

AN INVESTIGATION OF THE FREQUENCY OF
KANSAS PHYSICAL EDUCATION TEACHER FEEDBACK AND PROXIMITY
IN RELATION TO STUDENT BODY MASS INDEX AND GENDER

by

JOYCE A. ELLIS

B.S., Fort Hays State University, 1979

M.S., Fort Hays State University, 1998

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment
of the requirements for the degree

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Department of Curriculum and Instruction
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ABSTRACT

America is in the midst of an obesity epidemic (Wechsler, McKenna, Lee, & Dietz, 2004). According to Wechsler et al., physical inactivity is a major contributor to this issue. Burnette (1999), reports certain behaviors and instructional strategies help teachers to build stronger teaching/learning relationships with students, and that some specific behaviors may be the most influential. Teacher feedback and teacher proximity are two specific behaviors that are important in a physical education setting. Hastie (1998) and Lund (1990), report that when physical education teachers provide feedback and maintain proximity to students, learning may be enhanced.

This study examined the frequency of teacher feedback and teacher proximity in relation to student body mass index (BMI) and student gender. Fifteen Kansas middle school physical education teachers were observed delivering skill based lessons to two classes of students. Event recording, a form of systematic observation, was used in data collection. A multivariate analysis of variance was conducted with independent samples T-tests conducted for specific demographic data.

Results indicated no significant differences in the frequency of teacher feedback and teacher proximity in relation to student body mass index (BMI) or student gender. Results of the analysis of various pieces of demographic information showed teachers who use some of the Physical Focus Curriculum activities had a higher rate per minute of teacher feedback than teachers who use none of the curriculum. Analysis also showed that teachers using more individualized skill based activities provided significantly higher rates of feedback and proximity than those conducting large group activities. Further analysis of demographic data revealed those teachers currently coaching a sport provided less feedback and proximity to

students in class than those not currently coaching. Membership in the state professional organization did not have any effect upon rates of teacher feedback or proximity. The effects of teacher gender on rates of feedback and proximity showed female teachers are more proximal to all students than male teachers.

Recommendations to be considered when conducting further research include increasing the sample size, development of more specific instrumentation to measure rates of feedback and proximity in an activity setting, implementing more control of the type of activity and instruction provided, and including more diversity in the study.

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Approved by:

Major Professor
Dr. Michael Perl

Approved by:

Major Professor
Dr. Beetta Stoney

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Recommendations to be considered when conducting further research include increasing the sample size, development of more specific instrumentation to measure rates of feedback and proximity in an activity setting, implementing more control of the type of activity and instruction provided, and including more diversity in the study.

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Chapter 1

Introduction

The concept of teacher effectiveness has been a focus of educational research for the past several decades (Behets, 1996). Many factors such as class size, availability of equipment and facilities, various student characteristics, administrative support and funding affect overall teacher effectiveness (Lacy, Willison, & Hicks, 1998). Of all of these factors, teacher/student personal and academic interactions may be the most influential (Burnette, 1999). This study examines two specific interactions of Physical Education teachers and students in a skill based instructional setting in relation to student body mass index and student gender. Discussion in this chapter is organized in the following sections: (1) overview of the issues, (2) statement of the problem, (3) purpose of the study, (4) significance of the study, (5) overview of the methodology, (6) limitations of the study, (7) definition of terms, and (8) summary.

Overview of the Issues

Nearly everyday Americans are made aware of the fact that the United States is in the midst of an obesity epidemic (Wechsler, McKenna, Lee, & Dietz, 2004). Headlines across the nation have proclaimed what many educators have witnessed over the past two decades; children in the United States are getting heavier. Weschler et al. (2004) believed the cause of this increase in the number of overweight and obese children is simply an excess of caloric intake compared with caloric expenditure. In other words, children are making unhealthy eating choices and not getting enough physical activity.

Data from the Centers for Disease Control and Prevention (CDC), indicated the prevalence of overweight and obesity among children age 6 to 11 has more than doubled in the past 20 years and the rate among adolescents age 12 to 19 has more than tripled (Wechler et al. 2004). Schools and educators can make a difference by helping students adopt and maintain more healthful eating and activity behaviors. The Center for Disease Control has published guidelines that identify school policies and practices most likely to be effective in addressing nutrition and physical behaviors of children. Specifically important to physical education specialists, these guidelines suggest that schools strengthen nutrition and physical activity policies and implement a high-quality course of study in physical education. Policymakers are beginning to understand that physical education is as much an academic discipline as all the other subjects taught in school (Wechsler et al. 2004).

Physical inactivity is dangerous to our health (Arnett, 2001). Most young Americans, especially females and minorities, are too sedentary and are at greater risk for problems such as obesity, diabetes, cancer, and heart disease (Gordon-Larsen, 2003). Quality physical education classes can provide enhanced opportunities for regular physical activity (Ross & Pate, 1987). However, physical educators must do more than just provide opportunities for physical activity. Physical education instructors must ensure that students enrolled in their classes actually participate and learn the physical and behavioral skills, including time management and goal-setting behaviors that they will need later in adulthood.

Physical education class offers a unique contribution to student well being. Students who are perceived by teachers as more competent and proficient in psychomotor skills are more likely to be active participants in physical education classes. The overweight/obese student is often perceived as being less competent and less skilled (Briggs, 1992). Inequality

in classrooms has become a central issue in education. Of particular importance is the way in which teachers behave toward their students based upon their expectations of them (Lee, 1996). Research conducted in classroom settings has shown that teacher interaction with students perceived as low achievers is less motivating and less supportive than interaction with students perceived as high achievers (Kerman, 1979). One of the most important factors for successful education has been recognized as a teacher's responsibility to treat students "fairly" in the classroom (Lee, 1996). According to Brophy and Good (1974) and Darley and Fazio (1980), many teachers develop dissimilar expectations for their students and often treat them differently, depending on these expectations.

There are many factors affecting the success of students in schools today; the school's atmosphere and overall attitudes toward student achievement, involvement of the community, and culturally responsive curriculum are but a few (Burnette, 1999). The personal and academic relationships between teachers and their students may be the most influential of these factors. Certain behaviors and instructional strategies enable teachers to build stronger teaching/learning relationships with students (Burnette, 1999).

Statement of the Problem

In most physical education programs, the primary curricular objectives are the development of psychomotor skills and the improvement and/or maintenance of health-related physical fitness through participation at a moderately vigorous level of physical activity (Lacy, Willison, & Hicks, 1998). In order for students to achieve these objectives, it is imperative that they are engaged in developmentally appropriate activities. There are many factors such as class size, student characteristics, facilities, and equipment not directly

controlled by the teacher yet influence how students spend their time in physical education. While these may be important variables, certain teacher behaviors exert direct influence on student activity levels and enjoyment of physical activity and are directly controlled by the teacher. Teacher behaviors interact with student behaviors to create the learning environment. Specific instructional behaviors and strategies have been identified which enhance teaching/learning relationships with students such as the overweight/obese student in the physical education setting (Lacy, Willison & Hicks 1998).

Although much research has been done regarding teacher behaviors and student learning, further research related to specific teacher interactions with overweight/obese students in the physical education classroom setting is needed. In recent studies Hastie (1998) has shown correlations between specific teacher actions and student responses. Specifically, data collected from Hastie's (1998) study supported the idea that in middle and secondary physical education the most problematic instruction context is that of skill practice. The overwhelming conclusions reached through his study supported the fact that higher levels of teacher intensity (specifically accountability strategies including reinforcement of teaching cues, task-related feedback and teacher movement) result in increased levels of student engagement (Hastie, 1998). According to Briggs (1992), students who were actively engaged in physical activity for a large percentage of the class time, with a reasonably high rate of success, were found to achieve psychomotor skill proficiency at a higher level than the less active classmates. When teachers were more dynamic, providing feedback and constantly working with students and reinforcing skills, students worked at higher levels of commitment and produced higher standards of work (Hastie, 1998). Lund (1990) also found that when accountability strategies such as teacher proximity to students

during skill practice were used, students had significantly more total skill responses per lesson and a higher percentage of those responses were correct. But, are physical educators providing the same accountability strategies such as skill feedback and proximity to all students, or could the teachers be biased by student gender or body mass index? The research presented here may provide insight into the engagement and participation of both males and females and the lean and overweight/obese student in physical education activities. This research will also aid in preparing pre-service teachers in development of teaching strategies designed to address the current trends in physical education engagement and participation.

Purpose of the Study

This study provides pre-service teacher education programs and in-service physical education teachers with important information regarding the specific teacher behaviors of feedback and proximity to students identified as overweight/obese. This information will benefit in-service physical educators and physical education teacher education (PETE) instructors as they prepare pre-service teachers in specific strategies to address overweight/obese student engagement and participation in physical activity in the physical education class setting.

The purpose of this study was to determine how the specific behaviors of teacher feedback and teacher proximity are affected by student body mass index (BMI) and student gender.

Research Questions Investigated

1. Was there a statistically significant difference in the number of times teachers provided feedback to students with high body mass index (BMI) and to students with low to normal BMI?
2. Was there a statistically significant difference in teacher proximity to students with a high BMI and students with a low to normal BMI?
3. Was there a statistically significant difference in the number of times teachers provided feedback to males/females with a high BMI and males/females with a low to normal BMI?
4. Was there a statistically significant difference in teacher proximity to males/females with a high BMI and males/females with a low to normal BMI?

Significance of the Study

Americans are currently facing a very serious overweight/obesity epidemic in our nation's schools. While the U.S. Surgeon General (U.S. Department of Health and Human Services, 2001) has identified this obesity epidemic as one of the greatest health problems facing our nation, educators today seem to have their attention elsewhere. With the ever increasing focus on standardized test scores and funding, many schools have placed less emphasis on the broader view of a healthy mind in a healthy body (Wechsler et al. 2004). The National Association of State Boards of Education (NASBE) supports the idea that health and success in school are interrelated. Schools cannot achieve their primary mission of education if students and staff are not healthy and fit physically, mentally, and socially

(NASBE, 2000). Largely due to the efforts of NASBE members and policy makers, many schools are making important contributions to our nation's struggle with the obesity epidemic through the implementation of Coordinated School Health Programs, high quality physical education and health programs, and increased opportunities for students to engage in physical activity.

As teacher education programs in American colleges and universities work to prepare pre-service physical education teachers, it is imperative that they are introduced to specific teaching behaviors and strategies aimed at addressing the growing number of overweight/obese students. By developing strategies aimed at enhancing engagement and participation in physical activity, young teachers can begin to make a difference in the lives of their students.

Overview of Methodology

This study was designed as a between-subjects factorial design which permits the study of the effects of the two independent variables of student gender and BMI upon the two dependent variables of teacher feedback and proximity. A multivariate analysis of the dependent variables of teacher feedback and teacher proximity upon the independent variables of student gender and student BMI and the interactions of these variables was conducted. A univariate analysis of the dependent variable of teacher feedback upon the independent variables of student gender and student BMI and the interactions of these variables was conducted as part of the multivariate analysis of variance procedure. Another univariate analysis of the dependent variable of teacher proximity upon the independent

variables of student gender and student BMI and the interactions of these variables was conducted as part of the multivariate analysis of variance procedure.

The study sample was comprised of Kansas middle school physical education teachers. Fifteen teachers of grades six, seven, or eight were observed delivering two separate skill based lessons. All teachers and students were identified by number only. Observations were coded using an event recording form. Due to the various lengths of class time, rate per minute for both feedback and proximity was determined for each subject in the study as well as for each class. Inter-observer reliability was established through the use of a pilot study in which three videotapes of physical education class sessions were coded for incidents of teacher feedback and teacher proximity.

The *Statistical Package for the Social Sciences (SPSS) 11.0 for Windows* computer program was utilized to conduct a multivariate analysis of variance (MANOVA) for data analysis.

Limitations

There are several limitations of the study.

1. *Limited number of subjects.* This study focused on the interactions of fifteen teachers with their students. This may not provide enough of a representative sample to infer results to the general population of teachers.
2. *Limited geographical area.* The teacher/student interactions used in this study may not represent all geographical settings and thus may not be representative of teacher/student interactions in other parts of the country.
3. *Limited number of overweight/obese students per class studied.* The classes selected for use in this study may have a limited number of overweight/obese

students and thus fewer opportunities for these specific teacher/student interactions to occur.

4. *Different teaching styles.* Subjects used in this study may have different teaching styles and because of variations in teaching style may have more or less teacher/student interactions with the overweight/obese student population.
5. *Presence of researcher in class.* Behaviors of both students and teachers may be affected due to the presence of the researcher in class.

Definition of Terms

Body Mass Index (BMI): Body Mass Index is a number calculated from a child's weight and height and is a reliable indicator of body fatness for children and teens. For children and teens, BMI is age- and sex- specific and is often referred to as BMI-for-age. Although the BMI number is calculated the same way for children and adults, the criteria used to interpret the meaning of the BMI number for children and teens are different from those used for adults. For children and teens, BMI age- and sex-specific percentiles are used for two reasons:

- The amount of body fat changes with age
- The amount of body fat differs between girls and boys

In the metric system, the formula for BMI is weight in kilograms divided by height in meters squared. Since height is commonly measured in centimeters, an alternate calculation formula dividing the weight in kilograms by the height in centimeters squared, and then multiplying the results by 10,000 can be used. When using English measurements, ounces (oz) and

fractions must be changed to decimal values. Calculate BMI by dividing weight in pounds (lbs) by height in inches (in) squared and multiply by a conversion factor of 703 (CDC, 2006).

Feedback: The act of informing a student who has performed in some way that his/her response or performance is or is not acceptable. Feedback may be verbal, such as "Yes, that is the correct way to stop the soccer ball", "Good job swinging the bat," "OK," "That is wrong, we do not throw that way ", "No," or non-verbally communicating approval or disapproval, as in nodding, pointing or shaking the head (Kerman, 1979).

Proximity: Teacher initiated nearness to (within arm's reach) a student or the student's self-space, whether or not the student is aware of the teacher's presence. Merely passing by a student did not qualify as proximity (Kerman, 1979).

Self-space: Self-space is defined as all the space the body or its moving parts (including implements) can reach (Graham, Holt-Hale, Parker, 2007).

Obese: Body Mass Index (BMI) of 30.0 kg/m^2 or higher (CDC, 2006)

Overweight: Body Mass Index of $25.0 - 29.9 \text{ kg/m}^2$ (CDC, 2006)

Summary

As the issue of childhood obesity and all of the related health issues that accompany obesity continue to become a national priority, it becomes the responsibility of all educators, and specifically all physical educators, to do everything within their power to aid in changing children's attitudes and behaviors toward physical activity. In studies completed by Hastie (1998) and Briggs (1992), evidence was provided that certain behaviors and instructional

strategies helped enable teachers to build stronger teaching/learning relationships with students such as the overweight/obese student. The purpose of this study was to determine if the behaviors of teacher feedback and teacher proximity were affected by student body mass index and/or student gender. The study will determine if significant differences existed in the frequency of teacher feedback and teacher proximity to males or females of low to normal or high BMI. According to the NASBE (2000), schools will struggle in achieving their primary mission of education if students and staff are not healthy and physically, mentally, and socially fit. It is imperative that pre-service PETE professionals provide their pre-service teachers with adequate knowledge, skills and training to meet those needs. This study will provide PETE professionals with the data needed to better train physical education teachers and ultimately help them change the lives of their students. Those teachers currently teaching physical education may benefit from the findings of this study also. Teacher movement and feedback can be altered with more focus on interactions with all students.

Chapter 2

Review of Literature

The United States is in the midst of an obesity epidemic. According to Wechsler et al. (2004), the incidence of overweight and obesity in children has increased dramatically over the past two decades. The prevalence of overweight and obesity among children age 6 to 11 has more than doubled in the past 20 years and the rate among adolescents age 12 to 19 has more than tripled. Furthermore, Wechsler et al. indicated obesity and the related health consequences of physical inactivity and poor diet have become a major concern for school districts across the country. Wechsler et al. provided guidelines published by the Centers for Disease Control identifying school policies and practices most likely to be effective in addressing nutrition and physical behaviors of children. These guidelines suggested that schools strengthen nutrition and physical activity policies and implement a high-quality course of study in physical education. According to Wechsler et al., state and federal policymakers are beginning to understand that physical education is as much an academic discipline as all the other subjects taught in school.

Arnett (2001) pointed out that physical inactivity is very dangerous to our overall health and well being. Sedentary lifestyles such as those experienced by most young Americans, especially females and blacks, place them at greater risks for problems such as obesity, diabetes, cancer, and heart disease (Gordon-Larsen, 2000). Ross and Pate (1987), reported that quality physical education classes can provide students with enhanced opportunities for participation in regular physical activity. However, educators must do more than just provide opportunities for physical activity. Physical educators must ensure that students enrolled in physical education classes actually participate and learn the physical and

behavioral skills, including time management and goal-setting behaviors that they will need later in adulthood.

Teaching students how to take control of their health and wellness later in life will be enhanced through quality physical education programs and instruction because of the unique contributions that can be made to student well being. There are many factors that affect the success of our vastly diverse students in schools today. Of all the factors, the personal and academic relationships between teachers and their students may be the most influential. Certain behaviors and instructional strategies enable physical education teachers to build stronger teaching/learning relationships with diverse students (Burnette, 1999). Certain teacher behaviors exert direct influence on student activity levels and enjoyment of physical activity and are directly controlled by the teacher.

The purpose of this study is to determine how the specific behaviors of teacher feedback and teacher proximity in a skill based physical education class are affected by student body mass index (BMI) and gender. This review of literature will highlight key studies in the areas of (a) effective teaching strategies in physical education settings, (b) feedback, proximity, and student achievement in the physical education setting, and (c) diversity, gender and teacher-student interactions.

Effective Teaching Strategies in Physical Education Settings

According to Lacy, Willison, & Hicks (1998) most physical education programs are primarily concerned with the development of psychomotor skills and the improvement and/or maintenance of health-related fitness. In order for students to achieve these objectives, it is imperative that they are appropriately engaged in activities. There are many factors such as

class size, individual student characteristics, facilities, and equipment that are out of the direct control of the teacher yet influence how students spend their time in physical education. While these may be important variables, certain teacher behaviors exert direct influence on student activity levels and enjoyment of physical activity and are directly controlled by the teacher (Lacy et al., 1998). According to Lacy et al., teacher behaviors interact with student behaviors to create the learning environment. Furthermore, Lacy et al. indicated that certain teaching behaviors assist teachers in building stronger teaching/learning relationships with diverse students including the overweight/obese student. Without effective teaching strategies it is unlikely that students in the physical education setting will have the opportunity for high rates of appropriate motor engagement.

According to Briggs (1992), students who are engaged in physical activity for a large percentage of the class time, with a reasonably high rate of success have been found to achieve competence in psychomotor skills at a higher level than the less active classmates. Despite this finding, research on how students spend their time in physical education has consistently shown that students spend a very small amount of time actually engaged in motor activities (Lacy et al. 1998). Peter Hastie (1998), in his discussion of the classroom ecology paradigm, suggested that as a part of the teacher/student interactions of a classroom or playing field, statements are made to students about their performance or behavior and the consequences of such. These statements, according to Doyle (1983), are evaluative in nature and thus connect tasks to a reward structure. He contends that students tend to treat tasks seriously only to the extent to which they are held accountable for their accomplishment. This concept of accountability may help explain differences in task involvement within and between physical education classes. The use of accountability strategies by teachers will

usually result in classes which demonstrate higher levels of task involvement (Hastie, 1998). In studies Hastie (1998) showed correlations between specific teacher actions and student responses. When teachers are more dynamic, providing feedback and constantly reinforcing skills, students worked at higher levels of commitment and produced higher standards of work. Lund (1990), found that when accountability strategies were used students had significantly more total skill responses per lesson and that a higher percentage of those responses were correct. Some of the accountability strategies that were most successful included public recognition by the teacher, various forms of accountability checks, and providing the student with feedback on errors. Both Hastie (1998) and Lund (1990) noted that silent observation of students by a teacher showed negative correlations with student involvement and positive correlations with off-task behaviors. When the concept of monitoring relates to a focus on teacher positioning or proximity to students, studies have found that students are least likely to be off-task when the teacher is watching them in close proximity (Lund, 1990).

The ability to properly and appropriately reinforce behavior is one of the most critical elements in managing the physical education class (Hastie, 1998). One of the major findings of Hastie's (1998) study was the strong and consistent relationship between teaching behaviors and interactions with students and the resulting student performance. Teachers who reinforce task demands and hold students accountable will achieve better student outcomes. Downing, Keating, and Bennett (2005) found that reinforcement procedures foster positive feelings and that if reinforcement procedures are used to change behaviors, a child is more likely to develop a healthy self-image. This concept implies that teachers should provide students with feedback that will motivate them to engage in behaviors

considered desirable. When students learn that pleasant consequences occur after particular actions, they are more likely to repeat those actions. One of the most powerful forms of reinforcement is typically the teacher's attention. Oatman and Williams (1996) believed that every student should receive reinforcement and positive interaction with the teacher. Students with minimal skills as well as the most highly skilled should receive as much reinforcement as other class members. Bowyer (1996) reported what we teach and how we teach can have a significant impact on the children in our classes and their future perceptions of physical education. In a time when we are witnessing increasing levels of obesity and a significant decline in the physical activity levels of children, engaging students in physical activity and fostering participation in movement and a commitment to lifetime physical activity is more important than it has ever been before.

Feedback, Proximity, and Student Achievement in a Physical Education Setting

The domain of teacher effectiveness has been a very important focus in educational studies. Research on effective teaching has addressed a number of variables which enhance student learning. One such variable is teacher feedback directed to individual students. Teachers play a very important role in assisting students with learning. In the past several decades teacher and student behaviors in the physical education setting have been studied in more and more detail (Behets, 1996). The ability to provide relevant feedback is regarded as an important aspect of good teaching (Silverman, Woods, & Subramaniam 1998). In Hattie's review of numerous meta-analytic studies evaluating the impact of various education practices on the academic achievement of nearly 15 million students, he found teacher feedback to be the most powerful variable in enhancing student achievement (Burnett, 2001).

By providing appropriate feedback, teachers hope student performances will be modified and that the student will learn the material.

Silverman, Tyson, and Krampitz (1992) reported studies of learning in elementary and secondary classrooms where the subject matter consisted of math, social studies, and language skills showed specific, non-evaluative, task-relevant feedback is highly associated with increased student learning. However, transferring results from classroom studies to the physical education setting may be somewhat problematic. Physical education objectives such as learning motor skills, understanding kinesiological principles, and improving personal fitness levels are somewhat different from those of general classroom subjects. In the physical education setting students are more actively engaged in movement, and that may complicate the teacher's ability to provide feedback. Until recently most investigations of the role of feedback in the learning of a motor skill have been conducted in laboratory settings (Silverman, et al. 1992). Few studies have had a component focusing on teacher feedback and student achievement in the gymnasium setting. Silverman et al. (1992) suggested that further research would be needed to understand the role of teacher feedback as it relates to student achievement in physical education, and that this research should occur in an actual school setting with a large subject pool.

Silverman et al. (1998) has noted the effect of feedback on learning may be influenced by a number of variables, including the students to whom the feedback is directed and how teachers organize instruction. Student learning may be influenced by how teachers structure the practice of specific tasks as well as how they hold students accountable. Boyce, Markos, Jenkins and Loftus (1996) suggested teachers' decisions on what type of feedback given and who delivers the feedback are especially important to a student's initial skill

development. Burnett (2003) cited studies providing strong support for the use of ability feedback and found that students who attributed their success to ability had higher self-concepts than those students who did not. Dohrn and Bryan (1994) believed giving feedback providing positive ability attributions along with student instruction in specific tasks may lead children to persist longer and to acquire adaptive attributions. They described teachers as important role models for children and noted that teacher feedback shapes students' self-referent thoughts and self-talk (Dohrn & Bryan, 1994). Similar studies indicated that individual specific and corrective teacher feedback helped both lower- and higher-skilled students improve practice success in various volleyball skills (Pellett, Henschel-Pellett, & Harrison, 1994).

Although numerous studies supported the link between teacher feedback and student achievement, limited data existed relating teacher proximity and student achievement. Adams and Biddle (1970) found in various classrooms students most likely to be asked questions or to participate in discussions were seated in a T-shaped area with the top of the T at the center front of the room nearest the teacher. Rist (1972) reported students who were perceived as most able were placed together in one group and that teachers spent more time working with students in that group. Observations indicated that students perceived as low achievers were seated in a back row or corner of the classroom, as far away from the teacher as possible (Rist, 1972). According to a report by Gunter, Shores, Jack, Rasmussen and Flowers (1995), a number of researchers have reported that the positioning of the teacher in relation to the student may increase the power of the teacher's interactions with students. Good & Brophy (1987) provide evidence which seems to indicate that closer proximity of

teachers to students should enable teachers to more effectively interact with students which may increase student academic engagement and decrease student disruptions.

In a study of teacher interpersonal behavior on student subject-specific motivation Brok, Levy, Brekelmans & Wubbels (2005) indicated teacher interpersonal behavior was strongly related to student achievement and motivation. Their results showed that teacher proximity had a large effect on student effort and confidence. Results of a study of physics teachers and their students found the stronger the student's perception of proximity the greater the subject-specific motivation (Brekelmans, Wubbels, & Creton, 1990).

In a study more related to the physical education setting, Behets (1996) indicated that spatial location and teacher movements during active learning time can affect pupil involvement. In a similar study, Behets (1997) noted teachers' location and movement patterns during active learning time provided indications of how students attend to ongoing activities. The position and proximity of a teacher toward individual students could enhance on-task behavior and influence student learning, although his study indicated that for the most effective teachers, standing near the student was associated with higher levels of negative feedback statements (Behets, 1997). Hastie (1998) reported students are least likely to be off-task when the teacher is watching them while positioned close to the student. These limited findings support the notion that students will remain on task and perhaps achieve higher levels of success when in close proximity to the teacher.

Diversity, Gender and Teacher-Student Interactions

According to Warna Gillies (2001) one of the most important characteristics of a quality educator is the ability to effectively interact with all students. Research findings over

the past two decades indicate that both male and female teachers tend to be more attentive to male students from pre-school through high school (Gillies, 2001). Boys are called on more frequently and boys receive more praise, acceptance, remediation, and criticism than girls (Sadker, 1999). According to Sadker (1999) the higher achieving girls received the least teacher attention because their good behavior frees the teacher time to work with the more difficult to manage boys. Gillies (2001) proposed teachers rarely realize they are treating students differently and suggested that through the use of gender appropriate strategies the learning opportunities can be maximized for both boys and girls. Some suggested strategies include respecting the individual's learning pace, the use of teaching methods that promote active learning, and improving our efforts to avoid stereotypical assignments. Activities in the physical education setting quite often provide a perfect place for gender equity issues to be observed. Jo Sanders (2002) reported that although we assume teacher educators are preparing pre-service education students to teach equitably to both genders, in reality gender equity is still in its infancy in many teacher education programs. Sanders (2002) believes that if pre-service education students do not learn about teaching methods that promote gender equity during their preparation for the profession, they probably won't learn about it at all.

In a study by Chow and Kasari (1999) an attempt was made to look at how teacher's interactions with students differ depending on the child's status. More specifically, they wanted to know how teachers in an inclusive classroom could interact with the typical learners as well as those with disabilities. In the elementary setting there were conflicting findings. Some teachers gave less attention and feedback to students with disabilities and some provided more interaction and assistance (Chow & Kasari, 1999). Although

overweight/obesity is not yet specifically identified as a disability, many students with a higher body mass index (BMI) experience some of the same difficulties as those with other physical disabilities in a physical education classroom. Based upon the results of previously discussed studies, females with a high BMI are at even greater risk of receiving less attention and feedback.

Although not specifically addressed in this study, teacher interactions with students become even more complicated when the issue of race is included in the mix. Fear of being labeled a "racist" often leads to teachers providing limited feedback. Teachers often fear negative feedback will be perceived as "racist" and thus they tend to withhold feedback and deny students of color the honest feedback needed to improve their performance. This differential treatment based on race may contribute to the underachievement of many students of color (Tatum, 1999). Based upon these findings it appears that gender, diversity (physical and mental differences), and ethnicity may be significantly related to frequency of teacher/student proximity and feedback.

Summary

From the review of literature it is evident that a significant number of American youth are overweight or obese. Having a high BMI along with the sedentary lifestyles of youth has created some significant health issues in our county. Physical educators across the nation must face these issues and work to change student attitudes and participation in lifetime physical activity.

It is evident from the review of literature that educators must provide all students opportunities to experience active engagement in physical activity. Teacher

behaviors interact with student behaviors to create the learning environment (Lacy et al., 1998), and certain behaviors and instructional strategies enable teachers to build stronger teaching/learning relationships. The use of various accountability strategies leads to higher levels of task involvement (Hastie, 1998). Some of the most successful accountability strategies include providing students with feedback and teacher positioning in close proximity to students. Teacher feedback has been found to be one of the most powerful variables in student achievement (Burnett, 2001). Few studies have focused on teacher feedback and student achievement in the actual physical activity setting or gymnasium. Further research is needed to understand the role of teacher feedback and student achievement in this real life setting.

Although less research exists relating teacher proximity to student achievement, various studies have indicated teacher proximity can have an effect on student effort and confidence (Brekelmans et al., 1990). Students are least likely to be off-task when the teacher is watching them in close proximity (Hastie, 1998). Few if any studies have been done investigating the amount of feedback given and the positioning of teachers near students with higher than normal BMI. Gillies (2001) and Sadker (1999) both reported gender related differences in teaching existing from pre-school through high school. The physical education setting is certainly not immune to these issues. More research, especially in the field of physical education, is needed to determine the effects of teacher feedback and proximity related to student gender. If instructors are to provide an environment which enhances engagement and more positive attitudes toward lifetime participation in physical activity, it is imperative that factors influencing feedback and proximity to all students be identified and understood. If we are to make a difference in the lives of overweight and

obese students we must begin by changing the way pre-service teachers are trained to deal with the ever increasing number of these students they will find in their physical education classes.

Chapter 3

Methodology

The methodology of the study will be discussed in the following sections: (a) research question, (b) research design, (c) means of data collection, and (d) means of data analysis.

Research Question

The primary objectives of most physical education programs are the development of psychomotor skills and the improvement and/or maintenance of health-related physical fitness through participation at a moderately vigorous level of physical activity (Lacy, Willison, & Hicks, 1998). In order for students to achieve these objectives, it is imperative they are appropriately engaged in activities. A number of factors that are out of the direct control of the physical education teacher influence how students spend their time in physical education class. These include things such as class size, characteristics of individual students, and facilities and equipment availability. Although these may all be important variables, according to Lacy et al. (1998) there are certain specific teacher behaviors that exert direct influence on student activity levels and student enjoyment of physical activity and which are directly controlled by the teacher. Lacy et al. indicated the learning environment is created through an interaction of teacher behaviors and student behaviors and found there are some behaviors and instructional strategies that enable teachers to build stronger teaching/learning relationships with diverse students, including those who may be overweight or obese in physical education classes.

This study provided pre-service teacher education programs and in-service physical education teachers with important information regarding the specific teacher behaviors of feedback and proximity to students identified as overweight/obese. The resulting information will benefit PETE instructors as they prepare pre-service teachers and assist in-service physical education teachers in specific strategies to address overweight/obese student engagement in the physical education class setting.

The following research questions were the focus of the study:

1. Was there a statistically significant difference in the number of times teachers provided feedback to students with high body mass index (BMI) and to students with low to normal BMI?
2. Was there a statistically significant difference in teacher proximity to students with a high BMI and students with a low to normal BMI?
3. Was there a statistically significant difference in the number of times teachers provided feedback to males/females with a high BMI and males/females with a low to normal BMI?
4. Was there a statistically significant difference in teacher proximity to males/females with a high BMI and males/females with a low to normal BMI?

Research Design

This study was designed as a between-subject factorial design. This design permitted the study of the effects of the two independent variables of student gender and student BMI upon the two dependent variables of teacher feedback and teacher proximity. A multivariate

analysis of the independent variables of student gender and student BMI upon the dependent variables of teacher feedback and teacher proximity and the interactions of these variables was conducted. A univariate analysis of the independent variable of student gender upon the dependent variables of teacher feedback and teacher proximity and the interactions of these variables was conducted as part of the multivariate analysis of variance procedure. Another univariate analysis of the independent variable of student BMI upon the dependent variables of teacher feedback and teacher proximity and the interactions of these variables was conducted as part of the multivariate analysis of variance procedure. Coded event recording from the observation of fifteen teachers and thirty classes was used to provide data for the study. Prior to data collection, approval was obtained from the Committee on Research Involving Human Subjects (IRB) at Kansas State University.

Population and Sample

The population included all Kansas middle school teachers. Letters explaining the study and inviting schools to participate were sent to all physical education teachers in the middle schools in Kansas. From the 22 respondents, the first school to respond and indicate a willingness to participate from each of the ten Kansas state school board districts was selected for participation. The five remaining schools were selected from those indicating a willingness to participate once all ten state school board districts were represented. The sample included urban, suburban and rural schools with enrollments ranging from 46 to 685. Due to the fact that state school board district #5 covers the entire western half of Kansas, no school in the sample was further west than Hays, Kansas. Teaching experience ranged from 1 year to 24 years, with a mean of 10.4 years. Class size ranged from 13 to 49 students, with

a mean class size of 23.6. All classes were grades 6, 7 or 8, and were co-ed classes. Class length ranged from 30 minutes to 60 minutes, with a mean of 38.6 minutes and a mode of 30 minutes.

Protection of Human Subjects

All physical education teachers and their administrators completed an informed consent form. Each student was identified by a number which corresponded with BMI data provided by the physical education teacher. All BMI data was recorded according to student number and at no time was student BMI data or school/teacher names revealed. BMI data was destroyed following the completion of this study.

Means of Data Collection

Data collection is discussed in the following sections: (a) selecting and contacting the sample, (b) pilot study and inter-observer reliability (c) developing the data collection form, (d) developing the cover letter describing data collection procedures, and (e) administering the data collection instrument.

Selecting and Contacting the Sample

The names and contact information of all public middle school teachers in Kansas were obtained from the Kansas State Department of Education Directory. A letter inviting participation and explaining all requirements for participation in the study (Appendix A) was sent to all public middle school physical education teachers. From the 22 responding schools a sample of fifteen teachers was selected. One school from each of the ten Kansas state

school board districts was selected. The remaining five schools were selected based upon willingness to participate and access to the school. Those teachers were contacted and arrangements were made for two skill based lessons to be observed.

Pilot Study and Inter-observer Reliability

The goal of any observation in the teaching-learning environment is an accurate reflection of what actually has occurred. According to Hans van der Mars (1989), human beings are not well qualified to perform acts of observation due to the influences of our past experiences, biases, and beliefs. It is critically important that users of systematic observation tools take measures to ensure reliability.

Reliability in observational literature often refers to the adequacy with which an observer codes the observed actions. This almost always refers to inter-observer agreement in jointly observing and recording (House & House, 1979). Inter-observer agreement is a measure of the degree to which observers of the same events agree in their recording of them. Agreement has not only been equated with reliability, but has come to represent the accuracy of the observational data (van der Mars, 1989).

To develop inter-observer reliability a pilot study was conducted. Two current Physical education teachers and one member of the PETE faculty were selected to participate in the pilot study along with the primary investigator. Three videotaped physical education classes were provided for observation. Observers watched the video-taped segments independently of each other and coded frequency of teacher feedback and teacher proximity using a scored-interval method. According to Hans van der Mars (1989), the scored-interval

(S-I) method is the most widely used for reporting observer agreement percentages in physical education teaching research.

Because teaching physical education involves such a high frequency of behavioral episodes, a 5-second interval was used to help to maintain a high correspondence between the actual and the recorded frequencies of the occurrence of teacher feedback and teacher proximity. This length of interval also allowed sufficient time for an observer to recognize and record the behavior, according to Hans van der Mars, (1989). Each observer was connected via ear-phones to a pre-recorded cassette tape using a timing device to signal the observer to either "observe" or "record". At the end of each 5-second "observe" signal the observer was given 5 seconds to record prior to the next "observe" signal. Video-taped segments were 15 minutes in length, and provided skill based physical education teaching settings.

Following the collection of data, the percentage of agreement was calculated between the primary investigator and each of the three pilot study participants for both teacher feedback and teacher proximity. The variable of teacher feedback resulted in an 85% agreement between the primary investigator (PI) and observer A. Percentage agreement was 90% for the PI and observer B and 95% for observer C. The average percentage agreement for teacher feedback was 90%. The variable of teacher proximity resulted in a percentage agreement of 90% between the PI and observer A 96% between the PI and observer B and 94% between the PI and observer C. The average percentage of agreement for teacher proximity was 93%.

Hans van der Mars (1989) reported that although there is no fully accepted minimum standard for direct observation data, levels of agreement should reach 90% or higher when

measuring only one or a few behaviors. Results of the pilot study indicated sufficient levels of inter-observer reliability when observing both teacher feedback and teacher proximity. Based upon these results the primary investigator was able to record the occurrence of teacher feedback and teacher proximity in future observations at an acceptable level of reliability.

Developing the Data Collection Form

Darst, Mancini, and Zakrajsek (1983) indicated systematic observation allows a trained person following specific guidelines and procedures to observe, record, and analyze interactions with the confidence that others observing the same sequence of events would agree with the recorded data. Through the use of systematic observation methods we are able to answer questions regarding what goes on in school physical education classes with much more confidence than in the past. Used in research, systematic observation provides information on both independent and dependent variables. Darst et al. reported much of the research aimed at changing teaching behaviors of both pre-service and in-service teachers used feedback as part of the intervention, and this feedback was typically based on data collected through systematic observation.

Event recording, a form of systematic observation, was selected as the means of data collection for this project. Event recording provides the researcher with data on the frequency of occurrence of a discrete event by tallying the number of times the event takes place (van der Mars, 1989). If the length of the observation period would be the same for all teachers observed, frequency would be the unit of measurement in reporting the data. Due to the variability in the length of class times, the length of observation varied from one teacher to another. Thus, the rate of response was the most appropriate means to report the data.

The rate of response was calculated by dividing the recorded total frequency of the specified behavior by the length of the observation time in minutes. The resulting number was the rate per minute of the specific behavior being observed.

An all-purpose coding form for use with event recording (Appendix B) was modified and combined with the Teacher Expectations Student Achievement (TESA) Observation Coding Form (Appendix C) and the newly developed event recording form (Appendix D) was used to record the frequency of the identified dependent variables of feedback and proximity for each numerically identified student. Confidentiality was maintained by assigning a number to each student.

Reliability is a critical feature of systematic observation and is most often measured by the degree to which two people agree on their coding. Inter-observer reliability was established through a pilot study. Two current Physical Education teachers and one member of the PETE faculty independently observed and coded three videotaped physical education classes and percentage agreement was determined. An average percentage of agreement was calculated. Percentage agreement was within acceptable limits for all components of the pilot study.

Developing the Cover Letter for Data Collection

A cover letter was written describing the proposed study parameters and inviting participation in the study (Appendix E). The letter described the general purpose of the study, invited the assistance of the schools and teachers in data collection, and described the data to be collected and procedures for doing so. This letter was sent to all middle school physical education teachers in Kansas asking for volunteers to participate in the study.

Administering the Data Collection Instrument

Fifteen teachers meeting the study criteria were selected for observation of two skill based lessons. Each teacher was observed teaching two separate skill based lessons to a sixth, seventh or eighth grade physical education class. Class observation times ranged from 30 minutes to 60 minutes. Since class observation times were not equal, the rate per minute of feedback and proximity was determined for each teacher. Student BMI data was collected from current Physical Fitness Assessments or Student Health Assessments conducted by the school nurse.

Means of Data Analysis

The *Statistical Package for the Social Sciences (SPSS) 11.0 for Windows* computer program was used to conduct a multivariate analysis of variance (MANOVA) for data analysis. A multivariate analysis of the independent variables of student gender and student BMI upon the dependent variables of frequency of teacher feedback and teacher proximity and the interactions of these variables was conducted. A univariate analysis of the independent variable of student gender upon the dependent variables of teacher feedback and teacher proximity and the interactions of these variables was conducted as part of the multivariate analysis of variance procedure. Another univariate analysis of the independent variable of student BMI upon the dependent variables of teacher feedback and teacher proximity and the interactions of these variables was conducted as part of the multivariate analysis of variance procedure.

Participants in the study included fifteen teachers of grades six, seven and/or eight. Two individual classes of subjects per teacher were observed with the frequency of teacher

feedback and teacher proximity coded according to student number. Student BMI data was collected from student fitness assessment or health records. Student gender and BMI data were entered into the *SPSS* program, along with the frequency of teacher feedback and teacher proximity. Total class time observed for each individual class was entered and the rate per minute of teacher feedback and teacher proximity for each individual subject was calculated.

Independent Samples T-Tests were conducted for specific demographic data. Specific information for analysis in the study included teacher gender and whether they were currently coaching a sport. Also included was information regarding the participant's membership status in the Kansas Association of Health, Physical Education, Recreation and Dance (KAHPERD) and the type of activity observed (large group game or individual skill based activity). A one-way analysis of variance (ANOVA) and Scheffe Post Hoc testing was used to analyze the effects of using all, some or none of the Physical Focus middle school health and physical education curriculum activities on the frequency of teacher feedback and teacher proximity.

Summary

This study was designed to provide pre-service teacher education programs as well as in-service teachers with important information regarding the specific teacher behaviors of teacher feedback and teacher proximity to students identified as overweight/obese. This information may benefit PETE instructors as they prepare pre-service teachers in specific strategies to address overweight/obese student engagement in physical activity in the physical education class setting. In-service teachers will benefit from the findings of this

study and be able to use the data in making changes in their current teaching practices. The between-subject factorial design studied the effects of the two independent variables of student gender and student BMI upon the two dependent variables of teacher feedback and teacher proximity. Analysis of the effects of various demographics upon teacher feedback and teacher proximity will provide additional information for both pre-service and in-service educators. A sample of convenience was used and data was collected using a form of systematic observation known as event recording. A multivariate analysis of variance (MANOVA), one way analysis of variance, and several independent samples T-tests were conducted using the *SPSS* computer program.

Chapter 4

Analysis of Data

As stated earlier, this study examined the effects of student gender and student BMI on the frequency of teacher feedback and proximity. This chapter is centered in explaining the current investigation's findings related to the frequency of teacher feedback and teacher proximity to students of low to normal or high BMI and student gender. This chapter also focused on the effects of the use of the Physical Focus Middle School curriculum, membership in KAHPERD, coaching activities, type of class activities and teacher gender on the frequency of teacher feedback and teacher proximity. This chapter was designed to report the results of the data collection process described in chapter 3. This chapter is organized in the following sections: (a) observation results; (b) physical focus curriculum; (c) demographics; and (d) summary.

Observation Results

This section reports the findings of the various analyses as previously discussed. The analyses are discussed in the following sections: (a) teacher feedback to students with high and low to normal body mass index; (b) teacher's proximity to student with high and low to normal body mass index; (c) teacher feedback for males and females with high, low to normal body mass index; and (d) teacher's proximity for males and females with high, low to normal body mass index.

For analysis one a multivariate analysis of variance (MANOVA) using Wilks' Lambda statistics was performed to investigate the effects of the independent variables body mass index (BMI) and gender upon the dependent variables of teacher feedback and teacher

proximity, and the interactions of BMI and gender upon the dependent variables of teacher feedback and teacher proximity. Multivariate test results are presented in Table 1. Results of the multivariate tests of between-subjects effects are presented in Table 2.

Table 1.
Multiple Analysis of Variance for Teacher Feedback and Teacher Proximity - Multivariate Results

Source	Test	<i>p</i>	Partial Eta Squared
BMI	Wilk's Lambda	.770	.001
Gender	Wilk's Lambda	.128	.006
BMI X Gender	Wilk's Lambda	.795	.001

Table 2
Multiple Analysis of Variance for Teacher Feedback and Teacher Proximity - Univariate Results

Source	<i>df</i>	<i>F</i>	Partial Eta Squared	<i>p</i>
Proximity				
BMI	1	.346	.001	.557
Gender	1	3.748	.006	.053
BMI X Gender	1	.040	.000	.841
Error	673			
Feedback				
BMI	1	.490	.001	.484
Gender	1	2.928	.004	.087
BMI X Gender	1	.138	.000	.710
Error	673			

Teacher Feedback to Students

In response to research question one, the analysis showed no significant difference in the frequency of teacher feedback to students according to body mass index grouping [$F(1, 673) = .490; p = .484$] (see Table 2). Individual means and standard deviations from the multiple analyses of variance are provided in Table 3.

Table 3.

Means and Standard Deviations for Teacher Feedback - High and Low to Normal BMI

		Low to Normal BMI	Overweight to Obese BMI
		Group	Group
		$n = 528$	$n = 149$
RPM Feedback	(M)	.0248	.0272
	(SD)	(.03182)	(.03314)

Teacher Proximity to Students

In response to research question two regarding the teacher's proximity to students with a high BMI and students with a low to normal BMI, the analysis showed no significant difference in teacher proximity to students according to student BMI [$F(1, 673) = .346; p = .557$] (see Table 2). These results indicate that student BMI did not affect the teacher's proximity to students in this study sample. Individual means and standard deviations from the multiple analyses of variance are provided in Table 4.

Table 4.

Means and Standard Deviations for Teacher Proximity - High and Low to Normal BMI

		Low to Normal BMI	Overweight to Obese BMI
		Group	Group
		$n = 528$	$n = 149$
RPM Proximity	(M)	.0170	.0189
	(SD)	(.02642)	(.02815)

Teacher Feedback to Males

In response to the number of times a teacher provides feedback to males with a high BMI and males with a low to normal BMI, the analysis showed no significant difference in teacher feedback to males according to BMI [$F(1, 673) = .138; p = .710$] (see Table 2).

These results indicate that males are given feedback regardless of their BMI. Individual means and standard deviations from the multiple analyses of variance are provided in Table 5.

Table 5.
Means and Standard Deviations for Teacher Feedback to Males - High and Low to Normal BMI

	Low to Normal BMI Group <i>n</i> = 270	Overweight to Obese BMI Group <i>n</i> =88
RPM Feedback (M) (<i>SD</i>)	.0279 (.03517)	.0289 (.03555)

Teacher Feedback to Females

In response to the number of times a teacher provides feedback to females with a high BMI and females with a low to normal BMI, the analysis showed no significant difference in the frequency of feedback to females according to their BMI [$F(1, 673) = .138; p = .710$]

(see Table 2). These results indicate that females are given feedback regardless of their BMI. Individual means and standard deviations from the multiple analyses of variance are provided in Table 6.

Table 6.

Means and Standard Deviations for Teacher Feedback to Females - High and Low to Normal BMI

	Low to Normal BMI Group <i>n</i> = 258	Overweight to Obese BMI Group <i>n</i> =61
RPM Feedback (<i>M</i>)	.0216	.0248
(<i>SD</i>)	(.02759)	(.02943)

Teacher Proximity to Males

In response to any differences in a teacher's proximity to males with a high BMI and males with a low to normal BMI, the analysis showed no significant difference in teacher proximity to male students according to BMI group [$F(1, 673) = .040; p = .841$] (see Table 2). These results indicate physical education teachers are proximal to male students regardless of BMI. Individual means and standard deviations from the multiple analyses of variance are provided in Table 7.

Table 7.

Means and Standard Deviations for Teacher's Proximity to Males – High and Low to Normal BMI

	Low to Normal BMI Group <i>n</i> = 270	Overweight to Obese BMI Group <i>n</i> =88
RPM Proximity (<i>M</i>)	.0191	.0211
(<i>SD</i>)	(.03092)	(.02698)

Teacher Proximity to Females

In response to a teacher's proximity to females with a high BMI and females with a low to normal BMI, the analysis showed no significant difference in teacher proximity to female students according to BMI group [$F(1, 673) = .040; p = .841$] (see Table 2). These

results indicate teachers are proximal to females regardless of BMI. Individual means and standard deviations from the multiple analyses of variance are provided in Table 8.

Table 8.

Means and Standard Deviations for Teacher's Proximity to Females – High and Low to Normal BMI

	Low to Normal BMI Group <i>n</i> = 258	Overweight to Obese BMI Group <i>n</i> =61
RPM Proximity (<i>M</i>)	.0148	.0157
(<i>SD</i>)	(.02052)	(.02970)

Physical Focus Curriculum Use

The second analysis completed was a one-way analysis of variance (ANOVA) investigating the effects of the level of use of the Physical Focus curriculum upon the dependent variables of teacher feedback and teacher proximity. Participants in the study were asked to indicate their usage of the Physical Focus curriculum activities as "yes" if they used this curriculum for their classes, "no" if they did not use this curriculum for their classes, and "some" if they used only parts of this curriculum for their classes. Of the fifteen teachers in the study, 12.3% (*N*=2) indicated that they used all Physical Focus activities in their classes, 19.0% (*N*=3) did not use Physical Focus activities, and 68.7% (*N*=10) used some of the Physical Focus activities in their classes.

Results of the one -way ANOVA show no significant difference in the frequency of teacher proximity between teachers using all, some, or none of the Physical Focus Curriculum [$F(2, 674) = 1.142; p = .320$] (see Table 9). Results of the frequency of teacher feedback and Physical Focus Curriculum use were significant [$F(2, 674) = 4.713; p = .009$] (see Table 9). Scheffe's Post Hoc tests indicate a significant difference ($p=.010$) in the frequency of feedback between those teachers who use some and those who use none of the

physical focus curriculum. Results of the one way analysis of variance are presented in Table 9. Individual means and standard deviations from the one-way analysis of variance are provided in Table 10.

Table 9.
One Way Analysis of Variance for Physical Focus Curriculum Use

Source	Sum of Squares	df	Mean Square	F	p
Proximity					
Physical Focus	.002	2	.001	1.142	.320
Error	.484	674	.001		
Feedback					
Physical Focus	.010	2	.005	4.713	.009**
Error	.687	674	.001		

** $p < .01$

Table 10.
Means and Standard Deviations for Physical Focus Curriculum Use

	No (n= 129)	Some (n=465)	Yes (n=83)	Total (n=677)
RPM Proximity (M)	.0167	.0169	.0216	.0174
(SD)	(.02214)	(.02748)	(.02939)	(.02680)
RPM Feedback (M)	.0328	.0231	.0261	.0253
(SD)	(.03787)	(.02998)	(.03248)	(.03210)

Effects of Demographics

Demographic variables of specific interest to this study were: coaching status (currently coaching or not), KAHPERD membership status (currently a KAHPERD member or not), activity type (large group game or individual skill based lesson), and teacher gender. The third analysis that was conducted was a series of independent samples T-tests to

investigate the effects of various demographic variables upon the rate per minute of teacher feedback and teacher proximity. These were two-tailed tests significant at the .05 level.

Coaching

The tests investigating the effects of coaching upon rate per minute of teacher feedback [$t(232) = -2.35, p = .02$] and teacher proximity [$t(209) = -2.461, p = .01$] were significant at the .05 level for both rate per minute of feedback and rate per minute of proximity (see Table 9). The magnitude of the difference in the means for both proximity (eta squared = .009) and feedback (eta squared = .008) was very small. Individual means and standard deviations from the T-tests are provided in Table 10.

Table 11.
T-test for Equality of Means - Coaching

	<i>t</i>	<i>df</i>	Sig.(2-tailed)
Proximity	-2.461	209.271	.015*
Feedback	-2.352	231.948	.019*

* $p < .05$

Table 12.
Means and Standard Deviations for Coaching

	No (<i>n</i> =156)	Yes (<i>n</i> =521)
RPM Proximity (<i>M</i>)	.0228	.0158
(<i>SD</i>)	(.03285)	(.02451)
RPM Feedback (<i>M</i>)	.0310	.0236
(<i>SD</i>)	(.03511)	(.03098)

KAHPERD Membership

The tests investigating the effects of membership in KAHPERD upon rate per minute of teacher feedback [$t(675) = -1.678, p = .09$] and teacher proximity [$t(675) = .158, p = .88$] were non-significant (see Table 13). The magnitude of the difference in the means for both

proximity (eta squared = .00004) and feedback (eta squared = .004) was very small.

Individual means and standard deviations from the T-tests are provided in Table 14.

Table 13.

T-test for Equality of Means - KAHPERD Membership

	<i>t</i>	<i>df</i>	Sig.(2-tailed)
Proximity	.158	675	.875
Feedback	-1.678	231.948	.094

Table 14.

Means and Standard Deviations for KAHPERD Membership

	No (<i>n</i> =177)	Yes (<i>n</i> =472)
RPM Proximity (<i>M</i>)	.0172	.0175
(<i>SD</i>)	(.02271)	(.02842)
RPM Feedback (<i>M</i>)	.0285	.0240
(<i>SD</i>)	(.03496)	(.03072)

Group Game

Although the instructions for this study were to provide for observation of a skill based lesson, not all teachers in the study did so. Thus, an analysis of the effects of activity type upon the rate per minute of teacher feedback and teacher proximity was performed. Results indicated significance for both feedback [$t(344) = -4.613, p = .00$] and proximity [$t(361) = -5.194, p = .00$] (see Table 15). The magnitude of the difference in the means for both proximity (eta squared = .038) and feedback (eta squared = .031) was small. Individual means and standard deviations from the T-tests are provided in Table 16.

Table 15.
T-test for Equality of Means - Group Game

	<i>t</i>	<i>df</i>	Sig.(2-tailed)
Proximity	-5.194	209.271	.000**
Feedback	-4.613	343.983	.000**

** $p < .01$

Table 16.
Means and Standard Deviations for Group Game

	No (<i>n</i> =524)	Yes (<i>n</i> =153)
RPM Proximity (<i>M</i>)	.0198	.0094
(<i>SD</i>)	(.02822)	(.01928)
RPM Feedback (<i>M</i>)	.0279	.0166
(<i>SD</i>)	(.03370)	(.02402)

Teacher Gender

The final independent samples T-test investigated the effect of teacher gender upon the rate per minute of teacher feedback [$t(675) = .727, p = .467$] and teacher proximity [$t(249) = 2.839, p = .005$] (see Table 17). Equal variances were not assumed for teacher proximity. Un-pooled data ($p=.01$) indicated significance for teacher proximity with female teachers ($M = .0188, SD = .02745$) being more proximal to students than male teachers ($M=.0122; SD = .02356$). Equal variances were assumed for the rate per minute of teacher feedback. Pooled data show the results of the effects of teacher gender upon rate per minute of teacher feedback were non-significant ($p=.593$). The magnitude of the difference in the means for both proximity (eta squared = .011) and feedback (eta squared = .0007) was very small. Individual means and standard deviations from the T-tests are provided in Table 18.

Table 17.
T-test for Equality of Means - Teacher Gender

	<i>t</i>	<i>df</i>	Sig.(2-tailed)
Proximity	2.839	249.487	.005**
Feedback	.727	675	.467

** $p < .01$

Table 18.
Means and Standard Deviations for Teacher Gender

	Female (<i>n</i> =536)	Male (<i>n</i> =141)
RPM Proximity (<i>M</i>)	.0188	.0122
(<i>SD</i>)	(.02745)	(.02356)
RPM Feedback (<i>M</i>)	.0258	.0236
(<i>SD</i>)	(.03903)	(.03628)

Summary

This chapter included an examination of the results through data analysis and a summary of those results. Fifteen Kansas middle school physical education teachers were observed with the frequency of teacher feedback and teacher proximity to students recorded through systematic observation procedures. Multivariate analysis of variance (MANOVA) procedures were used to investigate the effects of the independent variables of body mass index (BMI) and student gender upon the rate per minute of teacher feedback and teacher proximity. Both multivariate and univariate analyses produced non-significant results.

A second analysis investigated the effects of the level of use of the Physical Focus curriculum upon the rate per minute of teacher feedback and teacher proximity, with non-significant results for the rate per minute of teacher proximity. Analysis of variance results were significant for the rate per minute of teacher feedback. Post Hoc tests were significant

for the rate per minute of teacher feedback between those teachers who do not use any of the Physical Focus curriculum and those who use some of the curriculum.

The third and final analysis was a series of independent samples T-tests investigating the effects of various demographic variables upon the rate per minute of teacher feedback and teacher proximity. An analysis of the effects of membership in the Kansas Association of Health, Physical Education, Recreation and Dance (KAHPERD) produced non-significant results. The variables of coaching, activity type and teacher gender all produced results which were significant and consistent with current research.

Chapter 5

Summary, Recommendations, and Conclusions

This final chapter of the study discusses the implications of the study as well as what significant information the author gleaned for future research. This chapter is organized into the following sections: (a) summary of the study problem and methodology; (b) a summary of the study, (c) discussions of the results, (d) recommendations for future research, and (e) conclusion of the study.

Summary of Study Problem and Methodology

The purpose of this study was to determine whether or not there was a significant difference in the frequency of teacher feedback and teacher proximity to students of low to normal or high body mass index (BMI) and student gender. The study also analyzed the effects of the use of the Physical Focus middle school curriculum upon the frequency of teacher feedback and teacher proximity, as well as the effects of membership in the Kansas Association of Health, Physical Education, Recreation and Dance (KAHPERD), coaching, type of class activity, and teacher gender upon the frequency of teacher feedback and teacher proximity.

The data were analyzed using descriptive statistics, multivariate analysis of variance (MANOVA), univariate analyses of variance (ANOVA) and independent samples T-tests. Three separate analyses were conducted.

Participants were fifteen physical education teachers of grades 6, 7 and/or 8. Thirteen of the teachers were female and two were male. Two classes were observed for each of the

fifteen teachers resulting in a total of 677 subjects, 319 female and 358 male. Body mass index (BMI) data indicated that 80.8% of the females ($N=258$) were within the low to normal body mass index group (BMI of 0-24.99). The remaining 19.2% of the females ($N=61$) had a body mass index of 25.0 or above, placing them in the overweight to obese category. Of the males in the study, 75.4% ($N=270$) had a BMI within the low to normal category (BMI of 0-24.99) and 24.6% ($N= 88$) were in the overweight to obese category (BMI of 25.0 and above). Overall 22%, ($N=149$) of the students in physical education classes observed during this study were overweight to obese.

Summary of the Study

This study was conducted to determine if there would be significant differences in the frequency of teacher feedback and teacher proximity to students of different body mass index and gender. The study also analyzed the effects of: (a) the use of Physical Focus curriculum activities, (b) membership in the Kansas Association of Health, Physical Education, Recreation and Dance (KAHPERD), (c) coaching, (d) physical education class activity type, and (e) teacher gender upon the frequency of teacher feedback and teacher proximity.

Specifically this study determined whether or not there was a significant difference in the rate per minute of teacher feedback and teacher proximity to students based upon body mass index and student gender. Fifteen Kansas middle school physical education teachers were observed through systematic observation procedures. The frequency of teacher feedback and teacher proximity was recorded and rate per minute of both teacher feedback and teacher proximity determined. Student gender and body mass index was gathered.

Various pieces of demographic information were gathered to analyze their effects upon the frequency of teacher feedback and teacher proximity.

The data were analyzed using multivariate analysis of variance (MANOVA) and univariate analysis of variance (ANOVA). Independent samples T- tests were used in the analysis of the demographic information. The multivariate analyses resulted in non-significant results. The second analysis investigating the effects of the use of the Physical Focus curriculum upon the frequency of teacher feedback and teacher proximity resulted in significance for the variable of teacher feedback. Post Hoc tests showed a significant difference in the frequency of teacher feedback between those who do not use any of the Physical Focus curriculum and those who use some of the curriculum.

The independent T-tests showed that those physical education teachers who are currently coaching provide a lower rate of both teacher feedback and teacher proximity than those not currently coaching. Results also found that teachers who use large group activities provide less frequent feedback and proximity. Membership in the state professional organization was found to have no significant effect upon the frequency of teacher feedback and teacher proximity. Finally, results indicated that female teachers tend to be more proximal to both male and female students than male teachers.

Summary of the Results

This section of the study presents an overview of the results from the previous chapter. In the first analysis, a multivariate analysis of variance (MANOVA) was performed to investigate the effects of the independent variables (BMI and gender) upon the dependent variables (teacher feedback and teacher proximity) as well as the interactions of BMI and

gender upon the dependent variables. Overall the MANOVA produced non-significant multivariate results. There was no significant difference in the frequency of teacher feedback or proximity to students by BMI or gender. The analysis also indicated no significant differences in the frequency of teacher feedback and proximity with BMI/gender interaction.

A one way analysis of variance (ANOVA) was conducted to investigate the effects of the level of use of the Physical Focus curriculum upon the dependent variables (teacher feedback and teacher proximity). Results of the ANOVA were non-significant for the rate per minute of teacher proximity and use of Physical Focus curriculum [$F(2,674) = 1.142; p = .320$], but were significant for the rate per minute of teacher feedback [$F(2, 676) = 4.713; p = .009$]. Scheffe's Post Hoc tests showed a significant difference in the rate per minute of teacher feedback between those who do not use the Physical Focus curriculum and those who use some of the Physical focus curriculum [$p = .01$]. There was no significant difference between those who do and those who do not use the curriculum, nor those who do use the curriculum and those who use only some of the curriculum. This may have been due to the fact that the majority of the teachers in the study report using some parts of the curriculum while relatively low numbers ($N=2$) report using the entire curriculum or none ($N=3$) of the curriculum.

Results of the tests investigating the effects of coaching upon rate per minute of teacher feedback [$t(232) = -2.35, p = .02$] and teacher proximity [$t(209) = -2.461, p = .01$] were significant at the .05 level for both rate per minute of feedback and rate per minute of proximity. Levene's Test for Equality of Variances showed equal variances could not be assumed. Un-pooled data results indicate that those teachers who are not currently coaching provide a higher rate per minute of both teacher feedback ($M = .0310, SD = .03511$) and

teacher proximity ($M = .0228$, $SD = .03285$) than those who are currently coaching (see Table 11).

Results of the tests investigating the effects of membership in KAHPERD upon rate per minute of teacher feedback [$t(675) = -1.678$, $p = .09$] and teacher proximity [$t(675) = .158$, $p = .88$] were also non-significant. With equal variances assumed, pooled data from the t-test indicate that KAHPERD members provide only slightly higher ($M=.0175$; $SD=.02842$) proximity than non-members ($M=.0172$; $SD= .02271$). The rate per minute of teacher feedback was slightly higher for non-members ($M=.0285$; $SD = .03496$) than for members ($M= .0240$; $SD = .03072$). These results indicate that membership in the state professional organization (KAHPERD) did not significantly influence the amounts of teacher feedback and teacher proximity provided in the study sample (see Table 13).

Some significance was found in the analysis of the effects of activity type upon the rate per minute of teacher feedback [$t(344) = -4.613$, $p = .00$] and teacher proximity [$t(361) = -5.194$, $p = .00$]. Using Levene's Test for Equality of Variances, un-pooled data results indicated those teachers instructing a skill based activity ($N=12$) provided significantly more teacher feedback ($M = .0279$, $SD = .03370$) and teacher proximity ($M = .0198$, $SD = .02822$). Those instructing a large group activity ($N=3$) provided much less proximity ($M= .0094$; $SD = .01928$), and about half as much feedback ($M= .0166$; $SD = .02402$). Due to the nature of large group activities these findings are no surprise.

The final independent samples T-test investigated the effect of teacher gender upon the rate per minute of teacher feedback [$t(675) = .727$, $p = .467$] and teacher proximity [$t(249) = 2.839$, $p = .005$]. Results indicated significance for teacher proximity with female teachers ($M = .0188$, $SD = .02745$) being more proximal to students than male teachers

($M=.0122$; $SD = .02356$). Results of the effects of teacher gender upon rate per minute of teacher feedback were non-significant ($p=.593$). In light of the current issues of sexual harassment and abuse it would seem logical that male teachers tend to position themselves further away from students more often than female teachers do (see table 17).

Discussion of the Results

The following is a discussion of the results of the research questions identified in this study. The first research question addressed the difference in frequency of teacher feedback to students based on student body mass index (BMI). Burnette (1999) has found that there are certain instructional strategies and behaviors which enable physical education teachers to develop stronger teaching/learning relationships with their students. Hastie (1998) has shown correlations between specific teacher actions and student responses. He reports that when teachers provide feedback and constantly reinforce skills students will work at higher levels of commitment and produce higher standards of work. According to Bryan (1994) giving feedback along with student instruction in specific tasks may lead children to persist longer in an activity and thus have greater chances of acquiring skills. Based upon this previous research it is evident that teacher feedback enhances student learning.

Research Question #1

“Was there a statistically significant difference in the number of times teachers provided feedback to students with high body mass index (BMI) and to students with low to normal BMI?”

This question attempted to determine if all students, regardless of student BMI, were receiving teacher feedback in physical education classes. Analysis of the data collected for

this study revealed no significant difference in the frequency of feedback provided to students of low to normal BMI and those in the overweight to obese category, with the mean rate per minute of teacher feedback to overweight/obese students being even slightly higher ($M = .0272$) than the mean rate per minute of teacher feedback to the low to normal BMI group ($M = .0248$). This was actually a very positive finding. These results support the idea that the physical education teachers in this study were not biased by student BMI and that they provided feedback to overweight/obese students as well as those within the low to normal BMI category. Feedback helps both lower and higher skilled students improve according to Pellett, Henschel-Pellett, & Harrison (1994). By providing the overweight or obese student with skill feedback they are given opportunity to enhance skill development and improve skill competency, which according to Bowyer (1996) may impact future perceptions of physical education and lifetime physical activity.

Research Question #2

“Was there a statistically significant difference in teacher proximity to students with a high BMI and students with a low to normal BMI?”

Research question two addressed the difference in the frequency of teacher proximity to students of low to normal BMI and students with a high BMI. Research on teacher proximity has been done in the classroom setting but few studies have focused on proximity in an activity setting. Rist (1972) found that in a classroom setting students who were perceived as most able were placed together in groups and that teachers spent more time working with these students, while lower achievers were seated as far away from the teacher as possible. According to Hastie (1998) students are least likely to be off-task when the

teacher is positioned closer to the student. Brok, Levy, Brekelmans & Wubbels (2005) research results show that teacher proximity has a great effect on student effort and confidence. In a more activity related setting, Behets (1997) noted that teacher proximity toward individual students could enhance on-task behavior and influence student learning. These findings all support the idea that teacher proximity to a student may enhance learning and achievement.

Research question number two sought to determine the frequency of proximity of the physical education teachers in this study to their students according to student BMI. Analysis of the data collected for this study revealed no significant difference in the frequency of teacher proximity to students of low to normal BMI and those in the overweight to obese category, with the mean rate per minute of teacher proximity to overweigh/obese students being even slightly higher ($M = .0189$) than the mean rate per minute of teacher feedback to the low to normal BMI group ($M = .0170$). This would seem to indicate that the physical education teachers in this study were not biased by student BMI and attempted to be proximal to students regardless of student BMI. As with teacher feedback, this is actually a very positive finding and supports the idea that these physical education teachers are working in close proximity with all students regardless of student BMI.

Research Question #3

"Was there a statistically significant difference in the number of times teachers provided feedback to males/females with a high BMI and males/females with a low to normal BMI?"

Research question number 3 addressed behavior of teacher feedback according to BMI group by student gender. Gillies (2001), reports that the ability to effectively interact with all students is one of the most important characteristics of a quality educator. According to Gillies' (2001) research both male and female teachers have been more attentive to male students over the past two decades.

Analysis of the data collected addressing research question number 3 revealed no significant differences in the behavior of teacher feedback to students by gender. The data indicate that the physical education teachers in the study provided slightly more teacher feedback overall to males ($M = .0281$) than to females ($M = .0222$). These findings were consistent with the findings of both Gillies (2001) and Sadker (1999), which indicated that both male and female teachers tend to be more attentive to male students. Sadker (1999) reported that boys receive more praise, acceptance, remediation, and criticism than girls. These findings may also be a result of the fact that there were slightly more males ($N = 358$) than females ($N = 319$) observed in this study.

When the data are disaggregated by both gender and BMI group the findings showed that males in the overweight to obese BMI group received slightly higher averages of teacher feedback ($M = .0289$) than males in the low to normal BMI group ($M = .0279$). Females in the overweight to obese BMI group received slightly more teacher feedback ($M = .0248$) than those in the low to normal BMI group ($M = .0216$). These findings were actually quite positive in that they indicated the physical education teachers in this study were actually providing the overweight/obese students with teacher feedback at about the same rate as the low to normal BMI students. This may aid in the development of more positive attitudes toward physical education and physical activity for those students in the overweight/obese

grouping. Although this may seem somewhat insignificant, it is a big step in the on-going fight to reduce childhood obesity.

Research Question #4

"Was there a statistically significant difference in teacher proximity to males/females with a high BMI and males/females with a low to normal BMI?"

Analysis of the data collected addressing research question number 4 revealed no significant differences in the behavior of teacher proximity to students by gender. The data indicated that the physical education teachers in the study provided slightly more teacher proximity overall to males ($M = .0196$) than to females (.0150). Again these findings appeared to be consistent with the findings of both Gillies (2001) and Sadker (1999) which supported the fact that males receive more attention than females. Behets (1997) found that the position and proximity of a teacher toward students could enhance on-task behavior. Hastie (1998) also reported that students were less likely to be off-task when the teacher was in close proximity to the student. According to Sadker (1999), females may receive less teacher attention and proximity because their good behavior allows the teacher more time to work with the more difficult to manage males. These student management issues appeared in several of the observations made during this study. Teachers appeared to be more proximal to male students while attempting to keep them on-task. This may also be a result of the fact that there were slightly more males ($N = 358$) than females ($N = 319$) observed in this study.

When the data are disaggregated by both gender and BMI group the findings showed that males in the overweight to obese BMI group received slightly higher averages of teacher proximity ($M = .0211$) than males in the low to normal BMI group ($M = .0191$). Data for

females was consistent with this trend also. Females in the overweight to obese BMI group received slightly more teacher proximity ($M = .0157$) than those in the low to normal BMI group ($M = .0148$). These findings were actually positive and indicate that the physical education teachers in this study were providing the overweight/obese students with teacher proximity at about the same rate as the low to normal BMI students. Again it is hopeful that this will aid in the development of more positive attitudes toward physical education and physical activity for those students in the overweight/obese grouping and assist in the fight to reduce childhood obesity.

Demographics

The second analysis of data in this study was an attempt to look at several pieces of demographic data to address a request from the Kansas Association of Health, Physical Education, Recreation and Dance (KAHPERD) to further obesity related research in Kansas and collect data specific to Kansas that might be used to support organization initiatives. Analysis two was done to determine if a teacher's use of activities from the Physical Focus Middle School Physical Education Curriculum had any effect upon the rates per minute of teacher feedback and teacher proximity provided in class.

The Physical Focus Curriculum is designed to provide teachers with activities that are more individual and skill based. One would assume that the use of these activities would provide for more opportunities for a teacher to give individual skill feedback and to be more proximal to all students during a class. Participants in this study were asked to indicate whether they used all, some or none of the Physical Focus activities in their teaching. Of the

fifteen physical education teachers in the study, only two teachers use all Physical Focus activities, and three teachers do not use any of the activities.

Use of the curriculum activities did not have a significant effect upon the rate per minute of teacher proximity, but there was a significant effect upon teacher feedback. Post Hoc analysis indicated a significant ($p = .01$) difference in the amount of teacher feedback between those who used some of the activities and those who used none of the activities. Due to the nature of the activities in the curriculum one would expect teachers who use these activities to have more opportunities for both feedback and proximity. The results showing that those who use some of the activities provide more teacher feedback than those who use none of the activities support this idea. The finding that teachers who use all of the curriculum activities did not have significantly more teacher feedback or teacher proximity might be due to the low number of teachers in that group ($N = 2$). More research is necessary to determine the effects of the use of the Physical Focus Curriculum activities upon specific teacher behaviors such as those identified in this study.

Although the original instructions to study participants were to provide skill-based lessons for observation, not all study participants did so. This was due in part to the need to modify planned activities due to changes in school scheduling and weather conditions. Results of the analysis of activity type upon rates of teacher feedback and teacher proximity were in line with what one might expect to find. Those teachers who taught more individualized skill based activities provided more feedback ($M = .0279$) and more proximity ($M = .0198$) than those who taught large group activities (feedback $M = .0166$, proximity $M = .0094$). These results are what were expected as those instructing large group activities tend

to teach from the perimeter and have fewer opportunities to provide individual feedback or to be proximal to students.

Demographic data gathered also included current coaching status of the physical education teacher. Results of the analysis of coaching status on rate per minute of teacher feedback and teacher proximity showed a significant difference for both teacher feedback and teacher proximity. Physical Education teachers who are currently coaching a sport ($N=9$) provided less teacher feedback ($M = .0236$) and less teacher proximity ($M = .0158$) than those not currently coaching ($N= 6$, feedback $M = .0310$, proximity $M = .0228$). Little research on the effects of coaching upon teaching behaviors has been done. These results suggest further research on the effects of coaching upon teacher behaviors is necessary.

Results of the analysis of KAHPERD membership upon the rate per minute of teacher feedback and teacher proximity revealed non-significant results. It would appear that membership in the state professional organization does not significantly affect the rate per minute of the teacher behaviors in this study.

The final analysis of demographic data was to investigate the effects of teacher gender upon the rate per minute of teacher feedback and teacher proximity. Results of this analysis proved to be significant for teacher proximity with females teachers being proximal to students ($M = .0188$) than male teachers ($M = .0122$). Given the current social climate it would seem logical that male teachers might hesitate to spend time in close proximity to students, especially female students. Results show that female teachers give only slightly more feedback ($M = .0258$) than male teachers ($M = .0236$).

Recommendations for Practice

As a result of the findings in this study, some recommendations for practice are suggested. The recommendations are numbered and described in italics. Additional information about the recommendation follows the descriptor.

1. *Develop methods to monitor teacher movement patterns.* All reflective teachers should develop a way to monitor their current movement patterns. One of the easiest ways to do this is to video-tape class sessions and review the video-tapes to determine if movement and attention is equally distributed to all students. Teachers should also develop data collection formats to help self-monitor their movements.
2. *Increase in-service and workshop opportunities related to teacher feedback and proximity for all students.* District administrators should make every effort to provide in-service opportunities which address physical activity and the relationship to obesity and gender issues in the physical education setting.

Recommendations for Further Research

A list of recommendations to be considered when doing further research follows. The recommendations are numbered and described in italics. Additional information about the recommendation is included after the brief descriptor.

1. *Increase the sample size.* The study included 15 Kansas Middle School physical education teachers and their students. Teachers were selected based up application with each of the ten state school board districts represented. Accessibility and scheduling are issues that prevented some teachers from

participation in the study. Increasing the sample size to include three teachers (one rural, one suburban and one urban) from each of the ten state school board districts would provide for a better sample.

2. *Control instrumentation.* There is currently no instrument available designed to measure just the specific behaviors of physical education teacher feedback and teacher proximity. Various instruments exist to measure general physical education teaching behaviors. Those available include the assessment of a wide range of behaviors that are assessed simultaneously. Following consultations with various professional colleagues it was decided that collection of data on such a wide range of behaviors would interfere with the focus on the specific behaviors of teacher feedback and teacher proximity. The instrument used to collect data from observations for this study was developed by the researcher from an all-purpose coding form for use with event recording (Appendix B) and the Teacher Expectations Student Achievement (TESA) Observation Coding Form (Appendix C) and the newly developed event recording form (Appendix D) was used to record the frequency of the identified dependent variables of teacher feedback and teacher proximity for each numerically identified student. Further research on teacher feedback and teacher proximity might be enhanced through the use of The Observational Recording Record of Physical Education's Teaching Behavior (ORRPETB). This is a multidimensional instrument that can be used in a lab or field setting and has been tested for inter-observer reliability in both lab and field settings. The instrument consists of 27 teacher behavior categories, 4 student behavior categories and 5 teacher-student behavior categories (Steward, 1989).

3. *Implement more control over the type of instruction provided for students.*

Although those included in this study were directed to provide for observation of skill based physical education activities, some selected large group activities for the observations. These large group activities generally do not provide for as much opportunity for teacher feedback or proximity. By controlling the activity selected for observation one might be able to collect more accurate data on the frequency of teacher feedback and teacher proximity. Asking each teacher to teach the same activity might provide more control.

4. *Conduct research on different types of diversity.* Although gender was included in this study, further research on the frequency of teacher feedback and teacher proximity to students of various ethnicities, socio-economic levels and special needs such as Attention Deficit Disorder or Learning Disabled would be valuable. Research indicates that obesity is more prevalent in some ethnic groups (Gordon-Larsen, 2000). Including student ethnicity would enhance the study. Some special needs students demand more teacher feedback and teacher proximity due to the nature of the student needs. Identifying such needs and analyzing the frequency of teacher feedback and teacher proximity to these students would enhance the study.

Conclusions of the Study

Results from this study indicated that for those teachers participating in the study the rate per minute of teacher feedback and teacher proximity were not influenced by individual student body mass index or student gender. These findings indicate that these physical

education teachers are providing skill related feedback to students in the overweight to obese category as often as they do to students in the low to normal body mass index category. The same was found to be true for teacher proximity.

According to Ross & Pate (1987) quality physical education classes can provide enhanced opportunities for regular physical activity when physical education instructors ensure that students enrolled in physical education classes participate and learn. Burnette (1999) believes that there are certain behaviors and instructional strategies that enable teachers to build stronger teaching and learning relationships with students. One of the most important factors for successful education has been recognized as a teacher's responsibility to treat students "fairly" in the classroom (Lee, 1996). The results of this study support the belief that physical education teachers are providing skill related feedback and proximity to student in an unbiased and fair manner. These teachers are working with all students, regardless of physical body mass index or specific student gender.

In reviewing the results of the analysis of various demographic data, the study would conclude that the use of at least some of the Physical Focus curriculum activities in physical education classes does provide for increased rates per minute of teacher feedback. The Physical Focus curriculum is designed to provide for higher rates of individual and small group activities. As supported by the study, rates of teacher feedback and proximity are significantly higher in these kinds of activities as opposed to large group activities. When more individual skill based activities are provided one would expect to see more skill related feedback provided to students. These results may have been due to the fact that 12 of the 15 teachers in the study reported using either all or some of the activities in their classes.

In reviewing the results of the analysis of the effects of coaching upon rates per minute of teacher feedback and teacher proximity one would conclude that those who are currently coaching provide less feedback and less proximity to students. There may be a variety of reasons why teachers who are currently coaching provide less teacher feedback and teacher proximity. Coaching duties require a great deal of time and this may lead to more physical education instruction in large group activities which are easier to plan and administer rather than individual skill based lessons. Coaches may use more team games rather than smaller sided activities to teach the various skills to students. This might result in less opportunity for individual teacher skill feedback and teacher proximity.

Analysis of teacher membership in the state professional organization (Kansas Association of Health, Physical Education, Recreation and Dance) and rate per minute of teacher feedback and teacher proximity reveal that there is no significant difference between those teachers who are members and those who are not members. Membership does not seem to have any effect upon these two specific teaching behaviors. While belonging to a professional organization can offer opportunities for professional development and growth, teachers' behaviors relating to skill feedback and teacher proximity appear to be developed in teacher preparation programs.

The final analysis completed in this study indicated that female teachers tend to be more proximal to students than male teachers are. In light of the current issues of sexual harassment one would conclude that male teachers are more reluctant to get close to students of either gender. Female teachers often serve as a "mother" role model, and thus may spend more time in closer physical proximity to students than male teachers.

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Appendix A
Letter of Invitation

Appendix A

Letter of Invitation

139K Cunningham Hall
Fort Hays State University
600 Park Street
Hays, KS 67601

October 3, 2006

Dear

As a middle school physical education teacher in Kansas, you are invited to participate in a research study designed to investigate teacher student interactions during a skill based lesson. This study is being conducted in partial fulfillment of requirements for a Doctor of Philosophy degree in Curriculum and Instruction.

Participation in this study would require all administrators and teachers involved to complete a signed consent form giving permission to be observed prior to the beginning of the study. The study will consist of the observation of two skill based lessons during regularly scheduled physical education classes. Student gender and body mass index will be collected from previously administered fitness test data. Student anonymity will be insured through the use of a student number assigned to each student. At no time will the names of participating teachers or students be revealed.

The purpose of this study is to provide pre-service teacher education programs and in- service teachers data regarding the relationship of teacher/student interactions in a physical education class setting.

It is my hope that you will seriously consider participation in this study. Through the use of such research we can all help to develop more highly competent physical educators. Please complete the bottom portion of this letter and return it to me if you are interested in being a part of this project.

Thanks so much for your time and consideration.

Joyce A. Ellis, Instructor
Department of Health & Human Performance
Fort Hays State University

_____ I wish to be considered for participation in this study.

_____ I do not wish to be considered for participation in this study.

Name & Address

Appendix B

All-Purpose Event Recording Form

Appendix B

All-Purpose Event Recording Form

Teacher: _____ Date: _____ School: _____

Activity: _____ Time Started: _____ Time Ended: _____

Definitions:

- 1. _____
- 2. _____
- 3. _____
- 4. _____

- 1. 2. 3. 4.

Totals: _____ _____ _____ _____

Data Summary:

Behaviors	Total Frequency	Rate Per Minute
1. _____		
2. _____		
3. _____		
4. _____		

Comments:

Appendix C

Teacher Effectiveness Student Achievement Coding Form

Appendix C

Teacher Effectiveness Student Achievement Coding Form

TESA - OBSERVATION CODING FORM

UNIT _____ CLASS # _____

STUDENTS	1 st OBSERVATION			2 nd OBSERVATION			3 rd OBSERVATION			4 th OBSERVATION			5 th OBSERVATION			THESE DATA TO BE CODED ON STUDENT IBM CARD																								
	Name	#	STRANDS			Date - Act. - Obs. -	Name	#	STRANDS			Date - Act. - Obs. -	Name	#	STRANDS			Date - Act. - Obs. -	Name	#	STRANDS			Date - Act. - Obs. -	Name	#	STRANDS			Date - Act. - Obs. -	Name	#	1	2	3	4	5	TOTAL POSITIVES BY STRANDS	TOTAL NEG.	
			A	B	C				A	B	C				A	B	C				A	B	C				A	B	C											A
L I S T	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#								
S T U D E N T S	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#								
I N F O R M A T I O N	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#								
N A M E	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#								
C O D E	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#								
R E C O R D	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#								
O B S E R V E R	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#				Date - Act. - Obs. -	Name	#								

distributed by
Phil Delta Kappa, Inc.
Box 789
Bloomington, IN 47402

Appendix D

Study Observation Coding Form

Appendix D

Study Observation Coding Form

Teacher: _____ Date: _____ School: _____

Activity: _____ Time Started: _____ Time Ended: _____

Definitions:

1. *Feedback*: The act of informing a student who has performed in some way that his/her response or performance is or is not acceptable. Feedback may be verbal: "Yes," "Good," "OK," "Wrong," "No," or non-verbally communicating approval or disapproval, as in nodding or shaking the head.
2. *Proximity*: Teacher initiated nearness to (within arm's reach) a student or the student's self-space, whether or not the student is aware of his/her presence. Merely passing by a student does not qualify as proximity unless the teacher should speak to or touch the student in passing.

Data Summary:

Behaviors	Total Frequency	Rate Per Minute
------------------	------------------------	------------------------

1. Feedback _____

2. Proximity _____

Comments:

Student #	Proximity	Feedback
1		
2		
3		
4		
5		
6		

Appendix E
Demographic Information

Appendix E

Demographic Information

School Name: _____

Mailing Address: _____

Phone: _____

Total School Enrollment: _____ Grade Levels in this school: _____

Principal's Name: _____

Phone: _____ E-Mail: _____

Teacher's Name: _____ Sex: Male: _____ Female _____

Phone: _____ E-Mail: _____

How many years have you taught Middle School Physical Education? _____

What grades have you taught? ____6th ____7th ____8th

What other subject areas do you /have you taught? _____

Do you use the Physical Focus Curriculum? Yes _____ No _____

If yes, do you use all of the activities or only some of the activities? _____

When did you receive training in the Physical Focus Curriculum? _____

Do you coach? Yes _____ No _____ If yes, what sport/sports _____

How many years have you been coaching? _____

Are you a KAHPERD member? Yes _____ No _____

How many conventions have you attended?

KAHPERD _____ Central District AAHPERD _____ AAHPERD _____

What degree do you have? _____

Where did you get this degree? _____

Appendix F

Teacher/Administrator Informed Consent Form

Appendix F

An Investigation of Teacher/Student Interactions In A Skill Based Physical Education Class

Teacher/Administrator Informed Consent Form

Purpose:

The purpose of this study is to determine how specific teacher/student interactions in a skill based physical education class are related to student gender and student body mass index.

Procedure:

I understand that in this study my physical education class will be observed while participating in skill based physical education class activities. Students will be required to wear a numbered jersey for identification purposes. Teacher and student names will not be revealed to the investigator at any time. Student height, weight and date of birth data will be collected from physical fitness or student health records. This data will be associated with student number only.

Risk:

Except for the very low risk of injury (e.g., muscle injury) or discomfort (e.g., out of breath) associated with participation in physical education in the manner outlined in my child's school Physical Education curriculum already, there is no extra risk by participating in this study.

Benefits:

I understand that this study will help develop enhanced teacher/student interactions and improve overall physical education teaching techniques.

Voluntary Participation/Withdrawal:

Participation in this study is voluntary. I understand that I may contact the following individuals if I have any questions regarding this study:

- Dr. Beeta Stoney at Kansas State University; Phone (785) 532-3531
- Joyce A. Ellis at Fort Hays State University; Phone (785) 628-4594

Confidentiality/Consent:

The information obtained in this study will be treated as confidential and will not be released to any person without my expressed written consent. The information obtained from this study may be used for statistical or scientific purpose with my right of privacy upheld. I have read or have had read to me all of the above information about this research study, including the research procedure, possible risks, and the likelihood of any benefits. I understand that all videotapes will be destroyed at the conclusion of this study. I hereby voluntarily consent to participate in this research study.

Teacher Signature

Date

Administrator Signature

Date

Appendix G

Research Project BMI Assessment Data

Appendix G

Research Project BMI Assessment Data

Student #	DOB m/dd/yy	Date of Assessment	Height	Weight	Sex
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