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The effects of immediate supervisory feedback using audiocuing on the interaction between students and preservice physical education teachers

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THE EFFECTS OF IMMEDIATE SUPERVISORY FEEDBACK USING
AUDIOCUING ON THE INTERACTIONS BETWEEN STUDENTS AND
PRESERVICE PHYSICAL EDUCATION TEACHERS

A Thesis Presented to the Faculty of
The School of
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In Partial Fulfillment of the
Requirements for the Degree
Master of Science

by

John McNally
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ABSTRACT

The purpose of this study was to determine the effects of immediate supervisory feedback using audiocuing on the interactions between students and preservice physical education teachers (PPET). The subjects were 12 PPET enrolled in an undergraduate professional preparation program. The subjects were randomly divided into a control and treatment group. The control group received no supervision during the investigation, and the treatment group received an intervention consisting of immediate supervisory feedback delivered via a two-way wireless communication system. Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) was used to measure the teaching behaviors and interaction patterns of the PPET. Phase I was the first of five lessons taught and was used to determine if the behaviors between the control and treatment group were similar prior to the intervention. Analysis of CAFIAS data showed that both groups initially had similar behaviors. Phase II, which consisted of the second, third, and fourth lessons, involved an intervention for the treatment group and no intervention for the control group. The treatment group received immediate supervisory feedback through the use of a two-way wireless communication system. The supervisory comments related to the instructors' use of student names, verbal feedback, managerial and engagement time, and class scanning. Following this intervention, Phase III took place. Phase III was the fifth and final lesson. Neither group was given any supervisory feedback during this stage. CAFIAS was used again to obtain the data for both groups for Phase III. Descriptive statistics were used to compare the differences in teaching

behaviors before and after the intervention. It was decided prior to the investigation that the difference between the groups needed to be 5% or greater in order to be considered significant. The analysis of the descriptive statistics indicated that immediate supervisory feedback using audiocuing has a significant effect on the behaviors of PPET. The hypothesis that there would be no significant differences in the behaviors and interactions between students and PPET as a result of interactive supervision was rejected. It was concluded that immediate supervisory feedback through the use of audiocuing is an effective method of changing PPET behaviors and interaction patterns. After receiving immediate supervisory feedback, treatment group PPET changed several of their behaviors. Teacher information decreased from 32.1% to 20.2% and teacher directions decreased from 14.1% to 5.1%, and student predictable behaviors were reduced from 26.0 % to 13.7%. The teachers increased their use of praise from 3.7% to 11.2% and the use of questions rose from 3.5% to 11.2%. The treatment group also experienced changes in their interaction patterns. The amount of time spent in extended information-giving was decreased from 31.6% to 13.6% and students were praised and accepted more during their interpretive responses. There was also a decrease in student to student predictable responses, in the use of questions, and the giving of information during student predictable responses. It can be concluded that immediate supervisory feedback through a two-way wireless communication system is an effective method of changing behaviors of PPET.

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DEDICATION

This work is dedicated to my late cousin, Ryan T. Caulfield. You set an example for every promising young athlete by your ability to give 100% both on the practice field and on the game field. To this day you provide me with the inspiration to give my all whether it be on the field coaching or in the classroom teaching. Even though you have left this earth, you still hold a place in the hearts of so many.

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Chapter 1

INTRODUCTION

Throughout the field of education, in all subject areas, there is a constant emphasis being placed on increasing teacher effectiveness. Teacher effectiveness can be improved in many ways both at the inservice and preservice levels. Enhancing preservice teachers' effectiveness allows teachers to enter the work force with a multitude of skills they can use to work effectively with their students and to enhance their development as a teacher. There are several approaches that can be used to improve preservice teachers' effectiveness. One approach is to place preservice teachers into the natural school setting under the guidance of a college supervisor and a cooperating teacher. In this setting preservice teachers can practice their teaching skills and gradually assume more responsibility for the student's learning. Supervisory feedback, both from the college supervisor and cooperating teacher, provides a means for preservice teachers to make adjustments to their teaching styles to be more effective.

The supervisor plays an important role in the development of these preservice teachers. Many institutions that provide courses for teacher training use an on campus environment, known as micropeer teaching, to introduce preservice teachers to teaching. In this atmosphere, one student assumes the role of the teacher and the classmates play the role of the students in the class. Some institutions, however, are fortunate enough to have working relationships with local school districts, enabling them to send their preservice teachers to those districts so that they get a better taste of what the real school

environment is like. In either case, the supervisor plays the role of teacher and mentor for these preservice teachers.

Supervisors play a critical role in the development of preservice teachers by providing them with feedback. Many times, feedback is provided to preservice teachers days after they have completed their observed lesson. Everhart and Turner (1996) found that feedback was most effective when given immediately after a micropeer teaching session. With the use of videotaping, the supervisor and the preservice teacher can review the preservice teachers' performance immediately after the conclusion of the lesson. New technology has allowed the supervisor to give the preservice teacher even more timely feedback. With the incorporation of a two-way wireless communication system, the supervisor is able to provide the teacher with immediate feedback while the lesson is taking place, enabling the teacher to make the necessary adjustments during the class period. van der Mars (1988) found success in changing teacher behaviors using audiocuing as a method of providing immediate feedback.

Because the feedback given was sometimes both inconsistent and inaccurate, researchers sought to improve the reliability and accuracy of feedback. In 1969, Flanders developed a system that laid the groundwork for recording and analyzing the verbal behaviors that took place in the classroom (van der Mars, 1989). His system became the standard for behavior analysis, and other researchers developed systems as modifications of it. One of these researchers was John Cheffers. Cheffers (1972) developed an adaptation of Flanders' system which is now commonly known as Cheffers' Adaptation of Flanders' Interaction Analysis System or CAFIAS. Cheffers' system accounts for

both the verbal interactions and the nonverbal interactions in the class. CAFIAS has been used primarily in physical education and athletics to describe and compare teachers' and coaches' behaviors as well as providing them with feedback to become more effective educators.

This study expands the scope of research that has previously been done on the effects of immediate supervisory feedback delivered via audiocuing on preservice teachers' behaviors. It focuses on the effectiveness of delivering feedback using a two-way wireless communication system in the natural school setting.

Scope of the Problem

The purpose of this study was to determine the effects of immediate supervisory feedback using audiocuing on the interactions between students and preservice physical education teachers (PPET). The immediate supervisory feedback consisted of prompts provided by a supervisor through the use of a two-way wireless communication system. Twelve preservice physical education teachers enrolled in an elementary level curriculum and methods in physical education course at a professional preparation institution in New York were evenly divided into two groups: a control and a treatment group. Each subject was videotaped teaching five lessons in a local elementary school. The investigation was divided into three phases. Phase I was used to collect the initial data and utilized the first lesson taught for baseline data. Phase II consisted of the second, third, and fourth lessons. It was during this phase that the treatment group received the intervention. Phase III consisted of the fifth and final lesson. The data collected from Phase III were

compared with that collected from Phase I to determine whether differences existed between the control and treatment groups after the intervention had taken place.

The intervention, referred to as interactive supervision, was comprised of prompts and feedback given to the preservice physical educators during the course of the lesson using a two-way wireless communication system. These prompts and feedback were directly related to the instructors' use of student names, verbal feedback, managerial and engagement time, and class scanning. A graduate student, trained in the evaluation of these teaching behaviors, was located in the corner of the gymnasium providing the prompts and feedback. The videotapes were then coded using CAFIAS, a method of systematic observation (Cheffers & Mancini, 1989). The behaviors of both groups, as recorded using CAFIAS, were compared to determine the effects of the intervention.

Statement of the Problem

The investigation was conducted to determine the effects of immediate supervisory feedback using audiocuing on the interactions between students and PPET as measured by CAFIAS in a local elementary school setting.

Null Hypothesis

There will be no significant difference in the interactions between students and PPET as a result of audiocuing as a method of interactive supervision.

Assumptions of the Study

The following assumptions were made for the purposes of this investigation:

1. The differences between the control and treatment groups in Phase III are a result of the intervention, not outside influences on the PPET.

2. The CAFIAS coding instrument provides accurate data regarding the observed verbal and nonverbal behaviors of the preservice teachers.
3. The coder is reliable in using the CAFIAS coding system.
4. The 12 subjects provide an accurate representation of PPET teachers, specifically those attending the college used in this study

Definitions of Terms

The following terms were operationally defined for the purposes of this investigation:

1. Flanders' Interaction Analysis System (FIAS) is an objective system of behavior analysis that focuses on analyzing verbal interactions between teachers and students (Darst, Mancini, & Zakrajsek, 1989).
2. Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) is a validated way to measure the verbal and nonverbal interactions between teacher and pupil, class structure, and a variety of teaching agents (Cheffers, Mancini, & Martinek, 1980).
3. Verbal behavior is an audible action or reaction (Cheffers, 1972).
4. Nonverbal behavior is an action or reaction that is not audible (Cheffers, 1972).
5. Preservice teachers are undergraduate students studying physical education, who have not yet formally participated in student teaching (Williams, 1996).
6. Prompts are cues given to shape a learning environment or response before or simultaneous to its occurrence (Ormond, 1992).

7. Feedback is information generated about a response that is used to modify the next response (Cole, 1991).
8. Systematic supervisory feedback is verbal input based on data obtained through the use of a systematic observation instrument and is directed at teaching methodology and specific teacher and student behaviors (Mancini et al., 1985).
9. Two-way communication device is an instrument placed in the ear that allows both parties to receive and give auditory stimulus (Jumper, 1998).
10. Significance is defined as a difference of 5% or greater between the data being compared.

Delimitations of the Study

The following were the delimitations of this investigation:

1. The subjects consisted only of PPET enrolled in an elementary level curriculum and methods course at a professional preparation college in New York.
2. The subjects were observed only in the local elementary school setting.
3. Each group consisted of six PPET students with equal gender breakdown.
4. Only the CAFIAS coding instrument was used in this study.

Limitations of the Study

The following were the limitations of the investigation:

1. The findings may be generalizable only for PPET enrolled in the methods classes similar to those at a professional preparation institution in Central New York.
2. The findings may only be generalizable when compared to other studies using the CAFIAS coding instrument.

3. The preservice teachers did not always have input as to what they were teaching, which may have affected their teaching behaviors.

Chapter 2

REVIEW OF RELATED LITERATURE

The review of related literature that is relevant to this investigation will focus on the following areas: (a) systematic observation in physical education, (b) CAFIAS in physical education, (c) supervisory feedback and audiocuing in physical education, and (d) summary.

Systematic Observation in Physical Education

The use of systematic observation has grown in popularity since it was first used in the 1960's for studies of classroom teaching (van der Mars, 1989). The significance of systematic observation is now recognized, especially in physical education, and various systems have been developed with the goal of improving teacher effectiveness and providing teachers with the resources necessary to become experts in the field. Manross and Templeton (1997) stated that one characteristic of expert teachers is that they have a distinct focus on managing activities during instruction and on facilitating students' ability to develop motor skills by constantly providing them with feedback and information relevant to the task at hand. It is through the use of systematic observation that teachers can analyze their behaviors and make a concerted effort to focus their efforts on areas that they feel they need to improve in order to become experts.

Many systems have been developed to systematically analyze both teacher and student behaviors. For the purposes of this investigation, the scope of systematic observation has been narrowed down to two systems dealing with teacher and student behaviors and teacher and student interactions.

In the 1960's Flanders developed a system of interaction analysis known as FIAS. This system became the backbone for the development of models for studying classroom verbal behaviors throughout the 1960's and 1970's (Darst et al.,1989). FIAS was the standard system of behavior analysis and as the years progressed, many systems arose as extensions of it. These systems refined FIAS as well as made it useful in specific content areas. FIAS focused on analyzing only verbal interactions between teachers and students using 10 different categories.

Some researchers have made adaptations to FIAS based on Mosston's teaching styles (Mosston & Ashworth, 2002). Rankin (1975) adapted FIAS, developing his own system known as RIAS. RIAS added the idea of analyzing nonverbal behaviors as well as verbal behaviors. Although this adaptation served the purpose of expanding on Flanders' system, it would not prove to be as popular and as useful as the system developed by John Cheffers.

In 1972, John Cheffers expanded Flanders' system by making his own adaptations to it. This new system became known as CAFIAS. When it was created, the goal was to develop a system that could be used in physical activity settings. Cheffers (1972) made two changes to Flanders' system. First, he changed it to provide a means of coding nonverbal behaviors through a double category system. This gives the coder the opportunity to code every behavior as verbal, nonverbal, or both. The second adaptation is to show how students are working. The coder can distinguish between the whole class being engaged, part of the class being engaged, or an individual being engaged in the specific behavior. Mancini, Wuest, and van der Mars (1985) recognized the usefulness of

CAFIAS, noting that it allowed the investigator to objectively record verbal and nonverbal teacher and student behaviors, to identify teaching agents, and to describe class structure.

CAFIAS in Physical Education

Over the years, CAFIAS has been used for a variety of different purposes to study behaviors. It has been used in the classroom to analyze the interactions between teachers and students as well as the athletic arena to investigate the behaviors of coaches and athletes. Regardless of where it has been used, it has been a very beneficial tool in improving teacher effectiveness and changing teachers' behaviors in a positive way. For the purposes of this investigation, the review will focus on how CAFIAS has been used in the physical education setting to investigate the teaching behaviors and interaction patterns of PPET.

Rochester (1976) did a study to investigate the effects of instruction and supervision using CAFIAS on the teaching behaviors of PPET. Each subject taught two micropeer lessons. Both the control and treatment groups were given instruction in the use of CAFIAS. The control group received instruction in CAFIAS concerning the identification of certain behaviors, whereas the treatment group was given the same instruction but was also exposed to coding their lesson using CAFIAS. Analysis of the CAFIAS data showed significant differences in favor of the treatment group in the categories of student-initiated nonverbal behavior, teacher suggested, student verbal interaction, student suggested, and teacher questioning. Higher levels of teacher instruction were found in the control group. The classes taught by those teachers who

had experience in coding had more student interactions and teacher questioning. Finally, Rochester concluded that teaching behaviors of preservice teachers, as identified through the use of interaction analysis, are related to performance on teacher effectiveness variables identified through a review of process-product studies.

In 1981, van der Mars, Mancini, and Frye sought to find whether or not receiving CAFIAS instruction would be beneficial in helping preservice teachers gain an awareness of their own teaching behaviors. The subjects, all of whom were PPET, were videotaped teaching in a micropeer setting. Before each lesson, the subjects completed a questionnaire regarding their objectives for the lesson. After the lesson, they could make any adjustments on the questionnaire. To supplement the systematic supervisory feedback that they were given, the subjects were also given a comparison of their objectives from the questionnaire to the actual teaching behaviors that were observed. This information was presented in percentages from the CAFIAS printout. Data that were to be analyzed were taken from the videotape of the third and final teaching session. In the treatment group which had received CAFIAS instruction, six of eight correlations between perceived and actual behaviors were significant, whereas only one correlation was significant in the control group. The results showed that there were significant differences in teaching behaviors between the control and treatment groups. The teachers that had been exposed to CAFIAS instruction exhibited significantly more teacher use of verbal acceptance and praise, teacher use of questioning, and the data also showed that those preservice teachers who were exposed to instruction and supervisory feedback

through CAFIAS were significantly more accurate in perceiving observed classroom behaviors.

Mancini et al. (1985) analyzed several studies that had incorporated the use of systematic observation. All of the studies had certain commonalities. In each, preservice teachers were randomly separated into control and treatment groups with each group having their teaching split into two phases for the study. In the first phase, teachers were videotaped teaching a lesson and given feedback on their performance the following day. The second phase consisted of the treatment. The control groups received conventional supervisory feedback focusing on class control, class organization, class structure, and methodology. The treatment group received systematic supervisory feedback relating to instruction and supervision through CAFIAS.

After analyzing these studies, Mancini et al. (1985) arrived at the following three conclusions concerning preservice teaching instruction and/or supervision using CAFIAS during undergraduate teacher training:

1. The teaching behaviors and interaction patterns of preservice teachers can be altered.
2. Teachers receiving training and supervision using interaction analysis during undergraduate professional preparation were more effective teachers and their students were more successful.
3. The effects of instruction and supervision in interaction analysis are long lasting.

A further example of the use of CAFIAS in the supervisory process took place in 1986, at the University of Oregon. Paul Schempp used CAFIAS to analyze the stability of teacher-student interactions over the course of one academic year. He conducted a single subject time series analysis. The subject had 14 years experience as an elementary school physical education teacher. A total of 52 classes were observed at equal time intervals throughout the school year. Each grade level was observed an equal number of times to prevent grade level bias. The 20 CAFIAS categories served as the dependent variables in the study and were subjected to a univariate Box-Jenkins time series analysis to determine stability. The results indicated that of the 20 CAFIAS categories, only five demonstrated significant stationarity. Those five categories were teacher directions (verbal), student responses (verbal and nonverbal), silence and confusion. These categories, when combined, accounted for 28.5% of the total teacher-student interaction. Because less than 30% of the behavior was stable over the academic year, Schempp concluded that the teaching behaviors that were observed in this study may lack the stability necessary for making the generalizations common to research conducted under the natural science paradigm.

In a study that will be discussed in greater detail in the next section of this review, DeMay (2000) used CAFIAS to determine the effects of periodic prompting on preservice physical education teachers' teaching behaviors. He found that immediate supervisory feedback did have a positive influence on preservice physical education teachers' behaviors. Similar to van der Mars et al. (1981), DeMay used a micropeer

teaching setting to conduct his investigation as opposed to using a more natural setting in the public schools.

Supervisory Feedback and Audiocuing in Physical Education

This section of the literature review will focus on supervisory feedback in physical education and look at studies in which immediate supervisory feedback has been provided through the use of audiocuing. One characteristic of effective educators is the provision of giving feedback to their students to increase their rate of success and knowledge of the subject area. It is through the use of feedback that teachers help improve students. One aspect of teacher effectiveness is the ability to give feedback. In order for students to improve, they must first know what needs improvement, and second understand how to make that improvement happen. This can only take place with proper feedback from the teacher. It is the supervisor's role then to provide the PPET with feedback so that they can in turn give proper feedback to their students. The analysis of preservice teacher and student feedback has taken place in many different ways. It has been studied in regards to its frequency, form, direction, time, and specificity (Tan 1996). By doing these analyses, researchers in the field have begun to gain an understanding of different feedback patterns and their effects on student learning.

In order for supervisory feedback to have the greatest chance of being effective, it must be given during or immediately following the lesson that was taught. Everhart and Turner (1996) studied the effects of immediate feedback after micropeer teaching sessions versus teaching in a natural setting. The subjects each taught three lessons, approximately 30 min. in length, the first two in a micropeer setting, and the third in a

natural setting. In the first two lessons, the subjects chose the activity, whereas in the third the activity was decided upon by the cooperating teacher. After each of the three lessons, the subjects were provided with feedback by their professors. The investigators discovered that giving feedback to the subjects after they had taught in a controlled environment (micropeer) was the best way to help improve their teaching techniques and in turn make them more effective educators. It helped them develop their strengths and work on the areas where they were not particularly strong. The subjects felt that the feedback given to them in the controlled micropeer atmosphere had beneficial effects when they taught in the natural setting. The simulated situation prepared them for different situations that may come up in the natural setting so that when they went into that setting, they were not caught by surprise. The immediate feedback, in addition to identifying their strengths and weaknesses, was a key factor in preparing them to work in the actual school environment.

The process of interactive supervision requires the efforts of both the supervisor and the preservice teacher. According to Cogan (1973), there must be a helping relationship between the supervisor and the student teacher in which the supervisor respects the student teacher as a human being. Acheson and Gall (1992) built on that belief by stating that supervision is not only a process, but a distinctive style of relating to teachers by taking into account the professional activity and behaviors of the student teacher. The supervisor must create an effective learning environment for the preservice teacher as the preservice teacher would ideally do for his or her students. This is an

environment where the preservice teacher will eventually become self-sufficient (Neide, 1996).

Supervisory feedback can be provided in many different ways. There are two types of supervisory feedback. The first is known as conventional supervisory feedback, which encompasses class methodology, class control, and organization. This is the more traditional approach to giving feedback. The second and more effective type of supervisory feedback is referred to as systematic supervisory feedback. This allows the supervisor to provide the teacher with objective feedback concerning their behaviors at the conclusion or, in the case of this investigation, during the teaching session.

Systematic observation systems are used to gather specific information on the subject.

The purpose of supervisory feedback is to provide the learner with knowledge of results or performance with the intent of shaping future performances (Rink, 1998). In comparison to conventional supervisory feedback, systematic supervisory feedback has proven to be a more successful feedback tool (Mancini et al., 1985). The closer to the teaching session that the feedback is given, the more effective the feedback will be in changing the teacher's behaviors.

The literature also places an emphasis on prompting as an integral part of the feedback package. A prompt was described by Skinner (1968) as a supplementary stimulus that is used as a means of obtaining responses so positive reinforcement can be given. Examples of prompts could be directions, demonstrations, or verbal cues. Ormond (1992) explained that verbal prompting helps preservice teachers create both positive and effective classroom learning environments. He defines a verbal prompt as a

concise stimulus given to preservice teachers which helps them provide reinforcement in classroom situations. van der Mars (1988) concluded that with proper training from university supervisors, mentor teachers could effectively prompt preservice teachers to use desired skills.

It has been determined that supervisory feedback, when given as close to the teaching session as possible, is most effective. If feedback immediately after a lesson is effective, than feedback during a lesson may be just as, if not more effective. There have been several studies conducted where wireless communication systems have been utilized to allow the supervisor to play a more direct role by providing feedback to the teacher while class is taking place. This allows the teacher to make adjustments immediately as opposed to waiting until after the conclusion of the class. This use of audiocuing has not been very prevalent in the preparation of teachers, therefore not many researchers have investigated this technique.

Hans van der Mars is considered one of the pioneers in the use of two-way wireless communication systems in the physical education setting. In 1984 he conducted an investigation using four undergraduate physical education majors at Ohio State University. The subjects were videotaped during three consecutive lessons and given feedback by way of a cordless microphone and earpiece by their supervisor throughout the lesson. van der Mars found that periodic prompting was beneficial in increasing certain teacher behaviors such as positive reinforcement for both skill and behavior, and teacher use of student first names. He also found that periodic prompting by way of a

wireless communication system was beneficial in the supervision of preservice physical education teachers.

In 1988, van der Mars followed up on this study by investigating the effects of audiocuing on the teaching behaviors of an experienced elementary school physical education teacher. The teacher selected the skills that would be targeted for change. The subject was videotaped teaching a second grade class over a period of 18 classes. The activities ranged from locomotor skills to manipulative skills, elementary games, and end-of-the-year fitness testing.

The teacher wanted to increase the use of two verbal interaction skills. The first was the use of positive behavior feedback. This feedback was related to all student behavior with the exception of motor skill performance. The second was the use of positive skill-specific feedback. This feedback would be given to students as they performed the motor skills. The audiocuing was implemented by using a cassette recorder. Cues were given to the teacher by way of an earphone at a rate of two per minute, loud enough only for the teacher to hear.

Along with the earphone, the subject wore a cordless microphone so that all verbal behaviors could be recorded. The targeted behavior was tallied using an event recording system. van der Mars (1988) found the following as a result of the intervention:

1. Audiocuing as a primary intervention tactic can alter significantly the use of positive behavior feedback and positive skill-specific feedback by an experienced physical education specialist.

2. Lasting effects of audiocuing are variable across teaching behaviors.
3. Changes in teaching behaviors, selected by the teacher, can be established quickly and efficiently by way of audiocuing.
4. Audiocuing can alter at least two teaching behaviors simultaneously.

Recently, DeMay (2000) took the concept of audiocuing one step further by utilizing a two-way wireless communication system. He wanted to evaluate the effects of periodic prompting on PPET behaviors in a micropeer setting. He used undergraduate physical education majors enrolled in a methods course as his subjects. Each subject taught three 10-minute micropeer lessons. Both the control and treatment groups were exposed to the two-way wireless communication system. The control group received periodic prompting from their supervisor in relation to teacher movement, classroom management, and methodology. The treatment group received this prompting as well as additional specific prompting regarding the frequency and type of feedback used (i.e., positive, negative, and informative) and the frequency of the teacher's use of student names. After each micropeer lesson, the preservice teacher had a conference with their supervisor. CAFIAS was used to describe the teachers' behaviors as well as those of the students. The control group showed no difference in teaching behaviors. The treatment group, however, had significant changes as a result of the periodic prompting.

Information-giving and student predictable responses were significantly decreased and use of praise, questions, and student interpretive behavior were significantly increased.

DeMay (2000) concluded that through the use of audiocuing, specific prompting is more effective than general prompting in changing the behaviors and interaction

patterns of preservice teachers. DeMay suggested that more teaching sessions should be used and the effects of periodic prompting should be studied in the public school setting.

Cook (2000) used one of DeMay's (2000) recommendations in his investigation. Cook studied the effects of interactive supervision on the teaching behaviors of PPET in the public school environment. The subjects for this study were 12 undergraduate students enrolled in a methods course at a professional preparation institution in New York. The subjects were randomly divided into a control and treatment group. Each subject taught five lessons in the public school setting. The five lessons were divided into three phases with the intervention occurring in the second phase. The intervention consisted of the treatment group receiving interactive supervision by way of a two-way wireless communication system. The control group did not receive interactive supervision during this phase. The interactive supervision consisted of prompts and immediate feedback concerning the teachers' use of student name, verbal feedback, managerial and engagement time, and class scanning. A graduate student trained in the evaluation of teaching behaviors served as the supervisor, positioned in the corner of the gymnasium with a wireless microphone. Cook used the Academic Learning Time-Physical Education ALT-PE instrument to analyze data. Data showed that following the intervention the treatment group demonstrated a higher percentage of time in subject motor activity as opposed to general activities, transition, and other situations where they were not motor engaged. Cook concluded that students of preservice physical educators who received interactive supervision demonstrated better rates of ALT-PE than students of those teachers that did not receive this type of supervision. Also, interactive

supervision is beneficial in changing the behaviors of teachers in an actual public school setting. The use of feedback and prompts during the lesson through a two-way communication system had a positive impact on effective teaching behaviors.

Backus (2002) also used a two-way wireless communication system to study the effects of periodic prompting on preservice physical education teachers' teaching behaviors. Like Cook (2000) she used the ALT-PE instrument to analyze her data. Her study was similar to DeMay's (2000) in that she used the micropeer setting as opposed to the public school setting. The subjects for the investigation were 54 randomly selected PPET enrolled in a methods course at a professional preparation institution in New York. The subjects were randomly assigned to either a control or treatment group. All subjects were videotaped teaching three 10-minute micropeer lessons. During each lesson the teacher received periodic prompting from their supervisor. Teachers in the control group received prompting regarding teacher movement and classroom management. The teachers in the treatment group received the same prompting as the control group and in addition they received prompts regarding the use of prompts and cues, the frequency of student name use, and the type of feedback that was used. Like Cook, Backus (2002) found that in the treatment group students spent significantly less time in transition and more time practice activity. The treatment group students were also found to be more active than the control group students. Backus concluded that specific prompting is more effective than general prompting in the development of preservice teachers' behaviors. Also, the students of the teachers in the treatment group accrued significantly more ALT-PE, indicating they learned more than students in the control group.

These studies by DeMay (2000), Cook (2000), and Backus (2002) were all similar in that they used a two-way wireless communication system as a method of providing immediate feedback to PPET. Prompting has been found to be effective in enhancing teacher effectiveness and student learning in both the micropeer and natural settings. Both CAFIAS and ALT-PE have been used to describe teacher behavior. The present investigation is similar to DeMay's (2000) study in that it analyzes teacher behavior using CAFIAS, but it is different in that it uses the natural setting as opposed to the micropeer setting.

Summary

Systematic observation became prevalent in the teaching and coaching professions in the 1960's. At that time Flanders developed his system of analyzing teaching and student verbal behaviors, known as FIAS. Using FIAS as a foundation other researchers developed their own systems. Cheffers (1972) developed now what is probably the most popular system of analyzing teacher and student behavior, known as CAFIAS. The popularity of this system was due to the fact that it provided for analysis of both verbal and nonverbal behavior. From the traditional physical education atmosphere to the coach-athlete setting, CAFIAS has been used on its own as well as in conjunction with other systems to accurately and specifically describe the behaviors and interactions between teachers and students as well as among students.

Supervisory feedback is most effective when it is given immediately following the teaching performance. This is possible through the use of audiocuing. van der Mars (1986) utilized a cassette recorder and an earpiece to give specific cues to an elementary

school teacher at different timed intervals throughout the lesson. This is a one-way communication system. Supervisory feedback can also be given during teaching through the use of a two-way wireless communication system. This process of audiocuing allows the supervisor to provide feedback to the teacher as to what he or she sees take place in the class while observing.

Throughout the 1980's, van der Mars did studies to examine the effects of audiocuing on the teaching behaviors of both undergraduate and inservice physical education teachers. In 1988 he concluded that audiocuing as a primary intervention tactic can alter significantly the use of positive behavior feedback and positive specific skill feedback by an experienced physical education specialist. van der Mars pioneered the use of wireless communications systems in the physical education arena. Recently, Cook, (2000) DeMay, (2000) and Backus (2002) used audiocuing in investigations with PPET as subjects. DeMay and Backus investigated the effects of audiocuing on PPET in the micropeer setting, whereas Cook expanded into the normal school setting with his investigation. They all found that prompting and feedback given through the supervisory process did in fact have a positive impact on PPET.

Chapter 3

METHODS AND PROCEDURES

This chapter describes the methods and procedures used in the investigation. Included in this chapter is the following: selection of subjects, treatment of subjects, testing instrument, intraobserver agreement, procedures, collection of data, scoring of data, and treatment of data. A summary is provided at the conclusion of this chapter.

Selection of Subjects

The subjects selected for this investigation were 12 undergraduate students enrolled in a curriculum and methods course in elementary physical education at a professional preparation college located in New York. Subjects were selected from all students enrolled in the course. Informed consent was obtained from each of the subjects (see Appendix A).

Treatment of Subjects

Prior to being videotaped five times during the spring semester of 2000, each subject signed an informed consent form. The PPET were randomly divided into control and treatment groups. The PPET were videotaped over the course of five lessons. Each of these five lessons took place at the public school to which the subject was assigned. The grade levels taught ranged from Kindergarten to fifth grade. The teaching sessions varied from 15 to 30 min in length. The first teaching session was referred to as Phase I. During this part of the investigation, baseline data were gathered for the control and treatment groups. Phase II consisted of the middle three teaching lessons in which the treatment group received interactive supervision.

During Phase III, the subjects were videotaped teaching one lesson. Each of the subjects was equipped with a wireless microphone at all times. The wireless microphone provided a means by which the teachers' verbal communications could be recorded. During lessons when intervention was taking place, the subjects wore an earpiece that allowed them to hear the supervisor. The supervisor controlled the activation of the earpiece, thereby eliminating that as a potential problem for the subject during the lesson itself. The supervisor was connected to a camcorder in order to have the ability to hear everything that was said by the subject. This system, consisting of a camcorder, microphones, and earpieces, provided for interactive communication during the lessons.

Testing Instrument

The instrument used to code the teaching episodes was CAFIAS. Developed specifically for use in physical education classes, CAFIAS codes a variety of observable behaviors that occur in class settings. Teacher behaviors observed are acceptance, questioning, information-giving, directions, and criticism. Student behaviors observed are student predictable response, student interpretive response, and student initiative response. Behaviors are recorded every 3 s or as often as they change (Cheffers, 1972; Cheffers & Mancini, 1978). The purpose of the system is to analyze the verbal and nonverbal interactions taking place in class by both teacher and student. The percentage and types of behaviors that are exhibited during the lessons are also measured (Cheffers, Mancini, & Martinek, 1980).

Coder Reliability

To establish coder reliability for this study, four videotapes were randomly selected and coded during two independent observation sessions using CAFIAS by Dr. Victor H. Mancini, an expert coder in the use of CAFIAS. Two videotapes were selected from the control group and two videotapes were selected from the treatment group. The verbal and nonverbal behavior data were ranked and subjected to the Spearman rank-order correlation technique.

Procedures

The PPET were randomly divided into a control and a treatment group. The five teaching episodes were divided into three phases. Phase I served as a means of collecting baseline data. Phase II was the segment in which the intervention took place. It consisted of the second, third, and fourth lessons. The control group received no intervention whereas the treatment group was provided with interactive supervision. The fifth teaching episode was labeled Phase III. During Phase I and Phase III no prompting or feedback took place during or after the teaching session for both groups.

The interactions of Phase II took place through the use of a two-way wireless communication system. All subjects were equipped with a wireless microphone. Those in the treatment group receiving the interactive supervision wore an earpiece as well. Prompting and immediate feedback were provided to those PPET in the treatment group by their supervisor during the course of the lesson. These prompts and feedbacks were in relation to the instructors' use of student names, verbal

feedback, managerial and engagement time, and class scanning. The individual giving the prompts and feedbacks was a graduate student who was previously trained in the evaluation of these teaching behaviors. This supervisor was located in the corner of the gymnasium throughout the entire lesson. Outside of the intervention, all other variables were kept as consistent as possible.

Collection of Data

Data were collected during the first and fifth teaching sessions, otherwise referred to as Phase I and Phase III. Over the course of all three phases, both the control and treatment groups were videotaped by the same graduate assistant who supplied the intervention to the treatment group in Phase II. The videotapes were coded using the CAFIAS system. The tapes were coded by Dr. Victor H. Mancini, an expert in systematic observation.

Scoring of Data

Data were scored manually by coding the videotapes using CAFIAS. Collected data were then entered into the CAFIAS computer program to find ratios and percentages of both verbal and nonverbal behaviors that were exhibited by the PPET during the teaching session.

Treatment of Data

In order to compare the PPET, descriptive statistics were used to examine the CAFIAS data. To determine the effect of interactive supervision on preservice teachers' teaching behaviors, pretest and posttest CAFIAS data and ratios were compared. Prior to the collection of data, a decision was made that the difference

between the two groups needed to be 5% or greater in order for the difference to be considered significant.

Summary

Twelve PPET were randomly assigned to either a control or treatment group. Each group taught five lessons to students ranging from Kindergarten to fifth grade in the local public school setting. The first lesson was Phase I and provided initial data prior to the intervention which occurred in Phase II (second, third, and fourth lessons). The fifth lesson, referred to as Phase III, provided for final data collection. With the exception of the intervention which consisted of prompts and immediate feedback given by the same supervisor, all other variables were kept consistent.

The videotapes were coded using CAFIAS. To determine coder reliability, two videotapes from each group were randomly selected and coded on two separate occasions. The data were then ranked and subjected to the Spearman rank-order correlation technique. Descriptive statistics were used to compare the preservice teachers' behaviors before and following the intervention. Prior to the start of the study, it was determined that the differences in behavior had to be 5% or greater in order to be considered significant.

Chapter 4

ANALYSIS OF THE RESULTS

This study determined the effects of immediate supervisory feedback using audiocuing on the interactions between students and PPET as measured by CAFIAS during preservice physical education teaching in the local elementary schools.

Coder Reliability

In order to assess the reliability of the coder for this investigation, four videotapes, two from the control group and two from the treatment group, were randomly selected and coded during two independent observation sessions using CAFIAS by an expert coder. The verbal and nonverbal behavior data were ranked and subjected to the Spearman rank-order correlation technique. The mean score of the correlation was .99, which was sufficient to indicate coder reliability.

Analysis of the Control and Treatment Groups' Behaviors

Descriptive statistics were calculated on variables identified through the use of CAFIAS. Prior to the collection of data, it was determined that the difference between the groups needed to be 5% or greater in order to be considered significant.

Analysis of the Phase I differences between the control and treatment groups' overall behaviors (see Table 1) revealed no significant differences. The control group's Phase I total behaviors equaled 2,597, and the treatment group's total behaviors were 2,742.

Table 1

Control and Treatment Groups' Percentages for CAFIAS Behaviors and Total Behaviors

| Behaviors | <u>Control Group</u> | | <u>Treatment Group</u> | |
|-------------------------------|----------------------|-----------|------------------------|-----------|
| | Phase I | Phase III | Phase I | Phase III |
| Teacher Praise | 4.1 | 5.1 | 3.7 | 13.2 |
| Teacher Acceptance | 2.7 | 4.6 | 3.3 | 5.3 |
| Teacher Questions | 3.2 | 4.2 | 3.5 | 11.2 |
| Teacher Information | 33.0 | 27.1 | 32.1 | 20.2 |
| Teacher Directions | 15.3 | 13.8 | 14.4 | 5.1 |
| Teacher Criticism | 4.0 | 6.0 | 4.1 | 2.5 |
| Student Predictable Response | 25.5 | 19.8 | 26.0 | 13.7 |
| Student Interpretive Response | 6.4 | 10.5 | 6.8 | 21.2 |
| Student Initiative Response | 2.9 | 4.9 | 3.1 | 2.5 |
| Silence/Confusion | 3.2 | 4.0 | 3.0 | 5.1 |
| Total Behaviors | 2,592 | 2,742 | 2,597 | 2,953 |

Following intervention, a significant difference between the control and treatment groups' total behaviors was found. The control group's posttest total behaviors were 2,742, and the treatment group's total behaviors were 2,953. The increase for control group teachers was 5%, and the increase for the treatment group teachers was 12%. This demonstrated that immediate supervisory feedback using audiocuing significantly increased interactions between students and teachers. Both groups had significant changes, but the treatment group's changes were greater in magnitude than those of the control group.

Analysis of data for specific behaviors revealed that the treatment group teachers' behaviors changed significantly as a result of the immediate supervisory feedback. Prior to the intervention the two most frequently used behaviors for both the control and treatment group were teacher information-giving and student predictable responses. The third most frequently used behavior was teacher directions.

In the Phase III data, the control group experienced significant changes in two behaviors. There was a significant decrease in the amount of information given by the teacher and predictable responses by the students as well.

The Phase III data also revealed significant changes in the treatment group teachers' behaviors. The treatment group significantly increased the amount of praise given to students and the amount of questions that they asked the students. As a result of immediate supervisory feedback, teachers increased their praises from 3.7% to 13.2%. They also increased their questions from 3.5% to 11.2%. Student interpretive responses

increased from 6.8% to 21.2%. The PPET provided students with increased opportunities to participate in the class.

There were also three behaviors that decreased significantly: teacher instructions, teacher directions, and student predictable responses. Teacher instructions decreased from 32.1% to 20.2% and teacher directions decreased from 14.4% to 5.1%. Student predictable responses decreased from 26.0% to 13.7%. Analysis of the individual behavior data revealed that immediate supervisory feedback led to significant changes in 6 of the 10 treatment group teachers' behaviors that were observed.

Analysis of the Control and Treatment Groups' Interaction Patterns

Analysis of the overall interaction patterns of the control group and the treatment group teachers revealed significant differences following the immediate supervisory feedback. There were no significant differences between the control group and the treatment group at the beginning of the investigation (Table 2). Both groups had high frequencies of the interaction patterns 5-5, 8-10-8, and 6-8-6.

Extended information-giving (5-5) was the most prominent interaction pattern, occurring about 32% of the time. The next highest pattern was student to student predictable responses (8-10-8). This means that the students are responding to the directions given by the teacher in a manner which they think is correct. This occurred approximately 14% of the time. The third highest behavior pattern exhibited was teacher direction being followed by student predictable response, then followed by more teacher directions (6-8-6). This behavior pattern occurred about 12% of the time. This meant

Table 2

Control and Treatment Groups' Percentages for CAFIAS
Behavioral Interactions

| Phase | <u>Control Group</u> | | <u>Treatment Group</u> | |
|-----------|----------------------|------------|------------------------|------------|
| | Pattern | Percentage | Pattern | Percentage |
| Phase I | 5-5 | 33.7 | 5-5 | 31.6 |
| | 8-10-8 | 14.9 | 8-10-8 | 12.6 |
| | 6-8-6 | 12.0 | 6-8-6 | 11.6 |
| | 5-8-5 | 7.8 | 5-8-5 | 6.7 |
| | 4-8-4 | 4.5 | 4-8-4 | 5.1 |
| | 8-2 | 2.7 | 8-2 | 2.4 |
| | 8-3 | 1.8 | 8-3 | 2.1 |
| Phase III | 5-5 | 21.0 | 5-8-5 | 13.6 |
| | 8-10-8 | 10.3 | 8\10-8\ | 11.8 |
| | 6-8-6 | 10.2 | 5-5 | 11.4 |
| | 5-8-5 | 6.2 | 8\2-8\ | 9.9 |
| | 8\10-8\ | 5.6 | 4-8\4 | 9.7 |
| | 4-8-4 | 4.4 | 4-8-4 | 7.2 |
| | 4-8\4 | 4.1 | 8-10-8 | 6.4 |
| | 8\2-8\ | 3.7 | 8\3-8\ | 6.3 |
| | 8\3-8\ | 3.1 | 6-8-6 | 4.2 |

Table 2 (continued)

Description of the Most Frequent Interaction Patterns

| | |
|---------|---|
| 5-5 | Extended information-giving by the teacher. |
| 8-10-8 | Extended student to student predictable response. |
| 6-8-6 | Teacher direction followed by student predictable response, which was followed by further teacher direction. |
| 5-8-5 | Teacher information-giving followed by student predictable response, which was followed by further information or instruction. |
| 8\10-8\ | Student to student interpretive response and game play. |
| 4-8-4 | Teacher questions followed by student predictable response, which was followed by further teacher questions. |
| 4-8\4 | Teacher questions followed by student interpretive response, which was followed by further teacher questions. |
| 8\2-8\ | Student interpretive response followed by teacher praise and encouragement, which was followed by more student interpretive response. |
| 8\3-8\ | Student predictable response followed by teacher acceptance, which was followed by more student interpretive response. |
| 8-2 | Student predictable response followed by teacher praise and encouragement. |
| 8-3 | Student predictable response followed by teacher acceptance. |

that the teacher would give directions, the student would then respond, then the teacher would respond with further directions. Teacher information-giving, followed by predictable student responses, followed by further teacher information-giving (5-8-5) was also exhibited by both the control and treatment groups; this occurred about 7% of the time. Another pattern that also occurred, but only about 5% of the time, was teacher questions, followed by student predictable response, followed by further teacher questions (4-8-4).

There were significant changes in the interaction patterns of the teachers in the control group following Phase II. They also experienced significant decreases in extended information-giving and directions given to students while engaged in a predictable response. Extended information-giving (5-5) decreased from 21.0% to 11.4% and directions given to students while engaged in a predictable response (6-8-6) dropped from 10.2% to 4.2%.

Analysis of data showed that there were significant changes in the interaction patterns of the teachers in the treatment group after being exposed to immediate supervisory feedback. The three most frequently seen patterns in the treatment group were 5-8-5, 8\10-8\, and 5-5. Teacher information-giving followed by student predictable response and then more teacher information-giving occurred 13.6% of the time. Student to student interpretive behavior (8\10-8\) occurred 11.8% of the time, and extended information-giving (5-5) occurred 11.4% of the time. The next two most frequented interaction patterns for the treatment group indicated the use of praise during

student responses (8\2-8\), occurred 9.9% of the time and the use of questions (4-8\4) during student responses occurred 9.7% of the time. These figures indicate that following immediate supervisory feedback, there was a significant change in the interaction patterns of the treatment group. There was a decrease in extended information-giving (5-5), directions given to students while engaged in a predictable response (6-8-6), and student to student predictable behaviors (8-10-8). It was determined that the teachers in the treatment group provided more feedback during their lessons. There was an increase in the use of questions (4-8\4), the giving of information during student predictable responses (5-8-5), the amount of praise during student interpretive responses (8\2-8\), and the acceptance of the students' interpretive efforts (8\3-8\). The findings of this investigation lead to the rejection of the hypothesis that there will be no significant difference in the interactions between students and PPET as a result of audiocuing as a method of interactive supervision.

Summary

The results from the analysis of the CAFIAS data indicated that a significant difference had occurred between the teachers in the control and treatment groups after receiving immediate supervisory feedback during their lessons. This led to the rejection of the hypothesis that there would be no significant difference in the interactions between students and PPET as measured by CAFIAS in a local elementary school setting.

The number of total behaviors, individual behaviors specific to CAFIAS, and behavioral patterns specific to CAFIAS were not significantly different between groups

in Phase I. The three behaviors seen the most were teacher information-giving, student predictable responses, and teacher directions.

Both groups showed an increase in the number of behaviors used from Phase I to Phase III. Following the intervention, the treatment group experienced decreases in teacher information-giving, teacher directions, and student predictable responses. The treatment group also experienced a significant increase in the amount of teacher praises, teacher questions, and student interpretive responses.

The other aspect affected by the use of immediate supervisory feedback was teacher-student interaction patterns. At the beginning of the study there were no significant differences between the two groups. Both groups recorded high percentages of extended information-giving (5-5), student to student predictable behaviors (8-10-8), and teacher directions followed by student predictable responses, followed by more teacher directions (6-8-6).

After the intervention significant differences were indicated between the control and treatment groups' interaction patterns. In the posttest, the control group's three most frequented behavior patterns remained the same. The treatment group had a significant decrease in teacher information-giving (5-5), directions given to students while engaged in predictable responses (6-8-6), and student to student predictable behaviors (8-10-8). There was also a significant increase in the use of questions (4-8-4), the giving of information during student predictable responses (5-8-5), the amount of praise during student interpretive responses (8-2-8), and the acceptance of the students' interpretive efforts (8-3-8).

Chapter 5

DISCUSSION OF RESULTS

The purpose of this investigation was to determine the effects of immediate supervisory feedback using audiocuing on the interactions between students and PPET as measured by CAFIAS in a normal elementary school setting. This chapter will discuss the results of this investigation and make comparisons to similar studies that have already been done.

The subjects for this investigation were 12 undergraduate students enrolled in a curriculum and methods course in elementary physical education at a professional preparation college located in New York. Each subject was videotaped teaching five lessons in the local elementary school setting. This study consisted of three phases. Analysis of Phase I indicated very similar behaviors and interaction patterns between the control and the treatment group. This could be due to the fact that both groups had the same background and similar experiences during their professional preparation program. During this portion of the investigation, no supervision was given. This baseline measurement was used to establish similarities between the two groups prior to Phase II when the intervention took place. After determining that after Phase I both groups had similar behaviors and interaction patterns, it is assumed that any differences in Phase III can be credited to the intervention that took place in Phase II.

In Phase II, the teachers in the treatment group received immediate supervisory feedback during their lessons through the use of a two-way wireless communication

system. This feedback was in relation to the instructor's use of student names, verbal feedback, managerial and engagement time, and class scanning. The individual giving the supervisory feedback was a graduate student who was trained in the evaluation of these teaching behaviors and was located in the corner of the gymnasium. Other than receiving this intervention, Phase II was similar for both the control and treatment group. Both groups taught three lessons during this stage of the study.

During Phase III the PPET were videotaped for one lesson but received no supervisory feedback. This lesson provided data for post-intervention comparison with Phase I data.

Comparison of the data revealed that differences did occur as a result of the interactive supervision provided in Phase II. The control group's Phase I total behaviors totaled 2,592 and the treatment group's total was 2,597. In the Phase III analysis, the control group's total behaviors increased to 2,742. The treatment group's total increased to 2,953. This increase indicated that after the intervention, the treatment group adapted their behavior to provide more feedback and get more involved in the class. The treatment group also experienced a significant increase in the amount of teacher praise, teacher questions, and student interpretive responses. The increase in these behaviors indicates the teachers praised their students efforts more, used more questions to engage students in learning, and as a result saw more interpretive responses by the students.

The treatment group experienced decreases in teacher information-giving, teacher directions, and student predictable responses. By decreasing teacher information-giving, the students quickly moved into activity time. They are given more time and more

opportunity to improve their skills. This is seen in the increased amount of student interpretive responses.

Following the intervention the amount of teacher praises increased from 3.7% to 13.2%. Rather than just quietly observing, teachers were praising students for their actions which, in turn, encouraged students to continue practicing the skill. The teachers in the treatment group also used more questions. Frequent questions helped the students stay on task more and contribute to more easily understand the subject matter.

Interaction patterns also changed as a result of the intervention. After the intervention significant differences were indicated between the control and treatment groups' interaction patterns. The treatment group had a significant decrease in teacher information-giving (5-5), directions given to students while engaged in predictable responses (6-8-6), and student to student predictable behaviors (8-10-8). There was also a significant increase in the use of questions (4-8\4), the giving of information during student predictable responses (5-8-5), the amount of praise during student interpretive responses (8\2-8\), and the acceptance of the students interpretive efforts (8\3-8\).

There are many practical implications for this supervisory approach when dealing with a typical class. The PPET in the treatment group decreased the amount of time spent in extended information-giving. They accomplished this by giving information and instructions in smaller segments of time as opposed to having a class come in and sit down to listen to the teacher for an extended period of time. In doing so, they also questioned the students more, providing them with more opportunities to respond

therefore increasing their role in the learning process. Teachers could still get across the same amount of information that they needed to, but they just did it in smaller segments.

This investigation separated itself from most others in that feedback was provided to the preservice teachers immediately through the use of a two-way wireless communication system. Also it was done in the natural setting as opposed to a more controlled micropeer setting. There are many feedback studies that have been done that support the findings of this investigation.

In 1981, van der Mars et al. sought to find whether or not receiving CAFIAS instruction would be beneficial in helping preservice teachers gain an awareness of their own teaching behaviors. The teachers that had been exposed to CAFIAS instruction exhibited significantly more teacher use of verbal acceptance and praise, teacher use of questioning, and the data also showed that those preservice teachers who were exposed to instruction and supervisory feedback through CAFIAS were significantly more accurate in perceiving observed classroom behaviors. The supervision process provided these teachers with the information and the background needed to become more effective.

Mancini et al. (1985) analyzed a group of studies focusing on systematic observation. In all of these studies, the procedures were similar to the procedures in the present investigation as far as the subjects being part of an undergraduate teacher training program and being randomly divided into two groups and one group receiving systematic supervisory feedback related to instruction and supervision. Data were analyzed using CAFIAS and Mancini et al. found that teaching behaviors can be changed using systematic supervisory feedback. Also, teachers receiving training and supervision using

interaction analysis during undergraduate professional preparation were more effective teachers and their students were more successful. Finally, the effects of instruction and supervision in interaction analysis are long lasting. Once again, the supervisory process was used to increase teacher effectiveness. Each of the studies was unique but the similarity between them and the present investigation was the idea of providing supervisory feedback. In some investigations, the feedback was provided after the lesson, whereas in others it was provided immediately during the lesson.

van der Mars (1984) conducted a study using a wireless communication system to find the effects of prompting on physical education student teachers. His subjects were four student teachers. The supervision given to the student teachers was focused on positive skill feedback, positive behavior feedback, student names and class scanning. Periodic prompting resulted in an increase of positive skill feedback and use of student names. It did not, however, increase the use of positive behavior feedback or class scanning. van der Mars (1984) concluded that supervision with an interactive communication system made student teachers more aware of what takes place within the gymnasium as well as being more tuned in to the organizational aspects of their lesson.

His findings were similar to the findings in the present study in that the use of interactive supervision had a positive impact on teacher effectiveness. He found that periodic prompting resulted in increases in the use of positive skill feedback and pupils' first names by physical education student teachers. In his recommendations, he suggested that feedback be evaluated as part of interactive supervision; this was the case in the present study. Feedback, when combined with prompting, and given immediately

can have more of an effect on changing teacher behavior than feedback that is delayed in its delivery.

van der Mars followed up in 1988 by doing a study to determine the effects of audiocuing on teachers' behaviors. This time, however, he used an experienced elementary physical education teacher as opposed to a preservice one. Feedback regarding teaching performance was given to the teacher by way of a communication device. The feedback focused on student praise, specific feedback, corrective feedback, positive feedback, and student appreciation. van der Mars found that during audiocuing specific and positive skill feedback increased. He determined that with the use of audiocuing, teaching behaviors can improve. His findings were very similar to the findings in this investigation in that he found increases in the use of praises and feedback. He used the same supervisory process but added the immediate feedback using a two-way wireless communication system. This investigation was similar in that it used the same supervisory process as the one used in the present investigation in the normal school setting. However, van der Mars used an experienced physical educator as opposed to the PPET used here.

DeMay (2000) recently investigated the effects of periodic prompting on preservice physical education teachers' behaviors in a micropeer teaching environment. The subjects were randomly divided into a control and treatment group. The subjects taught three micropeer lessons each. The treatment group received periodic prompting by way of a two-way wireless communication system. The two-way wireless communication system allows for the prompting and feedback to be immediate. It also

allows for the teacher to talk back to the supervisor if they need to ask further questions or look for clarification. The treatment group also received prompting relative to the teachers' use of names and feedback given to the students. When data were analyzed using CAFIAS there was no difference within the control group but the treatment group did experience some significant changes. There was a decrease in information-giving and teacher directions and there was a significant increase in praises and student questioning.

DeMay's results were very similar to those in this investigation. In both cases teacher talk decreased and students had more opportunity to participate. Both investigations had the same procedures but DeMay's took place in a more controlled micropeer atmosphere as opposed to the natural school setting which was used in this investigation. This investigation proved that not only can behaviors be changed in the micropeer setting, but they can be changed in the natural school setting as well.

Although Cook (2000) and Backus (2002) did not use CAFIAS in their investigations, the interactive supervisory process was very similar to this investigation and DeMay's (2000). Cook used the ALT-PE instrument to analyze his data. He found that the treatment group exhibited a higher percentage of time in subject motor activity as opposed to general activity. This is similar to the decrease in extended information-giving and increases in student responses seen in this investigation. In both cases teachers spent less time talking and students spent more time in activity. He concluded that students who received interactive supervision demonstrated better rates of ALT-PE than those students who did not receive the intervention. Backus (2002) used the ALT-

PE instrument as well and like DeMay studied the micropeer setting. She found that the treatment group spent less time in transition and more time in practice activity. The students of the teachers in the treatment group accrued significantly more ALT-PE, indicating that they had learned more. Once again, the use of a two-way wireless communication was a key instrument in providing immediate supervisory feedback.

In the three aforementioned studies, the process of providing feedback and prompts through audiocuing remained the same. The focus has been shifted from using PPET in the micropeer setting to using PPET in the natural school environment.

Increasing teacher effectiveness plays an important role in enhancing student learning. The role of the supervisor is vital when trying to increase teacher effectiveness. The supervisor provides the teacher with the feedback, which they in turn process and use to change their teaching behaviors. The closer to the lesson that the feedback is given, the more chance it has of being effective. Rather than having the teacher and supervisor discuss the lesson the next day or after it is complete, a two-way wireless communication system allows the supervisor to deliver the feedback as the lesson takes place. Following supervision, the PPET exhibit more characteristics of effective teachers.

To make the study as close to the "real world" as possible, this investigation took place in the natural school setting. This study in conjunction with previous studies, illustrates that two-way interactive supervision can be used effectively in the school setting. Cooperating teachers can use it with their student teachers. The immediacy of a two-way communication system allows them to take advantage of teachable moments. It

also provides for a useful tool in a mentorship program to use with inservice teachers as well.

Summary

The findings of this study on the effects of immediate supervisory feedback supported those in earlier studies done by Mancini et al. (1981), Mancini et al. (1985), van der Mars (1984, 1988), DeMay (2000), Cook (2000), and Backus (2002).

The results show that the preservice teachers who had received immediate supervisory feedback demonstrated significant differences in their behaviors and interaction patterns as compared to those who did not receive immediate supervisory feedback. The teachers in the treatment group gave less directions and information, and used more student questions, more student praises, and experienced more student interpretive behavior than teachers in the control group.

Chapter 6

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to determine the effects of immediate supervisory feedback using audiocuing on the interactions between students and PPET in a natural setting. The subjects used in the investigation were 12 PPET enrolled in an undergraduate professional preparation program. The subjects were randomly divided into a control and treatment group. The control group received no supervision during the investigation and the treatment group received an intervention consisting of immediate supervisory feedback delivered via a two-way wireless communication system. CAFIAS was used to measure the teaching behaviors and interaction patterns of the preservice teachers throughout the study. All videotapes were coded by Dr. Victor H. Mancini, an expert in the field of CAFIAS analysis.

Phase I was the first of five lessons taught and was used to determine if the behaviors between the control and treatment group were similar prior to the intervention. The CAFIAS data showed that both groups did indeed have similar behaviors. Phase II which consisted of the second, third, and fourth lessons, involved an intervention for the treatment group and no intervention for the control group. The treatment group received immediate supervisory feedback through the use of a two-way wireless communication system. The supervisory comments related to the instructors' use of student names, verbal feedback, managerial and engagement time, and class scanning. Following this intervention, Phase III took place. Phase III was the fifth and final lesson. Neither group

was given any supervisory feedback during this stage. CAFIAS was then used again to obtain the data for both groups for Phase III.

Descriptive statistics were used to compare the differences in teaching behaviors before and after the intervention. The Phase I and Phase III data were compared to evaluate the effects of immediate supervisory feedback using audiocuing on the interactions between students and PPET by analyzing the teaching behaviors and interaction patterns.

In order to establish reliability, four videotapes were randomly selected and coded during two independent observation sessions using CAFIAS. The tapes were coded by Dr. Victor H. Mancini, an expert in the field. The behavior data were ranked and subjected to the Spearman rank-order correlation technique. The mean score of the correlation was .99, indicating that the coder was reliable.

The analysis of the descriptive statistics indicated that immediate supervisory feedback using audiocuing has a significant effect on the behaviors of PPET. The treatment group PPET exhibited significant decreases in teacher information-giving, teacher directions, and student predictable responses. They significantly increased their use of praise and questions and provided more opportunities for student interpretive responses. The hypothesis that there would be no significant differences in the verbal and nonverbal interactions between students and PPET as a result of audiocuing as a method of interactive supervision was rejected.

Conclusions

From the findings provided by this investigation the following conclusions were drawn:

1. Immediate supervisory feedback through the use of a two-way wireless communication system is an effective method of positively changing PPET behaviors and interaction patterns in a natural setting. After receiving immediate supervisory feedback, PPET decreased the amount of information and directions they gave and there was also a decrease in student predictable responses. The teachers increased their praises and questions and gave students an opportunity for more interpretive responses.

2. Following the intervention, the treatment group also experienced changes in their interaction patterns. The amount of time spent in extended information-giving was decreased and students were praised and accepted more during their interpretive responses. There was also a decrease in student to student predictable responses, in the use of questions, and the giving of information during student predictable responses.

Recommendations for Further Study

The following recommendations are suggested for further study:

1. A study of the effects of immediate supervisory feedback using audiocuing similar to this one but extending the intervention phase to five or seven lessons.
2. A study on the effects of immediate supervisory feedback on the observed teaching behaviors and interaction patterns of PPET while doing their student teaching.
3. A study on the effects of immediate supervisory feedback using audiocuing on

the observed teaching behaviors and interaction patterns of inservice physical education teachers.

Appendix A

INFORMED CONSENT FORM

1. Purpose of the study: To determine whether immediate supervisory feedback using audiocuing will increase the interactions between students and preservice physical education teachers.
2. Benefits: The subjects will receive immediate supervisory feedback during their teaching sessions enabling them to improve their teaching performance. The feedback may help the subjects become more aware and effective teachers.
3. What will you be asked to do? Each subject will be videotaped while teaching a scheduled class in their downtown placement in a local elementary school. This will occur five times throughout the semester. Subjects will be asked to wear a wireless microphone to record verbal behavior. Subjects will also be asked to wear a two-way compact receiver with an earphone. This will allow the observer to communicate with the subject during the lesson. Neither piece of equipment will interfere with teaching activities. An experienced observer will code each lesson using Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS). The CAFIAS instrument is designed to provide teachers with information on verbal and nonverbal behaviors occurring during class.

STUDENT INITIALS _____

Appendix A (continued)

4. What can you expect to happen as a result of your participation in this study? There are no foreseeable physical or psychological risks to the participating subjects in this study. As a result of participation in the study, subjects will gain an appreciation for the importance of feedback during teaching.
5. If you would like more information about this study: Additional information can be obtained by contacting John McNally at (607) 274-2232, Dr. Mancini at (607) 274-3176, or Dr. Wuest at (607) 274-3108. All questions are welcomed and will be answered.
6. Withdrawal from the study: Participation is voluntary. All subjects are free to withdraw at anytime without penalty.
7. How will the data be maintained in confidence? All data will be confidential. Once data are collected, the tapes will be analyzed by group, not by individual subjects. Taping is solely for the purpose of this study and will only be available to the person conducting the study, Dr. Mancini, and the subject involved. When the study is completed, the tapes will be erased.

I have read the above and I understand its contents. I agree to participate in this study.

PRINT NAME

SIGNATURE

DATE

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