusions are warranted:

1. Different types of "teacher knowledge", such being pedagogical and content oriented, are useful but neither could foster an increase in all of the behaviors studied within the volunteer tutors when introduced singularly.
2. Pedagogical knowledge was effective for the behaviors of prompting and VPSFB; however, it was only partially effective or had no effect on the behaviors of NVPFB, modeling, and physical assistance. The opposite held true when the intervention sessions consisted solely of content knowledge training.
3. Combining the two types of knowledge in order to develop pedagogical content knowledge was the most effective intervention of the three introduced.
4. Visual inspection of the data suggest that order played a small role for three to the five teaching behaviors; NVPFB, modeling and physical assistance favoring the pedagogical intervention (PK).

Results of the study emphasize the special role that volunteer tutors can play when working with children with developmental disabilities in the adapted physical activity setting. It was encouraging to see that when armed with short, focused, and specific training sessions; novice volunteer tutors could form a somewhat stable foundation of teaching skill and use such knowledge effectively with their children.

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CHAPTER 3: SUMMARY

RESEARCH CONCLUSIONS

Through a visual inspection of the data, meaningful conclusions can be made concerning the impact short specific intervention sessions consisting of different areas of teacher knowledge have on volunteer tutors. One, different types of "teacher knowledge", such being pedagogical and content oriented, are useful but neither could foster an increase in all of the behaviors studied within the volunteer tutors when introduced singularly. Pedagogical knowledge did appear effective for the behaviors of prompting and VPSFB; however, it was only partially effective or had no effect on the behaviors of NVPFB, modeling, and physical assistance. The opposite seemed to hold true when the intervention sessions consisted solely of content knowledge training.

Two, combining the types of knowledge in order to develop pedagogical content knowledge, proved to be the most effective intervention of the three introduced. Once volunteer tutors could contextualize the content and see appropriate examples of how the teachings behaviors could be introduced to the children, interaction rates improved for most participants in three of the five dependent variables.

And three, though less critical based on these data order played a small role for three to the five teaching behaviors; NVPFB, modeling and physical assistance. When presented first, content knowledge had little or no effect on VPSFB, NVPFB, modeling, or physical assistance. But when presented second, after the PK

intervention, behavior patterns partially increased for NVPFB and noticeably increased for modeling and physical assistance. It is believed that it was at this point the volunteer tutors could put into context the motor tasks with previously learned teaching skill to facilitate an increase in their interactions with the children. Simply put, the volunteer tutors, armed with the appropriate content knowledge, could now truly understand how to model and physically assist their children correctly with some forms of NVPFB. This was not the case for those volunteer tutors receiving content knowledge first and pedagogical knowledge second. As stated before, the ability of the volunteer tutors to combine the knowledge structures seemed apparent once they could recognize the appropriate content and the context of the setting. Once they had this "piece of the puzzle" the pedagogical knowledge seemed to make more sense.

Results of the study emphasize the special role that volunteer tutors can play when working with children with developmental disabilities in a self-contained activity setting. It was encouraging to see that when armed with short, focused, and specific training sessions; novice volunteer tutors could form a somewhat stable foundation of teaching skill and use such knowledge effectively with their children.

FUTURE RESEARCH DIRECTIONS

Based on the current findings, further research is warranted, continuing to focus on knowledge structures and their development in novice volunteer tutors and paraprofessionals working with children with disabilities. Three potential questions arise that could lead research further in this area. First, how do these knowledge structures translate into the actual physical education environment? Second, armed

with a more defined knowledge structure, will these better "trained" volunteer tutors bring about increased performances in students with developmental disabilities in a self-contained or regular physical education setting? And third, could this type of intervention translate across other types of disabilities commonly encountered in the physical education setting? Results of this study were obtained in a highly specialized surrounding. Further research should be more applied centering on the inclusive gym setting with paraprofessionals, volunteers, and same-aged peer tutors as the primary focal point. In doing so, answers to these questions could lead to the improvement of interactions by volunteer tutors in the actual environment. Continued research may determine how interventions designed to increase ones exposure to pedagogical content knowledge may affect other teaching behaviors not addressed in this study. Moreover, further research may also determine how such interventions may be applied to other disabilities such as autism. Clearly, information is lacking on how well assistants in a self-contained physical activity setting are trained before entering the educational environment. The conclusions of this study offer a foundation to build upon in terms of finding solutions to these important issues. By determining if one form of teacher knowledge should be emphasized over another, not ignored, teachers in the physical education setting may better train peer-tutors and volunteers to assist children needing special attention.

As the results of this study suggest, volunteer tutors increased in their interactions with children when the focus of the intervention contained elements of desirable teacher behaviors, pedagogical knowledge, followed by elements of content knowledge. One would hope that further work in this area could better equip teachers

in training potential assistants in the inclusive or self-contained setting, moving away from individuals who serve primarily as untrained managers charged with nothing more than keeping a student with a disability safe and/or out of trouble. Well-trained assistants can offer more to the learning experiences of children with disabilities beyond being an extra pair of eyes for the teacher.

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APPENDICES

APPENDIX A: REVIEW OF LITERATURE

Introduction

Special education within physical education is necessary for children with disabilities in many areas; socially, emotionally, cognitively, and physically. Unfortunately, many critics view special education as being costly, ineffective, and perhaps even unethical (promoting segregation). What hurts special education programs; however, are the extensive resources needed in terms of financial issues, challenges of physical accessibility, equipment issues, adequate support personnel, and the time required to make such programs effective. Teacher training, time to develop effective interventions and curricula, equipment, staffing, and the ability to bridge gaps between special educators and general educators all serve as elements that must be in place if such programs are to be successful.

One way to meet such challenges within the physical education setting is the use of peer tutoring models, paraprofessionals, and volunteer teaching assistants. Simply put, can these individuals become more effective within the self-contained and/or physical education setting when exposed to training centered on specific forms of teacher knowledge? Included is a brief evaluation of volunteers in the physical education setting, followed by an extensive review of information pertaining to teacher training and the development of "teacher knowledge" (i.e., content knowledge, pedagogical knowledge, and pedagogical content knowledge). Lastly, a brief clarification of the research blueprint will be covered further explaining the elements of the hybrid design.

The Use of Peer Tutors, Paraprofessionals, and Volunteer Teaching Assistants in the Physical Education Setting

Peer tutors have shown to increase the instructional effectiveness of both students with disabilities and those without (Auxter, Pyfer, & Huettig, 2005; Barfield, Hannigan-Downs, & Lieberman, 1998; Block, Oberweiser, & Bain, 1995; DePaepe, 1985; Houston-Wilson, Dunn, van der Mars, and McCubbin, 1997; Houston-Wilson, Lieberman, Horton, & Kasser, 1997; Lieberman, Dunn, van der Mars, & McCubbin, 2000; Webster, 1987). Additionally, physical education programs that utilize an effective peer tutoring program have demonstrated significant gains in both motor and fitness ability not only in students with disabilities, but also in their nondisabled tutors (Houston-Wilson, Lieberman, Horton, & Kasser, 1997).

The use of peer-tutors is by far the most popular method employed by teachers to meet the challenges of including a student with a disability into the physical education setting. A free and readily available source of support peer tutoring involves using same-age students, or those who may be older (cross-aged peers), to interact with children with disabilities in an attempt to keep them on task as they engage in a "general" physical education program (Hocutt, 1996). Specific models of peer tutoring include using cross-aged peers, class-wide peers, and reverse inclusion peers. Of these, the class-wide peer method has proven to be quite productive. In this model, every student acts as a peer tutor thus reducing the distinction and separation of students within the class as either disabled or nondisabled. The goal of this model is "to direct reciprocal learning among all students not disclosing which students in the inclusive classroom may have a disability or have lower skill levels." (Barfield, Hannigan-Downs, & Lieberman, 1998, p.218). The class-wide peer-tutoring model

greatly resembles the reciprocal style of teaching identified by Mosston & Ashworth (1986), where all students, through the teacher's design, act both as tutor and tutee. This idea is also evident in the reverse inclusion peer model. Many teachers have implemented this "reverse inclusion" method by having the student with a disability periodically take turns acting as the peer-tutor for their nondisabled classmates (Block, 2000; Davis, Woolley & French, 1987; Hillidge, 1988).

Another model that provides assistance to physical educators is the use of paraprofessionals. This form of delivery requires the use of "trained" instructional aides or teacher assistants. The type of training these individuals receive, however, has become a highly debated issue in the past fifteen years (Giancreco, Edelman, Broer, & Doyle, 2001). Within the inclusive setting, these individuals work primarily one-on-one with the student with the disability under the supervision of the teacher or other professional who is responsible for the overall management of the class (Block, 2000). Generally, in the case of paraprofessionals (or para-educators), many of their duties include such things as clerical work, monitoring students in various setting throughout the school day, provide specific personal care to the student with a disability where required (i.e., feeding, dressing, etc.), setting up the classroom or gym, providing full or partial instruction to the class, and assist in designing and implementing lesson plans (Auxter, Pyfer, & Huettig, 2005; Block, 2000). Their purpose is to assist an instructor in conducting a lesson by offering special attention to children with disabilities placed within the class. The problem with this model, however, revolves around the "professional training" and abilities to which these

individuals are exposed to. Much of which is doesn't specifically apply well to physical education.

According to an article written by Kelly & Havlicek (1982), the use of paraprofessionals was designed to "alleviate the shortage of professional special education teachers and offer employment to unemployed individuals, especially women, who were apparently attracted by the work and by the hours."(p.535). With regard to the training of these paraprofessionals, the article reported that the most important skills a paraprofessional should possess revolve around the person's capacity to work with children with disabilities, their ability to understand the child's general characteristics in the special education setting, and the degree to which to person could form a relationship with the student with a disability. There was no specific mention of how these attributes facilitated the appropriate training necessary towards educational effectiveness. Auxter, Pyfer, and Huettig (2005, p.174) suggest that at the very least, "the paraprofessional must have the opportunity to share the same types of learning experiences recommended for teachers." As such, it is recommended paraprofessionals receive similar pre-service or in-service training equal to that experienced by pre-service and in-service physical education teachers. Research has suggested that this may not be occurring. A study by Giancreco, Edelman, Broer, & Doyle, (2001) has reported that serious issues must be examined concerning paraprofessionals, their training, their supervision in the field, and their ability to provide a valuable service. In particular, a system has developed where in professionals in the educational field have relinquished many of their traditional roles and responsibilities to highly trained and minimally trained paraprofessionals. As a

result, issues of paraprofessionals and their effectiveness have become highly challenged.

A third model that provides assistance to teachers is the use of volunteer teaching assistants in the physical education setting. According to Auxter, Pyfer, and Huettig (2005) the use of volunteer teaching assistants is proving to be a viable resource for schools as funds continue to become scare in today's ever tightening budget crunch. Primarily, parents make up most of the volunteer teaching population, but community volunteers and high school students looking to fulfill graduation projects are also significant resources utilized by physical education teachers. Like peer-tutors and paraprofessionals, the teacher in charge is primarily responsible for training volunteer teaching assistants, recruited to help with various management, organizational, and instructional responsibilities. Using volunteers in various physical education settings has proven to be quite beneficial for children with disabilities, enhancing their opportunities to actively engage in the environment. As with peer-tutors and paraprofessionals, it is critical that volunteers receive the same type of pre-service and in-service training, as does the physical education professional. Accordingly, it becomes extremely important to review the many issues that determine appropriate teacher training and how these individuals develop knowledge in their professional advancement.

Regardless of the benefits the use of peer tutoring programs, paraprofessionals, and volunteer teaching assistants provide what becomes ambiguous is the degree in which these individuals are effectively trained to assist in the class. According to Block (2000) and Houston-Wilson, et al. (1997), in most instances, training is defined

as disability awareness, communication techniques, teaching techniques, reinforcement techniques (i.e., skill and behavioral feedback), and ongoing data collection. While these are appropriate components of a training program, they remain open to interpretation. Knowing that the teacher is ultimately responsible for training volunteer assistants in the class setting, one has to wonder how well these individuals are truly passing along the appropriate information and allowing the volunteers to practice implementing their newly acquired skills and knowledge. The following describes the knowledge and training physical education teachers receive during their pre-service development. In doing so, one hopes to understand the training that should be passed from physical education teachers to volunteers assisting in the inclusive setting.

Teacher Training and Developing "Knowledge" in Physical Education

Schempp, Manross, Tan and Fincher (1998, p.342) made the statement, "To teach one must know." But what one knows and how they come to know it are very unique issues within teacher preparation that require extensive review. Shulman (1987, p.20) noted that teaching is a learned profession. He wrote, "Teachers cannot be adequately assessed by observing their teaching performance without reference to the content being taught." The emphasis on effective teaching methods and sound pedagogical skills has been a strong voice in the research literature on teacher education in physical education (Graber, 2001). Findings from classroom literature and the gymnasium (Berliner, 1988, 2000; Brophy & Good, 1986; Doyle; 1986; Fisher, Berliner, Filby, Marliave, Cahen & Dishaw, 1980; Graber 1995, 2001; Richardson, 1996; Rosenshine & Stevens, 1986; Shulman, 1987) have greatly assisted

physical education teacher education (PETE) programs shape the pedagogical knowledge of their undergraduates.

According to the National Board of Professional Teaching Standards (1999), teachers must have a thorough understanding of how students learn and develop in order to design appropriate and challenging experiences for each child, regardless of their ability. In order to provide such experiences, teachers must have a concrete knowledge of physical education content and an understanding of the learning progression for each skill and activity presented to the learner. In addition, teachers must be able to manage and provide order to a class by drawing upon a variety of teaching strategies, reflecting on which ones were the most effective (NASPE, 1995; NBPTS, 1999). It would be safe to say that such knowledge and training for volunteer teaching assistants asked to work in a self-contained setting would also be a worthwhile endeavor. These individuals, armed with training similar to teachers, may then help to create a productive educational environment for all children regardless of disability. Although few in the field would argue that building majors' pedagogical skills is important, some have questioned the emphasis programs place on this particular area of teacher knowledge (Rink, 2001; Siedentop, 2002; Tinning, 2002). Hoffman (1987) claimed that the downfall of school physical education would be credited to the fact that physical education teachers had strong pedagogical skills but could not proficiently teach the content beyond an introductory unit. Vickers (1987, p. 179) echoed the same sentiment stating, "Teacher preparation programs today define teaching largely in terms of methods, processes, and procedures of pedagogy". Even Siedentop (1990, p.33) who once said "all failures in teaching derive from a lack of

pedagogical skill" has more recently positioned himself toward a stronger emphasis on developing PETE students' content knowledge. Content knowledge development that aligns itself with current physical education programs across the United States, promoting such areas as sport, games, and fitness activities (O'Sullivan, 1996; Siedentop, 1996; 2002).

Different formats of instruction allow the physical education teacher to use multiple styles to educate students (Mosston & Ashworth, 1986; Siedentop & Tannehill, 2000). Each format, whether it is either teacher-led (direct style) or student mediated (reciprocal/peer, etc.), has its own distinct strengths and weaknesses. The physical education teacher must choose the most appropriate instructional format that caters to the activity being taught and the general skill level of the students in order to facilitate a level of learning (Rink, 2001). Regardless of whom the teaching assistant is the lead physical education instructor generally takes on the responsibility of providing direction and instruction to peer tutors, paraprofessionals, and volunteer teaching assistants. It becomes important to examine how physical education teachers are trained and to define the knowledge they acquire in their pre-service development. In doing so, one better understands what potential knowledge, and possibly training, is passed on to the teaching assistant.

According to Locke (1990), there are those who feel, in the case of physical education teacher education, the sub disciplines of physical education (kinesiology, physiology, biomechanics, etc.) should constitute the bulk of teacher knowledge and preparation. On the other hand, proponents of teaching as a profession would argue that teacher educators should determine and guide the training of pre-service teachers

incorporating a more definitive program of study for its students, one that focuses more on sport, games, and fitness activities (Siedentop, 2002). How we prepare future physical education teachers should resemble the environment in which they will one day be employed while at the same time taking into account their past personal experiences as students of physical education (Graber, 1995, 2001; O'Sullivan 1996; Rovegno, 1993; Schempp, 1993; Siedentop 2002; Tinning 2002). In order to do so, we must provide pre-service teachers with a body of knowledge reflecting the subject matter of physical education, the pedagogical skills of teaching, and ways to merge the two together. These are considered to be important elements of teacher effectiveness (Darling-Hammond, 1998b).

This approach is made more complex when considering appropriate teacher training and knowledge development for working with children with disabilities. Many physical education teachers feel unprepared to effectively instruct classes that include children with a disability (Hocutt, 1996; LaMaster, Gall, Kinchin, & Siedentop, 1998; Rizzo & Vispoel, 1991; Sammel, Abernathy, Butera, & Lesar, 1991). According to Block (2000), many physical education teachers offer activities based on the developmental level of a student rather than on their chronological age. In doing so, students who graduate from school may only possess a handful of developmental skills but lack severely in lifetime leisure skills that are functional for a person with a disability.

Pedagogical skills also present many challenges for physical education teachers. Skill in classroom management and planning are performed with few challenges in general, but issues concerning behavior and activity modification pose

the greatest obstacles. Again, teachers in physical education tend to see themselves as ill prepared to deal with children with disabilities, both behaviorally and physically. As such, attitudes physical education teachers have regarding their aptitude to teach children with disabilities becomes an important issue (Rizzo & Vispoel, 1991). In-depth training, appropriate coursework in adapted physical education, knowledge of disabilities, and a definable program major all have been acknowledged as necessary components in developing educators who feel capable of teaching students with disabilities in the regular physical education setting (Kowalski & Rizzo, 1996; Rizzo & Kirkendall, 1995).

For peer-tutors, paraprofessionals, and volunteer teaching assistants who may not receive any significant exposure at all to children with disabilities on a regular basis, it is logical to assume these individuals may also experience feelings of being unprepared as a result of having no training whatsoever. As stated previously, in most instances, all volunteer teaching assistants, paraprofessionals, and especially peer-tutors take their lead from the physical education teacher. If the teacher feels unprepared, how can they effectively lead the assistant? This question may serve as a viable starting point for future research in the area of self-contained and regular physical education settings.

According to Feiman-Nemser (1990) there are five particular areas, or "orientations", that must be considered in the preparation of teachers: academic orientations, practical orientations, technological orientations, personal orientations, and critical/social orientations. While each is equally important, it is the academic, practical, and technological orientations that are of interest to the question at hand.

How do students in a PETE program develop and utilize content knowledge and pedagogical knowledge as it applies to the inclusive physical education setting? Moreover, is training in one form of knowledge essential to teacher development more effective in promoting interactions amongst individuals who teach in a self-contained activity setting?

If pre-service teachers are to flourish into well-prepared professionals, they must be exposed to appropriate opportunities to gain and demonstrate a level of knowledge sufficient to becoming professional physical education teachers. Pre-service teachers in physical education today must have ample exposure to the areas of content knowledge (Siedentop, 2002; Tinning, 2002), and pedagogical knowledge (Berliner, 1988; Brophy & Good, 1986; Doyle, 1986; Fisher, Berliner, Filby, Marliave, Cahen, & Dishaw, 1980; Rosenshine & Stevens, 1986). However, those areas of knowledge cannot be presented separately without reference to the other. Pedagogical content knowledge (O'Sullivan, 1996; Rovegno, 1992b, 1995; Shulman, 1987), how individuals "tie their knowledge of pedagogy to their knowledge of the subject matter" (O'Sullivan, 1996, p. 328), allows for the greatest opportunity for teachers to build up a practical and applicable understanding of how to present information to students in a way they can internalize it. Such knowledge allows for the greatest gains for pre-service teachers in their professional development.

Given the issues of teacher preparation, what follows is a general outline detailing the general "knowledge base", consisting of *content knowledge*, *pedagogical knowledge*, and *pedagogical content knowledge* (Shulman, 1987), for pre-service teachers in a PETE program. Since the focus of this study primarily centers on the

importance of teacher knowledge and training and how that information may translate to the teacher assistant, it becomes necessary to explore the element of the "knowledge base". Specifically, the areas of the content knowledge and pedagogical knowledge will be defined more extensively.

Content Knowledge:

According to Rink (1996), good content development can increase student learning. Likewise, teacher knowledge and teacher expertise can have significant influences on the students' ability to learn (Darling-Hammond, 1998a) as well as the teacher's ability to instruct (Schempp, Manross, Tan, & Fincher, 1998) regardless of the level of instruction: elementary, middle school, high school, undergraduate, or even postgraduate. One may assume that this statement also holds true for instructing students with disabilities. Many in the field of teacher education ask the question, what is the appropriate content knowledge for physical education trainees? Taken further, what is the appropriate content knowledge and training for individuals who may one day work in the inclusive educational setting? Rink (1995, p. 6) notes, "One of the biggest inhibitors to the development of the ability of teachers to respond appropriately to context is that we do not have an adequate knowledge base to share with our undergraduates on what is appropriate teaching for different contexts." This certainly applies toward teachers asked to include students with disabilities into their lessons, a very challenging setting covering many contextual levels. Graber (2001, p.496) adds, "There is little evidence on which to estimate the quality and extent of what physical education teachers know about their subject matter." This issue has been discussed amongst leaders in our field for quite awhile now with two basic points

of view emerging. According to O'Sullivan (1996), on one side of the issue are those in our field who believe the content of physical education for pre-service teachers should resemble that which is actually taught in the public K-12 schools such as sport, games, and fitness activities (Siedentop, 2002; Tinning, 2002). This would also seem appropriate in a physical education setting that includes children with disabilities. On the other side of this issue are those in our field who feel the content should focus on the sub disciplines of physical education such as exercise physiology, biomechanics, sport psychology, etc. Though both disagree slightly on the specifics of how content knowledge should be presented to pre-service teachers, Siedentop and Tinning support the notion that content should align with the current K-12 physical education setting as it pertains to ones environment. In addition, content that is appropriate for the varying levels of learning (for example, elementary versus high school), presented to students in critical ways relevant to their world today (societal, technological, etc.), should also be our focus as teacher educators regardless of a student's ability (Tinning, 2002; Tinning & Fitzclarence, 1992).

According to Block (2000, p.303) when teaching students with disabilities, "One of the biggest misconceptions about inclusion is that students with disabilities have to follow the same content at the same level as their peers without disabilities." This is certainly not the case. While some content may need a certain level of modification in terms of it presentation, the content in general is quite appropriate for all students in physical education as long as the activities and skills are not dangerous and all students are allowed to participate. Not only is the content very important but also the order of learning in which the physical education teacher presents components

of a skill should equally be considered (Block, 2000). In any case, issues of appropriate content have always been under scrutiny in physical education. These issues become even more important when applied to the area of adapted physical education.

Pedagogical Knowledge:

It is equally important for pre-service students to develop their pedagogical knowledge as well as content knowledge. Pedagogical knowledge is a special reference to those broad principles and strategies of classroom management and organization that appear to transcend subject matter (Graber, 2001; Shulman, 1987). According to Berliner (2000), studies have shown that teachers (pre-service, in-service, and veteran) who possess strong pedagogical knowledge out perform those teachers with strong subject matter (content) knowledge. However, an individual having only exposure and proficiency in either content or pedagogical knowledge will ultimately hinder that person's potential to become an effective teacher. According to Brophy & Good (1986), no "simple solution" of instruction can be effective because what constitutes effective instruction varies with context, group size, and specific instructional objectives. Tinning, as cited in O'Sullivan (1996), argued that knowledge considered to be essential for a physical education teacher is knowledge in both performing a particular activity as well as designing ways to organize and implement basic opportunities for children to practice such an activity.

As of today, many pre-service physical education teachers have very few opportunities to practice their pedagogical skills in varying contexts. According to Rink (1995), the issue of context is a very important element in preparing future

physical education instructors. Contexts in physical education are identified as the following: level of the learner, appropriate K-12 curriculum, teaching strategies, characteristics of the learner, and settings. Rink's main contention is that teacher educators must do a better job of preparing future physical education instructors. Much too often many physical education teachers in training are not given the proper skills to be successful in different contexts of effective teaching. Because there are so many contexts to contend with physical education teachers do not receive the appropriate exposure within the educational environment until they are in the field working, trying to develop their own system of instruction. While teacher educators do a decent job of providing the basic pedagogical skills needed to prepare future teachers within the physical education environment, there is still much discrepancy in providing these individuals with the appropriate practice needed in demonstrating how these skills would transfer and apply to the actual educational setting as well as across different contexts. This is especially true for those physical education teachers who are asked to provide opportunities in physical education to children with disabilities. While pre-service teachers may have a greater chance to experience such opportunities it is obvious volunteer teaching assistants working with children with a disabilities will not.

Pre-service teachers will engage in methods courses at both the elementary and adolescent levels of childhood development within the physical education setting while volunteer teaching assistants, peer-tutors, and paraprofessionals will not. Pre-service teachers will be introduced to basic pedagogical concepts and skills identifying and practicing the use of such skills within the learning domains of a basic teaching

lesson: psychomotor, cognitive, and affective. Areas covered include, *Management and Organizational Skills* (student grouping, student attention, routines, and transitioning), *Instructional Skills* (task progressions, opportunities for successful student practice at an appropriate skill level or academic learning time in physical education (ALT-PE), verbal and nonverbal teacher feedback, teacher positioning, lesson planning, "Stop & Go" commands, home positions, equipment issues), and *Safety Issues* pre-service teachers should be aware of during the course of a physical education lesson such as safe space (Berliner, 1979, 1988; Brophy & Good, 1986; Fisher, Berliner, Filby, Marliave, Cahen, & Dishaw, 1980; Pangrazi, 2001; Rink, 1996; Shulman, 1987; Siedentop, 1990; Silverman, Devillier, & Ramirez, 1991). Peer-tutors, paraprofessionals, and volunteer teaching assistants will not have the same access to such pedagogical knowledge and skill development. Independently, it is logical to say improvement in pedagogical training for these individuals will effectively assist the physical education teacher provide an appropriate learning environment. The question arises, "Do the psychomotor, cognitive, and affective learning domains equally apply when instructing students with disabilities?" The answer would tend to be "yes". Children, regardless of ability or disability, must be exposed to instruction that focuses on each of the learning domains within physical education. However, some teachers do not see this challenge as obtainable and may abandon the basic elements of effective pedagogy. If appropriately modified, factors such as teaching style, length of instruction, types of cues given, and type of organizational structure all prove to be valuable in producing a learning environment suitable for all students.

Pedagogical Content Knowledge:

Within the development of pre-service teachers, students must have equal exposure to content knowledge and pedagogical knowledge, as well as opportunities to integrate both, what Shulman (1987) refers to as pedagogical content knowledge. If not, future teachers will likely become what Siedentop (1990) refers to as 'ill-prepared' to teach in the physical education setting. This is none more apparent than in the adapted and inclusive physical education setting. Having a strong pedagogical background and a weak content background will create in pre-service teachers a weak practical knowledge within physical education (Arnold, 1988; O'Sullivan, 1996). The same might be said if a teacher possesses a strong content background and a weak pedagogical background. Thus, the same holds true for individuals who assist in teaching within the physical education setting. In the United States, students serious about entering the teaching profession in physical education must experience coursework chiefly designed to increase their knowledge of sport, games, and fitness. It goes without saying, knowledge about issues pertaining to certain disabilities and effective modifications to assist in instructing students with disabilities should also be added. As it stands now, while this knowledge is welcomed it is not emphasized as it should be in support of effective teacher development in physical education teacher education. For example, content in kinesiology, anatomy, and to some degree physiology can prove to be valuable as long as they are effectively taught in relation to the appropriate level of child development in physical education. The focus of methods courses consist primarily of discussions on content in physical education, how children learn, and how to observe and teach that content (Rovegno, 1992a,

1995). However, showing and telling pre-service teachers, peer tutors, paraprofessionals, and volunteers how to teach only content will not be sufficient to insure transfer to field settings. Pedagogy must be focus of teacher development in any form. If this is prescribed for teachers of physical education then the same should be expected of individuals who volunteer in helping instruct students with, and without, disabilities.

Research Design

Baseline logic of the reversal design entails elements of prediction, verification, and replication (Heward, 1987b). The premise behind prediction is that if the environment (i.e., the independent variable) does not change and a stable pattern exists, this pattern would continue to persist. Verification increases the likelihood that the baseline would have remained unchanged if the independent variable had not been introduced. In the reversal design, verification is established by using the student or group as the control. During the reversal design, a functional relationship is verified when the independent variable is applied simultaneously across subjects, settings, or behaviors during the intervention phase. When the independent variable is removed and baseline levels resemble those in the first baseline phase, verification of the data in the first baseline phase is obtained. Replication in the reversal design occurs when the independent variable is introduced over subjects, settings, or behaviors and similar states of responding are witnessed when it is taken away and re-introduced. According to Heward (1987b) replication serves two purposes: a) it reduces the likelihood that a confounding variable in causing the change in behavior, and b) it demonstrates the consistency of the behavior change.

By having an alternate control treatment group threats to the internal validity of experiments can be greatly reduced (Barlow & Hayes, 1979; Borg, 1984; Heward, 1987a; van der Mars, 1990). Internal validity threats, as primarily identified by Cook & Campbell (1979), are such things as *experimental mortality*, the *diffusion or imitation of treatment*, the *compensatory equalization of treatments*, the *compensatory rivalry by respondents receiving less desirable treatments*, and the *resentful demoralization of respondents receiving less desirable treatments*.

Experimental mortality is basically described as the loss of subjects from a no-treatment control group. These individuals, receiving little or no attention from the researcher, fail to see the importance of participating in the study. As a result, they withdraw or refuse to cooperate. The diffusion or imitation of treatment occurs when participants of both the experiment and control group are allowed, or given the opportunity, to communicate about the treatment or study in general. According to Borg (1984), such interactions may greatly minimize the differences in the dependent variables of both groups thus increasing the probability of a Type II error. The third issue that may affect the internal validity of a research experiment requiring the use of a control group is referred to as the compensatory equalization of treatments. In the example provided by Borg involving teachers, participants in the treatment group receiving goods or services that may be perceived as valuable by others could cause administrators to offer benefits in another form to additional individuals in the school setting. As a result, participants in the control group would also receive these benefits thus affecting data collected on the dependent variables. In short, this occurrence could also increase the probability of a Type-II error. Compensatory rivalry by

respondents receiving less desirable treatments, or the "John Henry Effect" (Saretsky, 1975; Borg, 1984; van der Mars, 1990), is the fourth issue that may affect the internal validity of a research experiment. Simply stated, in this instance, individuals who know they have been placed in the control group may perceive themselves as a lesser group. As such, these individuals may intentionally work to "reduce or reverse the expected differences brought about by the experimental treatment" (Borg, p. 12). This may be accomplished by one individual working harder to improve his or her performance thus possibly changing the occurrence of the dependent variable. The last issue identified by Borg resembles that of the compensatory rivalry amongst the respondents. The resentful demoralization of respondents receiving less desirable treatments could equally be a major threat to the internal validity of experiments utilizing a control group. Again using the example of teachers and the educational setting, in this instance teachers placed in the control group may observe those in the treatment group receiving special attention or help. As a reaction, teachers in the control group may respond opposite to that of the "John Henry Effect" and decide to make no effort what so ever to continue in their normal behavior. Like the compensatory rivalry of respondents, a change in the behavior of the control group in either occasion may lead to the occurrence of a Type I error.

By using the Alternate Control Treatment Group Research Design, the occurrence of these problems concerning internal validity among groups is significantly lowered. This is possible for two reasons: one, both the treatment and control groups will be participating in programs both will perceive as positive and

valuable, and two, the potential demands made on both groups will be similar, regardless of the treatment (Borg, 1984, p.13; van der Mars, 1990, p. 97).

Conclusion

Using volunteers in various physical education settings has proven to be quite beneficial for children with disabilities, enhancing their opportunities to actively engage in the environment. As with peer-tutors and paraprofessionals, it is critical that volunteers receive the same type of pre-service and in-service training as do physical education professionals. Accordingly, it becomes extremely important to review the many issues that determine appropriate teacher training and how these individuals develop knowledge in their professional advancement.

Because there are so many contexts to contend with in the area of physical education teachers do not receive an appropriate amount of exposure within the educational environment until they are in the field working, trying to develop their own system of instruction. The same must hold true for peer-tutors, paraprofessionals, and volunteers teaching assistants. These individuals will not have the same access to such pedagogical knowledge and skill development. Independently, it is logical to say improvement in pedagogical training for these individuals will effectively assist the physical education teacher provide an appropriate learning environment for children with disabilities.

APPENDIX B: INSTITUTIONAL REVIEW BOARD APPROVAL

OREGON STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
312 Kerr Administration Building • Corvallis, Oregon • 97331-2140
E-MAIL: [illegible] PHONE: (541) 737-3437 FAX: (541) 737-3093

REPORT OF REVIEW

TO: Hans van der Mars,
Exercise and Sport Science

RE: The Impact of an Intervention Program Designed to Develop Teaching Skills in Volunteers Assisting Children with Developmental Disabilities (Student Researcher: Daniel Tindall)

Protocol No. 2294

The referenced project was reviewed under the guidelines of Oregon State University's Institutional Review Board (IRB). The IRB has **approved** the application. This approval will expire on [illegible]. This new request was reviewed at the Expedited level. A copy of this information will be provided to the full IRB committee.

Enclosed with this letter please find the original informed consent documents for this project, which have received the IRB stamp. This information has been stamped to ensure that only current, approved informed consent forms are used to enroll participants in this study. All participants must receive the appropriate IRB-stamped informed consent document. Please make copies of these originals as needed.

- Any proposed change to the approved protocol, informed consent form(s), or testing instrument(s) must be submitted using the MODIFICATION REQUEST FORM. Allow sufficient time for review and approval by the committee before any changes are implemented. Immediate action may be taken where necessary to eliminate apparent hazards to subjects, but this modification to the approved project must be reported immediately to the IRB.
- In the event that a human participant in this study experiences an outcome that is not expected and routine and that results in bodily injury and/or psychological, emotional, or physical harm or stress, it must be reported to the IRB Human Protections Administrator within three days of the occurrence using the ADVERSE EVENT FORM.
- If a complaint from a participant is received, you will be contacted for further information.
- Please go to the IRB web site at: [illegible] to access the MODIFICATION REQUEST FORM and the ADVERSE EVENT FORM as needed.

Before the expiration date noted above, a Status Report will be sent to either close or renew this project. It is imperative that the Status Report is completed and submitted by the due date indicated or the project must be suspended to be compliant with federal policies.

If you have any questions, please contact the IRB Human Protections Administrator at IRB@oregonstate.edu or by phone at (541) 737-3437.

Date: 9/25/03

Dr. Anthony Wilcox
Institutional Review Board Chair

pc: 2294 file

APPENDIX C: INFORMED CONSENT -VOLUNTEER TUTOR

DEPARTMENT OF
EXERCISE AND
SPORT SCIENCE

INFORMED CONSENT DOCUMENT

(Volunteer)

Project Title: The impact of an intervention program designed to develop teaching skills in volunteers assisting children with developmental disabilities.

Principal Investigator: Dr. Hans van der Mars, Department of Exercise & Sport Science

Student Researcher: Daniel Tindall, Department of Exercise & Sport Science

OREGON
STATE
UNIVERSITY

126 Womens Building
Corvallis, Oregon
97331-6802

Telephone
541-737-2641

Fax
541-737-6625

PURPOSE

This is a research study. The purpose of this research study is to determine the usefulness of short training workshops to develop useful and effective teaching skills in volunteers who work with children with disabilities. The results of this project will support volunteers who wish to help a student with a disability in the adapted or regular physical education setting. Likewise, physical education teachers will be able to offer a more productive and effective physical education environment. The intended uses of this study are to complete partial requirements for a Doctoral degree in physical education teacher education and to publish results in a journal. The purpose of this consent form is to give you the information you will need to help you decide whether to be in the study or not. Please read the form carefully. You may ask any questions about the research, what you will be asked to do, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When all of your questions have been answered, you can decide if you want to be in this study or not. This process is called "informed consent". You will be given a copy of this form for your records.

PROCEDURES

If you agree to participate, your involvement will be required every Wednesday afternoon (30 minutes) and Friday evening (2 ½ hours) for one academic year. For the duration of the study, you will be required to work with a high functioning child with developmental disabilities. This may include children with mental retardation and Down Syndrome.

The following procedures are involved in this study. Upon arriving each Friday to the Special Motor Fitness Clinic (SMFC), after a 30-minute pre-clinic meeting, you will meet your child and proceed either to the pool or the gym. After 45 minutes in the setting you will switch from either the pool to the gym or the gym to the pool. During the gym activity portion of clinic you and the child you are assisting will be placed in an area that will focus on a particular corner of the gym where activity will take place, and where it will not be distracting to either you or the child. A different motor task will be introduced each week then repeated later in the quarter and across the year. During this time audio and video taped recordings will be made capturing the interactions between you and the child. Recording will last approximately 10 minutes each Friday evening. As the primary participant of the study you will wear a micro-cassette recorder around your waist with a microphone attached to your shirt collar. A video camera will be placed in area that will focus on a particular corner of the gymnasium where activity will take place and will not be distracting to either the child or you. After the taping is over you will be required to continue with the rest of the normal clinic activities.

OSU IRB Approval Date: 9/25/03
Approval Expiration Date: 9/24/04

On Wednesday afternoons, you will be asked to participate in a short 30-minute teaching in-service, or workshop. It is at this time that you will engage in instruction and practice of the necessary knowledge to effectively teach your child in the following clinic on Friday. Knowledge will include elements of the highlighted motor task to be presented and/or general teaching skills.

RISKS

No additional risk is posed to participants in the gym beyond what is normal in the clinic setting.

BENEFITS

The potential personal benefits that may occur as a result of your participation in this study are that you may receive effective training to assist your child with developmental disabilities. As a result, your clinic experience may become more productive and fun. The researchers anticipate that society may benefit from this study by providing researchers and teachers in physical education and adapted physical education information regarding effective ways to train and utilize volunteer teaching assistants in the regular and adapted physical education settings.

COSTS AND COMPENSATION

You will not have any costs for participating in this research project. You may not be compensated for participating in this research project. However, for all volunteers who participate in the study, one credit hour may be earned for each quarter of participation. Additionally, if you withdraw from the study after week 7 of the academic quarter, you may earn an "incomplete" for the credit hour.

CONFIDENTIALITY

Records of participation in this research project will be kept confidential to the extent permitted by law. However, federal government regulatory agencies and the Oregon State University Institutional Review Board (a committee that reviews and approves research studies involving human subjects) may inspect and copy records pertaining to this research. It is possible that these records could contain information that personally identifies you.

Audio and videotapes of your interactions with the child will be created during this study. These tapes will be labeled by participant number and will not be linked with your personal information. Informed consent forms will also be stored in a private location. In the event of any report or publication from this study, your identity will not be disclosed. Results will be reported in a summarized manner in such a way that you cannot be identified.

AUDIO AND VISUAL RECORDING.

By initialing in the space provided, you verify that you have been told that audio and visual recordings will be generated during the course of this study. These recordings are necessary in order to accurately capture the verbal and physical interactions between you and the child you will assistant. Audiotapes and videotapes will not be erased or destroyed as they may be used in future research projects that address similar or related questions. When this occurs, the researchers will follow the same procedures that ensure participant confidentiality in this project.

To ensure privacy each participant will be assigned a specific subject number at the beginning of the study. These numbers will be used to label the audio and videotapes as no names will be included when reporting

the findings. Tape recordings will be stored in a private location in the Sport Pedagogy Lab on the Oregon State University campus to ensure confidentiality. The audio and videotapes will be viewed and transcribed only by research staff under Dr. van der Mars' direction and will not be used for any public viewing.

_____ Participant's initials

RESEARCH RELATED INJURY

In the event of research related injury, compensation and medical treatment is not provided by Oregon State University

VOLUNTARY PARTICIPATION

Taking part in this research study is voluntary. You may choose not to take part at all. If you agree to participate in this study, you may stop participating at any time.

QUESTIONS

Questions are encouraged. If you have any questions about this research project, please contact: Daniel Tindall, at (541) 737-5932 or by e-mail at Tindalld@onid.orst.edu or Dr. Hans van der Mars, at (541) 737-4649 or by e-mail at HansVanderMars@orst.edu. If you have questions about your rights as a participant, please contact the Oregon State University Institutional Review Board (IRB) Human Protections Administrator, at (541) 737-3437 or by e-mail at

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Your signature indicates that this research study has been explained to you, that your questions have been answered, and that you agree to take part in this study. You will receive a copy of this form.

Participant's Name (printed) _____

_____ _____

(Signature of Participant) (Date)

RESEARCHER STATEMENT

I have discussed the above points with the participant or, where appropriate, with the participant's legally authorized representative, using a translator when necessary. It is my opinion that the participant understands the risks, benefits, and procedures involved with participation in this research study.

_____ _____

(Signature of Researcher) (Date)

APPENDIX D: PARENT PERMISSION LETTER

July 29, 2003

Dear Parent(s),

My name is Daniel Tindall and I am currently a doctoral candidate in the Department of Exercise and Sport Science at Oregon State University with a minor emphasis in the Movement Studies in Disability program. I would like to invite your child to join in my Doctoral Dissertation project.

The use of volunteer teaching assistants and peer-tutors to aid children with disabilities take part in the general physical education setting has become a helpful resource for teachers. However, what is unclear is how well these volunteers are specifically trained to help out. Generally, to be considered a trained volunteer, or peer-tutor, the only requirements are the desire and time available for a person to lend a hand to help a student with a disability. Very little is known about the training these volunteers receive before they can help out in the gym. The purpose of this study is to determine the importance of specific training for volunteer teaching assistants working with children with developmental disabilities and mental retardation.

The results of this project will support volunteers who wish to help a student with a disability in the adapted or regular physical education setting. Likewise, physical education teachers will be able to offer a more productive and effective physical education environment. Participating in this project is strictly voluntary but your cooperation would be very helpful, as it is key to the successful completion of this study. Children who join in this project will take part in all the usual clinic activities. Though the project will focus only on the clinicians, the contribution of your child is still very important. Volunteers working with your child will be taped in order to capture their interactions with your child and may last throughout the school year. As well, your child will also be taped. Taping will be during the gym session and last about 10-minutes every Friday evening. Only research personnel will review the tapes. Participation in this study will only be during clinic time. Participants in this study will have clinic fees waived for each quarter of involvement.

If you are willing to have your child contribute in this study please read the attached Informed Consent Form and return it to me as soon as possible. If you have any questions or concerns about this project please feel free to contact me at 541-737-5932, or e-mail at Tindalld@onid.orst.edu.

Thank you very much for your time and consideration regarding this project,

Daniel Tindall
Doctoral Candidate in Sport Pedagogy

APPENDIX E: INFORMED CONSENT – STUDENT/PARENT

DEPARTMENT OF
EXERCISE AND
SPORT SCIENCE

INFORMED CONSENT DOCUMENT

(Student/Parent)

Project Title: The impact of an intervention program designed to develop teaching skills in volunteers assisting children with developmental disabilities.

Principal Investigator: Dr. Hans van der Mars, Department of Exercise & Sport Science

Student Researcher: Daniel Tindall, Department of Exercise & Sport Science

OREGON
STATE
UNIVERSITY

320 Women's Building
Corvallis, Oregon
97331-6802

Telephone
541-737-2651

Fax
541-737-6625

PURPOSE

This is a research study. The purpose of this research study is to determine the usefulness of short training workshops to develop useful and effective teaching skills in volunteers who work with children with disabilities. The results of this project will support volunteers who wish to help a student with a disability in the adapted or regular physical education setting. Likewise, physical education teachers will be able to offer a more productive and effective physical education environment. The intended uses of this study are to complete partial requirements for a Doctoral degree in physical education teacher education and to publish results in a journal. The purpose of this consent form is to give you the information you will need to help you decide whether your child will be in the study or not. Please read the form carefully. You may ask any questions about the research, what your child will be asked to do, the possible risks and benefits, your child's rights as a volunteer, and anything else about the research or this form that is not clear. When all of your questions have been answered, you and your child can decide if he or she wants to be in this study or not. This process is called "informed consent". You will be given a copy of this form for your records.

PROCEDURES

If you agree to take part in the study, your child's involvement will be required every Friday evening for one school year. While the focus of the study is on the volunteer assistants working with your child, your child's presence is important to the success of the study. Your child will participate in clinic as before.

The following procedures are involved in this study. Upon arriving to the gym activity portion of clinic your child and his or her volunteer assistant will at some time move to a specific portion of the gym and engage in a motor task such as striking an object, kicking an object, catching an object, or throwing an object. Of the four, a different motor task will be introduced each week then repeated later in the quarter and across the school year. During this time audio and video taped recordings will be made capturing the interactions between your child and the volunteer assistant. Recording will last approximately 10 minutes each Friday evening. The volunteers will wear a micro-cassette recorder around their waist with microphones attached to their shirt collars. A video camera will be placed in an area that will focus on a corner of the gym where activity will take place and that will not be distracting to either the child or volunteer. After the taping is over nothing more of your child will be required and he or she will continue in clinic as they have done before.

OSU IRB Approval Date: 9/25/03
Approval Expiration Date: 9/24/04

RISKS

No additional risk is posed to participants in the gym beyond what is normal in the clinic setting.

BENEFITS

The potential personal benefits that may occur as a result of your child's participation in this study are that your child may receive better-trained and effective volunteer assistants. As a result, your child's clinic experience may become more productive and fun. The researchers anticipate that society may benefit from this study by providing researchers and teachers in physical education and adapted physical education information on effective ways to train and make use of volunteer teaching assistants.

COSTS AND COMPENSATION

You will not have any costs for participating in this research project. You will be compensated for participating in this research project. For all children who complete the study, the clinic fee of $40 will be waived for each academic quarter of participation. Additionally, if children withdraw from the study during an academic quarter, clinic fees will be prorated accordingly.

CONFIDENTIALITY

Records of participation in this research project will be kept confidential to the extent permitted by law. However, federal government regulatory agencies and the Oregon State University Institutional Review Board (a committee that reviews and approves research studies involving human subjects) may inspect and copy records pertaining to this research. It is possible that these records could contain information that personally identifies you and your child.

In order to maintain confidentiality, during the study only Dr. van der Mars and Mr. Tindall will have access to the data in this study, which will be kept on file in a secure location in the Sport Pedagogy Lab located in the College of Health and Human Sciences at Oregon State University. Audio and videotapes of your child's interactions with the volunteer assistant will be labeled by participant number and will not be linked with your child's personal information. Informed consent forms will also be stored in a private location. In the event of any report or publication from this study, you or your child's identities will not be disclosed. Results will be reported in a summarized manner in such a way that your child cannot be identified.

AUDIO AND VISUAL RECORDING

By initialing in the space provided, you verify that you have been told that audio and visual recordings will be generated during the course of this study. These recordings are necessary in order to accurately capture the verbal and physical interactions between your child and his or her volunteer assistant. Audiotapes and videotapes will not be erased or destroyed as they may be used in future research projects that address similar or related questions. When this occurs, the researchers will follow the same procedures that ensure participant confidentiality in this project.

To ensure privacy each participant will be assigned a specific subject number at the beginning of the study. These numbers will be used to label the audio and videotapes as no names will be included when reporting the findings. Tape recordings will be stored in a private location in the Sport Pedagogy Lab on the Oregon State University campus to ensure confidentiality. The audio and videotapes will be viewed and transcribed only by research staff under Dr. van der Mars' direction and will not be used for any public viewing.

_____ Participant's initials

RESEARCH RELATED INJURY

In the event of research related injury, compensation and medical treatment is not provided by Oregon State University.

VOLUNTARY PARTICIPATION

Taking part in this research study is voluntary. Your child may choose not to take part at all. If you agree to participate in this study, your child may stop participating at any time. If you decide not to take part, or if you stop participating at any time, your decision will not affect your child's status in the Clinic or access to Clinic activities.

QUESTIONS

Questions are encouraged. If you have any questions about this research project, please contact: Daniel Tindall, at (541) 737-5932 or by e-mail at Tindalld@onid.orst.edu or Dr. Hans van der Mars, at (541) 737-4649 or by e-mail at Hans.VanderMars@orst.edu. If you have questions about your child's rights as a participant, please contact the Oregon State University Institutional Review Board (IRB) Human Protections Administrator, at (541) 737-3437 or by e-mail at

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Your signature indicates that this research study has been explained to you, that your questions have been answered, and that you agree to take part in this study. You will receive a copy of this form.

Participant's Name (printed)

(Signature of Participant) (Date)

(Signature of Parent/Guardian or Legally Authorized Representative) (Date)

RESEARCHER STATEMENT

I have discussed the above points with the participant or, where appropriate, with the participant's legally authorized representative, using a translator when necessary. It is my opinion that the participant understands the risks, benefits, and procedures involved with participation in this research study.

(Signature of Researcher) (Date)

APPENDIX F: FEDELITY OF TREATMENT CODING FORM

Fidelity of Treatment Event Coding Form

Students will view a videotape of either a content-based performance of a motor skill or a pedagogical-based performance of a teaching skill.

The researcher will be videotaped when administering the intervention. After each intervention session, the videotape will be reviewed and coded to determine the consistency of the researcher to not provide extra information outside the videotape presentations. The ability of the researcher to stray between content knowledge and pedagogical knowledge domains can greatly affect the participant's capacity to focus on the intervention thus influencing their performance in future clinic sessions.

Date: _____ Study Group: Pedagogy Content

Issues of Pedagogy	Total	Issues of Content	Total
1. # of times researcher provides verbal descriptions or examples of ***VPSFB***		1. # of times researcher provides verbal descriptions of the skill being presented ***(throwing, catching, kicking, striking).***	
2. # of times researcher provides verbal descriptions or physical examples of ***NVPFB***		2. # of times researcher prompts participants to look for certain elements of the skill being presented.	
3. # of times researcher provides verbal descriptions or examples of ***prompting***.		3. # of times researcher physically models the skill being presented.	
4. # of times researcher provides verbal descriptions or physical examples of ***modeling***.		4. # of times researcher provides specific answers to questions about the skill being presented.	
5. # of times researcher provides verbal descriptions or physical examples of ***physical assistance***.		5. # of times researcher refers to specific issues pertaining to disability of child and the highlighted motor skill.	
Total		Total	
Time of session in minutes		Time of session in minutes	
Rate		Rate	