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A comparison of the teaching behavior of male and female pre-service secondary physical education teachers

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A COMPARISON OF THE TEACHING BEHAVIOR OF MALE AND FEMALE PRE-SERVICE SECONDARY PHYSICAL EDUCATION TEACHERS

A Project Presented to the Faculty of
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Master of Science

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by
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ABSTRACT

The purpose of this study was to determine if any significant differences occurred in the teaching behavior of male and female pre-service secondary physical education teachers. The subjects were 40 male and 40 female physical education majors enrolled in the 1975 spring and fall semester course of Curriculum and Methods in Secondary Physical Education at Ithaca College, Ithaca, New York. Each subject was videotaped during three micro-peer teaching situations. CAFIAS was then used to code the videotapes, and the data were transposed to data cards for computer analysis. A mean score for each of the 15 variables of CAFIAS was compiled for each subject from his three micro-peer teaching situations. A Friedman two-way analysis of variance by ranks was used to determine if there were any significant differences between the teaching behavior of male and female pre-service secondary physical education teachers. The major hypothesis was accepted. It was found that there was no difference between the teaching behaviors of male and female pre-service physical education teachers. It was concluded that the mean percentages of the 15 variables tested varied little between the male and female teachers.

Ithaca College
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CERTIFICATE OF APPROVAL

MASTER OF SCIENCE PROJECT

This is to certify that the Master of Science Project of

Marsha E. Faulkner

submitted in partial fulfillment of the requirements for the degree of Master of Science in the School of Health, Physical Education, and Recreation at Ithaca College has been approved.

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INTRODUCTION

With the mounting interest for describing classroom behavior, many systems for observing, coding, and decoding teacher-pupil interaction have been developed in the past decade. These systems after analysis help tell the teacher what type of teaching behavior he or she reflected and what type of teacher-pupil interaction occurred.

In the early 1950's Withall (6) introduced seven categories for analyzing teacher behavior. This system was later revised by Flanders (2) to produce a system of 10 categories. Flanders Interaction Analysis System (FIAS) became the most widely known system for describing and analyzing interaction between the teacher and his students. This system was later adapted by Cheffers (6) to produce a system to measure specific behaviors found in predominantly physical education classes. The eventual goal of Cheffer's system (CAFIAS) was to enable researchers and teachers to analyze classroom behavior as well as physical activity with relative objectivity and thus increase teacher effectiveness.

Because of the newness of these systems, little has been know about the interactions that occur between the teacher and students and the effectiveness of one teaching

style as compared to another. Concerned with the teaching-learning process, CAFIAS has helped the teacher understand more fully and improve his role in the classroom. CAFIAS is not used to assign a value judgement to a particular teacher, nor does it attempt to identify "good" and "bad" teachers. It is important that the reader understand that CAFIAS is used only to accurately describe and analyze the events of the classroom in a way that leads to better understanding of what transpired. With this information a teacher can then decide if he or she has portrayed the teaching style he or she wanted.

The purpose of interaction analysis is to distinguish those acts of the teacher that increase students' freedom of action from those that decrease students' freedom of action and to keep a record of both (18). This information could be of the utmost importance to pre-service teachers. Interaction analysis can identify for the teacher those behaviors which are coming-across the way the teacher wants them. It is easier at this point in a teacher's training for him or her to modify or change behaviors which are received negatively.

The problem, however, is that studies utilizing interaction analysis in physical education are limited. Of those completed, differences are not observed between the teaching behaviors of male and female teachers. Nygaard (21) was able in his study to draw conclusions concerning male and female teachers. He found that the male teachers used lecture significantly more than did the female teachers. However, the female teachers used praise and encouragement,

directions or command, criticism or justification of authority, student talk-initiation, and silence or confusion significantly more than did the male teachers.

It is important to distinguish between male and female teaching behaviors not only for the pre-service teacher but also for the experienced teacher and reseacher. Is it accurate to state that physical education teachers, regardless of sex, tend to lecture frequently when, in fact Nygaard's (22) study concluded that male teachers lectured more than female teachers. Distinguishing between which sex lectured more will aid in the modification these teachers might want to make in their teaching behavior.

This study was designed to compare the teaching behavior of male and female pre-service secondary physical education teachers.

Scope of the Problem

The purpose of this study was to determine if any significant differences occurred in the teaching behavior of male and female pre-service secondary physical education teachers. The subjects were 40 female and 40 male physical education majors enrolled in the 1975 spring semester and 1975 fall semester courses of Curriculum and Methods in Secondary Physical Education at Ithaca College, Ithaca, New York. Each subject was observed three times while teaching in micro-peer teaching situations. Videotapes were make of each subject and coded.

Statement of the Problem

The purpose of this research project was to compare the teaching behaviors of male and female pre-service physical education teachers. This study specifically compared the following teacher-student interaction patterns:

1. Teacher contribution
2. Student contribution
3. Silence and/or confusion
4. Teacher use of questioning
5. Teacher indirect response
6. Pupil initiation (teacher suggestion)
7. Pupil initiation (student suggestion)
8. Content emphasis (teacher imput)
9. Teaching agency - teacher
10. Teaching agency - student
11. Teaching agency - environment
12. Percentage verbal activity
13. Percentage nonverbal activity
14. Class structure - one unit
15. Class structure - group or individual

Major Hypothsis

There will be no significant differences between the interaction analysis patterns of male and female pre-service secondary physical education teachers.

Assumptions of the Study

1. Students were assigned to classes according to normal college registration procedure.

2. The coding of CAFIAS for a period of 10 minutes would yield valid data to test the hypothesis.

3. The use of an experienced and reliable coder was the best way to obtain a true "picture" of the teaching situation.

Definition of Terms

1. CAFIAS - Cheffers Adaptation of the Flanders Interaction Analysis System. It is an expansion of FIAS designed specifically to describe both verbal and nonverbal teacher-pupil interactions in physical education classes.

2. FIAS - The Flanders Interaction Analysis System. It is a well documented system designed for describing only verbal interaction that occurs between the teacher and pupils (37).

3. Nonverbal Behavior - This refers to observable human behaviors which are not expressed verbally.

4. Peer Teaching - A teaching situation where pre-service teachers learn and practice teaching skills by teaching their classmates (peers).

5. Pre-Service Teacher - An undergraduate student in a teacher training program who had not participated in student teaching.

6. Verbal Behavior - All interactions expressed verbally.

Delimitations of the Study

1. The groups studied were intact groups

2. Only one interaction analysis system was used (CAFIAS).

3. Only the spring and fall semester 1975 classes of Curriculum and Methods in Secondary Physical Education at Ithaca College, Ithaca, New York, were tested.

4. Each subject taught in a peer teaching situation of which 10 minutes of the teaching behavior was coded.

Limitations of the Study

1. The findings refer to only the pre-service teachers tested.

2. The results will hold true to only the one interaction analysis system used.

3. The presence of an observer and videotape machine could effect the interactions of the teacher and students.

Chapter 2

REVIEW OF RELATED LITERATURE

The review of related literature for this study focused specifically on (1) the purpose of analyzing verbal and nonverbal teacher-pupil interactions and (2) leading interaction analysis systems of classroom behavior. These systems will be discussed as to their feasibility in physical education settings and male/female differences in the research.

The interactions that occurred between the teacher and students have been aspects of classroom behavior that have long been accepted as a vital part of the teaching learning process; however, the observability of the classroom behavior has long been a problem. Squires (41:1463) concluded:

> The teacher's participation in improving his teaching behavior has always been limited by the inability to teach and to observe that behavior simultaneously. The study and improvement of teaching has thereby become reliant on putting trained observers into the classroom to record behavioral interactions and in one form or another to offer these records for the teacher's consideration and possible improvement.

Flanders (2) has done extensive work in studying the verbal interactions in the classroom in order to ascertain teacher influence and overall classroom climate. Flanders stated two purposes of analyzing classroom interaction (9:2):

> 1. To help a teacher develop and control his teaching behavior.

2. To investigate relationships between classroom interactions and teaching acts so as to explain some of the variability in the chain of events.

Cogan (3:66) expressed his concern as a question. "What are the relationships between the behaviors of the teacher and the behaviors of his pupils?" He answered his question as follows (3:66):

> It is evident that until such antecedent-conseluent relationships become predictable, the effectivieness of teachers connot be rigorously evaluated. Only relatively incomplete or unsatisfactory answers to the questions have thus far been found in the literature.

Anderson stated the need for describing classroom behavior as follows (15:1):

> In these times of revolutionary change in teaching methods in physical education, there is particular need for a more thorough and empirically based understanding of the teaching process. Descriptive-analytic research in physical education could provide the tools of inquiry as well as data needed to intelligently monitor and guide the process of change.

Dougherty (18:39) felt interaction analysis would offer the teacher (1) objective feedback as to the type and quantity of teacher-pupil interaction in the classroom and (2) knowledge that would enable the teacher to take steps to bring his actual and his desired behavior into closer alignment.

The need to describe classroom behavior has been apparent. The problem that has faced researchers in developing systems was to distinguish between what is and what is not significant in teaching (19). Therefore, Fishman and Anderson stated three essential features that interaction analysis

system should include (19:9).

1. A standardized set of procedures for observing events in teaching.
2. A recording instrument that specifies carefully defined categories of observable behaviors and provides a coding system for the efficient classification of observed behavior into categories.
3. A procedure for presenting the data collected in some meaningful form.

In the early 1950's, Withall (6) introduced seven categories for analyzing teacher behavior. In the late 1950's Flanders (2) built on Withall's system to develop a system known as The Flanders Interaction Analysis System (FIAS). This system provided the teacher with a tool for gathering objective data about his own behavior in the classroom. FIAS is an observable system consisting of ten categories. Categories one thru seven described teacher-talk, eight and nine described student-talk, and category ten described silence and/or confusion. The data yielded by FIAS can produce ratios for (1) teacher talk, (2) student talk, (3) silence and/or confusion, (4) extended indirect influence, (5) extended direct influence, (6) the cross content, (7) teacher response to student comments, and (8) student talk following teacher talk.

Dougherty (18) developed a system by modifying FIAS. First, a subdivision for interactions with the entire group and interactions with individuals was added. And second, he added a new category, category 11, which would be used for periods of meaningful nonverbal activity.

Another system for verbal interaction was developed by Amidon and Hunter (4). The Verbal Interaction Category

System (VICS) contained five major categories for analyzing classroom verbal behavior. They were (1) teacher-initiated talk, (2) teacher response, (3) pupil response, (4) pupil-initiated talk, and (5) other.

Along with Dougherty (18) other researchers have also modified FIAS. Furst (9), who tested the influence of teacher behavior on pupil achievement, combined the Flanders system and Bellack's Cognitive System. Lambert, Goodwin, and Roberts (18) separated category seven into mild and strong criticism and also separated category ten into silence and confusion, thus increasing its sensitivity and usefulness (18). Bauch and Goebel (18) modified FIAS to suit their studies' particular needs.

The Coping Analysis Schedule for Educational Settings (CASES) was developed to focus on the overt behavior of children in the classroom (9). It consisted of twelve categories of behaviors which are categorized on the basis of descriptive statements.

McKibbin's system, The Teacher Innovator System (TIS) (40), was designed to analyze teacher and student interaction using a diverse range of teaching strategies. In his particular study he also utilized a system of Pedagogical Moves developed by Bellack and associates. This system examined the cognitive dimensions of the classroom (40).

Parker and French (23) developed a system to describe student behavior both verbal and nonverbal. The Student

Behavior Index (SBI) consisted of four main category parts: categories one thru four--student talk that was self directive, categories five thru seven--student behavior that was compliant, categories eight and nine--teacher behavior direct and indirect and category ten--confusion and miscellaneous.

The Reciprocal Category System described the teacher's and students' verbal behavior. It consisted of 20 categories with categories one thru ten describing teacher-talk and categories 11 thru 20 describing student-talk.

The need for a useful tool for observing and classifying behaviors emitted in physical education classes was three fold: (1) the amount of time and type of nonverbal activity differ greatly from the regular classroom, (2) the set-up and operational procedures are unique, and (3) pupil participation varies considerably from the classroom. Therefore, the following systems were designed to analyze the behaviors in a physical education setting.

By the use of Goldberger's (32) system it was observed that physical education teachers were more authoritarian and direct when compared to other student teacher groups. In this system, direct and indirect teaching behaviors were described by an adaptation of FIAS. Siedentop and Hughley were also concerned with describing student teachers' behaviors for the use of improvement. In their system eight behavior categories existed. They were (1) input teaching acts, (2) managerial behavior, (3) monitoring, (4) no activity, (5)

positive feedback for a skill attempt, (6) negative feedback for a skill attempt, (7) positive reaction to on-task student behaviors, and (8) negative reaction to off-task student behaviors. The behavior categories, a combination and extension of those developed by Breyer, Colchera and Pollack, were designed to be utilized with an applied behavior analysis or behavior modification model.

Five systems designed specifically for physical education classes have been developed from a videotape data bank (15). Eighty-three tapes were collected by graduate students studying in the New York City area universities. An all inclusive system, The Occurrence of Physical Activity, categorized all physical activity which occurred during each class period and the duration of each activity. Laubach (38) developed a system that was multidimensional. Each unit of the student's behavior was coded several times, once for each dimension. The following dimensions were included in Laubach's system: (1) function, (2) mode, (3) content, and (4) time. Augmented feedback was described by a six category system developed by Fishman (15). The six categories, which have twenty-one sub-categories, were (1) Form, (2) direction, (3) time, (4) teacher intent, (5) general referent, and (6) specific referent. Hurwitz (36) developed a system known as The Teacher's Role in Learning Activity Selection Process (TRI-LASP). The fifth system to be developed from the videotape data bank was developed by Anderson (15). This system was divided into four parts: (1) professional

functions, (2) modes of communication, (3) persons with whom the teachers interact, and (4) the topic of communication.

Love and Barry (21) developed a system which added a category to FIAS, and now all nonverbal behaviors were coded in each of the 11 categories. Barret's (16) system was designed to describe teacher-student behavior in problem-solving techniques. She identified six types of movement tasks: (1) command, (2) guided discovery, (3) selected response, (4) specific limitations, (5) non-specific limitation, and (6) free exploration.

Cheffers (6) expanded FIAS into what is known as the Cheffers Adaptation of Flanders Interaction Analysis System (CAFIAS). CAFIAS consisted of FIAS but with the following changes: (1) teaching agency can be defined, (2) nonverbal behavior is coded, (3) class structure is defined, and (4) expanded pupil response. Cheffers made the following conclusion about his system (26:1674):

> It appears that CAFIAS as an instrument to describe physical activity classroom behavior is reliable when comparison of all ranking are made indicating the possibility of consistency in cell pattern.

Mancini (39) utilized CAFIAS at Boston University in 1974. In his study he measured the interaction patterns, both verbal and nonverbal, between elementary students and their teachers. This study, along with Keilty's (37), helped establish that CAFIAS is an adequate means of coding the interactions and behavior patterns between physical education teachers and their students.

CAFIAS has been ulitized for two completed theses at Ithaca College. Chertok concluded (27:41):

> The guided discovery style of teaching will not significantly increase the performance level of third grade students on selected ball handling skills, when compared to the performance level on the same ball handling skills taught by the command style of teaching.

Hendrickson (33) found that the use of instruction and supervision in CAFIAS combined with the viewing of video-taped micro-peer lessons of those students in the treatment group yielded more indirect pre-service teachers.

The number of studies using interaction analysis systems for physical education has grown rapidly. However, conclusions are still made about physical education teachers without stipulating whether the sex of these teachers is significant to their behavior. Male and female differences were cited in Nygaard's (22) study. Male teachers were more direct overall. Female teachers encouraged more student talk. Female teachers used a more autocratic or command-like verbal pattern. However, male teachers used more lecture. Nygaard made this conclusion (22:356):

> For this study, the male and female teachers behaved quite differently. . . When the total matrix is examined, two distinct interaction patterns emerge. It is interesting and unusual that two recognizable patterns reflect the verbal pattern used by each sex, and that two patterns differ considerably if examined as teaching models or teaching styles.

Other researchers (32, 15, 39, 9, 28, 40) have made conclusions about the teacher's behaviors and interactions with students, but none divide the teachers into

male and female. It is, therefore, essential that more studies are conducted where male and female differnces in teaching behaviors can be examined.

Summary

"What are the relationships between the behaviors of the teacher and the behaviors of his pupil (3:66)?" Without the answer to this question one cannot evaluate the teacher's performance nor help the teacher modify his behavior. Dougherty (18) felt that by describing teacher-pupil interactions, a teacher could better align his desired behavior with his actual behavior. These interactions that occurred between the teacher and students are aspects of classroom behavior that have long been accepted as a vital part of the teaching learning process. Because these interactions are important to both the teacher and researcher, systems to describe the classroom behaviors have been developed.

The most widely used system is Flanders Interaction Analysis System (18). However, FIAS can describe only the verbal interactions occurring in the classroom, thus making it inadequate in describing physical education settings. Other systems (40, 22, 18, 30, 4) have been developed to describe classroom behavior but fail to describe accurately a physical education setting. Of those systems (32, 38, 15, 23, 16, 6) developed specifically for physical education classes, Cheffers Adaptation of Flanders Interaction Analysis

System is most documented. CAFIAS described: (1) nonverbal communication, (2) more student response, (3) the teaching agency and (4) class structure (6). CAFIAS, then, is concerned primarily with measuring dimensions of human behaviors that cannot be measured by FIAS (34). Although the number of studies utilizing CAFIAS is small (37, 39, 27, 33) it is still felt to be the most descriptive tool for measuring teacher-pupil interactions and behaviors in physical activity classes.

Studies using descriptive analytic tools fail to make sex differences in describing the teachers' behaviors. Nygaard (22), by the use of FIAS, found differences in the verbal patterns of male and female teachers. Since FIAS cannot accurately describe a physical education class, it is necessary to use a more descriptive tool--CAFIAS--and analyze the differences in the teaching behavior of male and female teachers.

Chapter 3

METHODS AND PROCEDURES

Chapter 3 will be concerned with the means by which the study was undertaken. It will include (a) selection of the subjects, (b) testing instruments, (c) method of data collection, (d) scoring of data, (e) treatment of data, and (f) summary.

Selection of Subjects

The subjects for this study were 40 female and 40 male physical education majors at Ithaca College. All were enrolled in the 1975 spring and fall semester classes of Curriculum and Methods in Secondary Physical Education at Ithaca College. All students in both sections were assigned three peer teaching situations at equal intervals throughout the semester. The 40 male and 40 female students to be utilized for this study were then randomly selected from the entire group.

Testing Instrument

Cheffers Adaptation of Flanders Interaction Analysis System (CAFIAS) was used to measure the verbal and nonverbal interactions and behavior patterns of the 80 pre-service secondary physical education teachers. This interaction analysis system was specifically designed to code behaviors

in physical activity classes. The variables measured by CAFIAS can be seen in Appendix A.

Method of Data Collection

The 80 subjects were videotaped during their three 10 minute micro-peer teaching experiences. CAFIAS was then used to code the videotapes. The coding procedure from the videotapes was as follows:

1. Every three seconds or everytime the behavior changed the coder recorded a number that corresponded to a category of the interaction that had just taken place.

2. These numbers were recorded in sequence in a column on a tally sheet.

3. From the tally sheet these numbers were then placed on a matrix. A computer program was used to determine the number of tallies for each cell.

4. From the matrix and computer read-out the interaction patterns were determined and key aspects were observed.

Scoring of the Data

Computer analysis was used in the scoring of the data. Each tally recorded by the coder was transposed onto data cards. The computer then compiled the raw data into ratios and percentages for the 15 variables. A mean score of the three coded situations for each subject was then computed for each of the 15 variables. See Appendix B for an outline of the mean scores of the 15 variables for each subject.

Treatment of the Data

To determine if any overall significant differences existed between male and female teaching behaviors a Friedman two-way analysis of variance by ranks was used. A statistical significant difference at the .05 level was required for significant differences both between the groups and among the 15 variables. Chi square was then used to determine where the differences existed among the 15 variables.

Summary

The 80 subjects, 40 male and 40 female pre-service physical education teachers, were randomly selected from the 1975 fall and spring semesters of the course Curriculum and Methods in Secondary Physical Education given at Ithaca College, Ithaca, New York. All subjects were coded using CAFIAS for three micro-peer teaching situations. The raw data were transposed onto computer cards for an analysis of CAFIAS. Mean scores for the three situation were then used as the subject's "best picture" of his teaching behavior. A Friedman two-way analysis was used to determine if any significant differences existed between the teaching behavior of the male teachers and teaching behavior of the female teachers. Chi square was then used to determine where the differences existed among the 15 variables.

Chapter 4

ANALYSIS OF DATA

The purpose of this study was to determine the relationship between male and female pre-service secondary physical education teachers. The 80 subjects for this study were students enrolled in the 1975 spring and fall semester course of Curriculum and Methods in Physical Education at Ithaca College, Ithaca, New York.

This chapter will be concerned with the results of the statistical analysis of the data and the coder's reliability.

Coder's Reliability

To determine coder's reliability for the coder Dr. Victor H. Mancini, four lessons, two from the spring semester and two from the fall semester, were coded live and a repeated coding one day later from the videotapes of the four lessons. A Spearman rank-order correlation was utilized on the top ten cells to establish reliability. The data are presented in Table 1. The mean score of the four Spearman rank-order correlations was .995 which was sufficient to indicate the coder was reliable. The four individual Spearman rank-order correlations and CAFIAS matrices are outlined in Appendix C.

Table 1

CODER RELIABILITY*

SUBJECTS	SPEARMAN RHO	MEAN
1 (spring)	.99	.995
2 (spring)	1.00	
3 (fall)	1.00	
4 (fall)	.99	

*Coder reliability determined by a Spearman Rho comparison of the coding of teaching behaviors live then taped.

Results of the Friedman Two-Way Analysis of Variance by Ranks

To determine if there was a significant difference between the teaching styles of male and female pre-service secondary physical education teachers a Friedman two-way analysis of variance by ranks was used. Mean scores of the 15 variables were compared and a Chi square value (for 14df) of 23.685 or greater was needed to determine a significant difference. A Chi square value of 4.8 was obtained and therefore, the null hypothesis was accepted. There was no significant difference between the teaching behavior of pre-service secondary physical education teachers. The results of the Friedman two-way analysis of variance by ranks are contained in Table 2.

Table 2

FRIEDMAN TWO-WAY ANALYSIS BY RANKS

	CATEGORY	MS MALE	MS FEMALE	RANK MALE	RANK FEMALE	FRIEDMAN VALUE
1.	Total Teacher Contribution	59.16	55.94	13	13	
2.	Total Student Contribution	31.05	33.62	6	6	
3.	Total Silence and/or Confusion	9.79	10.46	3	3	
4.	Total Teacher Use of Questioning	10.52	10.71	4	4	
5.	Total Teacher Acceptance and Praise	47.38	44.86	10	8	
6.	Total Pupil Initiation, Teacher Suggestion	39.67	40.56	7	7	
7.	Total Pupil Initiation Student Suggestion	20.24	19.72	5	5	4.8
8.	Content Emphasis, Teacher Input	61.02	58.11	14	14	
9.	Teacher as Teacher	93.83	92.03	15	15	
10.	Other Students (as teacher)	4.26	4.82	2	2	
11.	The Environment (as teacher)	1.19	3.16	1	1	
12.	Verbal Emphasis	52.35	51.64	11	12	
13.	Nonverbal Emphasis	47.65	48.36	9	9	
14.	Class Structure-Whole	56.03	50.70	12	11	
15.	Class Structure-Part	43.97	49.30	8	10	

Chapter 5

DISCUSSION OF RESULTS

The purpose of this chapter is to discuss the results that can be determined from the analysis of the data presented in the previous chapter.

This study was unique in that the differences between the teaching behavior of male and female physical education teachers has not been previously tested by CAFIAS. In Nygaard's (22) study differences between male and female physical education teachers were observed. However, FIAS was used to describe these differences and thus only the verbal interactions could be defined. The results of this study indicate that there is no difference between the teaching behavior of male and female pre-service physical education teachers. There are, however, major differences between this study and Nygaard's study which could explain the differences in the results. First, Nygaard used 40 subjects in contrast to 80 subjects used in this study. Second, by the use of CAFIAS more variables were observed in this study as compared to FIAS used by Nygaard. Third, Nygaard's study used physical education teachers in elementary, secondary, and college levels where as pre-service secondary physical education teachers were used for this study. Fourth, the teachers utilized in

Nygaard's study were in a "school setting" compared to the micro-peer teaching situations in this study. Therefore, one might explain the results as follows:

1. Because more variables were coded in this study a "better picture" of the teachers' behaviors could be observed. Thus, the results of this study would better indicate the teaching behavior of physical education teachers.

2. Because experienced teachers were used by Nygaard his results show a more valid behavior pattern of male and female physical education teachers.

3. A micro-peer teaching situation might not yield a difference in the teacher-student interaction patterns. Therefore, this might explain why no differences were found between the teaching behavior of male and female pre-service physical education teachers used in this study.

The difference in results between the Nygaard study and this study might also be explained by the sample populations used by the two investigators. Nygaard's subjects were teachers in the public schools of the City of Missoula, Montana, and the University of Montana (22). Therefore, he used 40 teachers that had attended a number of colleges and/or universities for their training to become physical education teachers. This study utilized 80 teachers all receiving the same teacher-training preparation course. It is, therefore, possible that the differences found in Nygaard's study and the lack of differences found in this

study are related to the teacher-training preparation experienced by the physical education teachers.

Summary

No significant differences were found between the teaching behaviors of male and female pre-service secondary physical education teachers. The results are unique to this study. In Nygaard's study differences were found between the teaching behaviors of male and female physical education teachers. A number of factors are important to the results of both studies. Nygaard used 40 subjects, FIAS, experienced teachers with a variety of teacher-training preparation courses, and different grade levels. This study used 80 subjects, CAFIAS, pre-service teachers, and all received the same teacher-training preparation course. The null hypothesis was accepted as there was no difference between the teaching behavior of male and female pre-service physical education teachers.

Chapter 6

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

Summary

The purpose of this study was to determine if any significant differences occur between the teaching behavior of male and female pre-service secondary physical education teachers.

The subjects were 40 female and 40 male physical education majors enrolled in the 1975 spring semester and 1975 fall semester course of Curriculum and Methods in Secondary Physical Education at Ithaca College, Ithaca, New York. Each subject was observed three times while teaching in micro-peer teaching situations. Videotapes were made of each subject, and Cheffers Adaptation of Flanders Interaction Analysis System was used to code the tapes. The data collected from the coding of CAFIAS were transposed to data cards for computer analysis. The raw data were computed into percentages for the 15 variables. A mean score for each of the 15 variables of CAFIAS was compiled for each subject from his three micro-peer teaching situations. A Friedman two-way analysis of variance by ranks was used to determine if any significant differences existed between the teaching

behavior of male teachers and the teaching behavior of the female teachers.

The major hypothesis that there will be no significant difference between the interaction analysis patterns of male and female pre-service secondary physical education teachers was accepted. At the .05 level of significance the Friedman two-way analysis of variance by ranks revealed that there was no difference between the teaching behavior of male and female pre-service secondary physical education teachers.

Conclusions

Based on the analysis of the data, male and female pre-service secondary physical education teachers exhibit the same teaching behavior. Verbal and nonverbal interaction patterns do not differ between male and female physical education teachers.

Recommendations for Further Study

It is the suggestion of the investigator that the following recommendations be considered:

1. A study where teachers are observed in a "school-teaching" situation.

2. A study where teachers are observed at a particular grade level to see if differences occur between the teaching styles.

3. The teaching behavior of pre-service teachers as compared to experienced teachers could be studied.

4. The relationship between male and female coaches could be studied.

5. A continuation of this study when the subjects are student-teachers, first-year teachers, and then tenured teachers.

APPENDICES

APPENDIX A

THE CATEGORIES OF CHEFFERS ADAPTATION OF FLANDERS INTERACTION ANALYSIS SYSTEM

Coding Symbols

Teacher
Environment (E)
Student (S)

Categories	Verbal	Relevant Behaviors	Nonverbal
2-12	2 Praises, Commends, jokes, encourages	Face: Posture:	12 Smiles, nods with smile, (energetic) winks, laughs Claps hands, pats on shoulder, places hand on head of student, wrings student's hand, embraces joyfully, laughs to encourage, spots in gymnastics, helps child over obstacles.
3-13	3 Accepts, clarifies, uses, and develops suggestion and feelings by the learner.	Face: Posture:	13 Nods without smiling, tilts head in empathetic reflection, sighs empathetically. Shakes hands, embraces sympathetically, places hand on shoulder, puts arm around shoulder or waist, catches an implement thrown by student, accepts facilities
4-14	4 Asks questions requiring student answer.	Face: Posture:	14 Wrinkles brow, opens mouth, turns head with quizzical look. Places hands in air, waves finger to and fro anticipating answer, stares awaiting answer, scratches head, cups hand to hear, stands still half turned toward person, awaits answer.

THE CATEGORIES (Continued)

Categories	Verbal	Relevant Behaviors	Nonverbal
5-15	5 Gives facts, opinions, expresses ideas, or asks rhetorical questions.	Face: Posture:	15 Whispers words inaudibly, sings, or whistles. Gesticulates, draws, writes, demonstrates activities, points.
6-16	6 Gives directions or orders.	Face: Posture:	16 Points with head, beckons with head, yells at. Points finger, blows whistle, holds body erect while barking commands, pushes child through a movement, pushes a child in a given direction.
7-17	7 Criticizes, expresses anger or distrust, sarcastic or extreme self-reference.	Face: Posture:	17 Grimaces, growls, frowns, drops head, throws head back in derisive laughter, rolls eyes, bites, spits, butts with head, shakes head. Hits, pushes away, pinches, grapples with, pushes hands at student, drops hands in disgust, bangs table, damages equipment, throws things down.
8-18	8 Student response that is entirely predictable, such as obedience to orders, and responses not requiring thinking beyond the comprehension phase or knowledge (after Bloom)	Face: Posture:	18 Poker face response, nod, shake, gives small grunts, quick smile. Moves mechanically to questions or directions, responds to any action with minimal nervous activity, robot like.

THE CATEGORIES (Continued)

Categories	Verbal	Relevant Behaviors	Nonverbal
Eine (8\) & Eine-teen (18\)	EINE (8\) Predictable student responses requiring some measure of evaluation and synthesis from the student, but must remain within the province of predictability. The initial behavior was in response to teacher initiation.	Face: Posture:	EINETEEN (18\) A "What's more, Sir" look, eyes sparkling. Adds movements to those given or expected, tries to show some arrangement requiring additional thinking; e.g., works on gymnastic routine, dribbles basketball, "all game playing."
9-19	9 Pupil-initiated talk that is purely the result of their own initiative and that could not be predicted	Face: Posture:	19 Interrupting sounds, gasps, sighs. Puts hands up to ask questions, gets up and walks around without provocation, begins creative movement education, makes up own games, makes up own movements, shows initiative in supportive movement, introduces new movements into games not predictable in the rules of the games.
10-20	10 Stands for confusion, chaos, disorder, noise, much noise.	Face:	20 Silence, children sitting doing nothing, noiselessly awaiting teacher just prior to teacher entry, etc.

APPENDIX B

CLASSIFICATION OF CAFIAS DATA FOR ALL SUBJECTS

Variables Tested

1. Total Teacher Contribution (TTC)
2. Total Student Contribution (TSC)
3. Total Silence and/or Confusion (S/C)
4. Total Teacher Use of Questioning (TTUQ)
5. Total Teacher Acceptance and Praise (TTAP)
6. Total Pupil Initiation, Teacher Suggestion (TPITS)
7. Total Pupil Initiation, Student Suggestion (TPISS)
8. Content Emphasis, Teacher Input (CE)
9. Teacher (as teacher) (T)
10. Other Students (as teacher) (S)
11. The Environment (as teacher) (E)
12. Verbal Emphasis (VE)
13. Nonverbal Emphasis (NE)
14. Class Structure (as one unit) (WHOLE)
15. Class Structure (group or individual) (PART)

MEAN SCORES OF CAFIAS FOR ALL SUBJECTS

FEMALES

SUBJECTS	TTC*	TSC	S/C	TTUQ	TTAP	TPITS	TPISS	CE	T	S	E	VE	NE	WHOLE	PART
1	72.01	26.49	1.49	6.98	65.62	19.72	50.00	72.79	44.78	51.49	3.73	44.03	55.97	4.94	95.06
2	31.43	53.33	15.24	10.26	59.26	71.43	4.76	34.76	88.10	0.00	11.90	36.19	63.81	7.32	92.68
3	52.89	34.95	12.16	12.50	53.23	62.61	35.71	50.76	90.58	8.51	0.91	60.18	39.82	4.49	95.51
4	30.27	49.04	20.69	14.89	50.00	60.16	39.13	31.80	91.19	2.68	6.13	55.94	44.06	1.43	98.57
5	46.75	35.37	17.89	10.34	53.57	71.26	26.32	48.37	100.00	0.00	0.00	52.44	47.56	34.76	65.24
6	35.37	44.69	19.94	12.77	49.21	78.42	12.50	26.05	91.96	5.47	2.57	63.67	36.33	12.20	87.80
7	59.91	30.60	9.48	3.45	39.13	22.54	0.00	65.95	100.00	0.00	0.00	43.97	56.03	100.00	0.00
8	47.37	37.28	15.35	6.49	51.61	70.59	26.47	52.63	81.58	14.91	3.51	63.60	36.40	7.22	92.98
9	42.01	45.56	12.43	0.00	75.00	37.66	46.15	46.75	76.33	16.57	7.10	46.15	53.85	3.18	96.82
10	50.49	29.13	20.39	88.00	46.30	73.33	34.78	41.26	100.00	0.00	0.00	65.53	34.47	100.00	0.00
11	60.61	31.17	8.23	19.82	62.07	79.17	40.00	72.73	77.92	0.00	22.08	39.83	60.17	100.00	0.00
12	54.06	34.38	11.56	17.19	26.67	36.36	26.67	58.13	99.06	0.94	0.00	60.00	40.00	100.00	0.00
13	60.07	35.97	3.96	3.21	30.77	11.01	0.00	68.65	98.35	0.00	1.65	48.86	53.14	59.15	40.85
14	50.35	40.67	9.03	3.54	15.62	6.84	40.00	50.69	97.57	1.04	1.39	44.44	55.56	100.00	0.00
15	26.26	46.04	27.70	0.00	6.67	40.62	3.85	28.42	96.76	0.00	3.24	57.55	42.45	8.99	91.01
16	73.56	17.63	8.81	1.66	19.44	7.69	0.00	71.53	100.00	0.00	0.00	58.31	41.69	100.00	0.00
17	57.94	33.33	8.73	2.70	37.14	4.76	0.00	58.73	84.52	15.48	0.00	53.57	46.43	31.68	68.32
18	65.31	26.56	8.13	3.50	17.07	30.61	8.33	66.94	98.37	0.54	1.08	59.35	40.65	21.27	78.73
19	73.43	25.87	0.70	1.07	17.39	10.81	0.00	80.42	100.00	0.00	0.00	43.71	56.29	66.43	33.57
20	73.44	22.27	4.30	8.55	44.44	17.54	25.00	71.48	99.61	0.00	0.39	54.30	45.70	58.51	41.49
21	27.61	54.60	17.79	3.12	23.08	6.74	40.00	32.52	96.93	0.00	3.07	50.92	49.08	10.29	89.71
22	95.60	2.38	2.01	2.33	42.86	69.23	33.33	97.44	100.00	0.00	0.00	53.11	46.89	100.00	0.00
23	71.96	25.40	2.65	1.85	6.36	5.21	50.00	50.53	100.00	0.00	0.00	50.00	50.00	100.00	0.00
24	32.83	49.06	18.11	0.00	21.05	5.38	0.00	44.53	92.45	0.00	7.55	38.87	61.13	10.90	89.10
25	60.19	31.28	8.53	25.61	53.33	68.18	11.76	59.24	95.73	0.00	4.27	54.50	45.50	100.00	0.00
26	63.73	28.53	7.73	13.66	58.93	68.22	7.41	67.73	82.13	17.87	0.00	46.67	53.33	50.00	50.00
27	64.06	25.81	10.14	1.87	65.62	32.14	10.00	56.68	100.00	0.00	0.00	57.60	42.40	100.00	0.00
28	51.10	36.56	12.33	30.49	85.29	74.70	4.55	52.86	100.00	0.00	0.00	59.47	40.53	80.75	19.25

* TOTAL DESCRIPTION OF VARIABLES CAN BE SEEN ON PAGE 34

MEAN SCORES OF CAFIAS FOR ALL SUBJECTS

FEMALES

SUBJECTS	TTC	TSC	S/C	TTUQ	TTAP	TPITS	TPISS	CE	T	S	E	VE	NE	WHOLE	PART
29	45.08	36.74	18.18	11.59	68.75	71.13	0.00	44.32	88.64	11.36	0.00	62.50	37.50	22.79	77.21
30	68.75	22.70	8.55	4.79	47.62	46.38	0.00	73.68	70.07	4.61	25.33	39.14	60.86	43.68	56.32
31	53.98	33.92	12.09	23.08	53.03	46.96	13.33	48.08	100.00	0.00	0.00	50.44	49.56	28.31	71.69
32	45.10	44.59	10.31	4.83	63.33	54.34	16.22	65.46	89.43	4.90	5.67	40.98	59.02	21.17	78.83
33	44.58	50.00	5.42	30.61	92.00	51.81	18.18	56.02	86.14	9.04	4.82	51.81	48.19	9.16	90.84
34	48.74	40.00	11.26	25.00	80.00	68.39	15.79	43.45	89.66	7.82	2.53	54.02	45.98	20.70	79.30
35	54.85	42.16	2.99	6.52	74.55	29.20	19.05	54.85	78.73	19.40	1.87	41.79	58.21	3.64	96.36
36	42.69	42.93	14.39	7.33	46.43	53.07	11.76	63.79	95.20	0.00	4.80	45.80	54.20	67.27	32.73
37	77.46	14.37	8.17	5.16	47.83	17.65	20.00	78.03	100.00	0.00	0.00	63.66	36.34	84.44	15.56
38	80.80	15.18	4.02	0.85	9.09	10.29	50.00	87.28	99.33	0.00	0.67	50.67	49.33	53.40	46.60
39	77.78	19.85	2.37	1.40	14.29	10.09	14.29	77.78	100.00	0.00	0.00	51.37	48.63	100.00	0.00
40	66.67	28.33	5.00	1.59	20.59	20.59	33.33	70.83	100.00	0.00	0.00	52.50	47.50	100.00	0.00
MEAN	55.94	33.62	10.46	10.71	44.86	40.56	19.72	58.11	92.03	4.82	3.16	51.64	48.36	50.70	49.30
KPC	74.72	19.17	6.11	2.07	14.29	20.29	0.00	78.89	100.00	0.00	0.00	53.89	46.11	100.00	0.00
LBC	54.17	30.56	15.28	3.31	11.43	40.91	0.00	56.94	100.00	0.00	0.00	43.75	56.25	100.00	0.00

MEAN SCORES OF CAFIAS FOR ALL SUBJECTS

MALES

SUBJECTS	TTC*	TSC	S/C	TTUQ	TTAP	TPITS	TPISS	CE	T	S	E	VE	NE	WHOLE	PART
1	45.90	39.34	14.75	10.29	59.72	63.33	31.71	32.13	91.48	1.64	6.89	51.15	48.85	23.58	76.42
2	50.50	36.63	12.87	5.50	50.00	87.39	16.22	51.16	87.13	2.97	9.90	49.83	50.17	9.81	90.19
3	58.65	33.76	7.59	17.39	68.09	25.00	46.67	57.38	81.01	4.64	14.35	51.90	48.10	2.37	97.63
4	54.76	32.65	12.59	8.26	42.50	73.96	12.82	55.78	58.16	41.84	0.00	60.54	39.46	11.73	88.27
5	32.27	52.99	14.74	12.50	24.00	42.11	31.03	42.23	79.68	14.74	5.58	50.20	49.80	4.02	95.98
6	42.45	42.86	14.69	10.00	52.27	44.76	48.28	39.59	93.88	2.04	4.08	51.02	48.98	4.50	95.50
7	41.82	46.65	8.54	47.95	68.92	64.05	23.91	43.29	94.21	1.22	4.57	47.26	52.74	27.34	72.66
8	50.56	42.01	7.43	0.91	23.08	23.01	0.00	76.58	89.22	0.00	10.78	30.48	69.52	100.00	0.00
9	67.33	23.33	9.33	1.73	44.83	14.29	0.00	68.00	100.00	0.00	0.00	54.67	45.33	100.00	0.00
10	85.95	10.54	3.51	7.48	67.57	52.63	0.00	90.57	55.45	45.55	0.00	60.63	39.37	30.42	69.58
11	65.30	28.08	6.62	7.98	52.63	19.10	0.00	79.18	95.90	0.95	3.15	55.84	44.16	28.93	71.07
12	70.74	24.02	5.24	7.14	4.55	5.45	0.00	76.86	93.01	5.24	1.75	57.21	42.79	30.32	69.68
13	82.09	14.68	3.23	1.34	12.50	6.78	0.00	84.08	98.51	0.00	1.49	50.00	50.00	97.10	2.90
14	59.35	27.10	13.55	4.29	28.57	82.14	10.00	66.77	99.03	0.00	0.97	52.26	47.74	21.69	78.31
15	65.40	23.95	10.65	2.21	44.44	23.81	55.56	62.74	90.87	9.13	0.00	55.89	44.11	100.00	0.00
16	50.41	32.79	16.80	17.95	62.22	21.25	33.33	43.44	100.00	0.00	0.00	64.34	35.66	100.00	0.00
17	50.30	37.58	12.12	17.53	63.77	27.42	0.00	43.33	95.76	4.24	0.00	50.30	49.70	100.00	0.00
18	56.71	30.96	12.33	8.18	77.08	73.45	9.09	56.16	100.00	0.00	0.00	55.89	44.11	39.50	60.50
19	74.57	19.14	6.29	9.43	59.18	49.25	0.00	74.29	93.14	6.86	0.00	50.86	49.14	59.90	40.10
20	52.41	35.83	11.76	14.29	68.57	19.40	33.33	49.73	100.00	0.00	0.00	58.82	41.18	22.86	77.14
21	65.67	29.85	4.48	16.22	87.69	27.50	21.43	58.96	100.00	0.00	0.00	42.16	57.84	100.00	0.00
22	70.23	22.90	6.87	7.23	38.89	23.33	33.33	75.95	100.00	0.00	0.00	57.25	42.75	50.94	49.06
23	63.28	24.88	11.84	3.18	64.29	57.28	11.76	62.32	100.00	0.00	0.00	59.18	40.82	44.13	55.87
24	60.95	27.14	11.90	14.74	72.73	77.19	11.90	55.71	97.62	2.38	0.00	56.19	43.81	58.01	41.99
25	56.99	35.62	7.39	57.25	77.65	74.07	8.00	58.31	100.00	0.00	0.00	66.75	33.25	100.00	0.00
26	47.72	39.01	13.27	20.67	73.63	62.94	49.33	49.90	92.67	7.33	0.00	56.44	43.56	69.28	30.72
27	47.09	47.09	5.83	18.87	43.18	34.02	28.57	48.54	84.47	7.28	8.25	38.35	61.65	13.61	86.39
28	48.81	43.73	7.46	11.54	32.50	72.09	0.00	58.31	86.78	8.47	4.75	40.34	59.66	15.35	84.65

* TOTAL DESCRIPTION OF VARIABLES CAN BE SEEN ON PAGE 34

MEAN SCORES OF CAFIAS FOR ALL SUBJECTS

MALES

SUBJECTS	TTC	TSC	S/C	TTUQ	TTAP	TPITS	TPISS	CE	T	S	E	VE	NE	WHOLE	PART
29	39.84	38.46	21.70	15.56	63.64	67.86	18.75	35.99	100.00	0.00	0.00	67.58	32.42	54.79	45.21
30	54.92	33.87	11.21	6.95	56.60	60.14	30.43	61.78	100.00	0.00	0.00	57.44	42.56	100.00	0.00
31	76.15	16.51	7.34	2.21	39.13	18.52	44.44	79.20	100.00	0.00	0.00	52.91	47.09	100.00	0.00
32	53.08	26.54	20.38	0.95	3.03	24.64	66.64	50.00	100.00	0.00	0.00	53.46	46.54	100.00	0.00
33	48.59	31.35	20.06	0.00	17.14	9.00	0.00	47.34	100.00	0.00	0.00	54.23	45.77	24.00	76.00
34	58.10	40.85	1.06	0.00	4348	12.07	0.00	70.42	100.00	0.00	0.00	38.03	61.97	43.48	56.52
35	80.38	18.01	1.61	1.82	40.00	5.97	50.00	79.57	100.00	0.00	0.00	54.30	45.70	100.00	0.00
36	55.17	33.91	10.92	17.95	55.56	27.12	15.38	66.67	100.00	0.00	0.00	55.75	44.25	47.37	52.63
37	64.95	28.18	6.87	4.03	15.00	4.88	50.00	70.10	100.00	0.00	0.00	45.02	54.98	100.00	0.00
38	80.54	15.61	3.85	7.48	85.71	59.42	5.00	84.16	100.00	0.00	0.00	54.75	45.25	77.17	22.83
39	59.94	36.96	3.11	1.50	6.67	42.02	12.50	60.87	95.03	4.97	0.00	37.27	62.73	28.89	71.11
40	73.33	16.67	10.00	0.51	4.35	8.00	0.00	73.33	100.00	0.00	0.00	47.67	52.33	100.00	0.00
MEAN	59.155	31.05	9.79	10.52	47.38	39.67	20.24	61.02	93.83	4.26	1.91	52.35	47.65	56.03	43.97
CBB	74.84	16.98	8.18	.93	13.64	7.41	0.00	76.10	98.74	.63	.63	52.83	47.17	37.13	62.87

APPENDIX C

Coder's Reliability* for Selected Subjects Using Spearman's Rho

Subject One

Top 10 Cells	Rank Live	Rank Taped	d	d^2
10-18	1	1	0	0
18-10	2	2	0	0
5-5	3	3	0	0
5-15	4	4	0	0
15-5	5.5	5	.50	.25
15-15	5.5	6.5	1.00	1.00
10-8	7	6.5	.50	.25
5-18	9	9	0	0
6-18	9	9	0	0
8-10	9	9	0	0
TOTAL				1.50

*.99

Top 10 cells listed refer to the order of coder's numerical frequency.

Rank live and rank taped refer to the origin of the coding.

d refers to the differences between the ranks of each cell for the live and taped codings.

d^2 refers to the d column squared.

Name Subject One

Class Secondary Methods

No. 20 G, B, (Coed)

CAFIAS

Grade Micro-Peer Teaching

Setting Live

Time Spring 1975

	2	12	3	13	4	14	5	15	6	16	7	17	8	18	8\	18\	9	19	10	20
2															1	3	1			
12							1		1							2	2	1		
3	1				1															
13					1			1												
4																1		1		5
14																				
5					1		18	12	3					8		3				
15					1		11	11	2					7		2				
6														8		1			1	
16														1						
7																				
17																				
8															1					
18		1	1		2		6	4	3	1					1	2			1	1
8\		2.			2		1											1	8	
18\	3	4	1		1		2	2	1									1	22	
9				1													1		2	
19				1			1	1											2	
10							1						1		10	23	1	1	1	
20							3		2						1	1				
Tea	4	7	2	2	9	0	44	34	12	1	0	0	1	24	14	38	5	5	38	6
Env																				
Stu																				
Tot																				
%	1.6	2.8	.8	.8	3.7	0	17.9	13.8	4.9	.4	0	0	.4	9.8	5.7	15.4	2.0	2.0	15.4	2.4

Name Subject One
Class Secondary Methods
No. 20 G, B, (Coed)

CAFIAS

Grade Micro-Peer Teaching
Setting Taped
Time Spring 1975

	2	12	3	13	4	14	5	15	6	16	7	17	8	18	8\	18\	9	19	10	20
2															1	3	1			
12							1		1							2	2	1		
3	1				1															
13					1			1												
4																1		1		5
14																				
5					1		18	12	3					8		3				
15					1		11	10	2					7		2				
6														8		1			1	
16														1						
7																				
17																				
8															1					
18		1	1		2		6	4	3	1					1	2			1	1
8\		2			2		1											1	8	
18\	3	4	1		1		2	2	1									1	22	
9				1													1		2	
19				1			1	1											2	
10							1						1		10	23	1	1	1	
20							3		2						1	1				
Tea	4	7	2	2	9	0	44	33	12	1	0	0	1	24	14	38	5	5	38	6
Env																				
Stu																				
Tot																				
%	1.6	2.5	.8	.8	3.7	0	17.9	13.5	4.9	.4	0	0	.4	9.8	5.7	15.4	2.0	2.0	15.4	2.4

Coder's Reliability* for Selected Subjects
Using Spearman's Rho

Subject Two

Top 10 Cells	Rank Live	Rank Taped	d	d^2
6-18	1	1	0	0
18-6	2	2	0	0
5-5	3	3	0	0
5-15	4.5	4.5	0	0
15-5	4.5	4.5	0	0
16-18	6	6	0	0
5-6	7	7	0	0
18-5	8.5	8.5	0	0
18-16	8.5	8.5	0	0
15-6	10	10	0	0
TOTAL				0

*1.00

Top 10 cells listed refer to the order of coder's numerical frequency.

Rank live and rank taped refer to the origin of the coding.

d refers to the differences between the ranks of each cell for the live and taped codings.

d^2 refers to the d column squared.

Name Subject Two
Class Secondary Methods
No. 20 G, B, Coed

CAFIAS

Grade Micro-Peer Teaching
Setting Live
Time Spring 1975

	2	12	3	13	4	14	5	15	6	16	7	17	8	18	8\	18\	9	19	10	20
2							1		1	1										
12				1																
3					1		2	2												
13						1														
4							1						1							
14								1												
5					1		42	31	13	4									2	
15							31	30	5	3										
6							1	1	1	1	1			69						
16							1	1	1	1		1		15						
7							1	1	2				1							
17														1						
8									1								1			
18	1		3				10	2	49	10	2			4			1	1		3
8\	1	1																		
18\																				
9									1						1					
19																				1
10									1	1	1								2	
20									2						1					1
Tea	2	1	3	1	2	1	90	69	77	21	4	1	2	89	2	0	2	1	5	5
Env																				
Dur																				
Tot																				
%	.5	.3	.8	.3	.5	.3	23.8	18.3	20.4	5.6	1.1	.3	.5	23.5	.5	0	.5	.3	1.3	1.3

Name Subject Two
Class Secondary Methods
No. 20 G, B, Coed

CAFIAS

Grade Micro-Peer Teaching
Setting Taped
Time Spring 1975

	2	12	3	13	4	14	5	15	6	16	7	17	8	18	8\	18\	9	19	10	20
2							1		1	1										
12				1																
3					1		2	2												
13						1														
4							1							1						
14								1												
5					1		41	30	13	4									2	
15							30	29	5	3									1	
6							1	1	1	1	1			68						
16							1	1	1	1		1		15						
7							1	1	2				1							
17													1							
8									1								1			
18	1		3				10	2	48	10	2		4				1	1		3
8\	1	1																		
18\																				
9									1						1					
19																				1
10									1	1	1								2	
20									2						1					1
Tea	2	1	3	1	2	1	88	87	76	21	4	1	7	88	2	0	2	1	5	5
Env																				
Stu																				
Tot																				
%	.5	.3	.79	.3	.5	.3	23.3	17.7	20.1	5.5	1.06	.3	1.85	23.3	.5	0	.5	.3	1.3	1.3

Coder's Reliability* for Selected Subjects
Using Spearman's Rho

Subject Three

Top 10 Cells	Rank Live	Rank Taped	d	d^2
5-5	1	1	0	0
5-15	2	2	0	0
15-5	3.5	3.5	0	0
15-15	3.5	3.5	0	0
18-5	5	5	0	0
6-18	6.5	6.5	0	0
18-10	6.5	6.5	0	0
15-18	8.5	8.5	0	0
10-8	8.5	8.5	0	0
18-15	10	10	0	0
TOTAL				0

*1.00

Top 10 cells listed refer to the order of coder's numerical frequency.

Rank live and rank taped refer to the origin of the coding.

d refers to the differences between the ranks of each cell for the live and taped codings.

d^2 refers to the d column squared.

Name Subject Three
Class Secondary Methods
No. 20 G, B, (Coed)

CAFIAS

Grade Micro-Peer Teaching
Setting Live
Time Fall 1975

	2	12	3	13	4	14	5	15	6	16	7	17	8	18	8\	18\	9	19	10	20
2															1					
12																				
3							1	1												1
13															1					
4													1		1					2
14																				
5					2		62	49	6	2			1	7	3					1
15							43	43	4	2			1	9	3					
6													1	11						
16													1	4						
7																				
17																				
8							3	1	2	1									3	
18	1			1	1		12	8	3	1			1	2	2				11	
8\					1		6	4											1	1
18\			1																	1
9																				
19																				
10			1										5	9	2	1			1	
20							2	1	2	1				1						
Tea	1	0	2	1	5	0	129	107	17	7	0	0	11	44	13	1	0	0	16	6
Env																				
Stu																				
Tot																				
%	.30	0	.60	.30	1.4	0	35.8	29.7	4.7	1.9	0	0	3.1	12.2	3.6	.3	0	0	4.4	1.7

Name Subject Three
Class Secondary Methods
No. 20 G, B Coed

CAFIAS

Grade Micro-Peer Teaching
Setting Taped
Time Fall 1975

	2	12	3	13	4	14	5	15	6	16	7	17	8	18	8\	18\	9	19	10	20
2															1					
12																				
3							1	1												1
13															1					
4													1		1					2
14																				
5					2		60	48	6	2			1	7	3					1
15					1		41	41	4	2			1	9	3					
6													1	11						
16													1	4						
7																				
17																				
8							3	1	2	1									3	
18	1			1	1		12	8	3	1			1	2	2				11	
8\					1		6	4											1	1
18\			1																	1
9																				
19																				
10			1										5	9	2	1			1	
20							2	1	2	1				1						
Tea	1	0	2	1	5	0	127	104	17	7	0	0	11	44	13	1	0	0	16	6
Env																				
Stu																				
Tot																				
%	.28	0	.56	.28	1.4	0	35.7	29.3	4.7	1.9	0	0	3.1	12.4	3.6	.28	0	0	4.4	1.7

Coder's Reliability* for Selected Subjects
Using Spearman's Rho

Subject Four

Top 10 Cells	Rank Live	Rank Taped	d	d^2
5-5	1	1	0	0
5-15	2	2	0	0
10-18	3	3	0	0
-15-15	4	4	0	0
15-5	5	5	0	0
18 -10	6	6	0	0
6-18	7	7	0	0
15-18	8.5	9	.50	.25
18-10	8.5	9	.50	.25
16-18	10	9	1.00	1.00
TOTAL				1.50

*.99

Top 10 cells listed refer to the order of coder's numerical frequency.

Rank live and rank taped refer to the origin of the coding.

d refers to the differences between the ranks of each cell for the live and taped codings

d^2 refers to the d column squared.

Name Subject Four
Class Secondary Methods
No. 20 G, B, Coed

CAFIAS

Grade Micro-Peer Teaching
Setting Live
Time Fall 1975

	2	12	3	13	4	14	5	15	6	16	7	17	8	18	8\	18\	9	19	10	20
2																				
12																				
3							1	1												1
13							1													1
4													2							2
14																				
5							24	23	4	3				2	1	5				2
15							17	18	4	2				12		3				1
6														13		1				
16														11						
7																				
17																				
8			2		1														1	
18				2	2		6	11	6	3			1		1	1			12	1
8\							2	1											5	
18\							8	2	1	2				2					14	
9																				
19																				
10													1	8	5	19				
20					1			2	3	3										4
Tea	0	0	2	2	4	0	59	58	18	13	0	0	4	48	7	29	0	0	32	12
Env																				
Stu																				
Tot																				
%	0	0	.7	.7	1.4	0	20.5	20.1	6.2	4.5	0	0	1.4	16.7	2.4	10.1	0	0	11.1	4.2

Name Subject Four
Class Secondary Methods
No. 20 G, B, Coed

CAFIAS

Grade Micro-Peer Teaching
Setting Taped
Time Fall 1975

	2	12	3	13	4	14	5	15	6	16	7	17	8	18	8\	18\	9	19	10	20
2																				
12																				
3							1	1												1
13							1													1
4													2							2
14																				
5							23	22	4	3				2		5				2
15							16	17	4	2				12	1	3				1
6														13		1				
16														12						
7																				
17																				
8			2		1								1						1	
18				2	2		6	10	6	3									12	1
8\							2	1											5	
18\							8	2	1	2				2	1	1			14	
9																				
19																				
10													1	8	5	19				
20					1			2	3	3										4
Tea	0	0	2	2	4	0	57	55	18	13	0	0	4	49	7	29	0	0	32	12
Env																				
Stu																				
Tot																				
%	0	0	.7	.7	1.4	0	20.1	19.0	6.3	4.5	0	0	1.4	17.2	2.4	10.2	0	0	11.2	4.2

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