

1991

The lasting effects of instruction and supervision through Academic Learning Time-Physical Education on the relationship between perceived and observed students' behaviors

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THE LASTING EFFECTS OF INSTRUCTION AND SUPERVISION THROUGH
ACADEMIC LEARNING TIME-PHYSICAL EDUCATION
ON THE RELATIONSHIP BETWEEN PERCEIVED
AND OBSERVED STUDENTS' BEHAVIORS

by

Carol Collinson Higgins

An Abstract

of a thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science in the Division
of Health, Physical Education,
and Recreation at
Ithaca College

September 1991

Thesis Advisor: Dr. Victor H. Mancini

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ABSTRACT

The lasting effects of instruction and supervision through Academic Learning Time-Physical Education (ALT-PE) on the relationship between perceived and observed behaviors of physical education student teachers and their students were investigated. Twenty-six physical education student teachers, who had earlier participated in a study done by O' Brien (1985) that assessed the effectiveness of two different types of supervisory feedback--systematic and conventional feedback--on pre-service teachers' behaviors, were videotaped three times while teaching their regularly scheduled classes. The three tapes of each subject were coded using the ALT-PE instrument. Prior to every videotaped class and immediately following these classes, each subject filled out the Teacher's Questionnaire on the Students' Activities (TQSA). This instrument was used to record the perceived students' behavior. The subjects were divided into two groups--those who had received conventional supervisory feedback as part of O'Brien's study (control group) and those who had received systematic supervisory feedback (treatment group) as part of O'Brien's study. All the videotapes served as data for the analysis. Only the post-class estimates from the TQSA were used for analysis. In the treatment group, significant canonical correlations were found for four variables in the context level and four variables in the learner involvement level. In the control group, no significant canonical correlations were found in the context level, and only one variable showed significant canonical correlations in the learner involvement level. No statistical test of the differences between correlations was applied because the correlations were so obviously different that for practical purposes there was a clear difference between the treatment and control group. This led to the rejection of the

first hypothesis that there would be no significant differences in the observed teaching behaviors between the physical education student teachers who received instruction in and supervision through ALT-PE and those who did not.

Multivariate analysis of variance was used to determine significant differences in the students' behaviors between the groups. Significant differences ($p < .05$.) led to the rejection of the second hypothesis that there would be no significant difference between the accrued ALT-PE of students engaged in classes taught by physical education student teachers who received instruction and supervision through ALT-PE and those who did not receive instruction and supervision through ALT-PE.

Univariate analysis of variance was performed on each of the ALT-PE variables to identify those variables that accounted for a significant amount of the between-group difference. The variables that accounted for the between-group difference in the context level were transition/management and warm up, and in the learner involvement level the variables that accounted for the between-group difference were waiting, off-task, on-task, and motor appropriate (ALT-PE). From the findings it was concluded that physical education student teachers instructed in and supervised through ALT-PE were significantly more accurate in estimating observed students' behaviors. It was also concluded that physical education student teachers who had been instructed in and supervised through ALT-PE during O'Brien's study had students who accrued more ALT-PE than those students whose teachers only received conventional feedback. Lastly, it was concluded that the effects of instruction and supervision through ALT-PE were still maintained up to 1 year following the cessation of training.

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A Thesis Presented to the Faculty of
the Division of Health, Physical
Education, and Recreation
Ithaca College

In Partial Fulfillment of the
Requirements for the Degree
Master of Science

by
Carol Collinson Higgins
September 1991

Ithaca College
Division of Health, Physical Education, and Recreation
Ithaca, New York

CERTIFICATE OF APPROVAL

MASTER OF SCIENCE THESIS

This is to certify that the Master of Science Thesis of

Carol Collinson Higgins

submitted in partial fulfillment of the requirements
for the degree of Master of Science in the Division of
Health, Physical Education, and Recreation of Ithaca
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Studies:

Date:

September 10, 1991

ACKNOWLEDGMENTS

The investigator would like to extend the sincerest appreciation to the following people:

1. To Dr. Victor H. Mancini, my thesis advisor, whose knowledge and guidance made this thesis possible.

2. To Dr. Deborah A. Wuest, my second reader, for her expertise, encouragement, and patience.

3. To Dr. Patricia A. Frye for her statistical knowledge and help.

4. To the seniors enrolled in the student teaching practicum, who served as subjects for this study.

5. To William Higgins, my husband, whose love, friendship, and support was deeply appreciated.

6. To Joanne Smoker for her computer knowledge and help.

7. To Merry Swavely, who served as my typist.

8. To Elaine Reed who helped with the printing of this thesis.

DEDICATION

This thesis is dedicated to Mary and Tom Collinson, my parents, for loving, caring, and giving me everything while never asking for anything in return.

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Chapter 1

INTRODUCTION

Our educational institutions are often the target of public criticism. Many people, including educators, recognize the need for a scientific approach to observe and evaluate the educational process and to increase teacher effectiveness. Through the years, teachers have been observed in the classroom and provided with feedback concerning their teaching behavior. However, this conventional method was subjective and unreliable and often not a valid measure of teaching behaviors. In order to correct this situation, researchers developed systematic observation. This method allows a trained person, using a systematic observation instrument and following stated guidelines and procedures, to observe, record, and analyze teachers' and students' behaviors with the assurance that the data collected are reliable and valid. Many systematic observation instruments are now being used in physical education to analyze activity in our gymnasiums and playfields.

Interaction analysis is one type of systematic observation technique. Many researchers have used interaction analysis to gather objective information about teachers' and students' behaviors: this information is then used to provide teachers with systematic supervisory feedback. Getty (1977), Hendrickson (1975), Rochester (1976), and Vogel (1976) all used interaction analysis to provide teachers with supervisory feedback. These researchers found the use of interaction analysis facilitated changes in teachers' behavior. Getty found the effects of interaction analysis were still present 1 month after the completion of the training period. Mancini, Morris, and Getty (1979) also found this to be the case in relation to teacher effectiveness. Mancini, Frye, and Quinn (1982) were the first to investigate the

lasting effects of instruction and supervision in interaction analysis on teaching behavior, effectiveness, and attitudes of inservice physical educators up to 4 years after undergraduate teacher training. These researchers determined systematic supervisory feedback had lasting effects not only on teaching behaviors but also on attitudes and teaching effectiveness.

Another type of systematic observation is interval recording. Interval recording permits the observer to record the occurrence or nonoccurrence of specified behaviors within a predetermined time interval. One instrument that utilizes this method and that has been used frequently in the area of physical education is the Academic Learning Time-Physical Education (ALT-PE) instrument. The ALT-PE instrument is based on research generated from the Beginning Teacher Evaluation Studies (BTES). BTES' researchers (Fisher et al., 1978) demonstrated that it was possible to use student time-on-task for product measures of student achievement; this time measure was named Academic Learning Time (ALT). The researchers also developed a coding instrument to facilitate the gathering of data about student ALT. To utilize this concept and instrument within the physical education and sport environment, Siedentop, Birdwell and Metzler (1979) modified the ALT instrument to permit the coding of physical activity. The amount of ALT-PE accrued is used as a direct measure of student achievement, which the teacher's behavior influences indirectly (Siedentop et al., 1979):

Many intervention and feedback studies have used the ALT-PE instrument to gather information to provide teachers with feedback. Birdwell (1980), Hart (1983), Metzler (1980b), Paese (1982), and Whaley (1980) investigated the value of different interventions and forms of feedback on teaching behavior. These studies revealed

that verbal and written feedback was shown to be a valuable supervisory tool in helping teachers improve instructional performance and increase their students' achievement as measured by accrued ALT-PE. Similarly, Grecic, Mancini, and Wuest (1984), who used the same population as Mancini et al. (1982), found the effects of instruction and supervision in interaction analysis on student ALT-PE were maintained 1 to 4 years after cessation of the training period.

Several researchers have investigated the effects of supervisory feedback on teachers' awareness of their behaviors. Withall (1972) found that 85% of the teachers from nursery through graduate school had little awareness of their behaviors or what effect it had on their students. Batchelder (1976) found that physical education teachers were inaccurate in 94% of their estimates of their process objectives, followed by English teachers with 84% and math teachers with 77%. Would supervisory feedback help teachers become more aware of their behaviors? Beam (1972) found that teachers who were trained in the interpretation of classroom interaction analysis tended to reduce the difference between their displayed and ideal classroom behaviors, as well as their displayed and perceived classroom behaviors. However, the teachers who received training in interaction analysis but received no feedback tended to increase the differences in displayed and perceived classroom behaviors and their displayed and ideal classroom behaviors. Van der Mars, Mancini, and Frye (1981) studied the effects of instruction and supervision through systematic supervisory feedback on the relationship between the perceived and observed teaching behaviors of 36 pre-service physical educators. They reported that the subjects who received the systematic supervisory training were more indirect in their teaching and were more accurate in estimating their behaviors compared to

those subjects who received conventional supervisory feedback.

O'Brien (1985) further investigated the effects of instruction and supervision through ALT-PE by studying the relationship between the perceived teaching behaviors and the observed teaching behaviors of 30 pre-service physical educators involved in micro-peer teaching. It was concluded that pre-service physical educators instructed in and supervised through ALT-PE were significantly more accurate in estimating observed students' behaviors as compared to those pre-service teachers who received conventional supervisory feedback. It was also found that pre-service physical educators instructed in and supervised through ALT-PE had students who accrued more ALT-PE than those students in the class whose teachers only received conventional feedback.

This investigation was undertaken as a follow-up to O'Brien's 1985 study. This investigation sought to determine the lasting effects of instruction and supervision through ALT-PE on physical education student teachers' awareness of their behaviors.

Scope of the Problem

This investigation was conducted to determine the lasting effects of instruction and supervision through ALT-PE on the relationship between perceived and observed behaviors of students in classes taught by physical education student teachers. The subjects were 26 physical education student teachers enrolled at Ithaca College, Ithaca, New York. These subjects had participated in a previous study by O'Brien (1985) that assessed the effectiveness of two different types of supervisory feedback--systematic and conventional feedback--on pre-service teachers' behaviors. O'Brien's study revealed that those pre-service teachers who had received systematic

supervisory feedback provided their students with more academic learning time or time-on-task and were more aware of their behaviors than those teachers who only received conventional supervisory feedback.

This follow-up investigation was undertaken to determine whether the effects of supervisory feedback were long lasting. Each subject was videotaped teaching three 40-min physical education classes. The tapes were coded using the revised ALT-PE instrument (Siedentop, Tousignant, & Parker, 1982). The ALT-PE data provided information about the students' observed behaviors. Each subject filled out the Teacher's Questionnaire on the Students' Activities (TQSA)(O'Brien, 1985) prior to and again immediately following each class. The TQSA data provided information about the students' perceived behaviors.

Statement of Problem

This investigation was conducted to study the lasting effects of instruction and supervision through ALT-PE on the relationship between the perceived and the observed behaviors of physical education student teachers and their students.

This study was also conducted to assess if there were any significant difference in the accrued ALT-PE of students engaged in classes taught by physical education student teachers who received instruction and supervision through ALT-PE and those who did not receive supervisory feedback using ALT-PE.

Major Hypotheses

1. There will be no significant differences between observed teaching behaviors of those physical education student teachers who received instruction and supervision through ALT-PE and those who did not receive instruction and supervision through ALT-PE in the correlations between the perceived and the

observed teaching behaviors.

2. There will be no significant difference between the accrued ALT-PE of students engaged in classes taught by physical education student teachers who received instruction and supervision through ALT-PE and those who did not receive instruction and supervision through ALT-PE.

Assumptions of Study

The following assumptions were made relative to this study:

1. The subjects selected were representative of the population of physical education student teachers at Ithaca College.
2. The coding of three teaching sessions using the ALT-PE instrument was adequate to yield valid data on the observed teaching behavior for each subject.
3. The revised TQSA provided valid data on the perceived behavior of the subjects.

Definition of Terms

The following terms were operationally defined for the purpose of this study:

1. Academic Learning Time (ALT) is the amount of time a student spends engaged in a relevant learning task with a high success rate (Marliave, Fisher, & Dishaw, 1972).
2. Academic Learning Time-Physical Education (ALT-PE) is the amount of academic learning time accrued by a student while in a physical education class (Metzler, 1980b).
3. Pre-service teachers are undergraduate students in physical education who have not yet participated formally in student teaching (van der Mars, 1979).
4. Student teachers are undergraduate students in physical education who are

presently teaching their physical education practicum in a public school in order to fulfill the necessary curriculum requirements to receive their teaching certificate.

5. Conventional supervisory feedback is verbal input based on aspects of class control, organization, and management; class structure; and methodology (Mancini, Wuest, & van der Mars, 1984).

6. 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., 1984).

7. Micro-peer teaching is a method of instruction in teacher education that enables pre-service teachers to practice teaching skills by teaching their classmates (van der Mars, 1979).

8. Teacher's Questionnaire on Students' Activities (TQSA) is a 15-item questionnaire derived from the ALT-PE categories (O'Brien, 1985).

9. Perceived teaching behavior is the estimated teaching behavior of the teacher in the physical education class as measured by the TQSA.

10. Observed teaching behavior is the actual teaching behavior of the teacher in the physical education class as measured by the ALT-PE instrument.

Delimitations of Study

The following were the delimitations of this study:

1. The subjects were physical education student teachers at Ithaca College, Ithaca, New York.
2. ALT-PE was the only instrument employed to record actual student behavior.
3. The TQSA was the only instrument used in this study to record the teaching

behaviors as perceived by the subjects.

4. All subjects taught their physical education classes according to their regular student teaching schedule.

Limitations of Study

The following were the limitations of this study:

1. The findings related to the observed student behavior may only be valid for comparison when the ALT-PE instrument is used for coding.
2. The findings related to the perceived teaching behaviors may only be valid for comparison when the TQSA is used for data collection.
3. The findings of this study may only be true for physical education student teachers similar to the subjects in this investigation.

Chapter 2

REVIEW OF RELATED LITERATURE

The review of related literature will focus on the following areas: (a) the use of feedback to modify teacher behavior, (b) studies involving ALT-PE, (c) teacher awareness in the classroom, and (d) summary.

The Use of Feedback to Modify Teacher Behavior

For years teachers were provided with information by their supervisors on their teaching performance in an attempt to help them modify and change their behaviors. However, this conventional verbal feedback typically focused only on aspects of classroom management, control, and methodology and was subjective in nature. Although this feedback was helpful, it did not provide objective descriptions of the classroom events. Recently the use of systematic observation systems have allowed trained observers to record classroom events as they occurred. These instruments provided objective data on classroom teachers' and students' behaviors. The data are then used to provide teachers with supervisory feedback; this process is referred to as systematic supervisory feedback.

Interaction analysis is one technique that has been used to provide teachers with systematic supervisory feedback. Interaction analysis instruments focus on teachers' and students' interactions and give an objective event-by-event description of what happens in the class. This enables the supervisor and the teacher to select and modify the teaching behaviors that require attention.

Several researchers have used the Flanders' Interaction Analysis System (FIAS) (Flanders, 1960) and its modifications to study the effects of instruction and/or supervision in FIAS on teachers' behaviors. Love and Barry (1971) used the Timer-

Love Adaptation of FIAS to investigate the difference between those student teachers trained using the instrument and those not trained. Results showed that the student teachers who received training developed a sense of cooperation with each other during the training period, were able to analyze their own teaching, and demonstrated both the desire and ability to change their own teaching behavior. Bondi (1970) used FIAS to provide student teachers in the treatment group with systematic feedback derived from FIAS matrices and information sheets, while the control group received conventional feedback. Bondi found that the student teachers who received the systematic supervisory feedback were more indirect in their teaching, gave more praise, asked more questions, and accepted and clarified students' ideas more than those student teachers who did not receive training.

The Cheffers' Adaptation of FIAS (CAFIAS) (Cheffers, 1983) was developed for use in physical activity settings. Many studies have used this instrument to provide teachers with supervisory feedback and also as a method to investigate its effects on teachers' behavior. Keilty (1975) sought to determine the effects of 15 hours of instruction and supervision in CAFIAS on pre-service physical educators teaching behaviors in a micro-peer setting. The Teacher Performance Criteria Questionnaire (TPCQ) was used to assess teacher effectiveness. Keilty reported that those teachers who received CAFIAS training were more indirect in their teaching style compared to those teachers who did not receive training. However, no significant changes were found in teacher effectiveness.

Hendrickson (1975) and Rochester (1976) used CAFIAS as the training instrument for pre-service physical education teachers during micro-peer teaching lessons. In both studies, the control groups viewed their videotapes and received

conventional supervisory feedback, while the teachers in the treatment group viewed their videotapes and received conventional supervisory feedback plus instruction and feedback from CAFIAS. Hendrickson found that the pre-service teachers trained in CAFIAS asked more questions, accepted and praised students' ideas more, were more student-oriented, were more indirect in their teaching, and used more small group and individual instruction than those pre-service teachers who were not trained. In Rochester's study, the treatment group also received additional supervision and experience in the coding of CAFIAS. The treatment group had less teacher talk, more verbal questioning by the teacher, and more student initiated behavior occurring in their classes as compared to the control group.

The effect of systematic supervisory feedback on student teachers' behavior was investigated by Vogel (1976) and by Getty (1977). The treatment group in Vogel's study received 10 hours of instruction and coding using CAFIAS along with computer feedback, while the control group only received conventional supervisory feedback. Getty (1977) decided to increase the training in CAFIAS for the treatment group from 10 to 15 hours, while the control group received 15 hours of conventional supervisory feedback. In both studies, the subjects trained in CAFIAS were more indirect in their teaching style, used more praise, permitted more verbal and nonverbal student-initiated behaviors, and made better use of questions. In Getty's study, the differences that were observed in the students' behavior following training were still present 1 month after training had ended. As a follow-up study to Getty (1977), Mancini et al. (1979) used the TPCQ on the same set of subjects in order to determine the lasting effects of instruction and supervision in CAFIAS on teacher

effectiveness. They found that the treatment group scored higher on the TPCQ and were more effective than the control group. They also concluded that teacher effectiveness could be maintained 1 month after the training had ended.

Inturrisi (1979) studied the effects of feedback and instruction in interaction analysis on the teaching behaviors and attitudes of physical education student teachers. Significant differences in teacher use of questioning, pupil initiation, and acceptance and praise were observed, in favor of the teachers in the treatment group. The Teacher Situation Reaction Test (TSRT) was used to assess teachers' attitudes. The results indicated that the student teachers exposed to CAFIAS showed more positive teaching attitudes than the control group.

Mancini et al. (1982) investigated the effects of supervisory feedback using CAFIAS up to 4 years post-training on 26 in-service teachers' behaviors, attitudes, and effectiveness. The results revealed that the teachers trained in CAFIAS as undergraduates used more questions, were more indirect in their teaching, and accepted and praised students more than those who received conventional supervisory feedback. The teachers who had been trained in interaction analysis were more effective and had a more positive attitude. The study showed that the effects of interaction analysis training could be maintained 1 to 4 years after the training period had ended.

Grecic et al. (1984) used the same set of subjects as Mancini et al. (1982) to investigate the lasting effects of training in interaction analysis on the students' ALT-PE during classes taught by in-service physical educators. The subjects trained in interaction analysis as undergraduates were more efficient teachers and had greater student involvement in their classes. The students in their classes had twice

as much ALT-PE as the control group students (40.1% compared to 21.3%).

Interaction analysis training was shown to be effective in providing teachers with feedback to change their behaviors. Another tool, the ALT-PE instrument, can also be used as an assessment instrument as well as to provide teachers with systematic supervisory feedback.

ALT-PE

ALT-PE is the amount of ALT accrued by a student involved in a physical education class. Carroll (1963) was the first to suggest that a relationship existed between time and student learning. He stated that the degree to which a student was involved in learning, as measured by time, was one of the most influential factors in creating favorable learning environment. The BTES (Fisher et al., 1978) were the first major research effort to identify specific teaching skills that were related to student learning. These studies were conducted by the Far West Laboratory for Educational Research and Development in 1972.

The BTES findings supported the use of time as a measure of student learning. This concept of time-on-task became known as ALT and was defined as the amount of time a student spends engaged in a relevant learning task with a high success rate (Marliave, 1976). Berliner (1979) supported the use of time-on-task for a product measure of actual achievement. Initially, ALT was used to monitor both teacher and student behavior. Higher levels of ALT were found to be associated with teacher effectiveness and student achievement; students who accrued high levels of ALT learned more than low level accruers.

The ALT model consists of four interrelated components achievement: allocated time (the time provided for learning a task), engaged time (the percentage

of allocated time students spent actively responding), task relevancy (the degree to which an activity can be viewed as contributing to an academic goal), and success rate (the amount of success experienced by the student for the engaged task) (Marliave, 1977). The BTES research that indicated that ALT was significantly related to students' achievement received strong support from other researchers (Berliner, 1978; Marliave, 1979; Ortiz, 1980).

The BTES researchers developed an ALT observation instrument to facilitate the monitoring of ALT in the classroom. This was then modified by Siedentop et al. (1979) so it could be used as an observation instrument in physical activity settings. In this modification, ALT was named ALT-PE and was defined as the amount of time a student spends engaged in a relevant task at an easy level of difficulty (Siedentop et al., 1979). The category ALT-PE (M) reflected the amount of time a student was successfully engaged in a relevant motor task.

The purpose of the ALT-PE instrument was to facilitate observation of participation levels of physical education students in respect to the context of the class and the difficulty of the activity. This initial system consisted four major decisions: setting (instructional style), content (general or physical education-related), learner moves (engaged or non-engaged), and level of difficulty (easy or not easy). A 12-s interval recording format was used: the coder observed for 6 s, then recorded for 6 s.

In order to make the original ALT-PE instrument easier to use, Siedentop et al. revised the initial instrument in 1982. The revised ALT-PE instrument consists of only two major decision levels--context level and learner involvement--compared to the four levels in version I. In version II, there is no setting category to reflect the

spectrum of teaching styles, but the inclusion of general content and subject matter motor makes possible a clearer picture of what the students are doing in class.

Version II includes a number of other changes; the warm-up category was added; non-academic instruction and other motor responses were deleted, and the learner moves grouping (engaged and not engaged) became motor engaged and not motor engaged, respectively.

Metzler (1980b) used the ALT-PE instrument to identify the amount of ALT-PE accrued in a variety of physical education settings. The subjects were 21 physical educators teaching at the elementary, junior high, and high school levels. A total of 32 classes were observed encompassing 13 different activities, with two or three target students observed in each class. The results showed that students were involved in PE-Content 73.6% of the class time, ALT-PE occurred 26.8% of all class intervals, and ALT-PE(M) occurred 7.5% of all intervals. Both ALT-PE(M) and ALT-PE were the highest at the elementary level, followed by the junior high and the high school level, respectively.

The same data were also used by Metzler (1980a) to examine the levels of ALT-PE accrued by students in each of the 13 physical education activities. The highest mean percentages of ALT-PE were found in volleyball (59.4%) and soccer (40.3%); the lowest were found in football (14.1%) and gymnastics (12.3%). The results revealed that students engaged in team activities accrued more ALT-PE than did students in individual activities. In addition, Metzler found that the ALT-PE did not increase as the teaching unit progressed.

Metzler (1981) examined the ALT-PE of college students. Descriptive statistics showed that 45% of all coded intervals were ALT-PE, nearly twice the amount of

ALT-PE exhibited in the 1st-12th grades study. This revealed a substantially higher level of involvement on the part of the college students.

Godbout, Brunelle, and Tousignant (1983) studied the amount of ALT-PE experienced by students in 30 elementary and 31 secondary physical education classes. Content-PE time accounted for 65.7% of the class time at the elementary level and 81.1% at the secondary level. ALT-PE constituted 36.4% of the class time in the secondary classes and 31.3% of the class time in the elementary classes.

The differences in learning opportunities in traditional elementary physical education classes were investigated by Placek, Silverman, Shute, Dodds, and Rife (1982). One male physical educator and 53 elementary school first, third, and fifth grade pupils were used as subjects. ALT-PE percentages were derived for three classifications: high-, medium-, and low-skilled students; girls and boys; and for different instructional units. The results revealed no significant difference in the ALT-PE accrued by girls and boys. However, high-skilled students accrued 15% ALT-PE(M), the medium-skilled students accrued 9%, and the low-skilled students accrued 8%. A similar study was conducted by Shute, Dodds, Placek, Rife, and Silverman (1982) to examine the differences in learning opportunities in elementary movement classes. This study investigated differences in ALT-PE between boys and girls, special and non-special need groups, and various skill levels. The results revealed that equal opportunities existed for all groups within the class.

Another study that compared the ALT-PE of regular and mainstreamed handicapped students was undertaken by Aufderheide, McKenzie, and Knowles (1982). Teachers were identified as users or nonusers of individualized instruction. The data showed that users of individualized instruction provided a significantly

greater amount of ALT-PE for their students whether they were mainstreamed or nonmainstreamed. Students engaged in classes taught by teachers using individualized instruction were engaged 57.2% of the class time compared with 48.94% for students of nonusers of individualized instruction.

McKenzie, Clark, and McKenzie (1982) studied the ALT-PE of students when different instructional strategies were used by their teacher. Six instructional strategies during beginning fencing classes, all taught by the same experienced teacher were assessed. ALT-PE(M) accrued during active learning periods ranged from 26.9% for bouting to 97.95% for machine-paced drilling. Feedback ranged from 18.7% for teacher-paced drilling compared with 54.8% for student-paced drilling. McKenzie et al. concluded that teaching strategies that maintain high levels of ALT-PE and allow more feedback were valuable.

Experimental Teaching Units (ETU), as a method of measuring ALT-PE, were utilized by Young (1981) and Keller (1982). An ETU is a novel skill designed to reduce the influence of prior learning. Both researchers chose a combined golf/hockey novel skill that involved hitting a ball into a hoop for the ETU. In Young's study, a pre-test was administered, followed by a 20-min lesson in which the content was regulated but not the instructional style. Following the lesson, a post-test was given. Young reported that higher post-test scores correlated with increased ALT-PE, indicating student mastery of the ETU skill. Keller (1982) studied the effects of two instructional methods, the lecture/demonstration method and the reverse chaining method, on student achievement scores and accrued ALT-PE(M). The results showed no significant differences in the ALT-PE accrued by students taught by either the lecture/demonstration or reverse chaining instructional method.

Many researchers have investigated the value of different forms of feedback and intervention in an effort to increase teacher effectiveness. One of the initial studies that examined the effects of feedback on the ALT-PE of students was conducted by Whaley (1980). Twelve students from four schools were observed in their daily physical education class for 7 weeks. Both teachers and students were made aware that more engaged time and increased motor response opportunities were more desirable; however, the ways of achieving these goals were not discussed. Throughout the study graphic feedback was given to both teachers and students. The findings indicated that feedback and daily monitoring were effective in some schools but not others in increasing students' ALT-PE.

A similar study by Birdwell (1980) examined the effects of instruction and daily feedback given to three in-service teachers on the ALT-PE of their students. Not only were the teachers made aware that changes in management and feedback were desirable, but they also received instruction on how to accomplish these objectives. Results showed ALT-PE increased from 34.7% to 57.3% and ALT-PE(M) from 17.5% to 37.7%.

Metzler (1981) assessed the value of intervention strategies to increase ALT-PE. The subjects were three students and a student teacher from each of two archery classes. The baseline measurements showed low percentages of ALT-PE(M), motor responding, and motor engagement. After the intervention, an increase in motor engagement and ALT-PE(M) was observed, along with a decrease in the student waiting time.

Hart (1983) examined the effects of modification of teacher behavior on the ALT-PE of selected students in physical education. Four elementary physical

education teachers were trained as observers to collect data with the ALT-PE instrument. The teachers then measured their students' ALT-PE. After this, the teachers then attended short instructional clinics, were given systematic feedback, and were given a pre-set criterion level for certain behaviors to meet. The relationship between the intervention and the behaviors at each school were examined. The data revealed that the intervention resulted in reducing student wait time and transition time and increasing the ALT-PE in three out of the four schools.

Paese (1982) assessed the effects of a university supervisor's feedback on the ALT-PE(M) of two student teachers' volleyball classes. The ALT-PE instrument was used to collect data. Teachers were given verbal and written feedback and strategies on how to reduce management time after each of their observed classes. The ALT-PE instrument was found to be a valuable supervisory tool in helping student teachers improve instructional performance and increase their students' achievement.

Teacher Awareness in the Classroom

Many educators have inaccurate perceptions of what is occurring in their classrooms. Bondi (1970) stated how aware the teachers are of their own behaviors and that of their students has been assumed to be related to teacher effectiveness. Teachers who are aware of their behaviors are able to correct negative behaviors or maintain positive behaviors that enhance the learning process for their students.

Researchers have developed many systematic observation instruments to provide teachers with objective feedback concerning the frequency and type of interactions with their students. "An assumption underlying this use of observation techniques is that teachers are unaware of certain aspects of their behavior in the classroom" (Martin & Keller, 1976, p. 47).

In a study by Withall (1972), it was revealed that 85% of the teachers from nursery through graduate school had little awareness of their behavior or what affect it had on their students. In an attempt to determine the reasons why teachers apparently lack awareness, Good and Brophy (1973) identified three factors:

1. The interaction in the classroom takes place at a rapid pace.
2. Teachers have not been trained to monitor and study their own behavior.
3. Teachers rarely receive systematic feedback from supervisors.

Batchelder (1976) developed the Teachers' Questionnaire on Objectives (TQO) from the CAFIAS categories to measure teachers' perceptions of their behaviors. Twenty-five elementary teachers who taught English, math, and physical education were observed. Before each class, each teacher filled out the TQO for three areas: pupil interaction, class structure, and variety of teaching agency. The classroom interactions were coded by two reliable observers using CAFIAS. After comparing the TQO to the observed teachers' classroom behaviors as recorded by CAFIAS, she found only one of the 17 objectives that were observed to be significantly correlated (pupil initiation, teacher suggested ratio). Results showed physical education teachers were inaccurate in 94% of the estimates of their process objectives; whereas, English teachers were inaccurate in 84% and math teachers in 79%.

The relationship between perceived teaching behavior and observed teaching behavior of 16 school health educators was investigated by Scriber (1977). In this study, CAFIAS and a modified version of the TQO were used to collect data. The teachers filled out the TQO before and after each class. The results revealed that only four out of the 20 variables examined were significantly related. He concluded that school health educators' perceptions of the class behaviors were different than the

actual observed behaviors.

Martin and Keller (1976) studied 30 classrooms, with each classroom being observed for 1 day, to monitor dyadic interactions between the teachers and the students. The teachers were told the amount of contacts they had with individual students and were asked to estimate the percentages that were recorded in each of the five categories: response opportunities, recitation and reading, procedural contact, work contacts, and behavior contacts. Results showed that teachers were unable to accurately estimate the number of contacts in each category.

Beam (1972) investigated 33 science teachers' displayed, perceived, and ideal teaching behaviors to determine the effects of training in interaction analysis. The subjects were divided into three groups who received training in interaction analysis in conjunction with videotape feedback, training in the interpretation of interaction analysis, and no training, respectively. Each teacher filled out a questionnaire concerning his/her intended teaching behaviors (ideal behaviors) and those behaviors actually used (perceived behaviors). FIAS was used to assess the displayed behaviors. The data revealed that the teachers who received videotape feedback plus interaction analysis tended to reduce the difference between their displayed and ideal behaviors and between their displayed and perceived behaviors. Teachers that only received the training in the interpretation of interaction analysis tended to increase the differences in both cases. The control group subjects showed no changes.

Van der Mars et al. (1981) examined the effects of instruction in and supervision through interaction analysis on the relationship between perceived and observed teaching behaviors of 36 pre-service physical educators who were randomly assigned to a control or a treatment group. All subjects filled out the TQO prior to

and immediately following teaching. The control group received conventional feedback. The treatment group received conventional feedback, feedback through CAFIAS, and were shown a comparison of their questionnaire estimates to their observed scores from CAFIAS. Data revealed that the teachers who received the systematic supervisory feedback were more indirect in their teaching style and were better able to make accurate estimates of their class behaviors.

O'Brien (1985) investigated the effects of instruction in and supervision through ALT-PE on the relationship between the perceived teaching behaviors and the observed teaching behaviors of 30 pre-service physical educators. Each subject was videotaped on three separate occasions while teaching in a micro-peer setting. The three tapes of each subject were coded using the ALT-PE instrument. Prior to every videotaped class and immediately following these classes, each subject filled out the Teacher's Questionnaire on the Students' Activities (TQSA). Based on the ALT-PE categories, the TQSA was used to record the perceived students' behavior. Subjects in both the treatment and control group received conventional feedback while viewing their tapes. In addition, the subjects in the treatment group received instruction and supervision through ALT-PE while viewing their tapes. The subjects in the treatment group were also shown a comparison of their post-class estimates from the TQSA and the observed scores from the ALT-PE instrument. O'Brien concluded that pre-service physical educators instructed in and supervised through ALT-PE were significantly more accurate in estimating observed students' behaviors. It was also shown that pre-service physical educators instructed in and supervised through ALT-PE had students who accrued more ALT-PE than those students in the classes whose teachers only received conventional feedback.

Summary

Past studies by Getty (1977), Grecic et al. (1984), and Mancini et al. (1982) revealed that training in interaction analysis had an immediate effect on the teachers' behaviors and that the effect was still maintained up to 4 years following the cessation of the training. Interaction analysis has been demonstrated to be a valuable tool in the teacher training program and in modifying teachers' behaviors.

Researchers have recognized that engagement in relevant activities or repetition of a skill facilitate student learning. The BTES used time-on-task, specifically ALT, for a product measure of actual achievement (Berliner, 1979). This concept was modified by Siedentop et al. (1979) for use in the physical education setting and became known as ALT-PE. An observation instrument was then developed to facilitate the gathering of ALT-PE data.

Several studies have used the ALT-PE instrument in physical education settings to measure the amount of ALT-PE accrued by students. The effects of various interventions and supervisory feedback on ALT-PE accrual have been investigated by Birdwell (1980), Hart (1983), Metzler (1981a), Paese (1982), and Whaley (1980). Their research revealed intervention and supervisory feedback given to teachers can increase their students' ALT-PE.

Teachers' perceptions of the classroom events and the actual classroom behaviors are not always the same (Batchelder, 1976; Good & Brophy, 1973; Martin & Keller, 1976; Withall, 1972). Training in systematic observation and systematic supervisory feedback were found to decrease the difference between perceived classroom behaviors and observed classroom behaviors by Beam (1972), O'Brien (1985), and van der Mars et al. (1981).

Chapter 3

METHODS AND PROCEDURES

This chapter explains the methods and procedures used in this study. Included are selection of subjects, testing instruments, treatment of subjects, procedures, methods of data collection, scoring of data, treatment of data, and summary.

Selection of Subjects

The subjects were 26 physical education student teachers enrolled in either the 1985 fall or 1986 spring student teaching practicum at Ithaca College, Ithaca, New York. These subjects had earlier participated in a study by O'Brien (1985) that investigated the effectiveness of two different types of supervisory feedback--conventional and systematic feedback--on pre-service teachers' behaviors during micro-peer teaching. All subjects signed an informed consent form (Appendices A-C).

Testing Instruments

The testing instrument used to code the amount of time students spent working directly on meaningful learning tasks was the revised ALT-PE observation instrument (Siedentop et al., 1982). Version II, the revised version, consists of two major decision levels: context level and learner involvement level. There are three major subdivisions within the context level (general content, subject matter knowledge, and subject matter motor) and 13 further categories that describe the nature of the class environment. The learner involvement level consists of two major subdivisions (not motor engaged and motor engaged) and eight further categories that describe individual student behavior. In this investigation the recording format used was 6-s observe, 6-s record. Three target students were

alternately observed in each class.

The second instrument used was the Teacher's Questionnaire on the Students' Activities (TQSA). O'Brien (1985) developed the questionnaire in order to compare the teachers' perceptions of class events to the observed students' behaviors, as measured by ALT-PE. The questionnaire was modeled after Batchelder's (1976) TQO. O'Brien used the ALT-PE, version II, categories as a basis to develop the instrument's questions.

Based upon the recommendation of the thesis committee and O'Brien, the instrument was modified for this study. Included in the directions was an explanation that percentages did not have to be an increment of 5, but whatever percentage that was used during class. The researcher also included an additional question (1.b.) to determine what percentage of time the students were successful when actively involved. The TQSA is presented in Appendix D.

Intraobserver Agreement

Intraobserver agreement (IOA) was assessed using the scored-interval agreement method, as recommended by Hawkins and Dotson (1973). Dr Victor Mancini, an expert in descriptive-analytic techniques, coded four randomly selected videotapes during two independent coding sessions. IOA was calculated on an interval-by-interval basis and was computed by dividing the number of intervals on which there was agreement by the number of agreements plus disagreements and then multiplying the results by 100 (Herson & Barlow, 1976). The formula is given below:

$$\frac{\text{Agreements}}{\text{Agreements} + \text{Disagreements}} \times 100 = \% \text{ of agreement or IOA.}$$

When both coding sheets showed the target behavior as occurring during the

interval, agreement was recorded. When the behavior recorded during the same interval did not concur for both coding sheets, it was determined to be in disagreement.

Treatment of Subjects

All subjects involved in this investigation were videotaped three times while teaching their regularly scheduled classes. The subjects were divided into two groups--those who had received conventional supervisory feedback as part of O'Brien's (1985) study (control group) and those who had received systematic supervisory feedback as part of O'Brien's study (treatment group). All three videotapes were used for data analysis.

Each subject received instructions on how to fill out the TQSA before his or her first teaching experience and received additional information while filling out post-class estimates immediately following the videotaped class. The questionnaire was filled out prior to and immediately following the subject's teaching of each class.

Procedures

Each subject was videotaped three times while teaching his or her regularly scheduled classes. During the videotaping, each subject wore a wireless microphone. The length of each teaching session was approximately 40 min. The activity taught and type of teaching style were the teacher's choice.

Each subject was asked to fill out the TQSA prior to and following the teaching of each class. Detailed instructions were given to all subjects on the content of the questionnaire.

The subjects were divided into two groups--those who received conventional supervisory feedback as part of O'Brien's study and those who received systematic

feedback as part of O'Brien's study.

Methods of Data Collection

The videotapes made on each subject served as data for the analysis. The videotapes were coded by an expert coder using the ALT-PE instrument. The TQSA was completed by each subject before the teaching session and again after the class. Only the post-class estimates were used for analysis.

Scoring of Data

Data collected from the coding of ALT-PE were hand-scored and transposed into percentages for the 21 variables identified by the ALT-PE instrument. Percentages were also tabulated for the questions on the TQSA.

Treatment of Data

Two steps were taken to meet the assumption of independence of variables to be analyzed by MANOVA. First, seven selected variables were eliminated, five from the context level and two from the learner involvement level. The decision to eliminate a variable was based on its interest to the researcher, its importance to the question, and the amount of recorded data it produced. Accordingly, five variables, social behavior, break, rules, fitness, and background, were eliminated from the context level. Two variables, interim and motor supportive, were eliminated from the learner involvement level. To determine the relationship between the perceived percentages recorded on the TQSA and the observed percentages recorded through ALT-PE, canonical correlations were performed on the six variables from the context level (transition/management, warm up, technique, strategy, practice, scrimmage/game) and on the six variables from the learner involvement level (waiting, off-task, on-task, cognitive, motor appropriate, and motor inappropriate)

for both the treatment and control groups.

Pearson correlation was the second step taken to meet the assumption of independence of variables to be analyzed by MANOVA. To check for multicollinearity, Pearson correlations were computed on all variables to determine the degree of relationship or association between any two variables. No statistical test of the differences between correlations was applied because the correlations were so obviously different that for practical purpose there was a clear difference between the treatment and the control groups.

MANOVA was performed to determine whether differences in the students' behaviors, as identified by ALT-PE, existed between the treatment and the control groups. The percent that each variable contributed to the significant difference was calculated using discriminant function analysis. An univariate analysis of variance (ANOVA) was then used to identify which of the ALT-PE variables independently contributed to the significant differences between the two groups. For all tests the .05 level of significance was set prior to the data collection.

Summary

Twenty-six physical education student teachers who were divided into two groups--those who had received conventional supervisory feedback as part of O'Brien's study and those who had received systematic supervisory feedback as part of O'Brien's study. All subjects filled out the TQSA prior to and immediately following the teaching of each class. Only the post-class estimates were used for analysis and served as data for the perceived behaviors. Each subject was videotaped three times while teaching his or her regularly scheduled classes. All the videotapes served as data for the analysis. The observed teaching behaviors were coded by an

expert coder using ALT-PE. The data collected were hand-scored and transposed into percentages.

Two steps were taken to meet the assumption of independence of variables to be analyzed by MANOVA. First, seven selected variables were eliminated, five from the context level and two from the learner involvement level. Canonical correlations were used to determine the relationship between perceived percentages from the TQSA and observed percentages recorded through ALT-PE for both the treatment and control groups. Pearson correlation was the second step taken to meet the assumption of independence of variables to be analyzed by MANOVA. To check for multicollinearity, Pearson correlations were computed on all variables to determine the degree of relationship or association between any two variables. MANOVA was performed to determine significant differences in the students' behaviors between the treatment and the control group. Then, a discriminant function analysis was utilized to determine the percent that each variable contributed to the significant difference. ANOVA was then executed to identify which of the ALT-PE variables, when independently considered, contributed significantly to any difference between the groups.

Chapter 4

ANALYSIS OF DATA

The lasting effects of instruction in and supervision through ALT-PE on the relationship between the perceived and the observed behaviors of students in classes taught by physical education student teachers were studied. The subjects were 26 physical education student teachers enrolled at Ithaca College, Ithaca, New York. This chapter presents the results of the statistical analysis of the data in the following four sections: (a) IOA, (b) relationship between perceived and observed students' behaviors, (c) differences in students' behaviors, and (d) summary.

IOA

IOA scores were computed using the scored-interval method (Hawkins & Dotson, 1973). Four randomly selected videotapes, two from the control group and two from the treatment group, were coded during two independent coding sessions by Dr. Victor H. Mancini, an expert in descriptive-analytic studies. To determine reliability for each of the categories of the ALT-PE recording instrument, the number of agreements was divided by agreements plus disagreements and multiplied by 100 (Herson & Barlow, 1976). IOA scores ranged from 93% to 100% which were sufficient to indicate the coder was reliable.

Relationship Between Perceived and Observed Students' Behaviors

In order to assess the relationship between the variables from the TQSA and the corresponding ALT-PE percentages for both the treatment group and the control group, the canonical correlation technique was used. The canonical correlation technique was chosen since it is a multivariate type of comparison, and each

question had multiple responses. However, because the variables involved were linearly dependent, the researcher was unable to execute the MANOVA procedure for canonical correlations. Two steps were taken to meet the assumption of independence of variables to be analyzed by MANOVA. First, seven selected variables were eliminated, five from the context level and two from the learner involvement level. The decision to eliminate a variable was based on its interest to the researcher, its importance to the question, and the amount of recorded data it produced. Accordingly, the variables social behavior, break, rules, fitness, and background were eliminated from the context level. The variables interim and motor supportive were eliminated from the learner involvement level. The results for the treatment group showed four variables had significant correlations at the context level, and four variables had significant correlations at the learner involvement level. However, the control group showed no significant correlations at the context level, and only one variable had a significant correlation at the learner involvement level. The results are shown on Table 1 and Table 2.

Pearson correlation was the second step taken to meet the assumption of independence of variables to be analyzed by MANOVA. To check for multicollinearity, Pearson correlations were computed on all variables to determine the degree of relationship or association between any two variables. For the treatment group, the shared variance between the perceived and the observed scores at the context level ranged from 87.57% (scrimmage/game) to 98.27% (practice). For the control group, the amount of variance share by the perceived and observed scores at the context level ranged from .08% (strategy) to 40.83% (practice) (see Table 3). At the learner involvement level, for the treatment group, shared variance

Table 1

Analysis of Canonical Correlations on the Relationship Between Perceived and Observed Students' Behaviors at the Context Level

Variables	Eigenvalue	Canonical Correlation	df for MANOVA ^a (s)
Treatment Group (<u>n</u> = 13)			
1	477.28	1.00*	6
2	314.97	1.00*	5
3	24.62	.98*	4
4	8.14	.94*	3
5	1.57	.78	2
6	0.00	.04	1
Control Group (<u>n</u> = 13)			
1	6.98	.94	6
2	2.97	.87	5
3	0.89	.69	4
4	0.29	.48	3
5	0.14	.35	2
6	0.01	.11	1

(table continues)

Note. Critical values of distribution of greatest characteristic root (gcr) are determined from A primer of multivariate statistics, (Table A5, pp. 300-309) by R. J. Harris , 1975, New York: Academic Press.

^adf for all analyses: $m = n = -1/2$.

*p < .05.

Table 2

Analysis of Canonical Correlations on the Relationship Between Perceived and Observed Students' Behaviors at the Learner Involvement Level

Variables	Eigenvalue	Canonical Correlation	df for MANOVA ^a (s)
Treatment Group ($n = 13$)			
1	50998.15	1.00*	6
2	40.39	1.00*	5
3	20.91	.98*	4
4	16.12	.97*	3
5	2.55	.85	2
6	.20	.41	1
Control Group ($n = 13$)			
1	105.87	1.00*	6
2	11.28	.96	5
3	3.86	.89	4
4	1.84	.81	3
5	.07	.25	2
6	.01	.09	1

(table continues)

Note. Critical values of distribution of greatest characteristic root (gcr) are determined from A primer of multivariate statistics, (Table A5, pp. 300-309) by R. J. Harris , 1975, New York: Academic Press.

^adf for all analyses: $m = n = -1/2$.

*p < .05.

Table 3

Correlation Coefficients for Perceived Versus Observed Scores at the Context Level

Variables	Correlation Coefficients	Shared Variance (%)
Treatment Group ($n = 13$)		
Transition/Management	.97	93.95
Warm Up	.97	93.72
Technique	.98	95.65
Strategy	.94	88.53
Practice	.99	98.27
Scrimmage/Game	.94	87.57
Control Group ($n = 13$)		
Transition/Management	.05	.28
Warm Up	.13	1.77
Technique	.18	1.63
Strategy	.03	.08
Practice	.64	40.83
Scrimmage/Game	.46	21.22

Note. Some numbers may not appear to be the exact square due to rounding.

ranged from 9.53% (motor inappropriate) to 91.97% (on-task). For the control group, the amount of shared variance ranged from 3.17% (cognitive) to 23.50% (waiting) (see Table 4).

No statistical test of the differences between correlations was applied because the correlations were so obviously different that for practical purpose there was a clear difference between the treatment and the control group. Therefore, the hypothesis that there would be no significant differences in the observed teaching behaviors between the physical education student teachers who received instruction in and supervision through ALT-PE and those that did not receive instruction in and supervision through ALT-PE was rejected.

Differences in Students' Behavior

MANOVA was performed on 13 variables identified through the use of ALT-PE, six variables from learner involvement level and seven variables from context level. In Table 5, the cell means for the treatment and control groups on the 13 variables are presented. The MANOVA procedure resulted in a value of $F(7,18) = 8.04$, for the context level, and a value of $F(6,19) = 17.92$, for the learner involvement level, which were both significant at the .05 level of significance. The findings of this significant between-group difference led to the rejection of the second hypothesis that there would be no significant difference between the accrued ALT-PE of students engaged in classes taught by physical education student teachers who received instruction in and supervision through ALT-PE and those who did not receive instruction in and supervision through ALT-PE.

The discriminant function analysis identified the percentage of contribution to the between-group difference for each of the seven context level variables and each

Table 4

Correlation Coefficients for Perceived Versus Observed Scores at the LearnerInvolvement Level

Variables	Correlation Coefficients	Shared Variance (%)
Treatment Group ($n = 13$)		
Waiting	.95	89.74
Off-Task	.91	83.03
On-Task	.96	91.97
Cognitive	.91	82.99
Motor Appropriate	.95	89.93
Motor Inappropriate	.31	9.53
Control Group ($n = 13$)		
Waiting	.48	23.50
Off-Task	.20	4.01
On-Task	.24	5.84
Cognitive	.18	3.17
Motor Appropriate	.30	8.83
Motor Inappropriate	.46	21.17

Note. Some numbers may not appear to be the exact square due to rounding.

Table 5

Cell Means for the ALT-PE Variables

Variables	Treatment Group <u>M</u>	Control Group <u>M</u>
Context Level		
Transition/Management	14.19	19.88
Warm Up	4.49	9.53
Technique	12.79	12.19
Strategy	2.29	2.33
Background	0.83	0.63
Practice	30.26	23.21
Scrimmage/Game	29.22	29.25
Learner Involvement Level		
Waiting	6.93	14.86
Off-Task	2.65	6.32
On-Task	8.38	17.64
Cognitive	17.70	19.20
Motor Appropriate	37.44	21.81
Motor Inappropriate	16.10	18.35

of the six learner involvement variables. These results are shown in Table 6. At the context level, strategy accounted for 46.50% of the between-group variance. This was followed by warm up (18.40%), transition/management (5.20%), background (3.03%), scrimmage/game (0.00%), and technique (0.00%). At the learner involvement level, on-task accounted for 2.56% of the variance. This was followed by waiting (2.16%), motor inappropriate (1.70%), off-task (0.76%), motor appropriate (0.52%), and cognitive (0.41%).

The univariate analysis of variance (ANOVA) on the seven variables from the context level and the six from the learner involvement level is presented in Table 7. The ANOVA identified the variables that contributed to the significant between-group difference. At the context level, transition/management and warm up were the only two variables that independently contributed to the significant between-group difference. At the learner involvement level four variables independently contributed to the significant between-group difference. These four variables were waiting, off-task, on-task, and motor appropriate to the significant between-group difference.

Table 5 shows the difference in the mean percentage of occurrence for each of the 13 ALT-PE variables. At the context level, the students in the treatment group teachers' classes had more time in technique, strategy, and scrimmage/game than the students in the control group teachers' classes. At the learner involvement level, the students in the treatment group teachers' classes had more motor appropriate behavior and had less waiting time, off-task behavior, on-task behavior, cognitive behavior, and motor inappropriate behavior than the students in the classes taught by teachers in the control group.

Table 6

Discriminant Function Analysis

Variables	Canonical Coefficients	Percent of Contributions
Context Level		
Transition/Management	-.23	5.20
Warm Up	-.43	18.40
Technique	.00	0.00
Strategy	-.68	46.50
Background	.17	3.03
Practice	-.02	0.03
Scrimmage/Game	-.01	0.00
Learner Involvement Level		
Waiting	.15	2.16
Off-Task	.09	0.76
On-Task	.16	2.56
Cognitive	.06	0.41
Motor Appropriate	-.07	0.52
Motor Inappropriate	.11	1.17

Table 7

Univariate Analysis of Variance Contrasting Treatment and Control Groups

Variables	<u>MS Among</u>	<u>MS Within</u>	<u>F^a</u>
Context Level			
Transition/Management	210.62	31.18	6.75*
Warm Up	165.00	9.35	17.65*
Technique	2.34	31.71	0.07
Strategy	0.01	4.55	0.00
Background	0.26	1.05	0.25
Practice	323.42	168.50	1.92
Scrimmage/Game	0.01	214.40	0.00
Learner Involvement Level			
Waiting	408.84	34.60	11.82*
Off-Task	87.52	7.59	11.53*
On-Task	557.55	18.71	29.80*
Cognitive	14.48	32.85	0.44
Motor Appropriate	2020.49	30.76	65.69*
Motor Inappropriate	32.79	10.74	3.05

^adf = (1,24) for all tests.

*p < .05.

Summary

IOA was established by the scored-interval method using four randomly selected class sessions videotapes which were coded at two different viewings. IOA ranged from 93% to 100%.

The canonical correlation technique was performed for the multivariate comparisons on the variables from the TQSA and their related ALT-PE categories to determine the relationship between the perceived and the observed teaching behaviors in both groups. In order to meet the assumption of independence of variables it was necessary to eliminate seven selected variables, five from the context level and two from the learner involvement level. The treatment group showed significant canonical correlations for four variables at the context level and four variables at the learner involvement level. In the control group no significant canonical correlations were found at the context level, and only one variable showed significant canonical correlations at the learner involvement level. No statistical test of the differences between correlations was applied because the correlations were so obviously different that for practical purposes there was a clear difference between the treatment and control groups. Therefore, the hypothesis that no significant differences in the observed teaching behaviors between the physical education student teachers who received instruction in and supervision through ALT-PE and those that did not receive instruction in and supervision through ALT- PE was rejected.

MANOVA was used to determine whether significant differences existed in the students' behavior between the treatment and control group. The MANOVA procedure resulted in a $F(7,18) = 8.04$, for the context level, and $F(6,19) = 17.92$, for the

learner involvement level, which were both significant at the .05 level of significance. This led to the rejection of the second hypothesis that there would be no significant difference between the accrued ALT-PE of students engaged in classes taught by physical education student teachers who received instruction in and supervision through ALT-PE and those who did not receive instruction in and supervision through ALT-PE. Discriminant function analysis identified the percent of contribution to the between-group difference for each of the ALT-PE variables. At the context level, strategy accounted for the greatest amount of variance, 46.50%. At the learner involvement level, on-task behavior accounted for 2.56% of the variance.

The ANOVA identified the variables that independently contributed to the significant between-group difference. At the context level, transition/management and warm up were the only two variables that independently contributed to the significant between-group difference. At the learner involvement level, waiting, off-task, on-task, and motor appropriate behavior all contributed to the significant between-group difference.

Chapter 5

DISCUSSION OF RESULTS

The purpose of this investigation was to study the lasting effects of instruction in and supervision through ALT-PE on the relationship between perceived and observed students' behaviors in classes taught by physical education student teachers. The TQSA was used to measure teachers' perceptions of the class events. The ALT-PE instrument was used to measure the actual students' behaviors.

The analysis of data revealed that physical education student teachers instructed in and supervised through ALT-PE were significantly more accurate in estimating observed students behaviors than those student teachers who only received conventional feedback. This increased awareness allowed teachers to make the necessary changes to increase the ALT-PE of their students, thus becoming more effective teachers. Therefore, this data support the inclusion of ALT-PE instruction and supervision in the undergraduate teacher training curriculum.

This chapter discusses the results of this investigation and compares them with the results of previous studies. The chapter has been divided into five sections. The first section compares and contrasts the results of this investigation with earlier studies on the relationship between perceived and observed students' behaviors. The second section compares the results of this study with those of earlier studies using systematic supervisory feedback. The third section compares the results of this study with other studies involving ALT-PE. The fourth section compares the results of this study with other follow-up studies. The fifth section presents a summary of the discussion.

Relationship Between Perceived and
Observed Teaching Behaviors

Martin and Keller (1976) stated that teachers are unaware of their behaviors in the class. Withall (1972) found that 85% of the teachers she investigated had little awareness of their behaviors or what effect it had on their students. This past research indicates that awareness of the class events is a problem to many teachers. This investigation also supports the belief that teachers are unaware of the class events. The canonical correlation technique was used to assess the relationship between variables from the TQSA and their related ALT-PE percentages. The treatment group showed four variables had significant correlations at the context level (transition/management, warm up, technique, and strategy) and four variables (waiting, off-task, on-task, and cognitive) had significant correlations at the learner involvement. However, the control group showed no significant correlations at the context level, and only one variable (waiting) had a significant correlation at the learner involvement level. Correlation coefficients were computed to determine the amount of shared variance by the perceived versus the observed scores. In the control group, the shared variance ranged from 0.08% to 40.83%, and in the treatment group, the shared variance ranged from 9.53% to 98.27%. This suggests that the subjects who did not receive instruction in and supervision through ALT-PE were not aware of their students' behaviors. The student teachers in the treatment group, who had received systematic supervisory feedback, were more aware of their behaviors and those of their students.

Many studies have been done using systematic supervisory feedback to help teachers improve. Similarities and differences between this study and other studies

using systematic supervisory feedback will be examined.

Batchelder (1976) developed the TQO from the CAFIAS categories to measure teachers' perceptions of their behaviors. Twenty-five elementary teachers who taught English, math, and physical education were observed. After comparing the TQO to the observed teachers' classroom behaviors as recorded by CAFIAS, she found only one of the 17 objectives that were observed to be significantly correlated (pupil initiation, teacher-suggested ratio). The relationship between perceived teaching behavior and observed teaching behavior of 16 school health educators was investigated by Scriber (1977). In this study, CAFIAS and a modified version of the TQO were used to collect data. Similar to Batchelder's findings, he found that only 4 of the 20 variables were significantly related.

Beam (1982) investigated 33 science teachers' displayed, perceived, and ideal teaching behaviors to determine the effects of training in interaction analysis. The data revealed that the teachers who had received videotape feedback plus interaction analysis training became more aware of their classroom behaviors. Van der Mars et al. (1981) used the TQO and CAFIAS to examine the effects of instruction in and supervision through interaction analysis on the relationship between perceived and observed teaching behaviors of 36 pre-service physical educators. The researchers found that the subjects who received the systematic supervisory feedback using CAFIAS and who were shown a comparison of their perceived to their observed CAFIAS scores were able to make more accurate estimates of their observed scores. O'Brien (1985) also used pre-service physical education teachers to investigate the effects of instruction in and supervision through ALT-PE on the relationship between perceived and observed teaching behaviors. From the findings it was

concluded that the subjects who received the systematic supervisory feedback using ALT-PE and who were shown a comparison of their post-class estimates from the TQSA and the observed scores were significantly more accurate in estimating observed student's behaviors than those subjects who only received conventional feedback.

In this investigation, the canonical correlation technique showed that the variables in the context level and learner involvement level, for the treatment group, were significantly correlated. This indicates that the subjects who had received the ALT-PE feedback during O'Brien's (1985) study were still better able to predict their behaviors and their students' behaviors than those subjects who did not receive ALT-PE feedback. This study and that of Beam (1972), van der Mars et al. (1981), and O'Brien (1985) supports the belief that teachers who receive systematic supervisory feedback and are shown comparisons of their perceived to observed behaviors are better able to predict their class behaviors than those without such objective feedback.

Many educators have inaccurate perceptions of what is occurring in their classrooms. Bondi (1970) stated how aware the teachers are of their own behaviors and that of their students has been assumed to be related to the teacher effectiveness. Teachers who are aware of their behaviors are able to correct negative behaviors or maintain positive behaviors which enhance the learning process for their students. In order to improve teachers' effectiveness, it is necessary to provide teachers with systematic supervisory feedback to increase their awareness of the behaviors of themselves and their students. The data from this study also supported that the treatment group students accrued more ALT-PE and learned more because their

teachers were more effective than the control group teachers.

Systematic Supervisory Feedback Studies

In the past, most studies have used FIAS and its modifications to gather data to provide systematic supervisory feedback. Therefore, direct comparisons of the present study which used the ALT-PE instrument to these studies is not possible, but similarities to other studies can be discussed.

Hendrickson (1975) and Rochester (1976) both used CAFIAS as the training instrument for pre-service physical education teachers during micro-peer teaching lessons. Hendrickson found that the subjects who received instruction in and feedback from CAFIAS asked more questions, accepted and praised students' ideas more, were more student-oriented, and were more indirect in their teaching than those subjects who did not receive instruction and feedback in CAFIAS. Rochester found that the teachers trained in CAFIAS had less teacher talk, more verbal questioning by the teacher, and more student-initiated behavior occurring in their classes than those teachers who were not supervised using CAFIAS.

Getty (1977), Inturrisi (1979), and Vogel (1976) also used CAFIAS as their observation instrument and feedback tool. Like the present study, the investigators used physical education student teachers as their subjects. Their results supported the findings of Hendrickson (1975) and Rochester (1976). These researchers found that CAFIAS feedback was effective in bringing about desired changes in the teachers' behavior. In this study, MANOVA, followed by a discriminant function analysis, and ANOVA were performed on the seven variables at the context level and on the six variables at the learner involvement level. The results of these analyses indicated the groups were significantly different. These analyses indicated

that the teachers who received instruction in and supervision through ALT-PE designed their instruction to allow their students to accrue more ALT-PE than those students whose teachers did not receive the ALT-PE feedback. These findings were similar to O'Brien (1985) who used the same group of subjects when they were pre-service physical education students; these teachers instructed in a micro-peer setting. O'Brien found that pre-service physical educators instructed in and supervised through ALT-PE were significantly more accurate in estimating their students' behaviors and had students who accrued more ALT-PE than those students in the classes whose teachers only received conventional feedback. The findings of this study and those of Getty (1977), Hendrickson (1975), Inturrisi (1979), Rochester (1976), Vogel (1976), and O'Brien (1985) support the idea that systematic supervisory feedback can produce desired changes in both the students' behaviors and the teachers' behaviors.

ALT-PE Studies

The effects of different interventions and forms of feedback on students' ALT-PE were studied by a number of researchers. Whaley (1980) used daily feedback in an attempt to increase the engaged time and motor responses of his students. Whaley's findings indicated that the treatment had no significant effect on the ALT-PE of the students. However, the results of this study were different. These results indicated that the ALT-PE feedback produced a significant difference in the ALT-PE of the students in the classes taught by teachers who received the ALT-PE feedback. The effects of instruction and supervision through ALT-PE were still maintained up to 1 year following the cessation of training.

Birdwell (1980) examined the effects of intervention and daily feedback given to

three in-service teachers on the ALT-PE of their students. Results showed ALT-PE increased from 34.7% to 57.3% and ALT-PE(M) from 17.5% to 37.7%. These increases are similar to the results obtained from Paese's (1982) study. Teachers who were given verbal and written feedback and strategies on how to reduce management time were able to increase their students' motor engaged time and their ALT-PE(M).

Metzler (1981) assessed the value of intervention strategies to increase ALT-PE. He found that a simple intervention of moving archery targets further apart (thus, allowing two students to shoot at the same time) increased motor engaged percentages from 15.4% to 35% and ALT-PE(M) from 11.8% to 29.5%. Hart (1983) examined the effects of short instructional clinics and daily systematic feedback given to teachers on their students' ALT-PE. The data revealed that the intervention resulted in reducing student wait time and transition time and increasing the ALT-PE of the students in three out of the four schools.

This investigation also found differences in students' ALT-PE. At the context level, the treatment group students had more time in subject matter motor, 59.48% compared to 52.46% in the control group classes. Students taught by teachers in the treatment group accrued more ALT-PE than students taught by teachers in the control group, 37.44% versus 21.81%. The students in the treatment group had less waiting time than the students in the control group teachers' classes. The discriminant function analysis revealed that strategy contributed to the greatest amount of the between-group difference at the context level, and that on-task behavior contributed to the greatest between-group difference at the learner involvement level. Therefore, this indicates that the treatment group teachers were more effective teachers because they allowed their students more ALT-PE.

The findings of this present study and the findings of Birdwell(1980), Hart (1983), and Paese (1982) all support the contention that interventions and ALT-PE feedback can produce higher engaged time for the students and reduce waiting time. This shows that the ALT-PE instrument is a valuable supervisory tool in helping teachers improve instructional performance and increase their students' achievement. Therefore, it seems evident that ALT-PE training and feedback should be included in teacher training programs. The inclusion of ALT-PE training and feedback in undergraduate teacher programs may produce more effective teachers in the future. However, the question to be asked is, are these results long lasting?

Follow-up Studies

Getty (1977) investigated the effects of CAFIAS training and feedback on student teachers. The subjects trained in CAFIAS were more indirect in their teaching style, used more praise, permitted more verbal and nonverbal student initiated behaviors, and made better use of questions. In Getty's study, the differences that were observed in the students' behavior following training were still present 1 month after training had ended. As a follow-up study to Getty (1977), Mancini et al. (1979) used the TPCQ on the same set of subjects in order to determine the lasting effects of instruction and supervision in CAFIAS on teacher effectiveness. They found that the treatment group scored higher on the TPCQ and were more effective. They also concluded that teacher effectiveness could be maintained 1 month after the training had ended.

Mancini et al. (1982) investigated the effects of supervisory feedback using CAFIAS up to 4 years post-training on 26 in-service teachers' behaviors, attitudes, and effectiveness. The results revealed that the teachers trained in CAFIAS as undergraduates used more questions, were more indirect in their teaching, and

accepted and praised students more than those received who conventional supervisory feedback. The teachers who had been trained in interaction analysis were more effective and had a more positive attitude. The study showed that the effects of interaction analysis training could be maintained 1 to 4 years after the training period had ended.

Grecic et al. (1984) used the same set of subjects as Mancini et al. (1982) to investigate the lasting effects of training in interaction analysis on the students' ALT-PE during classes taught by in-service physical educators. The subjects trained in interaction analysis as undergraduates were more efficient teachers and had greater student involvement in their classes. The students in their classes had twice as much ALT-PE as the control group students (40.1% compared to 21.3%).

O'Brien (1985) further investigated the effects of instruction and supervision through ALT-PE by studying the relationship between the perceived teaching behaviors and the observed teaching behaviors of 30 pre-service physical educators involved in micro-peer teaching. It was concluded that pre-service physical educators instructed in and supervised through ALT-PE were significantly more accurate in estimating their students' behaviors. It was also found that pre-service physical educators instructed in and supervised through ALT-PE had students who accrued more ALT-PE than those students in the classes whose teachers only received conventional feedback.

This study was undertaken as a follow-up study to O'Brien (1985) to determine the lasting effects of instruction and supervision through ALT-PE on the relationship between perceived and observed student behaviors in classes taught by physical education student teachers. The results of this study show that the physical

education student teachers who had been instructed in and supervised through ALT-PE during O'Brien's study were more aware of their students' behaviors and their students accrued more ALT-PE than those students whose teachers only received conventional feedback. Therefore, this study concluded that the effects of ALT-PE instruction and supervision were still maintained up to 1 year following the cessation of training.

Summary

Physical education student teachers who received instruction and supervision through ALT-PE showed a tendency to perceive classroom behaviors significantly more accurately than those teachers who did not receive the ALT-PE feedback. Training in systematic observation and systematic supervisory feedback were found to decrease the difference between perceived classroom behaviors and observed classroom behaviors by Beam (1982), O'Brien (1985), and van der Mars et al. (1981). The findings that teachers are unaware of their behaviors seem to coincide with results from earlier studies (Batchelder, 1976; Martin & Keller, 1976; Scriber, 1977; Withall, 1972). This lack of awareness can be addressed by providing teachers with systematic supervisory feedback.

MANOVA followed by discriminant function analysis and ANOVA resulted in the findings of significant differences between the treatment and control group. The mean percentages of each ALT-PE variable showed that the students in the treatment group had more motor appropriate behavior (ALT-PE), practice and less waiting time, off-task, and on-task behaviors than the students in the control group classes. The findings of this present study and the findings of Birdwell (1980), Getty (1977), Hart (1983), Hendrickson (1975), Rochester (1976) and Vogel (1976) all support the

contention that physical educators who are provided with systematic supervisory feedback are able to change their behaviors and their students' behaviors.

This present study was a follow-up study to O'Brien (1985) to determine the lasting effects of instruction and supervision through ALT-PE on the relationship between perceived and observed student behaviors in classes taught by physical education student teachers. The teachers who received instruction in and supervision through ALT-PE were significantly more accurate in estimating observed students' behaviors and their students accrued more ALT-PE than those teachers who only received conventional feedback. These findings were congruent with O'Brien (1985), therefore indicating that the effects of instruction and supervision through ALT-PE were still maintained up to 1 year following the cessation of training. These results coincide with past studies by Getty (1977), Grecic et al. (1984), and Mancini et al. (1982) that revealed that training in interaction analysis had an immediate effect on the teachers' behaviors and that the effect was still maintained up to 4 years following the cessation of training. Interaction analysis has been demonstrated to be a valuable tool in the teacher training program and in modifying teachers' behaviors.

The results of this investigation supports the inclusion of ALT-PE instruction and supervision in the undergraduate teacher training curriculum. Since the effects of instruction and supervision in ALT-PE were long lasting, it appears that the use of in-service ALT-PE feedback has the potential to assist pre-service teachers to be more effective teachers.

Chapter 6

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

Summary

The lasting effects of instruction in and supervision through ALT-PE on student teachers' behaviors, specifically their awareness of their behaviors and the academic learning time they provide for their students in their classes, were studied. The subjects were 26 physical education student teachers enrolled at Ithaca College, Ithaca, New York. These subjects participated in a previous study by O'Brien (1985) that assessed the effectiveness of two different types of supervisory feedback--systematic and conventional feedback--on pre-service teachers' behaviors. This investigation sought to determine if the effects of instruction and supervision through ALT-PE would still be maintained up to 1 year following the cessation of training. This follow-up investigation used ALT-PE as the testing instrument to collect data on the observed students' behaviors. The TQSA (O'Brien, 1985) was used to collect data on the perceived students' behaviors.

Each subject was videotaped teaching three 40 min physical education classes. The tapes were coded using the revised ALT-PE instrument (Siedentop et al., 1982). Each subject filled out the TQSA prior to and again immediately following each class. For the analysis of the data all three videotapes of each subject were used, along with the subject's post-class estimates of these classes.

Two steps were taken to meet the assumption of independence of variables to be analyzed by MANOVA. First, seven selected variables were eliminated, five from the context level and two from the learner involvement level. The decision to

eliminate a variable was based on its interest to the researcher, its importance to the question, and the amount of recorded data it produced. Accordingly, five variables, social behavior, break, rules, fitness, and background, were eliminated from the context level. Two variables, interim and motor supportive, were eliminated from the learner involvement level. The use of the canonical correlation technique for the ALT-PE variables, multivariate in character, resulted in the findings of significant canonical correlations for the treatment group for four variables in the context level and four variables in the learner involvement level. The findings for the control group showed no significant canonical correlations in the context level and only one in the learner involvement level.

Pearson correlation was the second step taken to meet the assumption of independence of variables to be analyzed by MANOVA. To check for multicollinearity, Pearson correlations were computed on all variables to determine the degree of relationship or association between any two variables. Table 3 presents the results of the significant correlations ($p < .05$) between variables at the context level. Table 4 presents the results of the significant correlations ($p < .05$) between variables at the learner involvement level. No statistical test of the differences between correlations was applied because the correlations were so obviously different that for practical purpose there was a clear difference between the treatment and control groups. Therefore, the hypothesis that no significant differences in the observed teaching behaviors between the physical education student teachers who received instruction in and supervision through ALT-PE and those that did not receive instruction in and supervision through ALT-PE was rejected.

MANOVA was used to determine significant differences in the students'

behaviors between the treatment and control groups. The second hypothesis that there would be no significant difference between the accrued ALT-PE of students engaged in classes taught by physical education student teachers who received instruction in and supervision through ALT-PE and those who did not receive instruction in and supervision through ALT-PE was rejected at the .05 level of significance. Discriminant function analysis identified the percentages of contribution of each individual variable to the between-group difference. At the context level, the major contributors were strategy, warm up, and transition/management. The major contributors at the learner involvement level were on-task, waiting, and motor inappropriate behavior. The ANOVA identified the variables that contributed to the significant between group difference. At the context level, transition/management and warm up were the only two variables that independently contributed to the significant between-group difference. At the learner involvement level, four variables independently contributed to the significant between-group difference. These four variables were waiting, off-task, on-task and motor appropriate behavior.

The findings for the treatment group related to the first hypothesis seem to support findings in earlier studies by Beam (1972) , van der Mars et al. (1981) and O'Brien (1985) regarding the beneficial effects of instruction and supervision through systematic supervisory techniques. The subjects who received instruction in and supervision using systematic supervisory techniques tended to be significantly more accurate in their estimates of their behaviors and those of their students than those subjects who did not receive instruction and supervision through interaction analysis and ALT-PE. The results of this investigation indicate that the effects of

instruction and supervision through ALT-PE were still maintained up to 1 year following the cessation of training.

The findings related to the second hypothesis also coincide with earlier researchers' findings (Birdwell, 1980; Getty, 1977; Hart, 1983; Hendrickson, 1975; O'Brien, 1985; Rochester 1976; Quinn, 1982; Vogel, 1976) about the effects of supervisory feedback on students' ALT-PE. Interventions and systematic supervisory feedback can have a positive influence on students' ALT-PE.

Conclusions

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

1. Physical education student teachers instructed in and supervised through ALT-PE were significantly more accurate in estimating observed students' behaviors than those physical education student teachers who only received conventional feedback.
2. The effects of instruction and supervision through ALT-PE were still maintained up to 1 year following the cessation of training.
3. Instruction and supervision through ALT-PE were found to be beneficial in making physical education student teachers more aware of their students' behaviors.
4. Physical education student teachers who had been instructed in and supervised through ALT-PE during O'Brien's study had students who accrued more ALT-PE than those students whose teachers only received conventional feedback.

Recommendations for Further Study

The following recommendations are suggested for further study:

1. A study of the effects of instruction in and supervision through ALT-PE on

the relationship between perceived and observed students' behaviors using in-service teachers.

2. A follow-up study using the same subjects to determine if the long-term effects of instruction in and supervision through ALT-PE are maintained when they become in-service physical education teachers.

Appendix A

INFORMED CONSENT FORM:

STUDENT TEACHER COPY

1. Purpose. Research is being conducted to investigate the lasting effects of instruction and supervision in Academic Learning Time-Physical Education (ALT-PE) on student teachers' behaviors, specifically their awareness of their behaviors and the academic learning time they provide for the students in their classes. The student teachers selected for inclusion in this investigation participated in a study last year where they received either conventional supervisory feedback or instruction and supervision in ALT-PE while viewing the videotapes of their micro-peer teaching. In last year's study, prior to and following their teaching, each subject completed the Teacher's Questionnaire on Students' Activities (TQSA). The results of the investigation revealed that those pre-service teachers who had received instruction and supervision in ALT-PE were significantly more aware of their behaviors and provided their students with significantly more academic learning time or ALT-PE compared to those teachers who only received conventional supervisory feedback. This study is being conducted to determine whether the effects of systematic supervisory feedback on teachers' behaviors and interactions are long lasting by videotaping the subjects 1 year after their training during their student teaching experience. The videotapes will be coded using the revised ALT-PE instrument. The student teachers will be asked to complete the TQSA prior to and following their teaching.

Benefits. With the resulting information student teachers may hopefully become more aware of their behaviors and enhance their students' academic learning time.

Secondly, the information gained from this study will help evaluate the efficacy of providing pre-service teachers with systematic supervisory feedback, such as ALT-PE, as part of their professional preparation program by studying the effects of such feedback 1 year later during their student teaching experience.

2. Method. As a subject you will be asked to participate in the following manner:

A. Permit the researcher, Carol Collinson, to videotape three of your classes.

During this time, the only thing you will be asked to do is to wear a small wireless microphone.

B. Prior to and immediately following your teaching you will be asked to complete the TQSA. Each videotape will later be coded using the revised ALT-PE instrument.

3. Will this hurt? There are no apparent physical or psychological risks involved in participating in this study. At no time will your normal actions as a teacher be affected by the videotaping. The coding instrument which will be used is nonevaluative. The instrument describes the amount of time students are engaged in performing motor activities.

4. Need more information? If you wish to know more information about the study, please feel free to contact Carol Collinson or Dr. Victor H. Mancini at 274-3109 at Ithaca College.

5. Withdrawal from the study. Participation is voluntary, and your agreement to participate does not prevent you from discontinuing your participation at any time.

6. Will the data be maintained in confidence? Yes, it is assured that the names and schools in this study will be kept in the strictest confidence. Videotaping is solely for the purpose of this study and will be available only to the researchers,

Carol Collinson and Dr. Victor H. Mancini, and the student teacher involved.

When the study is completed, the tapes will be erased.

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

Thank you.

Signature

Date

Carol Collinson
Graduate Student

Dr. Victor H. Mancini
Advisor-Ithaca College

Appendix B
INFORMED CONSENT FORM:
STUDENT COPY

1. Purpose. Research is being conducted to determine the lasting effects of supervisory feedback using the Academic Learning Time-Physical Education instrument on student teacher's behaviors, specifically the awareness of their behaviors and the academic learning time they provide for the students in their classes.

Benefits. With the resulting information student teachers may hopefully become more aware of their behaviors and enhance their students' academic learning time. Secondly, the information gained from this study will help evaluate the efficacy of providing pre-service teachers with systematic supervisory feedback, such as ALT-PE, as part of their professional preparation program by studying the effects of such feedback 1 year later during their student teaching experience.

2. Method. Student teachers will be videotaped teaching three classes. As a student in the class, you will be asked to participate by allowing yourself to be videotaped. Each videotape will be coded using the revised ALT-PE instrument.

3. Will this hurt? There are no apparent physical or psychological risks involved in participating in this study. At no time will your normal actions as a student be affected by the videotaping. The coding instrument which will be used is nonevaluative. The instrument describes the amount of time students spend engaged in motor activities.

4. Need more information? If you wish to know more information about the study or the results of the study, please feel free to contact Carol Collinson or Dr.

Victor H. Mancini at 274-3109 at Ithaca College.

5. Withdrawal from the study. Participation is voluntary, and your agreement to participate does not prevent you from discontinuing your participation at any time.
6. Will the data be maintained in confidence? Yes, it is assured that the names and schools in this study will be kept in the strictest confidence. Videotaping is solely for the purpose of this study and will be available only to the researchers, Carol Collinson and Dr. Victor H. Mancini, and the student teacher involved. When the study is completed, the tapes will be erased.
7. I have read and understand the contents of the above and agree to participate in this study. I acknowledge that I am 18 years of age or older.

Thank you.

Signature

Date

Carol Collinson
Graduate Student

Dr. Victor H. Mancini
Advisor-Ithaca College

Appendix C

INFORMED CONSENT FORM:

PARENT OR GUARDIAN COPY

1. Purpose. The study in which your son/daughter is asked to participate focuses on determining the lasting effects of supervisory feedback using the Academic Learning Time-Physical Education (ALT-PE) instrument on student teachers' behaviors, specifically on their students' academic learning time. The ALT-PE instrument provides a means to systematically assess the opportunities teachers provide their students to learn, specifically students' time-on-task.

Benefits. With the resulting information student teachers may hopefully become more aware of their behaviors and enhance their students' academic learning time. Secondly, the information gained from this study will help evaluate the efficacy of providing pre-service teachers with systematic supervisory feedback, such as ALT-PE, as part of their professional preparation program by studying the effects of such feedback 1 year later during their student teaching experience.

2. Method. Student teachers will be videotaped teaching three classes. Your son/daughter, as a student in the class, will be asked to participate by allowing him/herself to be videotaped for these three classes. The videotaping will not interfere with your son's or daughter's normal actions in class nor will they be asked to wear any identifying markers. Later, each videotape will be coded by a trained observer using the ALT-PE instrument. This systematic observation instrument permits the description of the academic learning time teachers provide the students in their classes.

3. Will this hurt? There are no apparent physical or psychological risks involved

in participating in this study. The coding instrument being used in this investigation is nonevaluative; it simply describes the students' activities. Participation in this investigation is voluntary, and the parent's agreement to the student's participation does not prevent him or her from discontinuing the student's participation at any time. If your son/daughter does not wish to participate in this investigation, arrangements will be made with the physical educator to provide your child with another comparable physical education opportunity. This will be done by having the physical educator divide the class in half, with one half of the class assigned to the physical educator and one half to the student teacher. Students who do not wish to participate would inconspicuously be included in the half of the class working with the physical educator (this half of the class would also include students who indicated their willingness to participate).

4. Need more information? If you wish to know more information about the study or the results of this study, please feel free to contact Carol Collinson or Dr. Victor H. Mancini at 274-3109 at Ithaca College.

5. Withdrawal from the study. Participation in this study is voluntary. Your agreement to allow your son/daughter to participate does not prevent you from discontinuing his/her participation at any time. If this occurs, your son/daughter will be provided with another comparable physical education opportunity by his/her physical educator.

6. Will the data be maintained in confidence? Yes, it is assured that the names and schools in this study will be kept in the strictest confidence. Videotaping is solely for the purpose of this study and will be available only to the researchers, Carol Collinson and Dr. Victor H. Mancini, and the student teacher involved.

When the study is completed, the tapes will be erased.

7. I have read the above information about investigation and I understand its contents. I agree to allow my son/daughter, _____, to participate in this study. I acknowledge that I am 18 years of age or older. Please note that failure to return signed informed consent form shall be taken to mean that consent is not given for your child's participation in this investigation.

Thank you.

Signature of Parent or guardian

Date

Carol Collinson
Graduate Student

Dr. Victor H. Mancini
Advisor-Ithaca College

Appendix D

TEACHER'S QUESTIONNAIRE ON THE STUDENTS' ACTIVITIES

Name _____ Class _____ Date _____

DIRECTIONS.

For each of the following questions, estimate the percentage of class time for each of the activities listed (i.e., 15%, 28%). Only give a percentage for those activities you are planning to use or to have actually occur.

For each of the following eight questions, estimate the percentage of class time for the specific activity described. The total for the eight questions should equal 100%.

These eight questions refer to the activities of the whole class.

	Before Class	After Class
For questions 1 and 2 the focus is on class time devoted to the <u>general content areas</u> .	<u>Estimate</u>	<u>Estimate</u>

1. What percentage of class time was devoted to managerial tasks, such as selecting teams, moving from station to station, changing equipment, or moving out to the playing field?
2. What percentage of class time was spent on warm-up activities, such as stretching, calisthenics, or routine exercises?

_____	_____
_____	_____

Questions 3-6 refer to class time when

Appendix D (continued)

	Before Class	After Class
	<u>Estimate</u>	<u>Estimate</u>
the primary focus is on the <u>knowledge of the sport or activity</u> , not movement.		
3. What percentage of class time was used for explanation of rules and regulations of the game or activity, such as violations, scoring in bowling or the specific rules in basketball?	_____	_____
4. What percentage of class time was used for giving information on <u>background</u> , history, rituals, heroes, or the importance of the activity for later years, such as team records or fitness values?	_____	_____
5. What percentage of class time was spent on <u>demonstration</u> or <u>explanation</u> of how to execute a skill, such as watching a film, listening to a speaker, or listening to a lecture?	_____	_____
6. What percentage of class time was spent on giving information about <u>the</u>		

Appendix D (continued)

	Before Class	After Class
	<u>Estimate</u>	<u>Estimate</u>
<p><u>strategy</u> of the game or physical activity, such as an explanation of offense and defense or the progressions in a dance or a gymnastic routine?</p>	_____	_____
<p>Questions 7-8 refer to the class time students are <u>actively involved or participated</u> in skill practice, scrimmage, or a game.</p>		
<p>7. What percentage of class time was spent on <u>controlled skill practice</u>, such as circle drill in passing a volleyball, dribbling around cones, practicing skills on the balance beam, or practicing a step in dance?</p>	_____	_____
<p>8. What percentage of class time were <u>skills applied</u> in a modified game, scrimmage, or an entire game, such as a volleyball game, a complete balance beam routine, a relay race, 100-yard dash, or a complete dance routine?</p>	_____	_____

Total should equal 100% TOTAL _____ _____

For each of the following questions estimate the percentages of class time each of the situations occurred. The total for the seven questions should equal 100%. These seven questions refer to the specific type of individual student(s) involvement in the class.

Questions 1 and 2 refer to the	Before Class	After Class
percentages of time the students	<u>Estimate</u>	<u>Estimate</u>
were actively involved or		
participated in skill practice,		
scrimmage, or an entire game.		

1a. What percentage of class time was the student actively involved in a skill practice, a scrimmage, or entire game ?

_____ _____

1b. Of the percentage of time in question 1a that the students were actively involved, what percentage of the time were they successful? Example: Students were actively involved 66% of the time, and they were successful 42% of the time. Do not add this percentage into the total percentage.

_____ _____

2. What percentage of class time

Appendix D (continued)

	Before Class	After Class
	<u>Estimate</u>	<u>Estimate</u>
during the physical activity was the student <u>acting as an assistant</u> or <u>in a supporting role</u> , such as spotting in gymnastics, feeding the balls to a hitter in tennis, or clapping to keep beat while others are dancing?	_____	_____
Questions 3-7 refer to the percentage of time the learners are not involved in a motor activity or game.		
3. What percentage of class time was the student not receiving information but <u>waiting</u> for the next instructions or opportunity to respond, such as waiting in/for the balance beam, waiting as a substitute to play in a game, or waiting for further directions?	_____	_____
4. What percentage of class time was the student <u>receiving information</u> by lecture or watching a		

Appendix D (continued)

	Before Class	After Class
	<u>Estimate</u>	<u>Estimate</u>
demonstration such as listening to instructions or having a discussion?	_____	_____
5. What percentage of class time was the student <u>off-task</u> , not carrying out an assigned task or engaged in an activity he/she should not be in, such as fooling around, fighting, disrupting a drill, or talking while the teacher was talking?	_____	_____
6. What percentage of class time was the student involved in a <u>non-instructional task</u> of an ongoing activity, such as retrieving balls, fixing equipment, or changing sides of a court in volleyball?	_____	_____
7. What percentage of class time was the student <u>carrying out an assigned non-subject matter</u> task, such as warmup activities, moving out to		

Appendix D (continued)

	Before Class	After Class
	<u>Estimate</u>	<u>Estimate</u>
the playing field, or moving into squads?	_____	_____
Total should equal 100% TOTAL	_____	_____

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