INFORMATION TO USERS

This reproduction was made from a copy of a document sent to us for microfilming. While the most advanced technology has been used to photograph and reproduce this document, the quality of the reproduction is heavily dependent upon the quality of the material submitted.

The following explanation of techniques is provided to help clarify markings or notations which may appear on this reproduction.

1. The sign or "target" for pages apparently lacking from the document photographed is "Missing Page(s)". If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting through an image and duplicating adjacent pages to assure complete continuity.

2. When an image on the film is obliterated with a round black mark, it is an indication of either blurred copy because of movement during exposure, duplicate copy, or copyrighted materials that should not have been filmed. For blurred pages, a good image of the page can be found in the adjacent frame. If copyrighted materials were deleted, a target note will appear listing the pages in the adjacent frame.

3. When a map, drawing or chart, etc., is part of the material being photographed, a definite method of "sectioning" the material has been followed. It is customary to begin filming at the upper left hand corner of a large sheet and to continue from left to right in equal sections with small overlaps. If necessary, sectioning is continued again–beginning below the first row and continuing on until complete.

4. For illustrations that cannot be satisfactorily reproduced by xerographic means, photographic prints can be purchased at additional cost and inserted into your xerographic copy. These prints are available upon request from the Dissertations Customer Services Department.

5. Some pages in any document may have indistinct print. In all cases the best available copy has been filmed.

University Microfilms International
300 N. Zeeb Road
Ann Arbor, MI 48106

Buckett, Bonnie-jean

A DESCRIPTIVE ANALYSIS OF TEACHER BEHAVIOR AND INTERACTION PATTERNS OF SELECTED ELEMENTARY PHYSICAL EDUCATION SPECIALISTS

Middle Tennessee State University D.A. 1983

A DESCRIPTIVE ANALYSIS OF TEACHER BEHAVIOR AND INTERACTION PATTERNS OF SELECTED ELEMENTARY PHYSICAL EDUCATION SPECIALISTS

Bonnie-jean Buckett

A dissertation presented to the
Graduate Faculty of Middle Tennessee State University
in partial fulfillment of the requirements
for the degree Doctor of Arts

August, 1983

A DESCRIPTIVE ANALYSIS OF TEACHER BEHAVIOR AND INTERACTION PATTERNS OF SELECTED ELEMENTARY PHYSICAL EDUCATION SPECIALISTS

APPROVED:

Graduate Committee:

Martha H. Whaley
Major Professor

Glen P Reed
Committee Member

Wallace R. Maglas
Committee Member

Harry D. Penny
Head of the Department of Health, Physical Education, Recreation and Safety

Mary Martin
Dean of the Graduate School

ABSTRACT

A DESCRIPTIVE ANALYSIS OF TEACHER BEHAVIOR AND INTERACTION PATTERNS OF SELECTED ELEMENTARY PHYSICAL EDUCATION SPECIALISTS

Bonnie-jean Buckett

The purpose of this study was to systematically observe, using the Cheffer's Adaptation of Flanders Interaction Analysis System (CAFIAS), and describe the teacher behavior and interaction patterns of 14 selected elementary physical education specialists teaching first-, third-, and fifth-grade classes. Each instructor was observed twice in the gymnasium environment with approximately three weeks separating the observations. A descriptive analysis of the specialists as a group and as individuals was summarized. A 2 X 2 X 3 univariant MANOVA was used to analyze the significant differences that occurred between the grade level, gender of the instructor, class size, and the 27 parameters of CAFIAS. A traditional teaching style, consisting of teacher information-giving followed by predictable student responses and game-playing activities, dominated the observed physical education environments. The teachers seemed to have developed a comfortable teaching style and, with minimal differences,

habitually displayed the same teacher behavior regardless of the grade level of the students. Significant differences were determined to exist when comparing teacher gender and class size. The male specialists tolerated more confusion, allowed more verbal student contribution, and employed more nonverbal teacher questions, while the female specialists utilized more nonverbal teacher contribution, had more content emphasis, and displayed more nonverbal acceptance and praise. In smaller classes more confusion, student verbalization, verbal teacher acceptance and praise, content emphasis, and nonverbal teacher-suggested pupil initiation occurred. In the larger classes (over 40 students) more silence, nonverbal student contribution, total student-suggested pupil initiation, nonverbal emphasis, and the use of the environment as the teaching agent occurred.

DEDICATION

To my Grandfather, Parents, and Irving

And to all my friends who gave me moral support and encouragement while in Tennessee.

ACKNOWLEDGEMENTS

I gratefully acknowledge the assistance received from the committee: Dr. Martha Whaley, Chairperson, and Professors Glen Reeder and Wallace Maples.

Appreciation is extended to the Superintendents of Schools and those physical education specialists in the Murfreesboro City and Rutherford County School Systems for allowing me to conduct the study within their schools.

Gratitude is expressed to Dr. John Cheffers for introducing me to various observational tools and the value of systematically and objectively recording human interaction. Indebtedness is extended to Mr. Paul Cheffers for tolerating my panicked hysteria and for rewriting the data process program so that the Middle Tennessee State University Honeywell computer could handle the information involved in this study.

And lastly, a very special thanks to Ms. Karen Carter for her assistance in collecting the data, as well as all the constant moral support given throughout the preparation of this study.

August 1983 B.B.

Table of Contents

Tables

Appendixes

CHAPTER ONE

Introduction

According to Singer and Dick (1980), a teacher's methodology results from the interaction of personality, past experiences, present knowledges and conditions, and a variety of other variables. Kenneth Eble (1976) believes that teaching is a learned craft in which teachers must learn content, communication skills, and the nature of the student. As early as the late 1930's, educational researchers were interested in analyzing the classroom interaction (Amidon, 1967). Thus, one finds physical educators turning to the discipline of education for aid and direction in the area of classroom analysis. Value clarification, interaction analysis, systems approaches, the open gymnasium, and applied behavioral analysis have not been developed from the discipline of physical education (Siedentop, 1972).

Scientific analysis of the act of teaching has been developing over the past four decades. The need for the development of systematic and objective forms of observation have produced a wide variety of systems depending upon the needs of the researcher. "The primary concern of virtually all descriptive analytical tools is to collect objective

records which accurately describe teaching events, and to organize these records in such a way that they can be analyzed and more readily understood" (Dougherty, 1989:82).

The three focal points for analyzing the teaching situation are: teacher behavior, pupil behavior, or teacher-pupil interaction (Humphrey, 1980). Studying teacher behavior is the purpose of interaction analysis (Flanders, 1970). The most widely recognizable system was developed by Flanders (Dougherty, 1979); however, the Flanders Interaction Analysis System (FIAS) was only concerned with the verbal behavior occurring in the environment (Amidon, 1967). Several physical educators, Dougherty, Nygaard, Cheffers, Goldberger, and Rankin, have made attempts to revise FIAS in order to objectively observe both physical education and coaching situations. Educational researchers have indicated that nonverbal behaviors are as important as verbal behaviors and, more specifically, in the physical education and coaching environment, the verbal and nonverbal behaviors of both the instructor and the students are important to record (Quarterman, 1980). The Cheffers Adaptation of the Flanders Interaction Analysis System (CAFIAS) used Flanders' system as a base of verbal behaviors and added important nonverbal information. CAFIAS is distinctly different from other

systems as it recognizes the impact of nonverbal information on learning (Dougherty, 1979).

The data collected from systematic observation do not suggest what is good or bad but, in fact, show what has occurred in the situation (Humphrey, 1980). This study will focus upon the physical education instructor-student interaction that takes place in the gymnasium while teaching grades one, three, and five. The study was conducted for research purposes and will not be used to make any judgments of the teachers involved.

Statement of the Problem

The purpose of this study was to observe and describe the teaching behaviors and interaction patterns of 14 physical education teachers while engaged in instructional sessions with first, third, and fifth graders. Secondary concerns of this study were a comparison of teacher behavior and interaction patterns used during different class sizes and comparing the male and female instructors' patterns and behaviors.

Hypotheses

The following hypotheses were tested:

1. There will be no significant difference in the teaching behavior of the physical education specialists when comparing grade levels.

2. There will be no significant difference in the interaction patterns of the physical education specialists when comparing grade levels.

3. There will be no significant difference in the teacher behavior or interaction patterns of the physical education specialists when comparing classes of over 40 students to those with less than 30 students.

4. There will be no significant difference in the teacher behavior or interaction patterns when comparing the male and female physical education specialists.

Definitions of Terms

For the purpose of this study, the following terms were defined as:

Interaction analysis. Interaction analysis is a technique for capturing quantitative and qualitative dimensions of teacher verbal behavior, but the system cannot measure all that occurs (Amidon, 1967:2).

Systematic observation. A tool used to study the dynamic, on-going interaction occurring between people (Cheffers, 1980:2).

Flanders Interaction Analysis System (FIAS). A system that involves coding seven possible categories when the teacher is involved in talking, two categories when the students are talking, and a last category to indicate silence or confusion (Flanders, 1970:33).

Cheffers Adaptation of Flanders Interaction Analysis System (CAFIAS). A system that involves coding six possible categories when the teacher is verbally or nonverbally communicating, three categories when the students are verbally or nonverbally communicating, and a last category to indicate silence or confusion. Various subscripts are also used (see the appendix for complete system explanation) (Cheffers, 1980:19-26).

Physical education. Physical education is sports, games, dance, and other culturally institutionalized forms of physical play (Siendentop, 1972:3).

Physical education specialist. A full-time teacher certified to teach physical education.

Interaction pattern. A short chain of events occurring frequently among people who can be identified and labeled (Flanders, 1970:4).

Vertical model. The teacher or the student has the sole initiative in the learning process, while the other assumes a passive role. It is identified by 5, 6, 18, 6 teaching pattern, and describes the teacher as giving lecture, directions while the student exhibits predictable responses (Martinek, 1977:350-351).

Horizontal model. The teacher and the student share roles in the learning process. It is identifiable by variables of 5, 4, 18, 9, 19, 2, 3 teaching pattern, which

describes the teacher as lecturing, asking questions, students respond predictably and unpredictably with verbal and nonverbal responses that result in teacher questioning, praise, and acceptance (Martinek, 1977:350-351).

Teaching behavior. Teaching behavior can be defined as acts by the teacher which occur in the context of classroom interaction (Flanders, 1970:4).

Dyadic behavior. Dyadic behavior is behavior directed toward the individual student instead of to the entire class (Cheffers, 1980:152).

Delimitations of the Study

The following delimitations were considered when interpreting the results of the study:

1. The subjects were 14 elementary physical education specialists teaching in the Murfreesboro City and Rutherford County School systems.

2. Only CAFIAS was used as the systematic observational tool.

3. Each teacher was observed twice per grade level by two recording observers with approximately three weeks separating the observations.

4. The subjects were observed during the winter months of January, February, and/or March.

Limitations of the Study

The following limitations pertained to this study:

1. The relatively small number of subjects and having only two observations may have had an effect on the final results of the study.

2. The subjects were observed in the gymnasium during the winter months which may have had an effect upon the teacher's or the students' behavior.

3. There was no control as to the type of physical education activity unit being taught during the observation period which may have had an effect upon the teacher-pupil interaction.

4. All teachers were notified in advance as to the times and dates of the observations which may have had an effect upon the teacher's behavior.

5. Since the students were unfamiliar with the observers, an effect upon the teacher-pupil interaction may have occurred.

Significance of the Study

A study by Hensley (1974) concluded that the physical education specialist is more effective in planning physical education activities compared to the classroom teacher. The specialists taught a greater percentage of fundamentals,

motor skills, rhythms and dance, stunts and tumbling, calisthentics, and lead-up games to sports.

Beale's (1975) study stated that the advantage of a program conducted by a physical education specialist is the development of the whole child; however, the specialist must implement a program which meets the child's needs. If the specialist is incompetent, the entire program could be jeopardized.

The rate of learning by the child is usually dependent upon previous learning and experiences as well as interest in the task to be learned. Adaptations need to be made during the learning of tasks depending upon the child's maturity and ability level (Hall, 1980). The teacher needs to recognize the individuality of the students and create an environment in which the students and teachers can effectively interact (Kirchner, 1978).

Mosston believes that teaching methods are the link between subject matter and learning. A teacher, if solely content-learning orientated, will foster a child who can not independently function during environmental changes, but a teacher who incorporates process learning will assist the child in learning how to respond to various environmental changes (Hoffman, 1981). Physical education specialists must make decisions as to which method will help the students learn. The contemporary approach to teaching physical

education involves the use of the direct (command) and indirect (guided discovery or problem solving) methods of teaching depending upon the children's abilities, maturity, and the nature of the learning task (Dauer, 1975).

According to Dauer (1975:21),

> The first grade program should devote 35% of the time to movement experiences; 25% to rhythms; 20% to apparatus, tumbling and stunts; and 20% to games and dramatic play. The third grade level should devote 22% of the time to movement experiences; 22% to stunts and tumbling; 17% for games and relays; 14% for sports skills and activities; and 3% for testing fitness. The fifth grade program should have 40% devoted to sports; 12% to games and relays, 9% to movement experiences; 18% to gymnastics and 3% for testing fitness.

Since the program should alter due to maturity changes and the needs of the children, the teaching behaviors may also need to vary. By using a systematic observation instrument, an objective view of the teacher's behaviors may be analyzed to determine if, in fact, changes do occur.

Dauer (1975) stated that the teacher needs to interact with each child individually using both verbal and nonverbal methods to motivate the students. Encouragement and corrections are needed to inspire learning among the students. An atmosphere of fairness, sympathy and understanding must be created by the teacher. The child should not be placed in a situation of sarcasm or criticism which may result in frustration and failure. Thus, studying the interaction patterns of physical education specialists may

suggest that these concepts, that are taught in college methodology classes, are being implemented when the educator enters the teaching environment.

CHAPTER TWO

Review of Literature

Researchers since 1900 have attempted to evaluate teacher behavior. The development of systematic tools for observation has been recorded since the 1940s. Since 1952 the researchers have been trying to develop tools to observe the teaching act which are significantly and consistantly correlated with student attitudes and content achievement (Flanders, 1970).

An article written by Medley and Mitzel in 1963 resulted in a multitude of observational instruments. Studying the "climate" of the gymnasium, using systematic observation, appears to have first been published in 1967 by Elizabeth Bookhout (Locke, 1977). But the development of systematic observational instruments useful for observations in the physical education environment was meager until the early 1970s when Siedentop, Anderson, Nygaard, Cheffers, and Mancini began to develop research tools (Cheffers, 1977).

Today, many different systems have been developed in order to identify the different parameters the researcher desires to study. Regardless, systematic observation provides a formula for analyzing, critiquing, and refining the teaching act (Cheffers, 1977). The use of systematic

observational tools is almost limitless. Bratcher and Cheffers (1980:18) stated that:

> Observational tools could be used to (1) describe current classroom practices, (2) modify teacher behavior, (3) provide a tool for analysis of teaching, (4) give feedback about one's own teaching, (5) train student teachers, (6) discriminate between patterns of teaching, (7) determine the relationship between various classroom behaviors and student growth, and (8) help in the projecting of future teaching patterns.

The primary focus of this study was to discriminate various patterns of teaching behavior and describe the classroom interaction patterns that occurred.

Elementary School Classroom Interaction

Kramer (1973) investigated the relationship between student teachers' personalities and selected classroom patterns of verbal interaction. The study attempted to connect the subject's presage (characteristics) with the process (teacher behavior). One hundred-forty student teachers majoring in elementary education were selected for the study. Four observers gathered information during three forty-five-minute observations using FIAS. No relationship was revealed connecting the student teacher's personality and classroom verbal interaction.

Grant (1970) used videotapes to study the nonverbal activity of five language arts teachers of grades one through five at the Patterson State College Campus School. Five language arts lessons of twenty minutes each were

videotaped. Two teams of coders analyzed two two-minute units from each lesson to determine verbal and nonverbal components of the teachers' behaviors.

Verbal dyadic behavior of elementary black and white classroom teachers was investigated by Mangold (1974). Sixteen white teachers and four black teachers were observed using a version of the Brophy-Good System of Interaction Analysis. General findings indicated that the black and white teachers interacted similarly with black and white children.

A study by Ortiz (1977) described the teacher-pupil dyadic verbal interactions in naturalistic setting involving all first grade children and four teachers. Four observers collected data for ninety-one hours in the four classrooms using the Brophy-Good Dyadic Interaction System. Few generalizations could be drawn, but the study implied that student readiness, sex, and age can influence patterns of interaction.

Williams (1972) investigated the possible significance of elementary school student-teachers' perceptions of student roles in classroom interactions. Two observers using FIAS coded thirty-minute sessions of ten student teachers teaching the third grade. There were some significant differences found with regard to perceptions of

the male and female students. Female students received more praise while male students asked more questions.

Analysis During Physical Education Student Teaching Experiences

Countiss (1976) studied the effects of training in the Spectrum of Teaching Styles (STS) on the attitudes and classroom behaviors of in-service physical education teachers. Nineteen subjects were trained in STS while the control group of twelve had no training. Subjects were observed for two thirty-minute periods before and after training. Results infer that training in STS can influence behavior change, influence flexibility in the use of various styles, and promote more affective and cognitive objectives.

Using the Observation System for Content Development-Physical Education (OSCD-PE), Gusthart (1982) described the teaching behaviors of college students. Two audiotapes were recorded for twenty physical education majors at Bowling Green State University. Graphic representation for each of the teaching behaviors and constructs were studied. The data provided information as bases of comparison of instructional behavior over the field-based experiences.

DeGenaro (1969) videotape recorded six male physical education student teachers at Ohio State University. Subjects were observed by two rating groups consisting of three raters each. One rating group observed by means of

physical or direct observation, while the other rating group viewed the subjects via videotapes. Both groups used an identical checklist system of evaluation. The results indicated sufficient agreement between the scores obtained by the two rating groups.

Hughley (1973) investigated the extent to which a behavioral focus in teacher education is effective in the acquisition of appropriate teacher behavior. Four students, who were student teaching, were observed for thirty-five minutes. The results indicated that directed information feedback is effective in modifying student teachers' behaviors; negative behavior tends to be emitted by beginning teachers; and beginning student teachers emit low rates of feedback.

Lewis (1980) conducted a study to determine if self-coded feedback from Verbal Interaction Category Systems (VICS) would help physical education students understand and control specific patterns of verbal behavior. Each student teacher taught six lessons of three styles (command, guided discovery, and problem solving) and selected ten minutes of the taped sessions to represent the styles. Each student taught grades one, three, and five on a randomly assigned rotation. The results showed that the command style was most prevalently used.

Zakrajsek's (1974) study was to systematically observe, categorize, and describe the utilization of instructional time in seventh grade physical education classes. Fifty-two seventh grade physical education teachers were observed once. Pattern Analysis was used to systematically categorize nine functions. The results of the study indicated that these seventh grade physical education teachers were not judicious in planning time, did not spend enough time in teaching the subject matter, and teacher education institutions needed to place more emphasis on instruction time utilization and effective planning.

Mancuso (1974) fused the FIAS and the Love-Roderick nonverbal categories into a single instrument plus a purposeful and non-purposeful motor activity category. Ten secondary female physical education teachers and their pupils comprised the same group. Half of the group of teachers was trained in interaction analysis and the other half was not trained. One of the stated results concluded that the interaction that exists in secondary physical education classes is predominately motor and nonverbal.

Analysis of Teacher Behavior

Kletch's (1978) study analyzed the effect of teaching experience, supervisory experience, administrative experience, and construct knowledge on the subject's ability to observe and record the frequency of the occurrence of

Junior High Teacher Behavior in Physical Education

Oien (1979) described the quality and quantity of individualized teacher behaviors that junior high physical education teachers directed toward their pupils. Subjects consisted of five teachers, two classes per teacher, for grades seven, eight, and nine. The Individualized Teacher Behavior Analysis System (ITBAS) was used to collect data. The conclusions indicated that teachers in the study directed unequal quantities and displayed different kinds of ITBs to their students. Sixty % of the classes consisted of lecture time, 1% acceptance of students, 10% praise, and 5% criticism. Distribution patterns were found to be associated with the teachers' perception of student skill or personality.

The Individualized Teacher Behavior Analysis System (ITBAS) was employed to collect data concerning teacher behaviors in a study conducted by Allard (1979). Five teachers teaching grades seven, eight, and nine, two classes per teacher, were observed. Three on-site observation sessions were conducted per class. The results indicated that the largest portion of ITB fell into the lecture category (61%). Praise, questioning, and directing students accounted for 11%; criticism accounted for 5%; and acceptance of students' feelings accounted for 1% of the total ITB selected teacher behaviors in physical education

classes. Three groups of twenty subjects viewed a thirty-minute video of an instructor conducting a beginning gymnastics lesson. The observers used the Showers Scale rating each of the four broad categories. The study concluded that descriptor variables do influence the behaviors being observed.

Forty elementary and secondary physical education classes were observed in Barrette's study which described and analyzed the occurrence, duration, and distribution of teacher behaviors. Anderson's Physical Education Teachers Professional Functions (APETPF) was the observational system used. One tape of thirty-three minutes per class was provided which had a split screen displaying the teacher on the top portion and the class action on the bottom half of the screen. Subscripts and mode results revealed that the teachers were doers and talkers, thus displaying teacher dominance and control in the gymnasium (Barrette, 1977).

Using Laubach's Descriptive-Analytic Observation System (BESTPED), Costello (1977) described student behavior in elementary physical education classes. Twenty videotaped elementary physical education classes were the source of data. The results were characterized by: 35.4% of the time involved waiting; 25% of the time the students received information; 29% of the time the students engaged in

physical activity. Thus, 63% of the students' time was in non-movement.

Quarterman (1978) described and analyzed elementary physical educators' reactions to skill attempt and class behavior of students while teaching in their natural setting. The study also analyzed how the majority of the students spent their time in class. Duration and Placheck recordings were used by two recorders to observe student behaviors in twenty-four physical education classes. The conclusions indicated that the oldest teachers used the highest rate of nagging; male teachers used the highest rate of nasty reactions; more experienced teachers had the highest rate of student instruction; teachers of primary grades used the highest rates of nagging reactions and student instruction. The study also concluded that only 12% of class time was spent in instruction, 54% in participation, and 34% in management.

Using FIAS, Nygaard (1971) analyzed the verbal interactions that occurred in physical education classes. Forty teachers were observed for twenty minutes. Five teachers represented each of the spans that covered the study from kindergarten through college level. The study concluded that teachers do most of the talking; classes consist mostly of lecture-silence/confusion-lecture; and there were

different interactions that occurred depending upon the grade level.

By 1979 the interaction pattern of elementary school physical education teachers had not been explored. Twa (1979) examined the verbal and nonverbal behaviors of teachers and elementary school chilcren. Communication between the teachers and students was measured by Rankin Interaction Analysis System (RIAS). The independent variables studied were the sex of the teacher and the grade level. Eight male and eight female physical education teachers were observed. The study concluded that male teachers utilized more praise but had more confusion at the primary level; however, the female teachers utilized more praise but had more confusion on the intermediate level. The primary pattern displayed that 45% of the time involved teacher talk, followed by student movement, teacher talk, teacher gesture, and teacher talk. From the study, Twa concluded that elementary physical education teachers teach all classes at both the primary and intermediate levels in the same manner.

Young (1974) investigated the various reinforcement contingencies on the educational behavior and physical performance of second grade physical education classes. Both Placheck and time sample observation techniques were used to measure behaviors emitted by the class. The results

suggested that appropriate behavior in physical education was increased due to positive reinforcement. No conclusion could be made when comparing skills to behavior.

Crowe (1977) reported a study that was to identify specific and differential teacher behaviors that affect student behavior based upon Rosenthal's Four Factory Theory. Four physical education classes, containing 96 students, were observed by three judges trained in the use of the Brophy-Good Interaction Analysis. Each class was observed six times in a two-week period. The results indicated that high achievers were given more opportunities to answer questions, were given more feedback, were more warmly treated, and were given more attention than the low achievers.

A study by Brown (1980) described the number, length, and type of dyadic student/teacher interactions in physical education classes. Interactions, in this study, referred to the content and noncontent relatedness of the interaction. The classes of six male and six female physical education teachers were observed using the Brown Dyadic Interaction Observation Tool (BDIOT) during five classes. Results inferred that male students received more interaction; high skilled students received more interaction; and male teachers spent more time in interaction than female teachers.

CAFIAS-Physical Education Student Teachers

Vogel (1977) studied the effects of instruction and supervision in CAFIAS on the behaviors of student teachers. Twenty student teachers received instructions in understanding CAFIAS and 20 student teachers received no training in CAFIAS. The subjects were videotaped during two teaching sessions and the results revealed that the use and understanding of interaction analysis were beneficial in the instruction and supervision of student teachers.

The effects of supervision and instruction on teaching behaviors and effectiveness while using interaction analysis of pre-student teachers was studied by Rochester (1977). Eighteen college juniors were instructed in the use of CAFIAS and 18 were not given instruction in CAFIAS. The study concluded that the combined use of instruction and practical application of coding interaction analysis was beneficial to the preparation of pre-service teachers.

Faulkner (1977) compared the teaching behaviors of male and female pre-service secondary physical education teachers. Forty males and 40 females were videotaped during three micropeer teaching situations. CAFIAS was used to code the teaching behaviors. The study concluded statistically that there were few differences between male and female teaching behaviors prior to student teaching.

Using CAFIAS, Hendrickson (1977) studied 40 pre-service secondary physical education majors in order to analyze teaching behaviors as a function of instruction and supervision. Each subject taught three micropeer lessons which were videotaped. Twenty subjects received only conventional supervision feedback, and 20 subjects in addition to the conventional feedback received instruction in CAFIAS. Conclusions indicated that interaction analysis understanding enhances the teaching of pre-service physical education teachers.

Mancini (1979), at the New Orleans convention, presented a paper on the use of interaction analysis. The purpose of the study was to determine the effects of feedback and interpretation of interaction analysis on the attitudes of teaching behaviors of student teachers. Twenty-eight physical education student teachers were randomly assigned to either a control or treatment group. Teaching Situation Reaction Test (TSRT) was administered to assess teaching attitudes. CAFIAS was used to identify teaching behaviors. The subjects were videotaped three times during the experience and received conventional feedback. The treatment group also received the results of their CAFIAS analysis. The results stated that the treatment group of student teachers made greater use of verbal and nonverbal questioning, praise, and student acceptance.

These student teachers and their students exhibited more interaction and varied behaviors during their classes.

An investigation of the effects of instruction and supervision in the practical application of coding interaction analysis on the teaching behaviors of physical education student teachers was studied by Getty (1978). The treatment group (N=15) participated in 15 hours of instruction and practical application of CAFIAS. The control group (N=15) received only conventional supervisory feedback. All subjects were videotaped once during instruction, immediately at the conclusion of the training session and one month later. Significant differences in teaching behaviors of student teachers existed following 15 hours of training using CAFIAS.

CAFIAS-Teacher Behavior, Physical Educators

Thomas (1980) wanted to determine if significant differences existed in the verbal and nonverbal behaviors between high affect and low affect physical education teachers and their male and female students. Five male and five female seventh grade teachers, scoring in the high range, whose adjective checklist was most consistent with their pupil's perception, were designated as the "high" group. Five male and five female seventh grade teachers, scoring in the low range, whose checklist was most

consistent with their pupil's perception, were designated as the "low" group. CAFIAS was used to identify verbal and nonverbal teacher behaviors. Each teacher was observed twice. The study statistically suggested that the female teachers provided significantly more verbal behavior than the male teachers. The "low" group had more negative comments by pupils about affective characteristics of their teaching, while the "high" group had more positive student comments.

Stevens (1981) presented a paper at the Boston AAHPER convention on the effects of instruction and supervision in interaction analysis on the teaching behaviors of elementary physical education teachers. Two male and two female experienced teachers were assigned to either a treatment or a control group. CAFIAS was used to identify teacher behaviors. Each teacher was observed for 20 days, once per day for one class. During classes 5 and 15 the control group received conventional supervisory feedback while the treatment group received instruction in CAFIAS and a CAFIAS analysis of each lesson. The treatment group had significant differences in the pretests and posttests while the control group showed no change. The treatment group used more verbal and nonverbal praise, acceptance and empathy towards their students. The nature of the teaching behaviors also changed from direct to indirect.

The purpose of Lombardo's (1979) study was to observe and describe the teaching behavior and interaction patterns of four elementary physical education teachers longitudinally. Also considered were the time of the day, day of the week the classes were conducted, sex of the teacher, grade level of the class, content of the lesson, and mode of supervision provided by the teacher. Each teacher was observed twice per day for 20 consecutive days. CAFIAS was used to describe the interaction patterns and teaching behaviors observed. Results concluded that: teaching behavior and interaction patterns vary minimally over 20 days, therefore, random observations are justifiable; the teaching behavior and interaction patterns recorded indicate that traditional, non-humanistic teaching styles prevailed in the movement classes observed; the variables of time of day, grade level, and day of the week have negligible influence on teaching behavior and/or interaction in physical education classes; there were significant differences in teaching behaviors between the male and female teacher; teachers seemed to vary their behavior from unit to unit; and teacher patterns were summarized as teacher information giving teacher direction and predictable student nonverbal response which are symbolized as a 5, 6, 18 combination.

Batchelder (1976) described and compared the process objectives of elementary school teachers and their implications in math, English, and physical education. CAFIAS was used by two coders to observe 25 elementary teachers who taught math, English, and physical education. Each teacher filled out a Teacher Questionnaire on Objectives in the three subjects prior to being observed. One of the results stated that elementary teachers are most direct in their behaviors when teaching physical education.

Using third grade classes, Chertok (1976) compared the effects of command and guided discovery styles of teaching on selected ball handling skills. CAFIAS was used to validate the two distinct styles of teaching.

Agnew (1978) observed 20 female secondary physical education instructors to determine if they displayed different behaviors while teaching and coaching. The subjects were videotaped twice, for 30 minutes in each situation. CAFIAS was used to analyze the behaviors. The results indicated that the female physical education teachers had different behaviors when teaching and when in a coaching situation.

Lydon (1978) studied the effects of variable decision-making teaching models on elementary-aged children and on the development of body coordination and self-concept. CAFIAS was used to verify the two decision-making teaching

methods used. One conclusion stated that the quality of the student-teacher interaction was significantly different between the two groups of students.

Martinek, Zaichkowsky, and Cheffers (1977) investigated the effects of vertical and horizontal teaching models on the development of certain motor skills and self-concept in elementary school children. CAFIAS was used to verify that two treatments were being used in the study. The study results indicated that the teacher-directed approach appears to be the best for developing motor skills, but the student-sharing approach had a positive effect upon the development of self-concept.

In the Mancini, Cheffers, and Zaichkowsky (1976) study, they investigated the difference between two decision-making models on the attitudes and interaction patterns of elementary school children. Students in grades one through six participated in either the vertical or horizontal model of decision making. CAFIAS measured the interaction patterns, while the Cheffers and Mancini Movement Attitude Scale measured attitude. Data were collected at mid-semester and at the end of the semester. Results indicated that children sharing the decision making had more student-teacher interaction and a more positive attitude.

Martinek and Johnson (1979) studied the effects of teacher expectations on specific teacher-student behaviors

during physical education classes. Further, the study described the effects of teacher expectations on the student's self-concept development. Five teachers were observed by two coders using a dyadic version of CAFIAS to determine teacher-student behaviors. The results concluded that the high expectancy group of children received more encouragement, acceptance, and questioning from teachers. Male students were found to give more rote responses than the females.

Three male and two female adaptive physical education teachers were the source of the data in Gaudet's (1982) study. The purpose of the study was to determine if knowledge of an interaction analysis had an effect upon the teaching behaviors of special needs teachers. Nine replications of teacher behavior observation, pre- and post-direct treatment, were made using CAFIAS. Based upon the results of the study, Gaudet concluded that feedback using interaction analysis can bring change over an 11-week period of time.

CAFIAS with Related Testings

CAFIAS has been used by other professionals to describe and compare teacher or coach behaviors in various environments. Doenges (1977) used CAFIAS when describing the use of elementary students, earmarked as being disruptive, as

modifiers of physical education teacher behavior. Mawdsley (1977) described and compared teacher-student interaction patterns and the teacher behavior in adaptive and regular classes for grades one, two, and three. Wood (1979) described the process and procedures inherent in an Adventure Education experience. Hope (1978) conducted a study to measure the effects of recreation programs on the morale, physical, and social functioning of 118 elderly nursing home residents. CAFIAS was used to validate the movement and social programs. At the Kansas City convention, Keane and Cheffers (1978) described the effects that the sex of the coach had on leadership styles, leader behaviors, and the coach-player interactions.

CHAPTER THREE

Methods and Procedures

The purpose of this study was to observe and describe the teaching behavior and interaction patterns of selected physical education specialists teaching first, third, and fifth grade elementary physical education classes in middle Tennessee. A second concern involved comparing the teaching behavior and interaction patterns of the male physical education specialists to those displayed by the female physical education specialists. A third concern involved comparing the teaching behavior and interaction patterns of those teachers teaching less than 40 students per class to those teachers who taught between 40 and 120 students per class.

Source of Data

Upon approval from the appropriate superintendents of schools, a questionnaire was mailed to the 22 physical education specialists employed in the Murfreesboro City and Rutherford County School Systems requesting their cooperation and participation in the study. Sixteen specialists responded; however, two teachers were eliminated due to facility complications. Of those selected, eight of the instructors were female with three to fifteen years of experience, and six of the instructors observed were male

with one to seventeen years of experience teaching physical education at the elementary school level. Seven of the specialists taught between 40 and 120 students per class. One specialist taught a first-grade class with more than 40 students; however, her third- and fifth-grade classes had less than 30 students.

Each instructor was notified in advance as to the scheduled dates and times of the observations. The teachers were observed twice per grade level with approximately three weeks separating the observations, allowing for the possibility of observing the classes in two different units. If possible, the second observation was not scheduled for the same day of the week as the first observation; thus, the same class may or may not have been observed for that grade level. All classes were observed in the gymnasium environment. The activities observed in the first- and third-grade physical education classes included: exercising, obstacle courses, movement experiences, dance and rhythms, lead-up games, relays, parachute activities, and tag games. No movement experiences were observed in the fifth-grade classes, but all of the other activities were observed as well as tumbling, basketball, volleyball, floor hockey, soccer skills, and games as described in Table 1.

Cheffers Adaptation of Flanders Interaction Analysis System (CAFIAS) was used to collect the data. CAFIAS is a

Table 1

Demographic Description of Source of Data

Teacher	Sex	Experience in Years	Grade	Class Size	Activities First Observation/Second Observation
#1	M	MS-17	1	23	basketball/earthball
			3	25	basketball/floor hockey
			5	22	basketball/
#2	M	BS-1	1	23	relays/floor hockey
			3	25	relays/floor hockey
			5	22	relays/floor hockey
#3	M	BS-10	1	42	stations/aerobics
			3	45	kickball/aerobics
			5	47	kickball/aerobics
#4	M	BS-7	1	50	exercise, tag/exercise,rhythms
			3	55	exercise, obstacle course/exercise, rhythms
			5	58	exercise, obstacle course/exercise, soccer
#5	M	MS-17	3	25	relays/crab soccer
			5	27	basketball, relays/basketball
#6	M	MS-7	5	50	exercise, tag, relays, free play/tag, tumbling
#7	F	BS-6	1	55	soccer, tag/stations
			3	58	games, tag/stations
			5	60	aerobics/dance

Table 1 (continued)

Teacher	Sex	Experience in Years	Grade	Class Size	Activities First Observation/Second Observation
#8	F	MS-6	1	23	stations/rhythms
			3	21	stations/games, ropes
			5	20	volleyball/volleyball
#9	F	MS-15	1	45	games, movement/rhythms, movement
			3	24	stations, games/exercises, games
			5	27	volleyball/volleyball
#10	F	EdS-6	1	80	exercise, dance/exercise, obstacle course
			3	120	exercise, dance/exercise, dance, games
			5	120	volleyball/exercise, dance, games
#11	F	BS-10	1	20	stations/exercise, games
			3	23	stations/games, parachute
			5	24	volleyball/volleyball
#12	F	BS-10	1	18	exercise, rhythms, parachute, games/ exercise, tag, rhythms, jump ropes
			3	25	exercise, kickball/exercise, tag, rhythms, tag, jump ropes
			5	22	exercise, volleyball/exercise, volleyball
#13	F	MEd-5	1	22	exercise, rhythms/exercise, rhythms, balls
#14	F	BS-3	1	50	relays, rhythms, movement/exercise, tag
			3	42	relays, rhythms, movement/exercise, games

process system designed to describe the teaching behavior and interaction patterns that occur in the selected environment. The major purpose of CAFIAS is to record on-going, moment-to-moment behaviors during interaction. In 1972 Cheffers tested the validity and reliability of CAFIAS which was measured against the performance of the Flanders Interaction Analysis System (FIAS) by comparing the scores of trained interpreters. A "blind-live" system of interpretation was used to determine that CAFIAS was valid and reliable at the .05 level of significance. In fact, CAFIAS was determined to be more accurate when interpreting physical activity behaviors than FIAS (Cheffers, 1980).

Method of Collecting Data

During the summer of 1982, the researcher was enrolled in a course entitled "Systems Observations in Human Movement" which was instructed by Dr. John Cheffers. The course involved the learning of the proper use and interpretation of various systems, including CAFIAS. After successful completion of the course, the researcher tutored a colleague in the use and application of CAFIAS. With 15 hours of instruction and trial observation codings, an interobserver r=.87 was established between the two coders.

Once an acceptable reliability was established between the coders, the physical education specialists were notified

as to the dates and times that each instructor would be observed. Teachers were observed on either a Tuesday, Wednesday, Thursday, or Friday, depending upon the class schedules of the observers and/or the specialists which varied from school to school. First-grade classes were observed for 20 to 30 minutes; third-grade classes were observed for 20 to 25 minutes; and fifth-grade classes were observed for 25 to 50 minutes depending upon the school schedule. Data were recorded every three seconds and were proportional to the length of the class. Observations began on January 20, 1983, and concluded on March 9, 1983.

Treatment of Data

The CAFIAS coded data resulting from the observations were processed by the Honeywell DPS8-44D computer by the researcher. Since the computer at Middle Tennessee State University did not have a PL1 compiler, the 1973 version of the University of Kansas Fortran program designed by Ken D. Rogers was used to analyze the data. The data were presented in three major elements:

1. Use of the CAFIAS categories (see Appendix A).
2. Use of the major CAFIAS parameters (see Appendix B).
3. Patterns of interaction between the teacher and students.

The major teacher-student interaction patterns or behaviors that occurred in the classes were extracted from

the top ten cells from the matrices. The cells were composed of one behavior followed by a second behavior. Specifically, the cells comprised either a teacher behavior followed by a teacher or student behavior or a student behavior followed by a teacher or student behavior. After the top cells were extracted from the matrices, a frequency count was made for each cell. The top five cells which were used most often were selected to describe the major interaction patterns occurring in the observed elementary physical education classes.

A descriptive analysis of the teaching behavior and interaction patterns of all the physical education specialists in this study were summarized. A 2 X 2 X 3 univariant MANOVA was used to analyze the teaching behavior to determine if a significant difference at the .05 level occurred between the 27 independent variables and the 3 dependent variables of gender of the instructor, grade, and size of the class. The top five interaction pattern cells were used to describe the interaction patterns occurring in the classes for:

1. Each teacher.
2. All 14 teachers as a group.
3. Six male physical education specialists.
4. Eight female physical education specialists.

5. The teachers who had classes with more than 40 students.
6. The teachers who had classes with less than 40 students.

CHAPTER FOUR

Results

The study was designed to investigate the teaching behavior and interaction patterns of selected elementary physical education specialists in the middle Tennessee area. The primary purpose of the study was to observe and describe the teaching behavior and interaction patterns of the 14 specialists teaching grades one, three, and five. The second purpose of the study was to ascertain if differences occurred in the teaching behavior and interaction patterns between the male and female instructors or due to the size of the class.

Cheffers Adaptation of Flanders Interaction Analysis System (CAFIAS) was used to collect the data. Twenty categories (Appendix A) and 27 major parameters (Appendix B) were analyzed to determine teacher behavior. The major interaction patterns that occurred during the classes were extracted from the top cells from the matrices. Only the five most exercised cells were used to describe the major interaction patterns that occurred during those classes.

Descriptive Analysis of All Teachers

In general, the results of this study (Table 2) concurred with previous descriptive studies involving the observation of physical education specialists teaching at the elementary school level. Flanders (1970) suggested that the teacher-student contribution ratio is 2:1. According to Cheffers (1980) the ratio is often 55:45 in the gymnasium environment. In this study the total teacher contribution was 55%, the total student contribution was 40%, and the total silence and confusion was 4%. The student contribution was 40% which had been reported by Cheffers (1980) and Lombardo (1979). Several studies indicated that the student behavior in the gymnasium tended to be predominantly nonverbal. Only 9% verbal student contribution was observed with approximately 31% being nonverbal student contribution. The relatively high percentage of total silence and confusion indicates that the teachers had various changes in formations and/or activities during the classes.

Results of this study revealed that the physical education specialists asked few questions during their classes. Since only a mean of 8% was determined, most of the teacher contribution would be assumed to be information or direction oriented with some praise and acceptence. The parameter of teacher acceptance and praise, as opposed to criticism and directions, was 47%. These results concurred

Table 2

Major CAFIAS Parameters
Mean Percentages
and Ratios

Parameters of CAFIAS	Mean
Teacher Contribution, Verbal	33.69
Teacher Contribution, Nonverbal	21.80
Total Teacher Contribution	55.49
Student Contribution, Verbal	9.50
Student Contribution, Nonverbal	30.81
Total Student Contribution	40.31
Silence	1.74
Confusion	2.44
Total Silence and/or Confusion	4.18
Teacher Use of Questioning, Verbal	9.37
Teacher Use of Questioning, Nonverbal	6.52
Total Teacher Use of Questioning	8.04
Teacher Acceptance and Praise, Verbal	34.48
Teacher Acceptance and Praise, Nonverbal	56.50
Total Teacher Acceptance and Praise	46.55
Pupil Initiation, Verbal	54.23
Pupil Initiation, Nonverbal	39.03
Total Pupil Initiation	42.35
Unstructured, Verbal	24.26
Unstructured, Nonverbal	8.35
Total Unstructured	12.21
Content Emphasis	44.09
Verbal Emphasis	45.49
Nonverbal Emphasis	54.51
Teacher as Teacher	89.65
Student as Teacher	.58
Environment as Teacher	9.87
Class Structure (as One Unit)	78.02
Class Structure (Groups or Individuals)	21.09
Class Structure (No Teacher Influence)	.89

with other studies that have been conducted (Batchelder, 1975; Lombardo, 1979; Mawdsley, 1977). However, the data in this study may be deceiving since the nonverbal teacher acceptance and praise was relatively high due to the rhythmic and gymnastic units being observed. Verbally, the teachers did have a relatively high level of acceptance and praise, as compared to criticism and direction, which was determined to be 34% in this study.

The teachers in this study tended to structure the learning environment to obtain predictable responses from the students. The total pupil initiation was found to be only 42% which was below the range of other studies (Batchelder, 1975; Mawdsley, 1977) but similar to the results found by Lombardo (1979). A possible explanation was that the game-playing and creative-movement situations observed were only a small portion of the total lessons used in this study. Also, seven of the teachers were involved in teaching specific dance or gymnastic routines.

This study also revealed that the teachers relinquished the central role in the gymnasium only slightly more than other studies have reported (Batchelder, 1975; Keane, 1978; Lombardo, 1979). Teacher control was 89% of the time which still indicates teacher dominance, while the use of the environment as the teaching agent was found to be 10%. The high percentage of environment as the teaching agent may

have been due to the large number of rhythmic units being taught at the time. The use of students as the teaching agent was nonexistent.

Falling within the range of various studies, the results of this study found the employment of keeping the class structured as a large group to be 78% of the time, while small group instruction was limited to 21% of the time. Again, these statistics may be misleading since the rhythmic instructions observed tended to keep the classes in large groups.

Descriptive Analysis of Individual Teachers

The data for Teacher #1 (Table 3) revealed that the total teacher contribution was slightly high at 63%; the total student contribution was low at 34%, while total silence and/or confusion was 3%. The student nonverbal contribution was extremely low at 19% which indicates that the students were not physically active for much of the class; however, the students were very involved verbally with the teacher as indicated by the 15% student verbal contribution. Teacher #1 did tend to ask questions during the class as exhibited by 9%. The teacher acceptance and praise, as compared to criticizing and direction giving, was high at 47%. The total pupil initiation was high in this teacher's class as indicated by the 68% level found. The

Table 3

Major CAFIAS Parameters Per Individual Teacher
Mean Percentages and Ratios

Parameters of CAFIAS	Teacher #1	Teacher #2	Teacher #3	Teacher #4	Teacher #5
Teacher Contribution, Verbal	44.37	28.70	18.38	24.66	31.11
Teacher Contribution, Nonverbal	18.83	12.44	29.84	8.90	21.48
Total Teacher Contribution	63.21	41.15	48.22	33.56	51.59
Student Contribution, Verbal	14.76	19.42	5.84	15.35	9.56
Student Contribution, Nonverbal	18.87	29.09	42.73	40.70	35.80
Total Student Contribution	33.67	48.52	48.58	56.05	45.35
Silence	.52	.47	2.82	7.76	.95
Confusion	2.62	9.85	.36	2.59	2.08
Total Silence and/or Confusion	3.31	10.32	3.18	10.35	3.03
Tea. Use Questioning, Verbal	9.15	5.47	9.42	13.77	9.14
Tea. Use Questioning, Nonverbal	2.63	18.06	10.40	19.41	11.01
Total Tea. Use Questioning	7.51	6.10	7.25	14.19	9.17
Tea. Acc. and Praise, Verbal	40.79	27.66	37.80	11.30	43.38
Tea. Acc. and Praise, Nonverbal	57.38	26.20	85.24	23.27	67.25
Total Tea. Acc. and Praise	47.33	28.52	73.79	15.86	55.03

Table 3 (continued)

Parameters of CAFIAS	Teacher #1	Teacher #2	Teacher #3	Teacher #4	Teacher #5
Pupil Initiation, Verbal	80.68	86.10	68.59	13.88	18.74
Pupil Initiation Nonverbal	58.11	75.82	30.02	25.35	39.95
Total Pupil Initiation	67.91	77.26	33.81	23.50	38.88
Unstructured, Verbal	1.85	4.25	72.71	10.76	17.81
Unstructured, Nonverbal	4.80	1.71	21.75	9.95	15.41
Total Unstructured	2.18	2.94	47.23	6.18	15.69
Content Emphasis	63.80	36.48	27.14	23.08	32.20
Verbal Emphasis	61.77	57.98	24.59	42.62	42.25
Nonverbal Emphasis	38.23	42.02	75.41	57.38	57.75
Teacher as Teacher	95.91	100.00	80.45	90.96	100.00
Student as Teacher	0.00	0.00	0.00	0.00	0.00
Environment as Teacher	4.08	0.00	19.55	9.03	0.00
Class Structure (One Unit)	82.73	86.10	85.78	77.91	61.87
Class Structure (Groups)	15.33	13.90	14.05	21.75	38.37
Class Structure (No Tea. Infl.)	1.73	0.00	0.16	0.00	0.00

Table 3 (continued)

Parameters of CAFIAS	Teacher #6	Teacher #7	Teacher #8	Teacher #9	Teacher #10
Teacher Contribution, Verbal	26.32	34.18	40.18	39.56	30.82
Teacher Contribution, Nonverbal	20.48	22.09	22.82	18.10	30.08
Total Teacher Contribution	46.80	56.27	63.00	57.66	60.90
Student Contribution, Verbal	7.29	5.27	13.89	11.01	4.99
Student Contribution, Nonverbal	40.38	34.72	20.79	28.35	30.73
Total Student Contribution	47.67	39.99	34.68	39.36	35.72
Silence	.37	1.63	1.11	1.99	1.63
Confusion	5.15	2.09	1.19	.89	1.72
Total Silence and/or Confusion	5.52	3.72	2.30	2.88	3.35
Tea. Use Questioning, Verbal	6.34	8.88	15.03	9.76	5.34
Tea. Use Questioning, Nonverbal	2.98	4.46	4.20	7.53	2.01
Total Tea. Use Questioning	5.10	7.69	12.40	9.23	3.98
Tea. Acc. and Praise, Verbal	33.74	43.92	45.36	48.10	21.58
Tea. Acc. and Praise, Nonverbal	56.19	65.50	72.41	63.66	36.35
Total Tea. Acc. and Praise	45.44	55.73	59.33	54.99	29.32

Table 3 (continued)

Parameters of CAFIAS	Teacher #6	Teacher #7	Teacher #8	Teacher #9	Teacher #10
Pupil Initiation, Verbal	53.89	50.26	64.15	72.05	40.57
Pupil Initiation, Nonverbal	49.63	21.65	57.96	46.30	15.82
Total Pupil Initiation	50.40	27.17	60.07	53.53	19.16
Unstructured, Verbal	47.01	8.96	16.06	13.01	36.19
Unstructured, Nonverbal	3.21	4.34	4.21	2.27	28.73
Total Unstructured	6.97	5.03	8.59	4.71	22.39
Content Emphasis	36.76	42.86	57.01	39.80	50.54
Verbal Emphasis	38.78	41.55	55.27	48.14	37.55
Nonverbal Emphasis	61.23	58.45	44.73	51.86	62.45
Teacher as Teacher	100.00	88.00	96.63	92.43	71.80
Student as Teacher	0.00	0.00	3.37	0.00	4.88
Environment as Teacher	0.00	12.00	0.00	7.57	23.31
Class Structure (One Unit)	44.05	75.55	71.00	88.73	55.21
Class Structure (Groups)	47.01	24.26	28.85	10.91	44.78
Class Structure (No Tea. Infl.)	8.85	0.19	0.15	0.35	0.00

Table 3 (continued)

Parameters of CAFIAS	Teacher #11	Teacher #12	Teacher #13	Teacher #14
Teacher Contribution, Verbal	42.06	38.84	38.39	35.09
Teacher Contribution, Nonverbal	20.75	25.16	27.67	26.57
Total Teacher Contribution	62.81	64.00	66.06	61.66
Student Contribution, Verbal	6.12	6.20	6.08	7.33
Student Contribution, Nonverbal	28.30	28.56	25.43	26.09
Total Student Contribution	34.42	34.76	32.21	33.42
Silence	1.59	.95	1.72	0.91
Confusion	1.16	0.26	0.00	3.99
Total Silence and/or Confusion	2.75	1.21	1.72	4.90
Tea. Use Questioning, Verbal	11.15	9.68	11.57	6.55
Tea. Use Questioning, Nonverbal	3.62	2.03	0.60	2.45
Total Tea. Use Questioning	9.12	7.37	8.39	5.09
Tea. Acc. and Praise, Verbal	34.49	27.97	38.12	28.54
Tea. Acc. and Prasie, Nonverbal	69.79	53.88	65.15	48.76
Total Tea. Acc. and Praise	47.43	46.87	53.69	38.38

Table 3 (continued)

Parameters of CAFIAS	Teacher #11	Teacher #12	Teacher #13	Teacher #14
Pupil Initiation, Verbal	48.86	74.85	48.83	37.84
Pupil Initiation, Nonverbal	34.55	44.94	23.84	22.57
Total Pupil Initiation	36.57	50.41	28.71	25.53
Unstructured, Verbal	19.15	34.86	13.89	43.17
Unstructured, Nonverbal	1.55	1.59	14.28	3.22
Total Unstructured	5.99	8.44	14.00	20.68
Content Emphasis	52.30	47.32	57.58	50.50
Verbal Emphasis	49.34	45.31	45.28	46.43
Nonverbal Emphasis	50.66	54.69	54.72	53.57
Teacher as Teacher	100.00	81.04	72.57	85.36
Student as Teacher	0.00	0.00	0.00	0.00
Environment as Teacher	0.00	18.96	27.43	14.63
Class Structure (One Unit)	83.90	85.28	100.00	94.25
Class Structure (Group)	15.20	14.58	0.00	5.48
Class Structure (No Tea. Infl.)	0.83	0.01	0.00	0.27

students tended to have the opportunity to verbally initiate a response (81%) more often than nonverbally (58%); however, the students in these classes had little student-suggested initiation participation (2%). Ninety-six percent of the time the teacher dominated the central role in the gymnasium with only 4% of the time being used by the environment as the teaching agent. Data analysis of the emphasis on content was very high (64%) for the teacher as well as the verbal to nonverbal ratio of 62:38. This indicates that a great deal of these classes spent more time verbalizing with less time spent on movement within the class. Generally, the teacher kept the class structured as a group 83% of the time and allowed individualized instruction 15% of the time. The teacher was in a non-influencing position 2% of the time.

An analysis of Teacher #2 (Table 3) disclosed that the total teacher contribution was 41% and the total student contribution was 49%, while total silence and/or confusion accounted for 10% of the time. In this case, teacher contribution was low and the confusion within the class was extremely high at 10%. The students were nonverbally active 29% of the time. Teacher #2 had a high level of nonverbal questioning in class but a relatively low percentage of praise and acceptance at 28%. Teacher-suggested pupil initiation was extremely high at 77%; thus, a large number

of unpredictable responses was obtained from the students. This indicates that the lessons were game-playing oriented with some confusion involved. Pupil-suggested initiation was low at 3%. Emphasis on content was slightly low at 36%. A verbal to nonverbal ratio of 58:42 was found for teacher #2. The teacher was the central figure for all classes and kept the classes as a whole group for 86% of the time. Individualized class structure accounted for 14% of the time.

The findings for Teacher #3 (Table 3) indicated an equal amount of teacher and student contribution (48%). The students were physically active 43% of the time which is relatively high, while teacher verbalization was low at 18%. The classes were well controlled as indicated by the 3% of silence and less than 1% confusion. A relatively low percentage of questions was asked (7%); however, teacher #3 had a very high percentage (74%) of praise and acceptance. The high level of nonverbal acceptance and praise (85%) indicates that the teacher was actively involved with participating with the students during the classes. Teacher-suggested pupil initiation was low at 33%; however, verbal pupil initiated responses were high (73%). This indicates that the students were involved in a predictable, structured learning environment, but had the opportunity to offer verbal initiated responses. The emphasis on content

was very low (27%) which indicates that the new concepts were not being taught during these lessons. The verbal to nonverbal ratio was 25:75 which indicates that few verbal cues were given in these classes. The teacher did relinquish the central role 20% of the time as the students were involved in a rhythmic unit.

Data revealed that Teacher #4 (Table 3) contributed only 34% of the time while the total student contribution was 56%. A high percentage (40%) of nonverbal student contribution indicates a large percentage of physical involvement during the classes. The large percentage (8%) of silence indicates that students waited on line quietly during the classes. The teacher asked a relatively high percentage of questions (14%) compared to the other teachers in this study; however, the teacher was very low in giving acceptance and praise (16%) to the students. Little teacher-suggested pupil initiation (24%) and low pupil initiation (6%) occurred in these classes which indicates strong teacher structuring of the learning environment. The teacher had little emphasis on content (23%) within these classes. A ratio of 43:57 indicates a high percentage of nonverbal cues as compared to verbal cues used in these classes. The teacher was the central role in the gymnasium 91% of the time and had the students work as a whole unit 78% of the time.

Findings for Teacher #5 (Table 3) showed a total teacher contribution of 52%, total student contribution of 45%, and a relatively low 3% for silence and confusion. There was approximately the same amount of teacher verbalization as to student nonverbalization. Few questions were asked (9%); however, a high percentage (55%) was found for teacher acceptance and praise. The large nonverbal acceptance and praise (67%) indicates that the teacher participated physically with the students during the classes. Teacher-suggested pupil initiation was 39% and the pupil-suggested initiated response was low at 16%, thus indicating a structured learning environment. Emphasis on content was 32% with a verbal to nonverbal emphasis ratio of 42:57. Teacher #5 was the central controlling figure in the classes 100% of the time, but the students were in small individualized groups 38% of the time and worked together as a large group for 62% of the time.

Teacher #6 (Table 3) had a total contribution of 46%, student contribution of 48%, and a total of silence and/or confusion 5% of the time. The students were active 40% of the time and were involved in confusion for 5% of the classes. A very low percentage (5%) of questions was asked in these classes, while teacher acceptance and praise was 45%. Teacher-suggested pupil initiated responses were relatively high (50%) which infers that the classes were not

highly structured for predictable responses. Pupil initiated responses were high verbally (47%) which may reflect the high level of confusion in the classes. Emphasis on content was found to be 37% with the verbal to nonverbal ratio of 39:61. The teacher was the central control of the environment, and the class time was almost equally divided for the students working in small groups and in a large group. Interestingly, the teacher was not influencing the class structure 9% of the time.

Analysis of Teacher #7 (Table 3) indicates that the total teacher contribution was 56% with total student contribution at 40%. Teacher verbalization was relatively high at 34% and student verbalization was very low at 5%. The teacher asked few questions (8%) but gave relatively high levels (56%) of praise and acceptance. It should be noted that a high level (66%) of nonverbal acceptance and praise indicates physical participation with the students during the classes. Teacher-suggested pupil initiation was low (27%) indicating a structured learning environment; however, a relatively high (50%) level of verbal pupil initiation should be noted. Pupil initiated responses were very low (5%) indicating very little student creativity. Teacher emphasis on content was 43% with the verbal to nonverbal ratio of 42:59. More nonverbal cues and physical activity occurred in these classes than verbal cues. The

teacher was the major teaching agent (88%) with the environment acting as the teaching agent 12% of the time.

Data from Teacher #8 (Table 3) revealed that the total teacher contribution was high at 63% and the total student contribution was low at 34%. Teacher verbalization was high at 40%, while students were only physically active 21% of the time. Teacher questioning was high for this study (12%), while acceptance and praise were also above average at 60%. Teacher #8 had a high nonverbal percentage of acceptance and praise (72%) indicating that the teacher was physically active during the classes. Teacher-suggested pupil initiated response was high (60%) indicating that the learning environment allowed for unpredictable student response, such as game-playing. Content emphasis was also high (57%), while the verbal to nonverbal ratio was 55:45. The teacher was the central control in the environment 97% of the time while using the students as the teaching agent 3% of the time. Generally, the class functioned as a large group 71% of the time while being involved in individual or small groups 29% of the time.

The results of the data from Teacher #9 (Table 3) suggest above average total teacher contribution (58%) with a slightly below average (39%) total student contribution. Teacher verbalization accounted for 40% of the time with a low 18% for nonverbal teacher contribution, implying little

physical information (demonstration) was presented to the students. Student verbal contribution was relatively high at 11%, while active participation was only 28%. The teacher questioned at a level of 9% with teacher acceptance and praise above the mean at 55%. Again, the high (64%) of nonverbal acceptance and praise suggests active participation with the students in the classes. Teacher-suggested pupil initiation was average at 54% which suggests that the teacher encouraged an unpredictable pupil initiated environment. Emphasis on content was 40%, while the verbal to nonverbal emphasis was almost equal (48:52). The teacher remained in the central control position 92% of the time and used the environment as the teaching agent 8% of the time. The classes participated as a large group 89% of the time and were only involved in small group activities 11% of the time.

Findings implied that Teacher #10 (Table 3) had a high total contribution of 60% and a low total of student contribution at 36%. The students were active 31% of the time and had little (5%) verbal contribution. Teacher questioning was almost nonexistent (4%), and teacher acceptance and praise was low at 29%. Although pupil initiated verbal responses were 41%, the nonverbal responses were a low 16%; thus, the learning environment was almost totally structured for predictable student responses.

Content emphasis was high at 51% with the verbal to nonverbal ratio of 38:62. This infers that the classes were not involved verbally, but were actively involved non-verbally. The teacher did relinquish the central role (71%) in the gymnasium by having the students act as the teaching agent 5% of the time and the environment act as the teaching agent 23% of the time. The classes were almost equally divided with regard to participating in large or small groups.

Teacher #11 (Table 3) had a high total contribution of 63%, while allowing total student contribution to be only 34%. The teacher verbalization was high at 42%, while student verbalization was low at 6%. The students were nonverbally active 28% of the time. A 9% level of teacher questioning was achieved with the total acceptance and praise at 47%. The verbalization of acceptance and praise was low (34%), while the teacher participated with the students at a relatively high level (70%). Pupil unpredicted initiation was low in these classes which meant that the learning environment was highly structured and the outcomes were very predictable. Emphasis on content was 52%, while the verbal to nonverbal ratio was almost equal (49:51). The teacher was the teaching agent 100% of the time and had the students participating in large groups 84% of the time and involved in small groups 16% of the time.

Data analysed for Teacher #12 (Table 3) revealed a high total teacher contribution of 64% with a low total student contribution of 35%. Teacher verbal contribution was high at 39%, while the student verbal contribution was very low at 6%. One percent of the time the classes were either silent or confused. Teacher questioning was found to be 7% with total teacher acceptance and praise at 47%. The high nonverbal teacher acceptance and praise (54%) denotes participation with the students during the classes. Teacher #12 had a high level of verbal teacher-suggested pupil initiation and a general level of 50% for total pupil initiation. The teacher also had a high level of student-initiated verbal responses and, therefore, had a mixture of structures within the learning environment. Teacher emphasis on content was 47% with a 45:55 ratio of the verbal to nonverbal emphasis. The teacher did relinquish the central role 19% of the time allowing the environment to act as the teaching agent. Eighty-five percent of the time the classes were structured as one unit, while 15% of the time the students were in small individualized learning groups.

Findings for Teacher #13 (Table 3) suggested a very high total teacher contribution of 66% with a low (32%) total for student contribution. The teacher verbalized (38%) a lot, yet the students only verbally communicated 6% of the time. The teacher was nonverbally (28%) more active

than the students (25%). Absolutely no confusion was observed in this teacher's classes. The teacher did ask questions (12%) and displayed a high level of acceptance and praise (54%). Pupil initiated responses, both teacher- and student-suggested, were relatively low, thus indicating a highly structured learning environment. Emphasis on content was high at 58% with the verbal to nonverbal emphasis at a ratio of 45:55. The teaching cues tended to be more nonverbal than verbal to these students. The teacher acted as the teaching agent 73% of the time while allowing the environment to act as the teaching agent the rest of the time. The classes functioned as a large group for the entire time while being observed.

Data showed that Teacher #14 (Table 3) had a high total teacher contribution of 62% and a low total student contribution of 33%. Four percent of the time there was confusion within the classes. The teacher asked relatively few questions (5%) and had a low level (38%) of acceptance and praise. The learning environment was very structured (26%) with low teacher-suggested pupil initiated responses. Although the students had unpredictable verbal responses, the total student initiated responses were low (20%). Emphasis on content was 51% with the verbal to nonverbal ratio of 46:54. The environment acted as the teaching agent 15% of the time, while the teacher remained in the central

role as the teaching agent the rest of the time. Ninety-four percent of the time the class was conducted in a large-group atmosphere, while 5% of the time the class was structured for small groups.

Interaction Patterns of Individual Teachers

An examination of the interaction patterns found in this study was similar to those found by Mawdsley (1977) and Lombardo (1979). This investigation revealed that the top five teacher-student interaction patterns (Table 4) could be summarized as 5-5-18-18-18↖-18↖-5-15-6-18 (i.e., extended teacher lecture, followed by extended student nonverbal predictable responses, followed by extended student nonverbal predictable responses, followed by extended student nonverbal interpretive responses, followed by teacher verbal and nonverbal information-giving, a teacher direction followed by a student nonverbal predictable response).

Table 4

Mean of the Most Frequent Interaction Patterns for the Physical Education Teachers and Students

Interaction Patterns	Number of Times
5 - 5	4472
18 -18	3904
18↖-18↖	3761
5 -15	1715
6 -18	1629

Table 5 reveals that the interaction patterns for teacher #1 could be summarized as 5-5-5-15-15-5-8↖-8↖-18↖-18↖ (i.e., prolonged teacher lecture verbally and nonverbally with extended student unpredictable verbal and nonverbal responses). Teacher #2 differed slightly in displaying 18↖-18↖-5-5-18↖-8↖-8↖-8↖-8↖-5 interaction patterns (i.e., extended student initiated nonverbal responses, extended teacher information-giving followed by prolonged student nonverbal and verbal unpredictable response, followed by teacher information-giving).

Teacher #3 differed greatly by displaying 18-18-13-18-18-13-18↖-18↖-13-18↖ (i.e., extended predictable nonverbal student responses, prolonged playing of/or engaging in activities with the students, followed by a student unpredictable nonverbal response, with extended teacher participation with the students). In contrast, Teacher #4 had interaction patterns that almost always involved a student to student response. The interaction patterns were 18-18-18↖-18↖-6-18-18-8-8-8 (i.e., extended student predictable and then unpredictable responses, a teacher direction followed by extended nonverbal and prolonged verbal student predictable responses).

Teachers #5 and #6 were somewhat similar in their interaction patterns. The patterns for Teacher #5 were 18-18-18↖-18↖-5-5-5-18↖-18-8 (i.e., extended student

Table 5

Summary of the Mean of the Most Frequent Interaction Patterns Among the Physical Education Specialists and Students

Teacher #1 Interaction Patterns	# of Times	Teacher #2 Interaction Patterns	# of Times	Teacher #3 Interaction Patterns	# of Times	Teacher #4 Interaction Patterns	# of Times
5 - 5	678	18↖ -18↖	428	18 -18	647	18 -18	619
5 -15	301	5 - 5	264	13 -18	334	18↖ -18↖	394
15 - 5	238	18↖ - 8↖	215	18 -13	327	6 -18	298
8↖ - 8↖	211	8↖ - 8↖	214	18↖ -18↖	243	18 - 8	288
18↖ -18↖	200	8↖ - 5	208	13 -18↖	206	8 - 8	218

Teacher #5 Interaction Patterns	# of Times	Teacher #6 Interaction Patterns	# of Times	Teacher #7 Interaction Patterns	# of Times	Teacher #8 Interaction Patterns	# of Times
18 -18	369	18↖ -18↖	409	18↖ -18↖	370	5 - 5	593
18↖ -18↖	203	18 -18	189	5 - 5	273	18↖ -18↖	319
5 - 5	151	5 - 5	158	13 -18	236	5 -15	226
5 -18↖	64	5 -15	109	18 -13	236	15 - 5	199
18 - 8	64	15 - 5	100	18 - 5	233	15 -15	184

Table 5 (continued)

Teacher #9 Interaction Patterns	# of Times	Teacher #10 Interaction Patterns	# of Times	Teacher #11 Interaction Patterns	# of Times
5- 5	345	18-18	757	5 - 5	550
6-18	191	5- 5	474	18\ -18\	311
18-18	175	15-15	350	6 -18	284
5- 6	142	5-15	320	18 - 5	248
18- 5	109	15- 5	308	5 -15	219

Teacher #12 Interaction Patterns	# of Times	Teacher #13 Interaction Patterns	# of Times	Teacher #14 Interaction Patterns	# of Times
5 - 5	588	5- 5	143	5- 5	255
18\ -18\	510	18-18	131	5-15	142
18 -18	467	13-13	75	18- 5	127
5 -15	311	18- 5	72	15- 5	123
13 -13	271	5-15	70	15-15	108

predictable and unpredictable nonverbal responses, followed by prolonged teacher information-giving, followed by an unpredictable and a predictable student nonverbal response, with a verbal predictable student response). The interaction patterns for Teacher #6 were 18\-18\-18-18-5-5-5-15-15-5 (i.e., extended unpredictable and predictable nonverbal student responses, with sustained verbal and nonverbal teacher information-giving).

The interaction patterns of Teachers #7 and #8 were also similar with both teachers displaying a pattern of teacher information-giving with unpredictable nonverbal student responses (5-5-18\-18\). Teacher #7 continued the pattern with 13-18-18-13-18-5 (i.e., prolonged predictable involvement physically with the students followed by teacher information-giving); however, Teacher #8 followed the initial pattern with 5-15-15-5-15-15 which indicates prolonged teacher verbal and nonverbal (demonstration) information-giving.

Teachers #9 and #10 were dissimilar except for giving teacher information. The interaction patterns for teacher #9 were 5-5-6-18-18-18-5-6-18-5 (i.e., teacher information-giving followed by a direction with sustained predictable nonverbal student responses, some teacher information, a direction, a student nonverbal predictable response followed by more teacher information). Teacher #10 had interaction

patterns of 18-18-5-5-15-15-5-15-15-5 (i.e., extended nonverbal predictable student responses, with continued teacher verbal and nonverbal (demonstration) information-giving).

Teachers #11 and #12 began with similar interaction patterns of teacher information-giving followed by extended unpredictable student nonverbal responses (5-5-18\-18\). Teacher #11 continued with a pattern of 6-18-18-5-5-15 (i.e., a direction followed by sustained predictable nonverbal student responses, with prolonged teacher verbal and nonverbal (demonstration) responses). The continued patterns of Teacher #12 were 18-18-5-15-13-13 (i.e., extended predictable nonverbal student responses, followed by a quick teacher information-giving session with a demonstration, followed by sustained nonverbal acceptance and praise by the teacher).

The last two teachers had similar interaction patterns. Teacher #13 had interaction patterns of 5-5-18-18-13-13-18-5-5-15 (i.e., teacher verbal information-giving, followed by extended nonverbal predictable student responses, sustained nonverbal teacher acceptance and praise of the students, followed by sustained verbal and nonverbal teacher information). The last teacher, #14, could be summarized as having the interaction patterns of 5-5-5-15-18-5-15-5-15-15 (i.e., prolonged teacher verbal information-giving with

demonstration, a student nonverbal predictable response, followed by prolonged teacher explanation/demonstration).

Statistical Analysis of Teaching Behavior Male Specialists Compared to Female Specialists

The univariant MANOVA was employed to determine significant variability among the 27 CAFIAS parameters and categories between the male and female physical education specialists. The means of each class for each teacher for all grades taught were compared. The results of the analysis revealed that for all of the observations (males = 30, females = 40) there were ten significant differences at the .05 level between the teaching behavior of the male physical education specialist when compared to the female physical education specialist in this study (Table 6). Specifically, male instructors displayed significant variability to female instructors for (level of significance in parentheses):

1. Confusion in the classes (.02).
2. Total confusion and/or silence in classes (.002).
3. Student verbal contribution (.003).
4. Total student contribution (.00).
5. Teacher use of nonverbal questioning (.00).

Table 6

Univariant MANOVA of CAFIAS Parameters
Male Specialists Compared to
Female Specialists

Parameters of CAFIAS	Sex	N	Mean	S.D.	S.E.	t	Sig. of t
Teacher Contribution, Verbal	M	30	3.29	.41			
	F	42	4.34	4.80	.44	-1.19	.237
Teacher Contribution, Nonverbal	M	30	2.78	.51			
	F	42	3.12	.29	.04	-3.60	.001*
Total Teacher Contribution	M	30	3.81	.28			
	F	42	4.10	.15	.02	-5.45	.000*
Silence	M	30	- .01	1.36			
	F	42	.15	.75	.12	- .66	.508
Confusion	M	30	.85	1.11			
	F	42	.07	.91	.11	3.26	.002*
Total Silence and/or Confusion	M	30	1.33	1.24			
	F	42	.77	.84	.12	2.30	.024*
Student Contribution, Verbal	M	30	2.35	.69			
	F	42	1.87	.61	.07	3.07	.003*
Student Contribution, Nonverbal	M	30	3.44	.41			
	F	42	3.31	.24	.03	1.78	.079
Total Student Contribution	M	30	3.81	.25			
	F	42	3.56	.20	.02	4.60	.000*
Tea. Use Questions, Verbal	M	30	1.90	.72			
	F	42	2.12	.58	.07	- .98	.330
Tea. Use Questions, Nonverbal	M	30	1.92	1.06			
	F	42	1.00	.80	.10	4.21	.000*
Total Tea. Use of Questions	M	30	1.96	.67			
	F	42	1.91	.61	.07	.27	.786

Table 6 (continued)

Parameters of CAFIAS	Sex	N	Mean	S.D.	S.E.	t	Sig. of t
Tea. Acc. and Praise, Verbal	M	30	3.31	.62			
	F	42	3.49	.46	.06	-1.41	.161
Tea. Acc. and Praise, Nonverbal	M	30	3.75	.67			
	F	42	4.02	.48	.06	-2.01	.048*
Total Tea. Acc. and Praise	M	30	3.60	.64			
	F	42	3.79	.45	.06	-1.47	.145
Pupil Initiation, Verbal	M	30	3.78	.82			
	F	42	3.90	.63	.08	- .68	.496
Pupil Initiation, Nonverbal	M	30	3.15	1.60			
	F	42	3.09	1.31	.17	.17	.863
Total Pupil Initiation	M	30	3.51	1.09			
	F	42	3.38	.96	.12	.54	.591
Unstructured, Verbal	M	30	2.09	1.54			
	F	42	2.57	1.13	.15	-1.51	.134
Unstructured, Nonverbal	M	30	1.19	1.48			
	F	42	1.07	1.21	.15	.40	.690
Total Unstructured	M	30	1.61	1.39			
	F	42	1.85	1.01	.14	- .82	.415
Content Emphasis	M	30	3.50	.45			
	F	42	3.85	.25	.04	-4.19	.000*
Verbal Emphasis	M	30	3.75	.40			
	F	42	3.82	.18	.03	-1.07	.286
Nonverbal Emphasis	M	30	3.93	.31			
	F	42	3.96	.14	.02	- .51	.609
Teacher as Teaching Agent	M	30	4.49	.27			
	F	42	4.43	.25	.03	.90	.371
Student as Teaching Agent	M	30	0.00	0.00			
	F	42	.08	.52	.04	- .84	.402
Environment as Teaching Agent	M	30	.73	1.49			
	F	42	1.57	1.60	.18	-2.24	.028*

*Significant at the .05 level

The female instructors' teaching behaviors varied significantly from those of the male instructors for (significance in parentheses):

1. Teacher nonverbal contribution (.001).
2. Total teacher contribution (.00).
3. Total teacher acceptance and praise (.04).
4. Use of the environment as the teaching agent (.028).

The results of this study differed from those found by Lombardo (1979), Nygaard (1971), Mawdsley (1977), and Keane (1978). Nygaard (1971) found that the males were more verbal than the females, but that the females used more praise (although a low level was obtained) and encouraged more student initiated verbal behavior. Mawdsley (1977) and Keane (1976) reported only minor differences when comparing male and female instructors. The results of this study are almost directly opposite to those found in the Lombardo (1979) study. In that study the researcher determined that male instructors were more verbal and had more silence in the classes. The female instructors allowed more student verbal contribution, had more acceptance and praise, and asked more questions within the classes.

Interaction Pattern Comparisons by Gender

The interaction patterns of the male physical education specialists in this study (Table 7) could be described as

Table 7

Summary of the Most Frequent Interaction Patterns
Among the Top Cells of Physical Education
Teachers and Students by Gender

Male (N=6)		Female (N=8)	
Interaction Patterns	Number of Times	Interaction Patterns	Number of Times
18↖ -18↖	1877	5 - 5	3221
18 -18	1824	18 -18	2080
5 - 5	1251	18↖ -18↖	1884
5 -15	465	5 -15	1250
8↖ - 8↖	425	6 -18	1214

18\-18\-18-18-5-5-5-15-8\-8\ (i.e., prolonged unpredictable nonverbal and then predictable nonverbal student responses, followed by sustained teacher information-giving with a demonstration, followed by unpredictable student verbal responses). The female physical education specialists demonstrated a different pattern. The interaction patterns for the females were 5-5-18-18-18\-18\-5-15-6-18 (i.e., teacher information-giving, followed by extended nonverbal predictable and unpredictable student responses, followed by a lecture/demonstration with a direction to be followed by a nonverbal predictable student response). These patterns differ slightly from those found by Lombardo (1979); however, they are quite similar in general.

Statistical Analysis of Teaching Behaviors Comparisons by Grade Level

A univariant MANOVA was computed to determine the significant variability among the 27 CAFIAS parameters and categories to compare the teaching behavior by grade level. The mean of each grade level per teacher was determined and used for the comparisons. Once a significant F (at the .05 level) was determined, a *t* test was employed to determine at which level the differences occurred. The results of the analysis (Table 8) indicated that for all of the observations (N = 24 per grade level) there were only five significant differences between the teaching behavior of the

Table 8

Univariant MANOVA of CAFIAS Parameters
Comparison by Grade Level

Parameters of CAFIAS	Gr.	Mean	S.D.	S.E.	t	Sig. of t	F	Sig. of F
Teacher Contribution, Verbal	1	3.58	.31	.43				
	3	4.74	6.39	.61	.51	.60		
	5	3.38	.34	.61	1.35	.18	.93	.397
Teacher Contribution, Nonverbal	1	3.05	.37	.05				
	3	3.01	.46	.07	.95	.34		
	5	2.88	.45	.07	.46	.64	1.04	.358
Total Teacher Contribution	1	4.07	.21	.02				
	3	3.97	.27	.04	2.21	.03*		
	5	3.89	.26	.04	- .10	.91	3.12	.05*
Silence	1	.28	.86	.12				
	3	.03	1.13	.17	1.12	.26		
	5	.06	1.13	.17	.26	.79	.69	.503
Confusion	1	.45	.99	.12				
	3	.51	1.13	.17	.30	.76		
	5	.23	1.09	.17	.62	.53	.44	.642
Total Silence and/or Confusion	1	1.09	.93	.12				
	3	1.14	1.04	.17	.48	.62		
	5	.78	1.18	.17	.79	.42	.84	.430
Student Contribution, Verbal	1	2.00	.58	.08				
	3	2.06	.70	.11	- .63	.52		
	5	2.16	.78	.11	- .13	.89	.33	.713
Student Contribution, Nonverbal	1	3.24	.31	.03				
	3	3.36	.33	.05	-2.32	.02*		
	5	3.49	.29	.05	- .09	.92	3.76	.023*

Table 8 (continued)

Parameters of CAFIAS	Gr.	Mean	S.D.	S.E.	t	Sig. of t	F	Sig. of F
Total Student Contribution	1	3.54	.21	.02				
	3	3.66	.24	.03	-2.95	.004*		
	5	3.79	.25	.03	- .12	.90	6.06	.004*
Tea. Use Questions, Verbal	1	2.33	.53	.07				
	3	2.03	.68	.10	2.58	.01*		
	5	1.82	.62	.10	- .27	.78	4.02	.022*
Tea. Use Questions, Nonverbal	1	1.39	1.10	.12				
	3	1.41	.97	.17	.05	.95		
	5	1.34	1.01	.17	.18	.85	.03	.970
Total Tea. Use Questions	1	2.15	.58	.07				
	3	1.91	.69	.10	2.15	.03*		
	5	1.74	.56	.10	- .24	.80	2.77	.069
Tea. Acc. and Praise, Verbal	1	3.41	.46	.06				
	3	3.39	.56	.09	- .07	.93		
	5	3.44	.60	.09	- .26	.79	.06	.938
Tea. Acc. and Praise, Nonverbal	1	4.00	.44	.06				
	3	3.80	.71	.09	.94	.34		
	5	3.90	.55	.09	-1.13	.25	.74	.480
Total Tea. Acc. and Praise	1	3.74	.45	.06				
	3	3.64	.63	.09	.32	.74		
	5	3.75	.54	.09	- .73	.46	.26	.760
Pupil Initiation, Verbal	1	3.81	.63	.08				
	3	3.90	.74	.12	- .36	.71		
	5	3.85	.79	.12	.39	.69	.09	.907
Pupil Initiation, Nonverbal	1	3.10	1.09	.17				
	3	3.09	1.60	.24	- .07	.93		
	5	3.16	1.58	.24	- .08	.92	.01	.986
Total Pupil Initiation	1	3.42	.68	.12				
	3	3.42	1.17	.17	.07	.94		
	5	3.47	1.14	.17	.10	.92	.01	.985

Table 8 (continued)

Parameters of CAFIAS	Gr.	Mean	S.D.	S.E.	t	Sig. of t	F	Sig. of F
Unstructured, Verbal	1	2.50	1.33	.15				
	3	2.50	1.27	.22	.86	.39		
	5	2.00	1.37	.22	.68	.49	1.20	.307
Unstructured, Nonverbal	1	1.34	1.14	.15				
	3	1.14	1.54	.22	1.00	.31		
	5	.88	1.26	.22	.09	.92	.74	.473
Total Unstructured	1	1.90	1.12	.13				
	3	1.87	1.34	.19	.44	.44		
	5	1.47	1.07	.19	.53	.53	.97	.384
Content Emphasis	1	3.79	.35	.04				
	3	3.70	.42	.06	1.22	.22		
	5	3.64	.39	.06	.14	.88	.89	.414
Verbal Emphasis	1	3.85	.25	.03				
	3	3.78	.30	.04	1.26	.20		
	5	3.74	.32	.04	- .28	.77	.88	.418
Nonverbal Emphasis	1	3.91	.22	.02				
	3	3.97	.21	.03	-1.10	.27		
	5	3.97	.24	.03	.49	.62	.60	.546
Teacher as Teaching Agent	1	4.42	.24	.03				
	3	4.45	.33	.04	.68	.49		
	5	4.49	.20	.04	.09	.92	.36	.699
Student as Teaching Agent	1	.00	.00	.04				
	3	.14	.68	.06	.70	.48		
	5	.00	.00	.06	1.40	.16	1.00	.373
Environment as Teaching Agent	1	1.55	1.73	.18				
	3	1.04	1.55	.26	1.22	.22		
	5	1.07	1.53	.26	- .67	.50	.75	.473

*.05 level of significance
N = 24 per grade

instructors while teaching different grade levels. The teachers did display five differences when teaching grade one as compared to grades three and five; however, there was no significant difference in the teaching behavior comparing grade three to grade five classes. Specifically, grade one differed in the teaching behavior for (level of significance in parentheses):

1. Total teacher contributions (.05).
2. Student nonverbal contribution (.02).
3. Total student contribution (.004).
4. Teacher use of verbal questioning (.022).
5. Total teacher use of questioning (.05).

The findings in this study were contradictory to those found by Lombardo (1979). In that study, the researcher found significant variability across the various grade levels. The Lombardo study, observing four teachers, did include the observation of guided discovery type classes which may be the reason for the differences. A very minimal amount of that style of teaching was displayed in any of the classes observed within this study.

Interaction Pattern Comparisons by Grade Level

The analysis of the data for the interaction patterns by grade level (Table 9) indicated similarities yet slight differences when comparing the instructors in this study.

Table 9

Summary of the Most Frequent Interaction Patterns
Among the Top Cells of Physical Education
Teachers and Students by Grade Level

Grade One		Grade Three		Grade Five	
Interaction Patterns	Number of Times	Interaction Patterns	Number of Times	Interaction Patterns	Number of Times
5 - 5	1534	5 - 5	1636	18 -18	1922
18↖ -18↖	822	18↖ -18↖	1193	18↖ -18↖	1713
18 -18	755	18 -18	1069	5 - 5	1679
6 -18	705	5 -15	623	5 -15	639
5 -15	556	6 -18	602	15 - 5	549

N = 24 per grade level

Nygaard (1971), Keane (1978), and Lombardo (1979) found little diversification in the teaching behaviors or interaction patterns when comparing the teachers by grade level. Universally, the past researchers indicated that the interaction patterns usually involved teacher information-giving, teacher direction, predictable and unpredictable nonverbal student responses.

The teachers in this study tended to follow the same general patterns as past studies; however, there were slight differences as the grade level increased. The teacher-student interaction patterns for grade one were 5-5-18↖-18↖-18-18-6-18-5-15 (i.e., teacher information-giving, extended unpredictable and predictable nonverbal student responses, a teacher direction, followed by a nonverbal predictable student response, with a short teacher lecture/demonstration). The teachers who taught the third-grade classes displayed teacher-student interaction patterns of 5-5-18↖-18↖-18-18-5-15-6-18 (i.e., teacher information-giving, followed by prolonged unpredictable and predictable nonverbal student responses, teacher lecture/demonstration followed by a direction and a predictable nonverbal student response). The only differences between the patterns with the first graders and third graders were a minor shift in teacher information prior to a direction and student response. The teacher-student interaction patterns for the

fifth-grade level were different than those displayed in the prior two grade levels. The interaction patterns for the fifth-grade level were 18-18-18-18-5-5-5-15-15-5 (i.e., prolonged student nonverbal predictable and unpredictable responses, followed by continued teacher information-giving, a nonverbal demonstration, and continued verbal information-giving). The interaction patterns of the fifth grade, as compared to the first and third grades, suggested that the teachers gave more information/demonstration, but only after the students were involved in sustained periods of physical activity.

Statistical Analysis of Teaching Behavior Comparison by Size of Class

The univariant MANOVA was employed to determine significant variability among the 27 CAFIAS parameters and categories between those teachers who taught classes with less than 40 students and those teachers who taught between 40 and 120 students per class. The mean of each day for each teacher was used for the comparison. The results suggested that for all the observations (under 40 per class = 40; 40 or more students per class = 32) there were 15 significant differences (Table 10) at the .05 level between the teaching behaviors of the teachers in this study due to class size. Specifically, the teachers who taught classes

Table 10

Univariant MANOVA of CAFIAS Parameters
Comparison by Size of Class

Parameters of CAFIAS	Size of Class	Mean	S.D.	S.E.	t	Sig. of t
Teacher Contribution, Verbal	+40	3.35	.39			
	-40	4.51	5.33	.43	-1.34	.184
Teacher Contribution, Nonverbal	+40	3.04	.49			
	-40	2.91	.35	.05	1.31	.194
Total Teacher Contribution	+40	3.94	.28			
	-40	4.02	.22	.03	-1.21	.227
Silence	+40	.34	1.17			
	-40	-.20	.81	.12	2.29	.024*
Confusion	+40	.17	1.07			
	-40	.66	1.00	.12	-1.98	.05*
Total Silence and/or Confusion	+40	1.10	.98			
	-40	.89	1.13	.12	.83	.406
Student Contribution, Verbal	+40	1.85	.60			
	-40	2.32	.70	.07	-2.99	.004*
Student Contribution, Nonverbal	+40	3.49	.27			
	-40	3.22	.32	.03	3.95	.000*
Total Student Contribution	+40	3.70	.25			
	-40	3.62	.25	.03	1.28	.204
Tea. Use Questions, Verbal	+40	2.02	.66			
	-40	2.10	.63	.07	- .52	.602
Tea. Use Questions, Nonverbal	+40	1.32	1.03			
	-40	1.45	1.01	.12	- .52	.599
Total Tea. Use Questions	+40	1.87	.69			
	-40	2.00	.56	.07	- .84	.401
Tea. Acc. and Praise, Verbal	+40	3.20	.62			
	-40	3.65	.28	.05	-3.76	.000*

Table 10 (continued)

Parameters of CAFIAS	Size of Class	Mean	S.D.	S.E.	t	Sig. of t
Tea. Acc. and Praise, Nonverbal	+40	3.85	.65			
	-40	3.97	.47	.06	- .88	.382
Total Tea. Acc. and Praise	+40	3.61	.67			
	-40	3.83	.32	.06	-1.72	.089
Pupil Initiation, Verbal	+40	3.70	.73			
	-40	4.02	.67	.08	-1.89	.063
Pupil Initiation, Nonverbal	+40	2.66	1.51			
	-40	3.63	1.13	.15	-3.04	.003*
Total Pupil Initiation	+40	3.10	1.02			
	-40	3.82	.86	.11	-3.19	.002*
Unstructured, Verbal	+40	2.96	1.15			
	-40	1.70	1.19	.13	4.54	.000*
Unstructured, Nonverbal	+40	1.40	1.43			
	-40	.81	1.12	.15	1.94	.05*
Total Unstructured	+40	2.17	1.14			
	-40	1.28	1.06	.13	3.40	.001*
Content Emphasis	+40	3.60	.42			
	-40	3.83	.31	.04	-2.61	.011*
Verbal Emphasis	+40	3.64	.31			
	-40	3.96	.16	.02	-5.23	.000*
Nonverbal Emphasis	+40	4.08	.16			
	-40	3.81	.21	.02	6.02	.000*
Teacher as Teaching Agent	+40	4.36	.32			
	-40	4.56	.10	.02	-3.62	.001*
Student as Teaching Agent	+40	.08	.54			
	-40	.00	.00	.04	.94	.348
Environment as Teaching Agent	+40	1.92	1.67			
	-40	.43	1.09	.16	4.43	.000*

*.05 level of significance N = 32 observations over 40
40 observations under 40

with less than 40 students displayed significantly higher variability for (level of significance in parentheses):

1. Confusion (.05).
2. Student verbal contribution (.004).
3. Teacher verbal acceptance and praise (.000).
4. Pupil nonverbal initiation (.003).
5. Total pupil initiation (.002).
6. Content emphasis (.011).
7. Verbal emphasis (.000).
8. Teacher as the teaching agent (.001).

The teachers who were instructing in an environment of 40 to 120 students per class exhibited significantly higher variability for (level of significance in parentheses):

1. Silence (.024).
2. Student nonverbal contribution (.000).
3. Unstructured verbal student-suggested responses (.000).
4. Unstructured nonverbal student-suggested responses (.05).
5. Total unstructured student responses (.001).
6. Nonverbal emphasis (.000).
7. Environment as the teaching agent (.000).

Some of the significant differences may be misleading. Only two observations per teacher per grade level were analyzed in the winter months in the gymnasium environment.

The data indicated that the teachers who had large classes used the environment as a teaching agent (music) more often than those teachers with smaller classes. The teachers with smaller classes may have already completed the rhythmic unit or would teach rhythmics at a later date.

An interesting view of the data includes the significant differences observed when confusion and silence were involved. Teachers with large classes displayed more organization and control over the environment by having more silence and less confusion within their classes. In the larger classes, pupils were more active physically and had more unpredictable student-suggested responses than those students who were taught in smaller classes. In smaller classes the students had more opportunity to contribute to the class verbally, received more teacher acceptance and praise, more instruction, and more teacher-suggested activities.

Interaction Pattern Comparisons by Size of Class

The analysis of the data for the teacher-student interaction patterns indicated some differences when comparing class size (Table 11). The patterns for the teacher-students in large classes were 18-18-18-18-5-5-18-5-5-15 (i.e., prolonged predictable and unpredictable nonverbal student responses, with extended teacher

Table 11

Summary of the Most Frequent Interaction Patterns Among the Top Cells of Physical Education Teachers and Students by Size of Class

Less than 40 Students Per Class		More than 40 Students Per class	
Interaction Patterns	Number of Times	Interaction Patterns	Number of Times
5 - 5	3164	18 -18	2517
18↖ -18↖	2097	18↖ -18↖	1664
18 -18	1350	5 - 5	1510
5 -15	1127	18 - 5	7770
15 - 5	999	5 -15	691

N = 40 for less than 40 students
32 for more than 40 students

information-giving, followed by a student predictable nonverbal response, followed by an extended lecture with a demonstration). In the smaller classes the teacher-student interaction patterns were 5-5-18↖-18↖-18-18-5-15-15-5 (i.e., teacher information-giving, followed by prolonged unpredictable and predictable nonverbal student responses, teacher information with extended demonstration and more teacher information).

CHAPTER FIVE

Summary, Conclusions, and Recommendations

Summary

The study was conducted to observe and describe the teaching behavior and interaction patterns of 14 elementary physical education specialists instructing grades one, three, and five in the middle Tennessee area. Each teacher was observed twice by two recorders per grade level from mid-January to early March, 1983, while instructing in the gymnasium environment. The Cheffers Adaptation of Flanders Interaction Analysis System was selected as the instrument to collect the data. Descriptive statistics were employed to describe and analyze the teaching behavior and interaction patterns of all the teachers within the study. A univariant MANOVA was utilized to determine the differences that occurred when comparing the teaching behavior by gender of the instructor, grade level, and size of the classes. A descriptive analysis was exercised to examine the differences that occurred in the teacher-student interaction patterns when comparing the independent variables.

Summary of Results of All Teachers

A descriptive analysis revealed that the 14 physical education specialists observed in this study displayed

similar teaching behaviors to those physical education teachers studied by other researchers in the past (Table 12). The total teacher contribution was 55% of the time, while the total student contribution was 40% of the time. Changing formations or activities accounted for 4% of the class time. Teachers used a low percentage (8%) of questioning indicating a command style of teaching. The group had a moderate level of teacher acceptance and praise (47%) as compared to criticism and directions. Teacher-suggested pupil initiated activity was 42%, while student-suggested responses were only 12% indicating a very structured learning environment. Content emphasis was 45% with the verbal to nonverbal ratio at 45:55. The teacher was the central teaching agent 89% of the time and instructed the class as a whole unit 78% of the time, thus indicating teacher dominance within the environment.

An examination of the teacher-student interaction patterns suggested similar results to past studies. This investigation (Table 13) revealed that the top five patterns could be summarized as 5-5-18-18-18$\wedge$-18$\wedge$-5-15-6-18 (i.e., extended teacher information-giving, followed by prolonged nonverbal predictable and unpredictable student responses, a teacher lecture/demonstration, followed by a teacher direction and a narrow nonverbal student response).

Table 12

Summary of CAFIAS Parameters
for All Teachers

Parameters of CAFIAS	Mean
Total Teacher Contribution	55.49
Total Student Contribution	40.31
Total Silence and/or Confusion	4.18
Total Teacher Use of Questions	8.04
Total Teacher Acceptance and Praise (as compared to criticism and directions)	46.55
Total (Teacher Suggested) Pupil Initiation	42.35
Total (Student Suggested) Pupil Initiation	12.21
Content Emphasis	44.09
Verbal Emphasis	45.49
Nonverbal Emphasis	54.51
Teacher as Teaching Agent	89.65
Class Structured as One Unit	78.02

Table 13

Summary of Teacher-Student Interaction Patterns

Interaction Patterns	Number of Times
5 - 5	4472
18 -18	3904
18^ -18^	3761
5 -15	1715
6 -18	1629

Summary of Individual Teachers

The following information (Table 14) summarizes the results of the analysis of the mean on the CAFIAS parameters and interaction patterns for all grade levels taught by the individual instructor. Only those parameters that were above or below (3%) the general mean for the entire study will be discussed for each individual teacher.

Table 14

Summary of the Results of the Analysis of the Mean on the CAFIAS Parameters and Interaction Patterns for All Grade Levels Taught by the Individual Instructor

Teacher #1
1. High (63%) total teacher contribution.
2. Low (34%) total student contribution.

Table 14 (continued)

Teacher #1

3. Very high (67%) total teacher suggested pupil initiation, indicating a creative learning environment.

4. High (64%) content emphasis.

5. High (61:38) verbal to nonverbal ratio.

Interaction patterns: 5-5-5-15-15-5-8\-8\-18\-18\

Summary of patterns: sustained teacher information-giving verbally, then nonverbally, followed by more verbal teacher information, succeeded by extended student verbal analytical, then nonverbal analytical responses.

Teacher #2

1. Low (41%) total teacher contribution.

2. High (48%) total student contribution.

3. High (10%) level of confusion.

4. Low (27%) total teacher acceptance and praise as compared to criticism and directions.

5. High (77%) total teacher suggested pupil initiation.

6. Low (37%) content emphasis.

Interaction patterns: 18\-18\-5-5-18\-8\-8\-8\-8\-5

Summary of patterns: extended nonverbal unpredictable student responses, extended teacher information-giving, a nonverbal unpredictable student response, sustained verbal analytical student responses, followed by a teacher information response.

Teacher #3

1. Low (48%) total teacher contribution.

2. Slightly high (48%) total student contribution.

Table 14 (continued)

Teacher #3

3. High (85%) nonverbal teacher acceptance and praise, indicating extended participation with the students.

4. High (74%) total teacher acceptance and praise.

5. High (69%) teacher-suggested verbal pupil interpretive initiation.

6. High (73%) pupil-suggested interpretive responses.

7. High (47%) total pupil-suggested interpretive responses.

8. Low (27%) content emphasis.

9. Low (25:75) verbal to nonverbal emphasis.

Interaction patterns: 18-18-13-13-18-18-18↖-18↖-13-18

Summary of patterns: extended nonverbal predictable student responses, followed by extended nonverbal teacher acceptance, succeeded by nonverbal predictable student responses, followed by nonverbal analytical student responses, a teacher nonverbal acceptance, followed by a nonverbal unpredictable student response.

Teacher #4

1. Low (34%) total teacher contribution.

2. High (56%) total student contribution.

3. High (8%) level of silence.

4. Low (16%) total teacher acceptance and praise.

5. Very low (11%) teacher-suggested total pupil interpretive responses.

6. Very low (6%) student-suggested total pupil interpretive responses.

7. Low (27%) content emphasis.

Table 14 (continued)

Teacher #4

Interaction patterns: 18-18-18↖-18↖-6-18-18-8-8-8

Summary of patterns: extended nonverbal predictable student responses, extended nonverbal unpredictable student responses, followed by a teacher direction, sustained nonverbal predictable student responses, followed by prolonged verbal predictable student responses.

Teacher #5

1. Slightly low (52%) total teacher contribution.
2. High (67%) teacher nonverbal acceptance and praise.
3. High (55%) total teacher acceptance and praise.
4. Low (39%) total teacher-suggested pupil interpretive response.
5. Low (16%) total student-suggested pupil interpretive response.
6. Low (32%) content emphasis.

Interaction patterns: 18-18-18↖-18↖-5-5-5-18↖-18-8

Summary of patterns: extended nonverbal predictable student responses, followed by nonverbal student analytical responses, prolonged teacher information-giving, an unpredictable nonverbal student response, followed by a predictable, narrow, nonverbal student response, succeeded by a narrow, verbal student response.

Teacher #6

1. Low (47%) total teacher contribution.
2. Slightly high (48%) total student contribution.
3. Slightly high (5%) confusion.
4. Low (45%) total teacher acceptance and praise.

Table 14 (continued)

Teacher #6
5. Very low (7%) student-suggested pupil interpretive response.
6. Low (37%) content emphasis.
7. Low (39:61) verbal to nonverbal emphasis.
Interaction patterns: 18↖-18↖-18-18-5-5-5-15-15-5
Summary of patterns: extended nonverbal analytical student responses, followed by narrow, nonverbal student responses, prolonged teacher verbal information-giving, with extended demonstration with no verbalization, followed by teacher information-giving.
Teacher #7
1. High (65%) nonverbal teacher acceptance and praise.
2. High (56%) total teacher acceptance and praise.
3. Low (27%) student-suggested pupil initiation.
Interaction patterns: 18↖-18↖-5-5-13-18-18-13-18-5
Summary of patterns: extended nonverbal analytical student responses, followed by sustained teacher information-giving, a nonverbal teacher acceptance, extended nonverbal predictable student responses, a nonverbal teacher acceptance, a nonverbal predictable student behavior, a teacher lecture.
Teacher #8
1. High (63%) total teacher contribution.
2. Low (35%) total student contribution.
3. High (12%) total teacher use of questions.
4. High (72%) teacher nonverbal acceptance and praise.
5. High (59%) total teacher acceptance and praise.

Table 14 (continued)

Teacher #8
6. High (60%) teacher-suggested pupil initiation.
7. High (57%) content emphasis.
Interaction patterns: 5-5-18↖-18↖-5-15-15-5-15-15
Summary of patterns: extended teacher information-giving, followed by nonverbal analytical student responses, followed by teacher information, a nonverbal demonstration, teacher information and a nonverbal demonstration.
Teacher #9
1. Slightly high (58%) total teacher contribution.
2. Slightly low (39%) total student contribution.
3. High (55%) total teacher acceptance and praise.
4. High (53%) teacher-suggested pupil initiation.
5. Slightly low (40%) content emphasis.
Interaction patterns: 5-5-6-18-18-18-5-6-18-5
Summary of patterns: extended teacher information-giving, a teacher direction, followed by prolonged nonverbal predictable student responses, teacher information, teacher direction, a nonverbal predictable student response with more teacher information.
Teacher #10
1. High (61%) total teacher contribution.
2. Low (35%) total student contribution.
3. Low (29%) total teacher acceptance and praise.
4. Low (19%) teacher-suggested pupil initiation.
5. Low (22%) student-suggested pupil initiation.

Table 14 (continued)

Table #10

6. High (50%) content emphasis.

7. Low (37:62) verbal to nonverbal emphasis.

Interaction patterns: 18-18-5-5-15-15-5-15-15-5

Summary of patterns: extended nonverbal predictable student responses, sustained teacher verbal information-giving, followed by extended nonverbal (demonstration) teacher information, a verbal information-giving, followed by sustained demonstration and verbal information-giving.

Table #11

1. High (63%) total teacher contribution.

2. Low (34%) total student contribution.

3. Low (6%) total pupil-suggested, pupil initiation.

4. High (52%) content emphasis.

Interaction patterns: 5-5-18↖-18↖-6-18-18-5-5-15

Summary of patterns: extended teacher information-giving, followed by unpredictable nonverbal student responses, a teacher direction, extended nonverbal predictable student responses, extended teacher information-giving with a demonstration.

Table #12

1. High (64%) total teacher contribution.

2. Low (35%) total student contribution.

3. Low (8%) total student-suggested pupil initiation.

Interaction patterns: 5-5-18↖-18↖-18-18-5-15-13-13

Summary of patterns: teacher information-giving, followed by nonverbal analytical student responses, followed by extended nonverbal predictable student responses, a teacher

Table 14 (continued)

Table #12

information/demonstration followed by teacher nonverbal acceptance.

Table #13

1. High (66%) total teacher contribution.
2. Low (32%) total student contribution.
3. High (54%) total teacher acceptance and praise.
4. Low (29%) total teacher-suggested pupil initiation.
5. Low (14%) total student-suggested pupil initiation.
6. High (58%) content emphasis.

Interaction patterns: 5-5-18-18-13-13-18-5-5-15

Summary of patterns: teacher information-giving, followed by predictable student nonverbal responses, extended teacher nonverbal acceptance, a predictable student nonverbal response, extended teacher information-giving with a demonstration.

Teacher #14

1. High (62%) total teacher contribution.
2. Low (33%) total student contribution.
3. Low (38%) total teacher acceptance and praise.
4. Low (23%) total teacher-suggested pupil initiation.
5. Low (21%) total student-suggested pupil initiation.
6. High (51%) content emphasis.

Interaction patterns: 5-5-5-15-18-5-15-5-15-15

Summary of patterns: prolonged teacher information-giving, a nonverbal demonstration followed by a predictable student

Table 14 (continued)

Teacher #14
response, followed by prolonged teacher information/ demonstration.

The second concern of this study was to determine if teacher gender would create variability in the teaching behavior and interaction patterns in the physical education environment. A univariant MANOVA was utilized to locate the significant differences between the six male and eight female physical education specialists in this study. The results are summarized in Table 15.

Table 15

Summary of Significant Findings
Teacher Gender

Major CAFIAS Parameters Demonstrating Significant Variability	
Males had significantly greater mean values for:	Females had significantly greater mean values for:
1. Confusion (.002)	1. Teacher contribution, nonverbal (.001)
2. Total silence and/or confusion (.024)	2. Total teacher contrubution (.000)
3. Student contribution, verbal (.003)	3. Teacher acceptance and praise, nonverbal (.043)
4. Total student contribution (.00)	4. Content emphasis (.000)
5. Teacher use of questions, nonverbal (.000)	5. Environment as the teaching agent (.028

Table 15 (continued)

Interaction Patterns	
Male Teachers:	Female Teachers:
18\-18\-18-18-5-5-5-15-8\-8\	5-5-18-18-18\-18\-5-15-6-18
Pattern symbols are summarized as:	
Extended nonverbal analytical student responses, followed by extended nonverbal predictable student responses, prolonged teacher information-giving, a demonstration, followed by verbal narrow student responses.	Extended teacher information-giving, followed by extended nonverbal narrow student responses, followed by sustained nonverbal analytical student responses, followed by a teacher verbal and nonverbal information, a teacher direction, and a nonverbal predictable student response.

The third concern of this study was to determine if the grade level that the teacher taught would create variability in the teaching behavior and interaction patterns in the physical education environment. A univariant MANOVA was employed to locate the significant differences between the three grades. Twenty-four lessons per grade (one, three, and five) were observed with the results summarized in Table 16.

The fourth concern of this study was to determine if the size of a class would create variability in the teaching behavior and interaction patterns in the gymnasium. Forty classes were observed having less than 40 students within

Table 16

Summary of Significant Findings
Grade Levels

Major CAFIAS Parameters Demonstrating Significant Variability

Teachers instructing first graders had significantly greater mean values than those teachers instructing third and fifth graders for:

1. Total teacher contribution (.03)
2. Teacher use questioning, verbal (.002)

Teachers instructing third and fifth graders had significantly greater mean values than those teachers instructing the first grade for:

1. Student contribution, nonverbal (.02)
2. Total student contribution (.004)

There were no significant differences when comparing the teaching behavior of the teachers teaching the third and fifth graders.

Interaction Patterns

First Grade	Third Grade	Fifth Grade
5-5-18↖-18↖-18-18-6-18-5-15	5-5-18↖-18↖-18 18-5-15-5-18	18-18-18↖-18↖-5-5-5-15-15-5
Pattern symbols are summarized as:		
Teacher information, followed by extended analytical nonverbal student responses, succeeded by nonverbal predictable student responses, a teacher direction, teacher verbal and nonverbal information-giving.	Teacher information, followed by extended analytical nonverbal student responses, succeeded by nonverbal predictable student responses, teacher verbal and nonverbal information-giving, a teacher direction followed by a student nonverbal predictable response.	Nonverbal predictable student response, followed by sustained nonverbal analytical student responses, prolonged teacher verbal information-giving, a nonverbal demonstration with more teacher information.

the classes, and 32 classes were observed having between 40 and 120 students within the classes. A univariant MANOVA was utilized to locate the significant differences between the classes in this study. The results are summarized in Table 17.

Table 17

Summary of Significant Findings
Class Size

Major CAFIAS Parameters Demonstrating Significant Variability	
Classes with less than 40 students had significantly greater values for:	Classes with more than 40 students had significantly greater values for:
1. Confusion (.05)	1. Silence (.024)
2. Student contribution, verbal (.004)	2. Student contribution, nonverbal (.000)
3. Teacher acceptance and praise as compared to criticism and directions, verbal (.000)	3. Pupil initiation (student-suggested), verbal (.00)
4. Pupil initiation (teacher-suggested), nonverbal (.003)	4. Pupil initiation (student-suggested), nonverbal (.05)
5. Total pupil initiation, (teacher-suggested) (.002)	5. Total pupil initiation (student-suggested) (.001)
6. Content emphasis (.011)	6. Nonverbal emphasis (.000)
7. Verbal emphasis (.000)	7. Environment as the teaching agent (.000)
8. Teacher as teaching agent (.001)	

Table 17 (continued)

Interaction Patterns	
Classes with less than 40 students:	Classes with more than 40 students:
5-5-18\-18\-18-18-5-15-15-5	18-18-18\-18\-5-5-18-5-5-15
Pattern symbols are summarized as:	
Extended teacher information-giving, followed by extended nonverbal analytical student responses, followed by non-verbal predictable student responses, a teacher lecture/ demonstration, with more teacher information-giving.	Extended nonverbal predictable student responses, followed by sustained non-verbal analytical student responses, extended teacher information-giving, a non-verbal predictable student response, more teacher verbal information-giving followed by a demonstration.

Discussion of Results

The teachers in this study seemed to have developed a teaching style that was comfortable for them and habitually behaved in that manner regardless of the ages/grade levels of the students. These results were similar to those found by Lombardo (1979). Interestingly, the college methodology classes and textbooks (Dougherty, 1979; Siedentop, 1972; Singer, 1980) present concepts that teachers should individualize learning based upon the age, grade level, and learning needs of the students. The results of this study indicate very few teacher behaviors changed according to age/grade level. This implies that these teachers refuted

the need for variability in teaching behavior for different age groups based upon the abilities, needs, and capabilities of the students.

Traditional teaching styles dominated the physical education environment observed. Some of the necessity for such a structured environment and lack of individualized learning may have been due to the enormous class size for some of the teachers involved in this study. When 120 students are in a gymnasium environment at one time, it may be difficult to encourage individuality and creativity while maintaining necessary control and discipline. Thus, the teachers in this study tended to employ a restrictive, authoritative approach which maintained a controlled environment. However, the teachers who had smaller classes, usually less than 30 students, were still authoritative in their teaching behavior, but these teachers as a group did allow for more individualized teacher-student interactions, more student verbalization, and gave more nonverbal teacher acceptance than those who taught larger classes.

The typical teacher-student interaction in these physical education classes is described as a very direct teacher-controlled atmosphere (with overwhelming large teacher information-giving and/or demonstration) while largely soliciting predictable student responses with minimal encouragement and little emphasis on student

verbalization and creativity. Lessons were mostly teacher centered and, even when the environment was the teaching agent, student responses were restricted. Thus, the results of this study suggest that the teachers are encouraging dependent student behaviors. Similar results have been reported by Lombardo (1979), Keane (1978), Batchelder (1975), and Cheffers (1980). Even when game-playing activities were involved, little thought was required analytically by the students of their movements. The emphasis was centered on game outcomes with minimal thought to interpretive and/or analytical application by the teacher or the students. Students received nonverbal acceptance, often through teacher participation, but received little corrective feedback during game-playing activities.

Some significant differences were found in this study when comparing teacher gender. The results were often contradictory to other similar studies. Nygaard (1971) found only minor differences when comparing male and female teachers. Keane (1978) found that female teachers encouraged more student initiation, while Mawdsley (1977) reported that female teachers encouraged more student verbal behavior. In the study conducted by Lombardo (1979) the results were almost completely opposite to the findings in this study. In this study the male physical education

specialists had more confusion, more verbal student contribution, and used more nonverbal questioning than the female specialists; however, the female physical education specialists employed more nonverbal teacher contribution, had more content emphasis, more nonverbal teacher acceptance and praise, and used the environment as the teaching agent more than their male counterparts.

Conclusions

Based upon the results of this study, it can be concluded that:

1. Teacher behavior and interaction patterns in physical education classes vary minimally and consist universally of teacher information-giving with predictable student responses followed by nonverbal game-playing activities.

2. There were significant differences between the teaching behaviors of the male and female physical education specialists observed in this study. The male physical education specialists tolerated more confusion generated in the classes, allowed more verbal student contribution, and employed more nonverbal teacher questioning. The female physical education specialists utilized more nonverbal teacher contribution, had more emphasis on content, gave

more nonverbal acceptance and praise, and employed the environment as the teaching agent.

3. Only minimal teacher behavior variability was determined to exist across the three grades studied. Those four variabilities that were found only existed when comparing the teacher behavior for the first-grade level as compared to that of the third- and fifth-grade levels.

4. There were significant differences in the teaching behavior of the instructors when teaching large (40-120 students) and small (less than 40 students) classes. Approximately 60% of all parameters studied reflected a significant difference between the teachers in the two environments. More confusion, student verbalization, verbal teacher acceptance and praise, nonverbal pupil initiation, content emphasis, and verbal emphasis existed in the environment with fewer students. In the large classes more silence, nonverbal student contribution, verbal student-suggested pupil initiation, nonverbal emphasis, and use of the environment as the teaching agent occurred.

Recommendations

The following recommendations are made:

1. Long-term observations should be conducted and studied comparing class size and its effects upon motor development and the teacher-student interaction patterns.

2. A study should be conducted comparing the teaching behavior and interaction patterns of teachers during the entire school year.

3. A study should be conducted over an entire year to determine if the student-student interaction patterns vary due to the size of the class.

4. Larger samplings of male/female comparisons during the teaching of the same activities should be studied.

5. A study should be conducted comparing the teacher behavior and interaction patterns of students during the student teaching experience and after one year of professional employment.

APPENDIXES

APPENDIX A

THE CATEGORIES OF CAFIAS

THE CATEGORIES OF CAFIAS

Categories	2 - 17	Teacher Behaviors
"	8 - 19	Student Behaviors
"	10	Confusion
"	20	Silence

Relevant Behaviors

Categories	Verbal	Nonverbal	
2 - 12	2		12
	(A positive value assessment) Praises, commends, jokes, encourages	Face: Posture:	Smiles, nods with smile (energetic), winks, laughs. Applause through congratulatory pats on shoulder, head, etc., rings student's hand, embraces joyfully, laughs to encourage.
3 - 13	3		13
	(No value implied) Accepts, clarifies, uses, and develops suggestins and feelings by the learner. N.B. Flanders category one which refers to teacher acceptance of student feeling and emotions is included in this category. Coders are reminded to use I and II on tally sheets.	(Elevates student performance onto a par with teacher performance) Face: Posture:	Nods without smiling, tilts head in empathetic reflection, sighs empathetically. Shakes hands, embraces sympathetically, places arm around shoulder or waist, catches an implement thrown by student, accepts facilitation from students, takes

Categories	Verbal		Nonverbal
	These behaviors are tallied separately for analysis purposes and included for parameter purposes in the matrix as 3 and 13.		part in the game with students, supports child during activity, spotting in gymnastics.
4 - 14	4		14
	Asks questions requiring student answer	Face:	Wrinkles brow, opens mouth, turns head with quizzical look.
		Posture:	Places hands in air quizzically to expect answer, stares awaiting answer, scratches head, cups hand to ear, stands still half-turned toward person, awaits answer.
5 - 15	5		15
	Gives facts, opinions, expresses ideas or asks rhetorical questions.	Face:	Whispers words inaudibly, sings or whistles.
		Posture:	Gesticulates, draws, writes, demonstrates activities, paints, points out facts on board.

Categories	Verbal		Nonverbal
6 - 16	6		16
	Gives directions or orders which will result in immediate observable student response.	Face:	Points with head, beckons with head, yells at using language other than recognizable words.
		Posture:	Points finger, blows whistle, holds body erect while barking commands, pushes a child in a given direction.
7 - 17	7		17
	(A negative value assessment.) Criticizes, expresses anger or distrust, sarcastic or extreme self-reference.	Face:	Grimaces, growls, frowns, drops head, throws head back in derisive laughter, rolls eyes, bites, spits, butts with head, shakes head.
		Posture:	Hits, pushes away, pinches, grapples with, pushes hands at student, drops hands at student, drops hands in disgust, bangs table, damages equipment, throws things down.
8 - 18	8		18
	Student response that is entirely predictable, such as obedience to orders and responses not requiring thinking	Face:	Poker-face response, nods, shakes, gives small grunts, quick smile.

Categories	Verbal		Nonverbal
	beyond the comprehension phase or knowledge (after Bloom).	Posture:	Moves mechanically to questions or directions, responds to any action with minimal nervous activity, robot-like, practices drills, awaits in line, etc., student responds by putting hand up in answering to teacher direction.
8\ - 18\	Eine (8)		Eineteen (18)
	Predictable student responses that require some measure of evaluation, synthesis, and interpretation from the student but must remain within the province of predictability. The initial behavior was in response to teacher initiation. Student interpretation from teacher in discussed activity. A student questioning when related strictly to topic under discussion.	Face:	Look of thinking eyes, pensive formal expressions.
		Posture:	Interprets movements, tries to show some arrangement that requires interpretive thinking; e.g., works on gymnastic routine; test taking; interpretation of task cards; all game playing. Student puts hands in air in order to give answer to teacher question.

Categories	Verbal		Nonverbal
9 - 19	9		19
	Pupil-initiated talk that is purely the result of their own initiative and which could not be predicted (either positive or negative behavior).	Face:	Makes interrupting sounds, gasps, sighs.
		Posture:	Puts hands up in air to ask (unsolicited) question of teachers, 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		20
	Stands for confusion, chaos, disorder, noise.	Face:	Silence, children sitting doing nothing, noiselessly awaiting teacher just prior to teacher entry, etc.

CAFIAS--THE EXPANDED SYSTEM

1. The teacher is categorized into one of three roles:

   a. The classroom teacher. No new symbolism is employed. The original teacher categories in FIAS are supplemented with the "teen" equivalent of CAFIAS, and this unappendaged enumeration signifies that the interaction represents the behavior of the classroom teacher.

   b. Other learners or students doing the teaching. Where the teacher initiating learning is, in fact, another student, whether he is authorized by the classroom teacher or not, CAFIAS assumes a different dimension. The letter "S" is placed beside the appropriate tally each and every time other students assume the teaching responsibilities. This situation then resembles the letter "T" in Mosston's reciprocal teaching model (Mosston, 1966).

   c. The environment. This broad term is used as an umbrella to include a wide variety of both animate and inanimate teaching agents. If television is responsible for the teaching, or a book, or a piece of apparatus, or an animal, etc., then the letter "E" is placed beside each and every appropriate tally.

   It is possible under these three subscripts to include the great majority of teaching agents, even in the most versatile situations.

2. A category dimension is included to describe nonverbal activity. Nonverbal interaction can be coded in the same model as verbal behavior. All nonverbal categories become the "teen" equivalent of their verbal categories. Thus, an 8 (predictable student verbal response) becomes an 18 (predictable student nonverbal response).

   For example:

Teacher says: "Run to your places, boys."	- 6
Students run to their places.	-18
Teacher says: "Ten push-ups. Go!"	- 6
Students perform ten push-ups.	-18

The Category 10 is now used for chaos and confusion, and the Category 20 for silence.

3. Flanders' Category 1 (acceptance of strong student feelings by the teacher) is eliminated from the matrix. All "1s" are now entered into the 3 cells, and a simple total of the number of 1s, represented in the 3 cells, is included at the bottom of the matrix. Hence, in CAFIAS, Categories 1 and 3 are combined in the matrix. Taking the place of Category 1 in the matrix is a new category formally called category eine (8\)--it has the nonverbal equivalent of eineteen (18\)--which adds to the dimensions describing student response. Category 8 is used to describe strictly predictable student response. Category 9 is used to indicate true pupil initiative, evaluation, synthesis, and disruptive activity. The new category (8\) is introduced to cater to student responses that are predictable, yet that show evidence of a higher order of thinking; e.g.:

> "Children! Group 1 will go to the south corner and play 3 man-a-side basketball. Group 2 will practice their routines for tomorrow night's concert on the trampoline. Group 3 will develop a pyramid for next year's concert."
>
> -6 then 6
>
> Children run off and perform their tasks.
>
> -18 then eineteens (18\)

It is obvious that the children are required to do some thinking, some synthesis, and some evaluation but that all their activities are entirely predictable and teacher directed. Amidon (1969) hinted at the need for this category when he subscripted Flanders' 8 into (a) mechanical response and (b) convergent thinking. Mosston, when he called for the guided discovery style, points to the need for something like an eine to code the student response accurately.

4. A ground rule covering the use of 7 and 17 is included. Arising from comments from Lambert, Goodwin, Roberts, (Dougherty, 1970) changes in the codings of 7 are made. Observers have for years talked of a "soft 7" and a "hard 7." There appears to be great differences between biting sarcasm of thunderous censure (hard 7)

and the correction of faults through reference to weaknesses with the view of encouraging correction and continued performance (soft 7). Whenever the observer is satisfied that the criticism is meant to encourage, is positive, and does not create abrasive tension in the learner, he immediately follows the 7 coding with a 2. This ground rule endeavors to distinguish between helpful criticism and criticism intended to destroy or punish.

5. A time line analysis of the class structure is also possible in CAFIAS. It is felt that an important ratio can be developed through contrasting the percentage of time in which the class spends as a whole and in more individualized learning situations. Whenever a change in class structure takes place, either the symbol W (whole), P (part), or I (not influencing) is placed beside the relevant code symbol. In this way it is possible to calculate percentages of time spent with the class working as a whole or in groups or independent of immediate teacher influence. The only time these code symbols are used is on the change from one structure to another and when it is assumed that the numbers of tallies in between each of these symbols represents an equal proportion to time measured in other components, such as minutes and seconds. If the teacher is interacting with the whole class, then the code "W" so indicates. As soon as the class breaks up into smaller groups for individual activity, then the code "P" so indicates. If the teacher is correcting work at his table, talking to a friend at the door, hanging posters on the side of the gymnasium, etc., then the code symbol "I" indicates this change.

6. Whenever the structure of the class moves to part (coded P), a decision has to be made as to which part of the class interaction is to be coded. Observers may code any part of the lesson they so desire, using CAFIAS, but, in the absence of particular directions, the observers will follow the teacher and code his interaction with either the individual students or the groups with which he is working. Nevertheless, if another student or some part of the environment is doing the teaching, then this can be coded by CAFIAS. On most occasions, for purposes of interobserver reliability, it is necessary to establish the specific categorization route prior to the lesson.

7. Whenever the teacher is talking and demonstrating at the same time, necessitating simultaneous coding, the

observer codes the verbal symbol and encircles it. This is encoded into the matrix in both verbal and nonverbal cells.

8. In order to clarify the use of 6, CAFIAS adopts the following recommendation. When directions are being given, only the executive part of the command is coded as a 6. The information-giving section of the statement is coded as a 5; e.g.:

"Group 6 will assemble the mats in the far corner in star information."	-5
"Right, boys! Go!"	-6

This ground rule is consistent with Flanders' recommendation that a direction should be followed by an immediate physical movement that is observable and in response to a teacher-directed command.

9. The use of 18-18-20-20 denotes that children are waiting in lines to perform. It was felt that this behavior, like student-to-student interaction (18-20-18: nonverbal student-to-student interaction), was pertinent to the reproduction of typical student behaviors in movement settings. Substitution of 10 for 20 and 8 for 18 occurs where the students are noisily and verbally keeping (and/or breaking) their lines.

Source: John Cheffers and others, Interaction Analysis: An Application to Nonverbal Activity, 2nd ed. (Minneapolis: Association for Productive Teaching, 1980), pp. 19-26.

APPENDIX B

THIRTY-ONE PARAMETERS OF BEHAVIORS EXPRESSED AS PERCENTAGES, RATIOS, OR FREQUENCY COUNTS FROM CAFIAS

THIRTY-ONE PARAMETERS OF BEHAVIORS EXPRESSED AS PERCENTAGES, RATIOS, OR FREQUENCY COUNTS FROM CAFIAS

1. Teacher Contribution, Verbal (TCV)

   All teacher verbal behaviors observed during the coding period, including praise, acceptance, questions, lecturing, directions, critcism, and empathy--For numerical calculations all tallies recorded for Categories 2, 3, 4, 5, 6, and 7 are added together.

2. Teacher Contribution, Nonverbal (TCNV)

   All teacher nonverbal behaviors observed during the coding period, including praise, acceptance, questions, lecturing, directions, criticism, and empathy--For numerical calculations all tallies recorded for Categories 12, 13, 14, 15, 16, and 17 are added together.

3. Total Teacher Contribution (TIC)

   All teacher behaviors observed during the coding period, verbal and nonverbal, including praise, acceptance, questions, lecturing, directions, criticism, and empathy--For numerical calculations all tallies recorded for Categories 2, 12, 3, 13, 4, 14, 5, 15, 6, 16, and 17 are added together.

4. Student Contributions, Verbal (SCV)

   All student verbal behaviors observed during the coding period, including rote (expected or automatic manner) predictable responses, interpretive or evaluative responses, and student-initiated, unexpected or unpredictable behavior--For numerical calculations all tallies recorded for Categories 8, 8 , and 9 are added together.

5. Student Contribution, Nonverbal (SCNV)

   All student nonverbal behaviors observed during the coding period, including rote (expected or automatic manner) predictable responses, interpretive or evaluative responses, and student-initiated, unexpected or

predictable--For numerical calculations all tallies recorded for Categories 18, 18↖, and 19 are added together.

6. Total Student Contribution (TSC)

All student behavior, verbal and nonverbal, observed during the coding period, including rote (expected or automatic manner) predictable responses, interpretive or evaluative responses, and student-initiated, unexpected or unpredictable behavior--For numerical calculations all tallies recorded for Categories 8, 18, 8↖, 18↖, 9, and 19 are added together.

7. Silence (S)

This parameter refers to each three-second period during the observation when there is silence--For numerical calculations all tallies recorded in Category 20 are added together.

8. Confusion (C)

This parameter refers to each three-second period during the observation when there is confusion--For numerical calculations all tallies recorded in Category 10 are added together.

9. Total-Silence and/or Confusion (TSC)

This parameter refers to each three-second period during the observation when there is either silence, confusion, or anything other than student or teacher talk--For numerical calculations all tallies recorded for Categories 10 and 20 are added together.

10. Teacher Use of Questioning, Verbal (TQRV)

The verbal questions of the teacher are compared with verbal lecturing behaviors. The numerical calculation is as follows:

$$\frac{4}{4+5}$$

11. Teacher Use of Questioning, Nonverbal (TQRNV)

The nonverbal questions of the teacher are compared with nonverbal lecturing behaviors. The numerical

calculation is as follows:

$$\frac{14}{14+15}$$

12. Total Teacher Use of Questioning (TTQR)

The verbal and nonverbal questions of the teacher are compared with verbal and nonverbal lecturing behaviors. The numerical calculation is as follows:

$$\frac{4+14}{4+14+5+15}$$

13. Teacher Use of Acceptance and Praise, Verbal (TAPRV)

The teacher's verbal use of acceptance, praise, encouragement, and empathy as compared with verbal use of direction and criticism. The numerical calculation is as follows:

$$\frac{2+3}{2+3+6+7}$$

14. Teacher Use of Acceptance and Praise, Nonverbal (TAPRNV)

The teacher's nonverbal use of acceptance, praise, encouragement and empathy as compared with nonverbal use of direction and criticism. The numerical calculation is as follows:

$$\frac{12+13}{12+13+16+17}$$

15. Total Teacher Use of Acceptance and Praise (TTAPR)

The teacher's verbal and nonverbal use of acceptance, praise, encouragement, and empathy as compared with verbal and nonverbal use of direction and criticism. The numerical calculation is as follows:

$$\frac{2+12+3+13}{2+12+3+13+6+16+7+17}$$

16. Student Verbal Initiation, Teacher Suggested (SVITSR)

The interpretive or evaluative student verbal responses and the unexpected or unpredictable verbal student

behaviors are compared with all student verbal behaviors. The numerical calculation is as follows:

$$\frac{8\backslash +9}{8+8\backslash +9}$$

17. Student Nonverbal Initiation, Teacher Suggested (SNVITSR)

The interpretive or evaluative student nonverbal responses and the unexpected or unpredictable nonverbal student behaviors are compared with all student nonverbal behaviors. The numerical calculation is as follows:

$$\frac{18\backslash +19}{18+18\backslash +19}$$

18. Total Student Initiation, Teacher Suggested (TSITSR)

All student verbal and nonverbal interpretive or evaluative responses and their unexpected or unpredictable behaviors are compared with all student verbal and nonverbal behaviors. The numerical calculation is as follows:

$$\frac{8\backslash +18\backslash +9+19}{8+18+8\backslash +18\backslash +9+19}$$

19. Student Verbal Initiation, Student Suggested (SVISSR)

The unexpected or unpredictable, self-initiated student verbal behaviors are compared with all student verbal behaviors. The numerical calculation is as follows:

$$\frac{9}{8+8\backslash +9}$$

20. Student Nonverbal Initiation, Student Suggested (SNVISSR)

The unexpected or unpredictable self-initiated student nonverbal behaviors are compared with all student nonverbal behaviors. The numerical calculation is as follows:

$$\frac{19}{18+18\backslash +19}$$

21. Total Student Initiation, Student Suggested (TSISSR)

All student verbal and nonverbal unexpected or unpredictable self-initiated student behaviors are compared with all student verbal and nonverbal behaviors. The numerical calculation is as follows:

$$\frac{9+19}{8+18+8\backslash+18\backslash+9+19}$$

22. Content Emphasis--Teacher Input (CETI)

The amount of class time the teacher devotes to subject matter. For numerical calculation all tallies in Categories 4, 14, 5, and 15 rows and columns are added together, with steady-state cells counted just one time. This total is divided by the total matrix tally count.

23. Content Emphasis--Student Input (CESI)

All tallies in 8\ and 18\ rows and columns are summed with the steady-state cell counted but once. This total is divided by the total matrix tally count.

24. Teacher as Teacher (TT)

The amount of class time during which the teacher is the teaching agent.

25. Other Students as Teacher (ST)

The amount of class time during which one or more of the students is the teaching agent.

26. The Environment as Teacher (ET)

The amount of class time during which the environment (a book, film, piece of equipment, etc.) is the teaching agent.

27. Verbal Emphasis (VE)

All behaviors during the class that are expressed verbally--For numerical calculations all tallies in Categories 2, 3, 4, 5, 6, 7, 8, 8\, and 9 are added together.

28. Nonverbal Emphasis (NV)

All observable behaviors during the class that are not expressed verbally--For numerical calculation all tallies in Categories 12, 13, 14, 15, 16, 17, 18, 18A, and 19 are added together.

29. Class Structure as One Unit (W)

The amount of class time during which the class is structured to function as a whole unit.

30. Class Structure as Groups of Individuals (P)

The amount of class time during which the class is structured in such a way that the students work in groups or as individuals.

31. Class Structure with No Teacher Influence (I)

The amount of class time during which the teacher has no influence over the class (i.e., talking with another teacher, answering the phone, correcting work at the table, handing posters, etc.)

APPENDIX C

PERMISSION FORMS

COPY OF THE LETTERS SENT TO THE SUPERINTENDENTS OF SCHOOLS

Dear _____,

As a doctor of arts candidate majoring in physical education at Middle Tennessee State University, my dissertation proposal involves the use of an interaction analysis system of observation (CAFIAS) to observe physical education specialists teaching in the public schools. The specialists will be selected from those physical educators teaching in the Murfreesboro City Schools, Rutherford County Schools, and the MTSU Campus School.

The specialists will be observed twice while teaching grades one, three, and five. The second observation will be made approximately three weeks after the first observation. Observations will be conducted by two researchers from January 20 and conclude by March 4, 1983. Each teacher, upon completing a simple questionnaire, will be notified as to the observation dates and times. No disruption to the program or classes is anticipated. No judgments will be made concerning the teachers' performance; rather, it will be a description of what occurs within the class.

The statistics will be compiled to compare the various teaching behaviors and interaction patterns observed within the gymnasium by grade level. Only general tendency statements will be made concerning the results.

Results of the individual teacher's patterns and behaviors will be given to that teacher. Copies of the conclusion of the study will be sent to all participants and superintendents.

Your cooperation, in granting permission for my admittance into the various schools to conduct this study, is greatly appreciated.

Sincerely,

Bonnie-jean Buckett

Copy of Dates and Times Scheduled

Thank you for responding to my dissertation experiment. I have contacted 17 physical education specialists within the Murfreesboro area. I will, along with another recorder, be observing you on two occasions; however, only one session will be listed until I can observe all teachers once. I will send your other date(s) as soon as possible.

Date	Grade	Time
_____	_____	_____to_____
_____	_____	_____to_____
_____	_____	_____to_____

Observations can only be scheduled for Tuesdays, Thursdays, and Fridays due to my teaching schedule at the University. If for some reason there is a conflict, please call me at 890-1371 before 9 a.m. or at night.

Again, many thanks.

Sincerely,

Bonnie-jean Buckett

APPENDIX D

COPY OF LETTERS SENT TO SPECIALISTS

Dear Fellow Professionals:

I have received permission from the superintendent of schools to conduct my dissertation study within the Murfreesboro City and Rutherford County Schools. My proposal involves the use of an interaction analysis system to observe teachers teaching physical education on the elementary school level. I and another researcher will be observing 22 teachers teaching grades one, three, and five. Each teacher will be observed twice with approximately three weeks separating the observations. Observations will be conducted between January 20 through early March depending upon schedules. The statistics will be compiled to compare the various teaching behaviors and interaction patterns occurring within elementary physical education classes.

Those teachers who are willing to participate in this study are asked to complete the following questionnaire and return it by January 15th in the attached envelope. Each teacher will be notified as to observation dates and times. Teachers will be randomly selected depending upon the researcher's ability to schedule observation times.

Thank you for your cooperation.

Sincerely,

Bonnie-jean Buckett

Name_____

School_____Grade levels_____

School Address_____

Years of experience teaching physical education at the elementary school level_____

Educational degrees_____

Major_____ Minor_____

Schedule for:

First grade: day_____ times_____
_____ _____
_____ _____

Third grade day_____ times_____
_____ _____
_____ _____

Fifth grade day_____ times_____
_____ _____
_____ _____

Any further questions, please call: 890-1371.

APPENDIX E

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON MEAN PERCENTAGES AND RATIOS

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #1 Grade 1 Date 2/8 Activity B'ball

teacher talk	51.15	student talk	12.88
teacher nonverbal	20.54	student nonverbal	12.37
total contribution	71.68	total contribution	25.26
silence	1.02	teacher as teacher	100
confusion	2.04	environment as tea.	
total	3.06	student as teacher	

teacher question ratio-
verbal 8.48 nonverbal 1.98 total 6.77

teacher response ratio-
verbal 32.20 nonverbal 60.0 total 41.57

pupil initiation response ratio-
verbal 86.14 nonverbal 73.20 total 79.80

unstructured ratio-
verbal 2.30 nonverbal 2.82 total 2.53

% verbal 66.07 % nonverbal 33.93 content cross 65.82

% class structure-whole part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	30.74	4. 5 -8\	4.34	7.	
2. 8\ -8\	8.55	5. 3 -5	3.83	8.	
3. 5 -6	5.99	6. 8\ -3	3.32	9.	
				10.	

Matrices tallies

total	16	0	0	8	0	0	22	0	0	28	0	0	24	0	0	
percent	2.0			1.0			2.8			3.6			3.0			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	259	0	0	99	0	0	55	0	0	22	0	0	
percent	.3			33.0			12.6			7.0			2.8			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	25	0	0	2	0	0	14	0	0	26	0	0	85	0	0	
percent	3.2			.3			1.8			3.3			10.8			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	69	0	0	2	0	0	2	0	0	16	0	0	8	0	0	
percent	8.8			.3			.3			2.0			1.0			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #1 Grade 1 Date 3/7 Activity Earthball

teacher talk	51.08	student talk	14.77
teacher nonverbal	15.54	student nonverbal	13.38
total contribution	66.62	total contribution	28.15
silence	.77	teacher as teacher	100
confusion	4.46	environment as tea.	
total	5.23	student as teacher	

teacher question ratio-
verbal 17.56 nonverbal 4.76 total 15.56

teacher response ratio-
verbal 32.86 nonverbal 66.10 total 48.06

pupil initiation response ratio-
verbal 61.46 nonverbal 10.34 total 37.16

unstructured ratio-
verbal 3.39 nonverbal 22.22 total 5.88

% verbal 70.31 % nonverbal 29.69 content cross 67.69

% class structure-whole 100 part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%		parent cell	%
1. 5-5	22.92	4. 8-5	4.92	=	7. 8-8	3.38
2. 8-8	6.0	5. 5-3	4.31		8. 4-8	3.23
3. 5-6	5.23	6. 3-5	3.38		9.	
					10.	

Matrices tallies

total	4	0	0	7	0	0	19	0	0	32	0	0	46	0	0	
percent	.6			1.1			2.9			4.9			7.1			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	216	0	0	40	0	0	42	0	0	18	0	0	
percent	.3			33.2			6.2			6.5			2.8			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	5	0	0	2	0	0	37	0	0	78	0	0	57	0	0	
percent	.8			.3			5.7			12			8.8			
number	7			17			8			18			8			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	7	0	0	2	0	0	2	0	0	29	0	0	5	0	0	
percent	1.1			.3			.3			4.5			.8			
number	18			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #1 Grade 3 Date 2/18 Activity B'ball

teacher talk	42.25	student talk	15.88
teacher nonverbal	18.0	student nonverbal	20.38
total contribution	60.25	total contribution	36.25
silence	.38	teacher as teacher	100
confusion	3.13	environment as tea.	
total	3.51	student as teacher	

teacher question ratio-

verbal 5.67 nonverbal 1.87 total 4.52

teacher response ratio-

verbal 50.55 nonverbal 62.16 total 53.91

pupil initiation response ratio-

verbal 74.02 nonverbal 87.73 total 81.72

unstructured ratio-

verbal 2.13 nonverbal 1.40 total 1.69

% verbal 61.25 % nonverbal 38.75 content cross 59.13

% class structure-whole 80.8 part 10.5 no tea. influence 8.7

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	29.88	4. 8\ -5	4.75	7.	
2. 8\ -8\	16.75	5. 5 -6	4.63	8.	
3. 5 -8\	6.63	6. 8\ -3	4.10	9.	
				10.	

Matrices tallies

total	15	0	0	13	0	0	31	0	0	10	0	0	14	0	0	
percent	1.9			1.6			3.9			1.3			1.8			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	233	0	0	105	0	0	34	0	0	12	0	0	
percent	.3			29.1			13.1			4.3			1.5			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	11	0	0	2	0	0	33	0	0	20	0	0	92	0	0	
percent	1.4			.3			4.1			2.5			11.5			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	141	0	0	2	0	0	2	0	0	25	0	0	3	0	0	
percent	17.6			.3			.3			3.1			.4			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #1 Grade 3 Date 3/7 Activity Floor Hockey

teacher talk	40.63	student talk	14.90
teacher nonverbal	26.94	student nonverbal	12.79
total contribution	67.57	total contribution	27.90
silence	.23	teacher as teacher	100
confusion	4.51	environment as tea.	
total	4.74	student as teacher	

teacher question ratio-
verbal 9.09 nonverbal 1.08 total 5.93

teacher response ratio-
verbal 37.84 nonverbal 43.04 total 40.00

pupil initiation response ratio-
verbal 79.29 nonverbal 70.59 total 75.27

unstructured ratio-
verbal 1.27 nonverbal 1.67 total 1.44

% verbal 60.05 % nonverbal 39.95 content cross 74.94

% class structure-whole part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	28.07	4. 8\ -8\	7.90	7.	
2. 8\ -5	11.51	5. 5 -6	6.09	8.	
3. 5 -8\	8.58	6.		9.	
				10.	

Matrices tallies

total	13	0	0	11	0	0	29	0	0	23	0	0	39	0	0
percent	1.0			.8			2.2			1.7			2.9		
number	2			12			3			13			4		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	3	0	0	390	0	0	276	0	0	64	0	0	43	0	0
percent	.2			29.3			20.8			4.8			3.2		
number	14			5			15			6			16		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	5	0	0	2	0	0	41	0	0	50	0	0	155	0	0
percent	.4			.2			3.1			3.8			11.7		
number	7			17			8			18			8\		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	118	0	0	2	0	0	2	0	0	60	0	0	3	0	0
percent	8.9			.2			.2			4.5			.2		
number	18\			9			19			10			20		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #1 Grade 5 Date 3/8 Activity Movie/Jmp. Rope

teacher talk	35.39	student talk	17.90
teacher nonverbal	12.35	student nonverbal	34.16
total contribution	47.74	total contribution	52.06
silence	.21	teacher as teacher	75.51
confusion		environment as tea.	24.49
total	.21	student as teacher	

teacher question ratio-

verbal 7.59 nonverbal 2.60 total 6.54

teacher response ratio-

verbal 51.85 nonverbal 65.12 total 57.73

pupil initiation response ratio-

verbal 97.13 nonverbal 34.34 total 55.93

unstructured ratio-

verbal 0 nonverbal 0 total 0

% verbal 53.29 % nonverbal 46.71 content cross 51.54

% class structure-whole 85 part 14 no tea. influence 1

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	23.25	4. 5 -8	5.56	7. 5-6	3.09
2. 8\ -8\	20.16	5. 8 -5	4.73	8.	
3. 8 -8	13.89	6. 8\ -5	4.12	9.	
				10.	

Matrices tallies

total	4	0	0	10	0	0	24	0	0	18	0	0	22	0	0	
percent	.4			1.0			2.5			1.9			2.3			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	218	0	0	75	0	0	22	0	0	13	0	0	
percent	.2			27.6			7.7			2.3			1.3			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	4	0	0	2	0	0	5	0	0	31	0	187	169	0	0	
percent	.4			.2			.5			22.4			17.4			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	114	0	0	0	0	0	0	0	0	0	0	0	2	0	0	
percent	11.7			0			0			0			.2			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #1 Grade 5 Date 2/18 Activity B'ball

teacher talk	45.78	student talk	12.27
teacher nonverbal	19.64	student nonverbal	20.17
total contribution	65.42	total contribution	32.44
silence	.53	teacher as teacher	100
confusion	1.60	environment as tea.	
total	2.13	student as teacher	

teacher question ratio-

verbal 6.56 nonverbal 3.54 total 5.77

teacher response ratio-

verbal 39.45 nonverbal 47.89 total 42.78

pupil initiation response ratio-

verbal 86.09 nonverbal 72.49 total 77.63

unstructured ratio-

verbal 2.02 nonverbal .73 total 1.27

% verbal 57.66 % nonverbal 40.34 content cross 63.71

% class structure-whole 40.3 part 59 no tea. influence .7

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	28.07	4. 8\ -5	7.47	7.	
2. 8\ -8\	10.57	5. 5 -6	4.91	8.	
3. 5 -8	7.58	6. 6 -8	3.52	9.	
				10.	

Matrices tallies

total	20	0	0	4	0	0	23	0	0	30	0	0	21	0	0	
percent	2.1			.4			2.5			3.2			2.2			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	4	0	0	299	0	0	109	0	0	60	0	0	35	0	0	
percent	.4			31.9			11.6			6.4			3.7			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	6	0	0	2	0	0	16	0	0	52	0	0	97	0	0	
percent	.6			.2			1.7			5.5			10.4			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	136	0	0	2	0	0	1	0	0	15	0	0	5	0	0	
percent	14.5			.2			.1			1.6			.5			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #2 Grade 1 Date 3/1 Activity Floor Hockey

teacher talk	25.53	student talk	28.54
teacher nonverbal	10.39	student nonverbal	19.40
total contribution	35.92	total contribution	47.93
silence	0.38	teacher as teacher	100
confusion	15.77	environment as tea.	
total	16.15	student as teacher	

teacher question ratio-

verbal 5.13 nonverbal 28.57 total 6.45

teacher response ratio-

verbal 27.59 nonverbal 27.63 total 27.61

pupil initiation response ratio-

verbal 69.30 nonverbal 79.35 total 73.37

unstructured ratio-

verbal 1.27 nonverbal 1.63 total 1.42

% verbal 69.84 % nonverbal 30.16 content cross 28.04

% class structure-whole 87.7 part 12.3no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8\ -8\	19.65	4. 5 -8\	4.76	7. 6-8\	3.13
2. 8\ -5	5.76	5. 8\ -10	4.26	8. 5-8	3.13
3. 10 -10	5.26	6. 8 -8	4.13	9.	
				10.	

Matrices tallies

total	5	0	0	1	0	0	19	0	0	20	0	0	6	0	0	
percent	.6			.1			2.4			2.5			.8			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	111	0	0	5	0	0	33	0	0	52	0	0	
percent	.3			13.9			.6			4.1			6.5			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	30	0	0	3	0	0	70	0	0	32	0	0	156	0	0	
percent	3.8			.4			8.8			4.0			19.5			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	121	0	0	2	0	0	2	0	0	126	0	0	3	0	0	
percent	15.1			.3			.3			15.8			.4			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #2 Grade 1 Date 2/10 Activity Relays

teacher talk	33.90	student talk	11.74
teacher nonverbal	11.93	student nonverbal	32.77
total contribution	45.83	total contribution	44.51
silence	0.95	teacher as teacher	100
confusion	8.71	environment as tea.	
total	9.66	student as teacher	

teacher question ratio-

verbal 10.32 nonverbal 50.00 total 11.54

teacher response ratio-

verbal 30.19 nonverbal 50.85 total 41.07

pupil initiation response ratio-

verbal 88.71 nonverbal 73.41 total 77.45

unstructured ratio-

verbal 3.64 nonverbal 1.57 total 2.20

% verbal 54.36 % nonverbal 45.64 content cross 40.72

% class structure-whole 100 part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8\ -8\	16.86	4. 5-5	7.01	= 7. 5-6	3.79
2. 8\ -5	9.09	5. 10-10	4.17	8.	
3. 5 -8\	7.39	6. 6-8\	3.79	9.	
				10.	

Matrices tallies

total	4	0	0	10	0	0	12	0	0	20	0	0	13	0	0	
percent	.8			1.9			2.3			3.8			2.5			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	113	0	0	2	0	0	29	0	0	27	0	0	
percent	.4			21.4			.4			5.5			5.1			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	8	0	0	2	0	0	7	0	0	46	0	0	53	0	0	
percent	1.5			.4			1.3			8.7			10.0			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	125	0	0	2	0	0	2	0	0	46	0	0	5	0	0	
percent	23.7			.4			.4			8.7			.9			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #2 Grade 3 Date 2/10 Activity Relays

teacher talk	28.31	student talk	9.78
teacher nonverbal	15.19	student nonverbal	35.67
total contribution	43.50	total contribution	45.45
silence	0.46	teacher as teacher	100
confusion	10.59	environment as tea.	
total	11.05	student as teacher	

teacher question ratio-

verbal 3.73 nonverbal 7.41 total 4.26

teacher response ratio-

verbal 18.82 nonverbal 10.48 total 14.21

pupil initiation response ratio-

verbal 92.94 nonverbal 64.84 total 70.89

unstructured ratio-

verbal 2.53 nonverbal .50 total 1.07

% verbal 48.68 % nonverbal 51.32 content cross 36.13

% class structure-whole part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8\ -8\	18.99	4. 8\ -5	5.64	7. 6 -8\	5.06
2. 5 -5	8.29	5. 6 -6	5.41	8. 6 -8	4.49
3. 5 -6	5.98	=6. 10 -10	5.41	9. 5 -8\	4.14
				10. 8\ -6	3.91

Matrices tallies

total	12	0	0	5	0	0	4	0	0	6	0	0	6	0	0	
percent	1.4			.6			.5			.7			.7			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	155	0	0	25	0	0	63	0	0	92	0	0	
percent	.2			17.8			2.9			7.2			10.6			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	6	0	0	2	0	0	6	0	0	109	0	0	77	0	0	
percent	.7			.2			.7			12.5			8.9			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	200	0	0	2	0	0	1	0	0	92	0	0	4	0	0	
percent	23.0			.2			.1			10.6			.5			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #2 Grade 3 Date 3/1 Activity Floor Hockey

teacher talk	25.53	student talk	31.46
teacher nonverbal	8.74	student nonverbal	20.00
total contribution	34.27	total contribution	51.46
silence	.5	teacher as teacher	100
confusion	13.77	environment as tea.	
total	14.27	student as teacher	

teacher question ratio-
verbal 6.82 nonverbal 13.33 total 7.33

teacher response ratio-
verbal 41.03 nonverbal 16.67 total 29.33

pupil initiation response ratio-
verbal 84.98 nonverbal 92.96 total 88.09

unstructured ratio-
verbal 14.66 nonverbal 4.32 total 10.42

% verbal 70.75 % nonverbal 29.25 content cross 29.25

% class structure-whole 84.9 part 15.1 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8\-8\	27.04	4. 5-8\	5.23	7. 5-6	3.02
2. 8\-5	6.53	5. 10-10	4.62	8.	
3. 5 -5	5.63	6. 10-8\	3.12	9.	
				10.	

Matrices tallies

total	8	0	0	1	0	0	24	0	0	11	0	0	12	0	0	
percent	.8			.1			2.4			1.1			1.2			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	164	0	0	13	0	0	20	0	0	47	0	0	
percent	.2			16.5			1.3			2.0			4.7			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	26	0	0	13	0	0	47	0	0	14	0	0	227	0	0	
percent	2.6			1.3			4.7			1.4			22.8			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	177	0	0	39	0	0	8	0	0	137	0	0	5	0	0	
percent	17.8			3.9			.8			13.8			.5			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #2 Grade 5 Date 3/1 Activity Floor Hockey

teacher talk	23.10	student talk	24.07
teacher nonverbal	12.67	student nonverbal	34.50
total contribution	35.77	total contribution	58.58
silence	.29	teacher as teacher	100
confusion	5.36	environment as tea.	
total	5.65	student as teacher	

teacher question ratio-

verbal 2.42 nonverbal 5.56 total 2.99

teacher response ratio-

verbal 43.06 nonverbal 26.60 total 33.73

pupil initiation response ratio-

verbal 91.09 nonverbal 90.11 total 90.52

unstructured ratio-

verbal .89 nonverbal .63 total 1.74

% verbal 52.53 % nonverbal 47.47 content cross 32.16

% class structure-whole 92.5 part 7.5 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8\-8\	38.50	4. 5-5	5.26	7.	
2. 8\-5	8.48	5. 5-6	3.51	8.	
3. 5 -8\	7.60	6.		9.	
				10.	

Matrices tallies

total	12	0	0	4	0	0	19	0	0	21	0	0	4	0	0		
percent	1.2			.4			1.9			2.0			.4				
number	2			12			3			13			4				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	2	0	0	161	0	0	34	0	0	30	0	0	64	0	0		
percent	.2			15.7			3.3			2.9			6.2				
number	14			5			15			6			16				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	11	0	0	5	0	0	22	0	0	35	0	0	223	0	0		
percent	1.1			.5			2.1			3.4			21.7				
number	7			17			8			18			8\				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	317	0	0	2	0	0	2	0	0	55	0	0	3	0	0		
percent	30.9			.2			.2			5.4			.3				
number	18\			9			19			10			20				
agent	t	s	e	t	s	e	t	s	e	t	s	e		s	e		

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #2 Grade 5 Date 2/10 Activity B'ball/Sp'ball

teacher talk	35.89	student talk	10.96
teacher nonverbal	15.74	student nonverbal	32.24
total contribution	51.64	total contribution	43.20
silence	.25	teacher as teacher	100
confusion	4.91	environment as tea.	
total	5.16	student as teacher	

teacher question ratio-

verbal 4.46 nonverbal 3.51 total 4.25

teacher response ratio-

verbal 25.30 nonverbal 25.00 total 25.17

pupil initiation response ratio-

verbal 89.66 nonverbal 54.30 total 63.27

unstructured ratio-

verbal 2.56 nonverbal 1.44 total 1.84

% verbal 51.76 % nonverbal 48.24 content cross 49.37

% class structure-whole 51.15 part 48.5 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	16.50	4. 8\ -5	6.68	7. 8\ -6	3.90
2. 8\ -8\	13.48	5. 8 -8	4.53	8. 5 -8	3.53
3. 5 -8\	7.18	6. 6 -8	4.28	9.	
				10.	

Matrices tallies

total	14	0	0	2	0	0	7	0	0	15	0	0	9	0	0	
percent	1.8			.3			.9			1.9			1.1			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	193	0	0	55	0	0	50	0	0	49	0	0	
percent	.3			24.3			6.9			6.9			6.2			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	12	0	0	2	0	0	9	0	0	117	0	0	76	0	0	
percent	1.5			.3			1.1			14.7			9.6			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	137	0	0	2	0	0	2	0	0	39	0	0	2	0	0	
percent	17.3			.3			.3			4.9			.3			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #3 Grade 1 Date 1/25 Activity Stations

teacher talk	41.64	student talk	4.61
teacher nonverbal	28.53	student nonverbal	25.22
total contribution	70.17	total contribution	29.83
silence		teacher as teacher	100
confusion		environment as tea.	
total		student as teacher	

teacher question ratio-

verbal 9.47 nonverbal 1.52 total 6.21

teacher response ratio-

verbal 26.26 nonverbal 72.73 total 44.85

pupil initiation response ratio-

verbal 87.50 nonverbal 4.67 total 17.19

unstructured ratio-

verbal 78.57 nonverbal 12.50 total 63.89

% verbal 46.25 % nonverbal 53.75 content cross 59.08

% class structure-whole 15.7 part 84.3 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-5	31.99	4. 5-6	5.33	7. 5-8	3.60
2. 8-8	11.82	5. 8-5	5.04	8.	
3. 6-8	5.76	6. 3-3	3.75	9.	
				10.	

Matrices tallies

total	12	0	0	1	0	0	14	0	0	47	0	0	18	0	0	
percent	1.7			.1			2			6.8			2.6			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	172	0	0	130	0	0	62	0	0	16	0	0	
percent	.3			24.8			18.7			8.9			2.3			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	11	0	0	2	0	0	4	0	0	167	0	0	6	0	0	
percent	1.6			.3			.6			24.1			.9			
number	7			17			8			18			8			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	7	0	0	22	0	0	1	0	0	0	0	0	0	0	0	
percent	1			3.2			.1			0			0			
number	18			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #3 Grade 1 Date 2/25 Activity Aerobic Dance

teacher talk	11.19	student talk	7.09
teacher nonverbal	35.45	student nonverbal	39.37
total contribution	46.64	total contribution	46.46
silence	5.6	teacher as teacher	44.78
confusion	1.31	environment as tea.	55.22
total	6.91	student as teacher	

teacher question ratio-
verbal 13.16 nonverbal 9.52 total 11.86

teacher response ratio-
verbal 59.09 nonverbal 96.45 total 92.15

pupil initiation response ratio-
verbal 28.95 nonverbal 1.9 total 6.02

unstructured ratio-
verbal 72.73 nonverbal 50.00 total 66.67

% verbal 19.59 % nonverbal 80.41 content cross 19.03

% class structure-whole 100 part no tea. influence

Parent cell percentages

parent cell	%		parent cell	%		parent cell	%
1. 3-8	26.87		4. 8-5	3.36		7.	
2. 8-3	26.68	=	5. 8-10	3.36		8.	
3. 8-8	6.16		6.			9.	
						10.	

Matrices tallies

total	4	0	0	13	0	0	9	0	0	3	0	147	5	0	0			
percent	.7			2.4			1.7			28			.9					
number	2			12			3			13			4					
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	2	0	0	33	0	0	19	0	0	5	0	0	4	0	0			
percent	.4			6.2			3.5			.9			.7					
number	14			5			15			6			16					
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	4	0	0	2	0	0	22	0	7	63	0	144	3	0	0			
percent	.7			.4			5			38.6			.6					
number	7			17			8			18			8					
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	2	0	0	8	0	0	2	0	0	7	0	0	30	0	0			
percent	.4			1.5			.4			1.3			5.6					
number	18			9			19			10			20					
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #3 Grade 3 Date 1/25 Activity Kickball

teacher talk	17.42	student talk	7.01
teacher nonverbal	37.50	student nonverbal	37.12
total contribution	54.92	total contribution	44.13
silence	.19	teacher as teacher	100
confusion	.76	environment as tea.	
total	.95	student as teacher	

teacher question ratio-

verbal 9.09 nonverbal 7.41 total 8.54

teacher response ratio-

verbal 24.32 nonverbal 73.68 total 64.90

pupil initiation response ratio-

verbal 89.19 nonverbal 84.69 total 85.41

unstructured ratio-

verbal 93.94 nonverbal .60 total 16.80

% verbal 25.19 % nonverbal 74.81 content cross 25.95

% class structure-whole part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 3 -3	8.71	4. 8 -6	4.17	7. 5 -3	3.41
2. 8\ -3	7.58	5. 5 -6	3.79	8. 3 -6	3.03
3. 5 -5	5.30	6. 6 -8\	3.60	= 9. 6 -8\	3.03
				10.	

Matrices tallies

total	2	0	0	1	0	0	7	0	0	125	0	0	5	0	0	
percent	.4			.2			1.3			23.7			.9			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	50	0	0	25	0	0	26	0	0	43	0	0	
percent	.4			9.5			4.7			4.9			8.1			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	2	0	0	4	0	0	30	0	0	2	0	0	
percent	.4			.4			.8			5.7			.4			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	165	0	0	31	0	0	1	0	0	4	0	0	1	0	0	
percent	31.3			5.9			.2			.8			.2			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #3 Grade 3 Date 2/25 Activity Aerobic Dance

teacher talk	10.03	student talk	5.30
teacher nonverbal	26.50	student nonverbal	53.01
total contribution	36.53	total contribution	58.31
silence	5.16	teacher as teacher	35.39
confusion		environment as tea.	64.61
total	5.16	student as teacher	

teacher question ratio-
verbal 15 nonverbal 12.50 total 14.29

teacher response ratio-
verbal 66.67 nonverbal 95.86 total 91.46

pupil initiation response ratio-
verbal 54.05 nonverbal .81 total 5.65

unstructured ratio-
verbal 80.00 nonverbal 33.33 total 73.91

% verbal 15.33 % nonverbal 84.67 content cross 14.18

% class structure-whole 100 part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8-8	26.79	4. 5-8	3.34	7.	
2. 3-8	20.20	5.		8.	
3. 8-3	20.06	6.		9.	
				10.	

Matrices tallies

total	6	0	0	19	0	0	6	0	8	7	0	136	6	0	0			
percent				2.7			2			20.5			.9					
number	2			12			3			13			4					
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	2	0	0	34	0	0	13	0	1	7	0	0	5	0	0			
percent	.3			4.9			2			1			.7					
number	14			5			15			6			16					
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	3	0	0	2	0	0	10	0	7	68	0	299	4	0	0			
percent	.4			.3			2.4			52.6			.6					
number	7			17			8			18			8					
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	2	0	0	16	0	0	1	0	0	0	0	0	36	0	0			
percent	.3			2.3			.1			0			5.2					
number	18			9			19			10			20					
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #3 Grade 5 Date 2/25 Activity Aerobic Dance

teacher talk	18.13	student talk	1.99
teacher nonverbal	17.43	student nonverbal	56.61
total contribution	35.56	total contribution	58.60
silence	5.73	teacher as teacher	47.37
confusion	.12	environment as tea.	52.63
total	5.85	student as teacher	

teacher question ratio-

verbal 2.46 nonverbal 2.90 total 2.62

teacher response ratio-

verbal 39.39 nonverbal 93.75 total 77.88

pupil initiation response ratio-

verbal 76.47 nonverbal .62 total 3.19

unstructured ratio-

verbal 15.38 nonverbal 33.33 total 18.75

% verbal 20.23 % nonverbal 79.77 content cross 28.89

% class structure-whole 99.0 part no tea. influence 1.0

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8-8	41.05	4. 8-3	6.78	7.	
2. 5-5	15.67	5. 5-8	4.21	8.	
3. 3-8	6.90	6.		9.	
				10.	

Matrices tallies

total	10	0	0	13	0	0	3	0	0	2	0	60	3	0	0		
percent		1.2			1.5			.4			7.3			.4			
number		2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	2	0	0	119	0	0	67	0	0	8	0	0	3	0	0		
percent		.2			13.9			7.8			.9			.4			
number		14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	12	0	0	2	0	0	4	0	0	91	0	390	11	0	0		
percent		1.4			.2			.5			56.3			1.3			
number		7			17			8			18			8			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	2	0	0	2	0	0	1	0	0	1	0	0	49	0	0		
percent		.2			.2			.1			.1			5.7			
number		18			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #3 Grade 5 Date 1/25 Activity Kickball

teacher talk	11.90	student talk	9.08
teacher nonverbal	33.63	student nonverbal	45.09
total contribution	45.54	total contribution	54.17
silence	.3	teacher as teacher	100
confusion		environment as tea.	
total	.3	student as teacher	

teacher question ratio-
verbal 7.55 nonverbal 28.57 total 10.00

teacher response ratio-
verbal 11.11 nonverbal 79.0 total 71.54

pupil initiation response ratio-
verbal 75.41 nonverbal 87.46 total 85.44

unstructured ratio-
verbal 96.65 nonverbal .75 total 14.79

% verbal 20.98 % nonverbal 79.02 content cross 15.77

% class structure-whole 100 part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8\ -8\	22.92	4. 8\ -3	7.59	7. 9-5	3.57
2. 3 -8\	11.16	5. 8\ -6	7.44	8.	
3. 3 -3	10.27	6. 6 -8	4.32	9.	
				10.	

Matrices tallies

total	1	0	0	10	0	0	2	0	0	163	0	0	4	0	0	
percent	.1			1.5			.3			24.3			.6			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	49	0	0	5	0	0	21	0	0	44	0	0	
percent	.3			7.3			.7			3.1			6.5			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	3	0	0	2	0	0	15	0	0	38	0	0	2	0	0	
percent	.4			.3			2.2			5.7			.3			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	263	0	0	44	0	0	2	0	0	0	0	0	2	0	0	
percent	39.1			6.5			.3			0			.3			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #4 Grade 1 Date 2/7 Activity Exercise/Tag

teacher talk	33.21	student talk	10.52
teacher nonverbal	12.80	student nonverbal	35.36
total contribution	46.01	total contribution	45.88

silence	5.07	teacher as teacher	100
confusion	3.04	environment as tea.	
total	8.11	student as teacher	

teacher question ratio-

verbal 14.06 nonverbal 16.67 total 14.29

teacher response ratio-

verbal 13.43 nonverbal 42.70 total 25.11

pupil initiation response ratio-

verbal 26.51 nonverbal 13.62 total 16.57

unstructured ratio-

verbal 9.09 nonverbal 5.26 total 6.67

% verbal 46.77 % nonverbal 53.23 content cross 31.18

% class structure-whole 78 part 22 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8-8	16.22	4. 8-5	5.96	7. 5 -5	3.93
2. 6-8	12.29	5. 8-6	5.32	8. 8\ -8\	3.17
3. 5-6	6.34	6. 8-10	4.31	= 9. 10 -10	3.17
				10.	

Matrices tallies

total	8	0	0	2	0	0	10	0	0	36	0	0	18	0	0
percent	1.0			.3			1.3			4.6			2.3		
number	2			12			3			13			4		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	2	0	0	110	0	0	10	0	0	98	0	0	49	0	0
percent	.3			13.9			1.3			12.4			6.2		
number	14			5			15			6			16		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	18	0	0	2	0	0	61	0	0	241	0	0	20	0	0
percent	2.3			.3			7.7			30.5			2.5		
number	7			17			8			18			8\		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	36	0	0	2	0	0	2	0	0	24	0	0	40	0	0
percent	4.6			.3			.3			3.0			5.1		
number	18\			9			19			10			20		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #4 Grade 1 Date 2/21 Activity Exer./Skipout

teacher talk	27.34	student talk	12.32
teacher nonverbal	10.76	student nonverbal	41.93
total contribution	38.10	total contribution	54.25
silence	6.09	teacher as teacher	74.79
confusion	1.56	environment as tea.	25.21
total	7.56	student as teacher	

teacher question ratio-

verbal 29.17 nonverbal 22.22 total 28.4

teacher response ratio-

verbal 13.22 nonverbal 16.42 total 14.36

pupil initiation response ratio-

verbal 14.92 nonverbal 50 total 42.04

unstructured ratio-

verbal 15.38 nonverbal 1.35 total 2.48

% verbal 41.22 % nonverbal 58.78 content cross 20.25

% class structure-whole 82 part 18 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8 -8	16.29	4. 8\ -10	4.53	7. 8-6	3.12
2. 8\ -8\	12.61	5. 6 -6	3.97	= 8. 6-8\	3.12
3. 6 -8	8.50	6.10 -6	3.97	9.	
				10.	

Matrices tallies

total	6	0	0	1	0	0	10	0	0	10	0	0	21	0	0	
percent	.8			.1			1.4			1.4			3.0			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	51	0	0	7	0	0	76	0	0	53	0	0	
percent	.3			7.2			1			10.8			7.5			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	29	0	0	3	0	0	74	0	0	145	0	3	11	0	0	
percent	4.1			.4			10.5			2.1			1.6			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	144	2	0	0	2	0	0	11	0	0	12	0	31	
percent	20.7			.3			.3			1.6			6.1			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #4 Grade 3 Date 2/21 Activity Exer./Skipout

teacher talk	20.99	student talk	15.54
teacher nonverbal	5.22	student nonverbal	48.43
total contribution	26.11	total contribution	63.97
silence	6.79	teacher as teacher	71.02
confusion	3.13	environment as tea.	29.98
total	9.92	student as teacher	

teacher question ratio-

verbal 20.27 nonverbal 50 total 21.79

teacher response ratio-

verbal 5.81 nonverbal 8.33 total 6.56

pupil initiation response ratio-

verbal 18.49 nonverbal 51.48 total 43.47

unstructured ratio-

verbal 9.09 nonverbal 1.05 total 1.88

% verbal 39.56 % nonverbal 60.44 content cross 18.54

% class structure-whole 83.9 part 17.1 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8 -8	24.15	4. 8½-10	4.31	7.	
2. 8½-8½	18.28	5. 8 -6	3.79	8.	
3. 6 -8	6.53	6.		9.	
				10.	

Matrices tallies

total	2	0	0	1	0	0	3	0	0	2	0	0	15	0	0	
percent	.3			.1			.4			.3			2.0			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	59	0	0	2	0	0	68	0	0	30	0	0	
percent	.3			7.7			.3			8.9			3.9			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	13	0	0	3	0	0	97	0	0	180	0	0	20	0	0	
percent	1.7			.4			12.7			23.5			2.6			
number	7			17			8			18			8½			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	4	0	185	2	0	0	2	0	0	24	0	0	15	0	37	
percent	24.7			.3			.3			3.1			6.8			
number	18½			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #4 Grade 3 Date 2/11 Activity Ex/Ob Cors

teacher talk	21.56	student talk	19.44
teacher nonverbal	7.82	student nonverbal	38.10
total contribution	29.38	total contribution	57.54
silence	9.27	teacher as teacher	100
confusion	3.80	environment as tea.	
total	13.07	student as teacher	

teacher question ratio-
verbal 3.03 nonverbal 4.88 total 3.57

teacher response ratio-
verbal 14.89 nonverbal 17.24 total 15.45

pupil initiation response ratio-
verbal 13.79 nonverbal 1.47 total 5.63

unstructured ratio-
verbal 12.50 nonverbal 40.00 total 17.24

% verbal 44.80 % nonverbal 55.20 content cross 24.02

% class structure-whole 92.7 part 7.3 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8-8	39.11	4. 10-10	5.81	7. 8-5	3.13
2. 5-5	7.04	5. 10-8	4.47	8. 5-6	3.02
3. 8-10	5.92	6. 8-6	3.24	9.	
				10.	

Matrices tallies

total	9	0	0	1	0	0	5	0	0	4	0	0	3	0	0	
percent	1.0			.1			.6			.4			.3			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	96	0	0	39	0	0	62	0	0	21	0	0	
percent	.2			10.7			4.4			6.9			2.3			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	18	0	0	3	0	0	150	0	0	336	0	0	21	0	0	
percent	2.0			.3			16.8			37.5			2.3			
number	7			17			8			18			8			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	3	0	0	3	0	0	2	0	0	34	0	0	83	0	0	
percent	.3			.3			.2			3.8			9.3			
number	18			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #4 Grade 5 Date 2/7 Activity Ex/Ob Cors

teacher talk	18.58	student talk	16.30
teacher nonverbal	4.89	student nonverbal	41.81
total contribution	23.47	total contribution	58.11
silence	18.01	teacher as teacher	100
confusion	.41	environment as tea.	
total	18.42	student as teacher	

teacher question ratio-

verbal 2.59 nonverbal 6.06 total 3.36

teacher response ratio-

verbal 10.71 nonverbal 22.22 total 12.95

pupil initiation response ratio-

verbal 23.50 nonverbal 3.70 total 9.26

unstructured ratio-

verbal 4.26 nonverbal 10.53 total 6.06

% verbal 35.29 % nonverbal 64.71 content cross 18.99

% class structure-whole 80.6 part19.4 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8-8	35.86	4. 10-8	7.42	7. 8-6	3.26
2. 8-10	8.96	5. 6-8	6.28	8. 5-6	3.02
3. 10-10	8.48	6. 5-5	5.95	9.	
				10.	

Matrices tallies

total	2	0	0	2	0	0	10	0	0	4	0	0	3	0	0	
percent	.2			.2			.8			.3			.2			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	113	0	0	31	0	0	86	0	0	15	0	0	
percent	.2			9.2			2.5			7.0			1.2			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	14	0	0	6	0	0	153	0	0	494	0	0	45	0	0	
percent	1.1			.5			12.5			40.3			3.7			
number	7			17			8			18			8			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	17	0	0	2	0	0	2	0	0	5	0	0	221	0	0	
percent	1.4			.2			.2			.4			18			
number	18			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #4 Grade 5 Date 2/21 Activity Ex./Line Soc.

teacher talk	26.50	student talk	18.02
teacher nonverbal	11.92	student nonverbal	38.61
total contribution	38.42	total contribution	56.63
silence	1.33	teacher as teacher	100
confusion	3.62	environment as tea.	
total	4.92	student as teacher	

teacher question ratio-
verbal 13.55 nonverbal 16.67 total 13.77

teacher response ratio-
verbal 9.76 nonverbal 32.74 total 20.76

pupil initiation response ratio-
verbal 7.41 nonverbal 31.85 total 24.07

unstructured ratio-
verbal 14.29 nonverbal 1.55 total 2.80

% verbal 48.14 % nonverbal 51.86 content cross 25.55

% class structure-whole 50.3 part 45.7 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8 -8	30.60	4. 5 -5	5.24	7. 5-6	3.72
2. 6 -8	8.01	5. 8 -6	4.00	8.	
3. 8\ -8\	7.44	6. 8\ -6	3.81	9.	
				10.	

Matrices tallies

total	3	0	0	1	0	0	9	0	0	36	0	0	21	0	0	
percent	.3			.1			.9			3.4			2.0			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	134	0	0	10	0	0	95	0	0	74	0	0	
percent	.2			12.8			1.0			9.1			7.1			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	16	0	0	2	0	0	175	0	0	276	0	0	12	0	0	
percent	1.5			.2			16.7			26.3			1.0			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	127	0	0	2	0	0	2	0	0	38	0	0	14	0	0	
percent	12.1			.2			3.6			3.6			1.3			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #5 Grade 3 Date 1/18 Activity Laps/Relays

teacher talk	28.17	student talk	6.35
teacher nonverbal	28.02	student nonverbal	34.83
total contribution	56.19	total contribution	41.18
silence	1.08	teacher as teacher	100
confusion	1.55	environment as tea.	
total	2.63	student as teacher	

teacher question ratio-
verbal 3.85 nonverbal 5.71 total 4.50

teacher response ratio-
verbal 54.72 nonverbal 78.08 total 68.25

pupil initiation response ratio-
verbal 9.76 nonverbal 1.78 total 3.01

unstructured ratio-
verbal 50.00 nonverbal 50.00 total 50.00

% verbal 36.07 % nonverbal 63.93 content cross 27.4

% class structure-whole 98.1 part no tea. influence 1.9

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8-8	19.97	4. 8-5	5.73	7. 5-5	5.42
2. 2-2	7.89	5. 2-8	5.42	8. 8-3	4.02
3. 6-8	6.19	6. 8-2	5.42	9. 8-6	3.87
				10.	

Matrices tallies

total	51	0	0	58	0	0	7	0	0	56	0	0	3	0	0	
percent	7.9			9.0			1.1			8.7			.5			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	73	0	0	33	0	0	43	0	0	30	0	0	
percent	.3			11.3			5.1			6.7			4.6			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	5	0	0	2	0	0	37	0	0	221	0	0	2	0	0	
percent	.8			.3			5.7			34.2			.3			
number	7			17			8			18			8			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	2	0	0	2	0	0	10	0	0	7	0	0	
percent	.3			.3			.3			1.5			1.1			
number	18			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #5 Grade 3 Date 2/10 Activity Laps Crab Soccer

teacher talk	36.46	student talk	8.47
teacher nonverbal	19.26	student nonverbal	28.50
total contribution	55.71	total contribution	36.97
silence	1.16	teacher as teacher	100
confusion	6.16	environment as tea.	
total	7.32	student as teacher	

teacher question ratio-
verbal 25.68 nonverbal 11.11 total 24.10

teacher response ratio-
verbal 32.35 nonverbal 59.09 total 45.52

pupil initiation response ratio-
verbal 27.27 nonverbal 59.91 total 52.43

unstructured ratio-
verbal 50.0 nonverbal 50.0 total 50.0

% verbal 51.09 % nonverbal 48.91 content cross 34.27

% class structure-whole 100 part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	7.19	4. 8\ -6	4.75	7. 4-8	3.59
2. 8 -8	6.55	5. 6 -8\	4.62	8.	
3. 8\ -8\	5.78	6. 5 -6	4.49	9.	
				10.	

Matrices tallies

total	31	0	0	25	0	0	13	0	0	53	0	0	38	0	0	
percent	4.0			3.2			1.7			6.8			4.9			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	110	0	0	16	0	0	83	0	0	52	0	0	
percent	.3			14.1			2.1			10.7			6.7			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	9	0	0	2	0	0	48	0	0	89	0	0	16	0	0	
percent	1.2			.3			6.2			11.4			2.1			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	131	0	0	2	0	0	2	0	0	48	0	0	9	0	0	
percent	16.8			.3			.3			6.2			1.2			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #5 Grade 5 Date 1/18 Activity Laps, B'ball Drill, Game

teacher talk	24.45	student talk	21.78
teacher nonverbal	14.61	student nonverbal	38.97
total contribution	39.06	total contribution	60.74
silence	.19	teacher as teacher	100
confusion		environment as tea.	
total	.19	student as teacher	

teacher question ratio-
verbal 1.75 nonverbal 2.22 total 1.96

teacher response ratio-
verbal 51.41 nonverbal 80.95 total 60.49

pupil initiation response ratio-
verbal 30.26 nonverbal 16.91 total 21.70

unstructured ratio-
verbal 10.14 nonverbal 10.14 total 10.14

% verbal 46.23 % nonverbal 53.77 content cross 25.60

% class structure-whole 33.6 part 67.4 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8 -8	37.63	4. 3-8	3.63	7.	
2. 5 -5	13.56	5. 2-8	3.44	8.	
3. 8\ -8\	9.17	6.		9.	
				10.	

Matrices tallies

total	38	0	0	18	0	0	35	0	0	33	0	0	2	0	0	
percent	3.6			1.7			3.3			3.2			.2			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	112	0	0	88	0	0	33	0	0	10	0	0	
percent	.2			10.07			8.4			3.2			1.0			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	36	0	0	2	0	0	159	0	0	339	0	0	62	0	0	
percent	3.4			.2			15.2			32.4			5.9			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	62	0	0	7	0	0	7	0	0	0	0	0	2	0	0	
percent	5.9			.7			.7			0			.2			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #5 Grade 5 Date 2/10 Activity Laps, B'ball Games

teacher talk	33.88	student talk	1.64
teacher nonverbal	22.04	student nonverbal	40.93
total contribution	55.42	total contribution	45.27
silence	1.39	teacher as teacher	100
confusion	.63	environment as tea.	
total	2.02	student as teacher	

teacher question ratio-

verbal 5.32 nonverbal 25.00 total 6.12

teacher response ratio-

verbal 35.06 nonverbal 50.9 total 45.9

pupil initiation response ratio-

verbal 7.69 nonverbal 81.23 total 78.40

unstructured ratio-

verbal nonverbal total

% verbal 35.64 % nonverbal 64.36 content cross 41.56

% class structure-whole 15.8 part 84.2 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8\-8\	17.25	4. 6-5	7.3	7. 5-6	3.78
2. 5 -8\	7.81	5. 5-5	6.55	8. 3-3	3.40
3. 8\-6	7.56	6. 8-8	3.90	9.	
				10.	

Matrices tallies

total	22	0	0	16	0	0	5	0	0	69	0	0	10	0	0	
percent	2.8			2.0			.6			8.7			1.3			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	178	0	0	6	0	0	38	0	0	80	0	0	
percent	.3			22.4			.8			4.8			10.1			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	12	0	0	2	0	0	12	0	0	61	0	0	1	0	0	
percent	1.5			.3			1.5			7.7			.1			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	264	0	0	0	0	0	0	0	0	5	0	0	11	0	0	
percent	33.2			0			0			.6			1.4			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #6 Grade 5 Date 2/15 Activity Dodge/ Tag/Tumble

teacher talk	25.60	student talk	10.67
teacher nonverbal	19.88	student nonverbal	33.79
total contribution	45.48	total contribution	44.45
silence	.17	teacher as teacher	100
confusion	9.90	environment as tea.	
total	10.07	student as teacher	

teacher question ratio-
verbal 5.37 nonverbal 2.04 total 4.29

teacher response ratio-
verbal 50.53 nonverbal 66.67 total 60.00

pupil initiation response ratio-
verbal 43.20 nonverbal 37.88 total 39.16

unstructured ratio-
verbal 3.7 nonverbal 1.33 total 1.96

% verbal 46.16 % nonverbal 53.84 content cross 34.30

% class structure-whole 12 part 73.1 no tea. influence 4.9

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	16.81	4. 8-10	7.51	7. 6-8	3.16
2. 8\ -8\	12.21	5. 2-8	4.35	8.	
3. 8 -8	9.90	6. 10-8	3.92	9.	
				10.	

Matrices tallies

total	30	0	0	47	0	0	18	0	0	43	0	0	11	0	0	
percent	2.6			4.0			1.5			3.7			.9			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	194	0	0	96	0	0	33	0	0	42	0	0	
percent	.2			16.6			8.2			2.8			3.6			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	14	0	0	3	0	0	71	0	0	246	0	0	52	0	0	
percent	1.2			.3			6.8			21.0			4.4			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	148	0	0	2	0	0	2	0	0	116	0	0	2	0	0	
percent	12.6			.2			.2			9.9			.2			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #6 Grade 5 Date 1/23 Activity Exercise/Tag/ Relay/Free Play

teacher talk	27.04	student talk	3.92
teacher nonverbal	21.08	student nonverbal	46.98
total contribution	48.12	total contribution	50.90
silence	.57	teacher as teacher	100
confusion	.41	environment as tea.	
total	.98	student as teacher	

teacher question ratio-

verbal 7.31 nonverbal 3.92 total 5.91

teacher response ratio-

verbal 16.96 nonverbal 45.71 total 30.88

pupil initiation response ratio-

verbal 64.58 nonverbal 61.39 total 61.64

unstructured ratio-

verbal 90.32 nonverbal 5.10 total 11.98

% verbal 31.37 % nonverbal 68.63 content cross 39.22

% class structure-whole 76.1 part 11.1 no tea. influence 12.8

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8\ -8\	23.94	4. 6-8	7.84	7.	
2. 5 -5	21.24	5. 8-6	5.88	8.	
3. 8 -8	8.74	6. 5-6	3.68	9.	
				10.	

Matrices tallies

total	11	0	0	4	0	0	8	0	0	44	0	0	16	0	0	
percent	.9			.3			.7			3.6			1.3			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	6	0	0	203	0	0	147	0	0	86	0	0	55	0	0	
percent	.5			16.6			12.0			7.0			4.5			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	7	0	0	2	0	0	17	0	0	222	0	0	3	0	0	
percent	.6			.2			1.4			18.1			.2			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	335	0	0	28	0	0	18	0	0	5	0	0	7	0	0	
percent	27.4			2.3			1.5			.4			.6			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #7 Grade 1 Date 2/16 Activity Soccer/Tag

teacher talk	27.67	student talk	2.38
teacher nonverbal	16.39	student nonverbal	43.11
total contribution	44.06	total contribution	45.49
silence	2.02	teacher as teacher	100
confusion	8.43	environment as tea.	
total	10.45	student as teacher	

teacher question ratio-
verbal 8.96 nonverbal 4.35 total 7.78

teacher response ratio-
verbal 11.11 nonverbal 19.57 total 15.18

pupil initiation response ratio-
verbal 4.32 nonverbal 4.05 total 4.06

unstructured ratio-
verbal 13.33 nonverbal .96 total 1.79

% verbal 38.48 % nonverbal 61.52 content cross 35.99

% class structure-whole 98.9 part no tea. influence 1.1

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8\-8\	19.60	4. 8 -5	5.94	7. 8 -6	4.51
2. 6 -8	7.48	5. 5 -6	5.23	8. 8\-6	3.80
3. 5 -5	6.29	6. 5 -8	4.99	9. 6 -10	3.44
				10.	

Matrices tallies

total	7	0	0	5	0	0	4	0	0	14	0	0	12	0	0	
percent	.8			.6			.5			1.5			1.4			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	122	0	0	44	0	0	73	0	0	68	0	0	
percent	.2			14.5			5.2			8.7			8.1			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	15	0	0	6	0	0	5	0	0	155	0	0	13	0	0	
percent	1.8			.7			.6			18.4			1.5			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	206	0	0	2	0	0	2	0	0	71	0	0	17	0	0	
percent	24.5			.2			.2			8.4			2.0			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #7 Grade 1 Date 3/3 Activity Stations

teacher talk	46.19	student talk	7.51
teacher nonverbal	21.50	student nonverbal	23.77
total contribution	67.70	total contribution	31.28
silence	.72	teacher as teacher	100
confusion	.31	environment as tea.	
total	1.03	student as teacher	

teacher question ratio-

verbal 12.17 nonverbal 9.09 total 11.85

teacher response ratio-

verbal 59.62 nonverbal 74.87 total 66.0

pupil initiation response ratio-

verbal 75.34 nonverbal 25.11 total 37.17

unstructured ratio-

verbal 3.64 nonverbal 3.45 total 3.54

% verbal 54.01 % nonverbal 45.99 content cross 37.45

% class structure-whole 27 part 73 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 6-8	6.58	4. 8-3	4.94	7. 5-5	4.32
2. 8-3	5.35	5. 3 -5	4.73	8. 5-3	3.91
3. 3-3	5.25	6. 3 -8	4.63	= 9. 5-6	3.91
				10. 8-6	3.40

Matrices tallies

total	63	0	0	21	0	0	92	0	0	119	0	0	23	0	0	
percent		6.5			2.2			9.5			12.2			2.4		
number		2			12			3			13			4		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	166	0	0	20	0	0	61	0	0	42	0	0	
percent		.2			17.1			2.1			6.3			4.3		
number		14			5			15			6			16		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	44	0	0	5	0	0	18	0	0	173	0	0	53	0	0	
percent		4.5			.5			1.9			17.8			5.5		
number		7			17			8			18			8		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	56	0	0	2	0	0	2	0	0	3	0	0	7	0	0	
percent		5.8			.2			.2			.3			.7		
number		18			9			19			10			20		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #7 Grade 3 Date 2/16 Activity Steal the Bacon/Dodge

teacher talk	29.35	student talk	2.84
teacher nonverbal	16.38	student nonverbal	45.85
total contribution	45.73	total contribution	48.69
silence	2.62	teacher as teacher	100
confusion	2.96	environment as tea.	
total	5.57	student as teacher	

teacher question ratio-
verbal 8.70 nonverbal 4.26 total 7.57

teacher response ratio-
verbal 21.67 nonverbal 41.24 total 30.41

pupil initiation response ratio-
verbal 80.00 nonverbal 65.01 total 65.89

unstructured ratio-
verbal 10.0 nonverbal .76 total 1.42

% verbal 35.15 % nonverbal 64.85 content cross 33.33

% class structure-whole 100 part no tea. influence

Parent cell percentages

parent cell	%		parent cell	%		parent cell	%
1. 8\-8\	21.39		4. 5-8	5.12		7. 8 -8	3.98
2. 5 -5	7.85	=	5. 6-8\	5.12	=	8. 5 -6	3.98
3. 8 -5	5.92		6. 6-8	4.78		9. 8\-6	3.75
						10.	

Matrices tallies

total	16	0	0	29	0	0	10	0	0	11	0	0	12	0	0	
percent	1.8			3.3			1.1			1.3			1.4			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	126	0	0	45	0	0	75	0	0	51	0	0	
percent	.2			14.3			5.1			8.5			5.8			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	19	0	0	6	0	0	5	0	0	141	0	0	18	0	0	
percent	2.2			.7			.6			16			2.0			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	260	0	0	2	0	0	2	0	0	26	0	0	23	0	0	
percent	29.6			.2			.2			3.0			2.6			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #7 Grade 3 Date 3/3 Activity Stations

teacher talk	45.37	student talk	7.41
teacher nonverbal	22.22	student nonverbal	24.49
total contribution	67.59	total contribution	31.89
silence	.31	teacher as teacher	100
confusion	.21	environment as tea.	
total	.52	student as teacher	

teacher question ratio-

verbal 4.63 nonverbal 4.76 total 4.65

teacher response ratio-

verbal 41.76 nonverbal 72.99 total 57.02

pupil initiation response ratio-

verbal 84.72 nonverbal 26.47 total 40.00

unstructured ratio-

verbal 3.28 nonverbal 1.59 total 2.42

% verbal 52.98 % nonverbal 47.02 content cross 48.35

% class structure-whole 40.7 part 59.3 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-5	12.55	4. 8\ -8\	4.84	7. 8-5	4.63
2. 6-8	8.02	= 5. 8 -3	4.84	8. 3-8	3.91
3. 5-6	5.25	= 6. 5 -3	4.84	9.	
				10.	

Matrices tallies

total	38	0	0	23	0	0	38	0	0	104	0	0	12	0	0	
percent	3.9			2.4			3.9			10.7			1.2			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	247	0	0	40	0	0	61	0	0	36	0	0	
percent	.2			25.4			4.1			6.3			3.7			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	45	0	0	11	0	0	11	0	0	175	0	0	59	0	0	
percent	4.6			1.1			1.1			18.0			6.1			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	62	0	0	2	0	0	1	0	0	2	0	0	3	0	0	
percent	6.4			.2			.1			.2			.3			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #7 Grade 5 Date 2/16 Activity Exer./Rhythms

teacher talk	23.18	student talk	5.36
teacher nonverbal	36.61	student nonverbal	32.31
total contribution	59.79	total contribution	37.67
silence	2.55	teacher as teacher	67.25
confusion		environment as tea.	32.75
total	2.55	student as teacher	

teacher question ratio-
verbal 4.81 nonverbal .98 total 2.91

teacher response ratio-
verbal 64.29 nonverbal 95.75 total 89.19

pupil initiation response ratio-
verbal 22.87 nonverbal 5.43 total 8.63

unstructured ratio-
verbal 11.76 nonverbal 5.0 total 8.11

% verbal 28.53 % nonverbal 71.47 content cross 56.89

% class structure-whole 100 part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-8	15.80	4. 3-8	12.47	7.	
2. 5-5	15.28	5. 8-3	12.38	8.	
3. 8-5	14.66	6.		9.	
				10.	

Matrices tallies

total	20	0	0	47	0	0	6	0	10	4	0	152	10	0	0		
percent	1.8			4.1			1.4			13.7			.9				
number	2			12			3			13			4				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	2	0	0	198	0	0	187	0	16	18	0	0	7	0	0		
percent	.2			17.4			17.8			1.6			.6				
number	14			5			15			6			16				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	2	0	0	2	0	0	44	0	0	153	0	195	15	0	0		
percent	.2			.2			3.9			30.6			1.3				
number	7			17			8			18			8				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	19	0	0	2	0	0	1	0	0	0	0	0	29	0	0		
percent	1.7			.2			.1			0			2.5				
number	18			9			19			10			20				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #7 Grade 5 Date 3/3 Activity Rhythms

teacher talk	33.37	student talk	6.16
teacher nonverbal	19.45	student nonverbal	38.79
total contribution	52.82	total contribution	44.95
silence	1.59	teacher as teacher	60.79
confusion	.64	environment as tea.	39.21
total	2.23	student as teacher	

teacher question ratio-
verbal 14.05 nonverbal 3.33 total 11.43

teacher response ratio-
verbal 65.12 nonverbal 88.62 total 76.59

pupil initiation response ratio-
verbal 29.31 nonverbal 3.84 total 7.33

unstructured ratio-
verbal 11.76 nonverbal 14.29 total 12.90

% verbal 40.17 % nonverbal 59.83 content cross 45.16

% class structure-whole 86.7 part 13.3 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8-3	13.50	4. 8-5	12.22	7.	
2. 3-8	12.75	5. 5-5	4.78	8.	
3. 5-8	12.43	6. 5-6	3.29	9.	
				10.	

Matrices tallies

total	12	0	0	25	0	0	35	0	37	6	0	78	26	0	0		
percent	1.3			2.7			7.7			8.9			2.8				
number	2			12			3			13			4				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	2	0	0	150	0	9	49	0	9	33	0	0	10	0	0		
percent	.2			16.9			6.2			3.5			1.1				
number	14			5			15			6			16				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	12	0	0	4	0	0	28	0	13	128	0	223	15	0	0		
percent	1.3			.4			4.4			37.3			1.6				
number	7			17			8			18			8				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	12	0	0	2	0	0	2	0	0	6	0	0	15	0	0		
percent	1.3			.2			.2			.6			1.6				
number	18			9			19			10			20				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #8 Grade 1 Date 2/3 Activity Stations

teacher talk	42.40	student talk	11.90
teacher nonverbal	21.54	student nonverbal	22.90
total contribution	63.95	total contribution	34.81
silence	1.25	teacher as teacher	100
confusion		environment as tea.	
total	1.25	student as teacher	

teacher question ratio-
verbal 19.56 nonverbal 2.70 total 15.94

teacher response ratio-
verbal 37.86 nonverbal 67.24 total 53.42

pupil initiation response ratio-
verbal 72.38 nonverbal 71.78 total 71.99

unstructured ratio-
verbal 44.74 nonverbal 4.14 total 18.10

% verbal 54.31 % nonverbal 45.69 content cross 58.84

% class structure-whole 39.2 part 60.8 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	17.57	4. 8\ -5	4.08	7.	
2. 8\ -8\	10.32	5. 4 -8	3.40	8.	
3. 5 -6	4.99	6.		9.	
				10.	

Matrices tallies

total	31	0	0	28	0	0	8	0	0	50	0	0	53	0	0	
percent	3.5			3.2			.9			5.7			6.0			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	218	0	0	72	0	0	44	0	0	36	0	0	
percent	.2			24.7			8.2			5			4.1			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	20	0	0	2	0	0	29	0	0	57	0	0	41	0	0	
percent	2.3			.2			3.3			6.5			4.8			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	139	0	0	34	0	0	6	0	0	0	0	0	11	0	0	
percent	15.8			3.9			.7			0			1.2			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #8 Grade 1 Date 2/18 Activity An/Rhythms

teacher talk	44.35	student talk	9.68
teacher nonverbal	22.45	student nonverbal	19.62
total contribution	66.80	total contribution	29.30
silence	2.55	teacher as teacher	100
confusion	1.34	environment as tea.	
total	3.90	student as teacher	

teacher question ratio-
verbal 13.82 nonverbal 2.02 total 10.43

teacher response ratio-
verbal 34.52 nonverbal 75.00 total 52.63

pupil initiation response ratio-
verbal 25.00 nonverbal 26.71 total 26.15

unstructured ratio-
verbal 11.11 nonverbal 5.13 total 7.02

% verbal 55.38 % nonverbal 44.62 content cross 68.68

% class structure-whole 100 part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	20.83	4. 5 -6	4.44	7. 6 -8	3.36
2. 8 -5	11.42	5. 8 -8	3.76	8. 8 -8	3.23
3. 5 -8	9.14	6. 3 -5	3.63	9.	
				10.	

Matrices tallies

total	21	0	0	17	0	0	8	0	0	34	0	0	34	0	0
percent	2.8			2.3			1.1			4.6			4.6		
number	2			12			3			13			4		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	2	0	0	212	0	0	97	0	0	34	0	0	15	0	0
percent	.3			28.5			13			4.6			2		
number	14			5			15			6			16		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	21	0	0	2	0	0	2	0	0	10	0	0	19	0	0
percent	2.8			.3			7.3			14.4			2.2		
number	7			17			8			18			8		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	37	0	0	2	0	0	2	0	0	10	0	0	19	0	0
percent	5			.3			.3			1.3			2.6		
number	18			9			19			10			20		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #8 Grade 3 Date 2/3 Activity Circuit

teacher talk	35.84	student talk	16.09
teacher nonverbal	23.50	student nonverbal	24.25
total contribution	59.33	total contribution	40.34
silence	0.32	teacher as teacher	100
confusion		environment as tea.	
total	0.32	student as teacher	

teacher question ratio-
verbal 24.42 nonverbal 5.26 total 20.06

teacher response ratio-
verbal 67.11 nonverbal 85.31 total 79.00

pupil initiation response ratio-
verbal 85.33 nonverbal 76.99 total 80.32

unstructured ratio-
verbal 8.59 nonverbal .57 total 3.97

% verbal 51.93 % nonverbal 48.07 content cross 52.25

% class structure-whole 65.7 part 34.3 no tea. influence

Parent cell percentages

parent cell	%		parent cell	%		parent cell	%
1. 5 -5	16.31		4. 5 -8	5.15		7. 3-8	
2. 8\ -8\	15.13	=	5. 8\ -3	5.15		8.	
3. 8\ -5	5.90		6. 2 -8\	4.72		9.	
						10.	

Matrices tallies

total	20	0	0	30	0	0	31	0	0	92	0	0	63	0	0
percent	2.1			3.2			3.3			9.9			6.8		
number	2			12			3			13			4		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	4	0	0	195	0	0	72	0	0	20	0	0	19	0	0
percent	.4			20.9			7.7			2.1			2.0		
number	14			5			15			6			16		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	5	0	0	2	0	0	22	0	0	52	0	0	117	0	0
percent	.5			.2			2.4			5.6			12.6		
number	7			17			8			18			8\		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	173	0	0	11	0	0	1	0	0	0	0	0	3	0	0
percent	18.6			1.2			.1			0			.3		
number	18\			9			19			10			20		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #8 Grade 3 Date 2/26 Activity Ex/Tug/JR

teacher talk	47.19	student talk	7.85
teacher nonverbal	26.51	student nonverbal	15.27
total contribution	73.70	total contribution	23.12
silence	1.38	teacher as teacher	100
confusion	1.80	environment as tea.	
total	3.18	student as teacher	

teacher question ratio-
verbal 8.71 nonverbal 1.72 total 6.81

teacher response ratio-
verbal 35.56 nonverbal 71.64 total 53.53

pupil initiation response ratio-
verbal 33.78 nonverbal 22.22 total 26.15

unstructured ratio-
verbal 8.00 nonverbal 6.25 total 7.02

% verbal 56.84 % nonverbal 43.16 content cross 67.02

% class structure-whole 60 part 40 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-5	24.39	4. 6-8	5.73	7.	
2. 8-5	8.48	5. 5-8	4.88	8.	
3. 5-6	7.95	6. 5-3	3.39	9.	
				10.	

Matrices tallies

total	16	0	0	31	0	0	32	0	0	65	0	0	27	0	0	
percent	1.7			3.3			3.4			6.9			2.9			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	283	0	0	114	0	0	69	0	0	36	0	0	
percent	.2			30			12.1			7.3			3.8			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	18	0	0	2	0	0	49	0	0	112	0	0	23	0	0	
percent	1.9			.2			5.2			11.9			2.4			
number	7			17			8			18			8			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	30	0	0	2	0	0	2	0	0	17	0	0	13	0	0	
percent	3.2			.2			.2			1.8			1.4			
number	18			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #8 Grade 5 Date 2/14 Activity V.B.

teacher talk	41.32	student talk	8.52
teacher nonverbal	32.38	student nonverbal	16.61
total contribution	73.69	total contribution	25.13
silence	0.67	teacher as teacher	100
confusion	0.51	environment as tea.	
total	1.18	student as teacher	

teacher question ratio-
verbal 6.52 nonverbal 1.04 total 4.63

teacher response ratio-
verbal 37.70 nonverbal 48.17 total 44.09

pupil initiation response ratio-
verbal 81.19 nonverbal 60.41 total 67.45

unstructured ratio-
verbal 14.63 nonverbal 1.68 total 6.97

% verbal 50.34 % nonverbal 49.66 content cross 61.64

% class structure-whole 77.7 part 21.4 no tea. influence .9

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	31.04	4. 5 -6	4.30	7.	
2. 8\ -8\	8.09	5. 8\ -5	3.12	8.	
3. 5 -6	5.99	6.		9.	
				10.	

Matrices tallies

total	25	0	0	24	0	0	21	0	0	68	0	0	24	0	0	
percent	2.1			2.0			1.8			5.7			2.0			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	344	0	0	191	0	0	59	0	0	96	0	0	
percent	.2			29.0			16.1			5.0			8.1			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	17	0	0	3	0	0	19	0	0	78	0	0	70	0	0	
percent	1.4			.3			1.6			6.6			5.9			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	117	0	0	12	0	0	2	0	0	6	0	0	8	0	0	
percent	9.9			1.0			.2			.5			.7			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #8 Grade 5 Date 2/25 Activity V.B.

teacher talk	30.02	student talk	29.30
teacher nonverbal	10.56	student nonverbal	26.09
total contribution	40.58	total contribution	55.38
silence	0.52	teacher as teacher	67.81
confusion	3.52	environment as tea.	
total	4.04	student as teacher	32.19

teacher question ratio-

verbal 17.19 nonverbal 12.50 total 16.60

teacher response ratio-

verbal 59.42 nonverbal 87.14 total 73.38

pupil initiation response ratio-

verbal 87.28 nonverbal 89.68 total 88.41

unstructured ratio-

verbal 9.31 nonverbal 7.52 total 8.46

% verbal 62.84 % nonverbal 37.16 content cross 33.64

% class structure-whole 83.4 part 16.6 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8\-8\	34.78	4.		7.	
2. 5 -5	13.66	5.		8.	
3. 8\-10	3.42	6.		9.	
				10.	

Matrices tallies

total	3	0	0	14	0	0	38	0	0	45	2	0	38	0	0			
percent		.3			1.4			3.9			4.9			3.9				
number		2			12			3			13			4				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	4	0	0	183	0	0	28	0	0	22	0	0	5	0	0			
percent		.4			18.9			2.9			2.3			.5				
number		14			5			15			6			16				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	6	0	0	4	0	0	34	2	0	19	7	0	106	118	0			
percent		.6			.4			3.7			2.7			23.2				
number		7			17			8			18			8\				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	49	160	0	23	0	0	17	0	0	12	22	0	5	0	0			
percent		21.6			2.4			1.8			3.5			.5				
number		18\			9			19			10			20				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #9 Grade 1 Date 2/4 Activity ME/JR/Bal

teacher talk	39.87	student talk	11.31
teacher nonverbal	17.13	student nonverbal	28.33
total contribution	57.00	total contribution	39.64
silence	2.80	teacher as teacher	81.08
confusion	0.56	environment as tea.	18.92
total	3.36	student as teacher	

teacher question ratio-
verbal 9.01 nonverbal 5.26 total 8.46

teacher response ratio-
verbal 38.06 nonverbal 66.09 total 51.00

pupil initiation response ratio-
verbal 52.48 nonverbal 23.32 total 31.64

unstructured ratio-
verbal 11.32 nonverbal 3.39 total 7.14

% verbal 51.74 % nonverbal 48.26 content cross 44.23

% class structure-whole 97.9 part no tea. influence 2.1

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-5	13.70	4. 8\ -8\	6.94	7. 3-8	5.38
2. 8-8	7.61	5. 8 -5	6.83	8. 8-3	4.70
3. 6-8	7.61	6. 5 -6	5.71	9. 8-6	3.58
				10.	

Matrices tallies

total	13	0	0	28	0	0	5	0	33	12	0	36	20	0	0				
percent	1.5			3.1			4.3			5.4			2.2						
number	2			12			3			13			4						
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e				
total	2	0	0	202	0	0	36	0	0	74	0	0	33	0	0				
percent	.2			22.6			4.0			8.3			3.7						
number	14			5			15			6			16						
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e				
total	9	0	0	6	0	0	18	0	30	143	0	51	40	0	7				
percent	1.0			.7			5.4			21.7			5.3						
number	7			17			8			18			8\						
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e				
total	45	0	12	6	0	0	2	0	0	5	0	0	25	0	0				
percent	6.4			.7			.2			.6			2.8						
number	18\			9			19			10			20						
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e				

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #9 Grade 1 Date 2/24 Activity Ex/Me/Rhy

teacher talk	47.96	student talk	6.01
teacher nonverbal	17.55	student nonverbal	24.64
total contribution	65.50	total contribution	30.65
silence	3.13	teacher as teacher	77.64
confusion	0.72	environment as tea.	22.36
total	3.85	student as teacher	

teacher question ratio-
verbal 18.54 nonverbal 4.88 total 16.26

teacher response ratio-
verbal 50.2 nonverbal 90.48 total 64.55

pupil initiation response ratio-
verbal 24.00 nonverbal 30.24 total 29.02

unstructured ratio-
verbal 3.91 nonverbal 1.17 total 10.81

% verbal 54.69 % nonverbal 45.31 content cross 47.00

% class structure-whole 90.5 part 9.5 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-5	9.50	4. 3-8	6.61	7.	
2. 8-3	8.41	5. 5-6	6.49	8.	
3. 6-8	6.73	6. 8-5	5.65	9.	
				10.	

Matrices tallies

total	23	0	0	44	0	0	45	0	30	11	0	40	38	0	0		
percent	2.8			5.3			9.0			6.1			4.6				
number	2			12			3			13			4				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	2	0	0	159	0	8	31	0	8	86	0	0	6	0	0		
percent	.2			20.1			4.7			10.3			.7				
number	14			5			15			6			16				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	10	0	0	4	0	0	17	0	21	86	0	57	6	0	0		
percent	1.2			.5			4.6			17.2			.7				
number	7			17			8			18			8				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	38	0	22	6	0	0	2	0	0	6	0	0	26	0	0		
percent	7.2			.7			.2			.7			3.1				
number	18			9			19			10			20				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #9 Grade 3 Date 2/4 Activity Circuit/V.B.

teacher talk	40.45	student talk	12.08
teacher nonverbal	21.25	student nonverbal	25.56
total contribution	61.70	total contribution	37.64
silence	0.66	teacher as teacher	100
confusion		environment as tea.	
total	0.66	student as teacher	

teacher question ratio-

verbal 9.00 nonverbal 8.70 total 8.97

teacher response ratio-

verbal 46.61 nonverbal 52.45 total 49.41

pupil initiation response ratio-

verbal 93.80 nonverbal 44.32 total 60.20

unstructured ratio-

verbal 2.48 nonverbal 1.65 total 2.07

% verbal 52.53 % nonverbal 47.47 content cross 37.45

% class structure-whole 87.0 part 13.0 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 6-8	6.46	4. 8 -8	5.15	7. 2 -8\	4.87
2. 5-5	6.18	5. 8\ -6	5.06	=8. 8\ -8\	4.87
3. 5-8\	5.99	=6. 8\ -5	5.06	9. 8\ -3	4.40
				10. 2 -8	3.93
				=11. 5 -6	3.93

Matrices tallies

total	65	0	0	60	0	0	38	0	0	47	0	0	19	0	0		
percent	6.1			5.6			3.6			4.4			1.8				
number	2			12			3			13			4				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	2	0	0	192	0	0	21	0	0	93	0	0	95	0	0		
percent	.2			18.0			2.0			8.7			8.9				
number	14			5			15			6			16				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	25	0	0	2	0	0	8	0	0	152	0	0	118	0	0		
percent	2.3			.2			.7			14.2			11.0				
number	7			17			8			18			8\				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	119	0	0	3	0	0	2	0	0	0	0	0	7	0	0		
percent	11.1			.3			.2			0			.7				
number	18\			9			19			10			20				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #9 Grade 3 Date 2/24 Activity Volleyball Cir/Games

teacher talk	31.96	student talk	5.13
teacher nonverbal	21.95	student nonverbal	36.20
total contribution	53.92	total contribution	41.34
silence	2.95	teacher as teacher	99.87
confusion	1.80	environment as tea.	
total	4.75	student as teacher	.13

teacher question ratio-
verbal 9.79 nonverbal 7.50 total 9.29

teacher response ratio-
verbal 47.17 nonverbal 71.76 total 60.76

pupil initiation response ratio-
verbal 85.00 nonverbal 55.67 total 59.32

unstructured ratio-
verbal 5.88 nonverbal 1.27 total 2.09

% verbal 38.90 % nonverbal 61.10 content cross 36.33

% class structure-whole 83.7 part 16.3 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8\ -8\	14.63	4. 6-8	5.39	7.	
2. 5 -5	9.63	5. 5-6	4.11	8.	
3. 8 -8	7.83	6.		9.	
				10.	

Matrices tallies

total	26	0	0	41	0	0	24	0	0	53	0	0	14	0	0	
percent	3.3			5.3			3.1			6.8			1.8			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	3	0	0	129	0	0	37	0	0	37	0	0	35	0	0	
percent	.4			16.6			4.7			4.7			4.5			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	19	0	0	2	0	0	6	0	0	125	0	0	31	1	0	
percent	2.4			.2			.8			16.0			4.1			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	155	0	0	2	0	0	2	0	0	14	0	0	23	0	0	
percent	19.9			.3			.3			1.8			3.0			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #9 Grade 5 Date 2/3 Activity Ex./V.B.

teacher talk	35.68	student talk	19.98
teacher nonverbal	18.55	student nonverbal	23.85
total contribution	54.23	total contribution	43.83
silence	1.33	teacher as teacher	96.02
confusion	0.61	environment as tea.	3.98
total	1.94	student as teacher	

teacher question ratio-
verbal 8.79 nonverbal 4.55 total 7.96

teacher response ratio-
verbal 50.00 nonverbal 42.03 total 46.41

pupil initiation response ratio-
verbal 90.31 nonverbal 76.50 total 82.79

unstructured ratio-
verbal 5.65 nonverbal 2.23 total 3.93

% verbal 56.27 % nonverbal 43.73 content cross 35.78

% class structure-whole 85.8 part 14.2 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8\-8\	16.31	4. 8\-2	6.73	7. 5-8\	5.30
2. 5 -5	10.50	5. 2 -8\	6.01	8. 5-6	3.98
3. 8\-6	7.24	6. 6 -8\	5.50	9. 6-5	3.06
				10.	

Matrices tallies

total	72	0	0	44	0	0	12	0	0	14	0	0	16	0	0	
percent	7.3			4.5			1.2			1.4			1.6			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	166	0	0	42	0	0	63	0	0	78	0	0	
percent	.2			16.9			4.3			6.4			8.0			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	21	0	0	2	0	0	19	0	0	52	0	3	160	0	7	
percent	2.1			.2			1.9			5.6			17.0			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	146	0	29	10	0	0	4	0	0	6	0	0	13	0	0	
percent	17.8			1.0			.4			.6			1.3			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #9 Grade 5 Date 2/23 Activity Ex./V.B.

teacher talk	41.48	student talk	11.59
teacher nonverbal	12.57	student nonverbal	31.56
total contribution	54.05	total contribution	43.16
silence	1.12	teacher as teacher	100
confusion	1.68	environment as tea.	
total	2.79	student as teacher	

teacher question ratio-
verbal 3.50 nonverbal 14.29 total 4.46

teacher response ratio-
verbal 57.14 nonverbal 59.21 total 57.83

pupil initiation response ratio-
verbal 86.75 nonverbal 47.79 total 58.25

unstructured ratio-
verbal 2.78 nonverbal 1.85 total 2.22

% verbal 54.75 % nonverbal 45.25 content cross 38.97

% class structure-whole 87.5 part 12.5 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8-8	8.94	4. 8-3	6.24	7. 8-5	4.05
2. 5-5	7.26	5. 5 -6	4.61	8. 8 -5	3.63
3. 5-8	6.98	6. 6 -8	4.33	9. 6 -8	3.35
				10.	

Matrices tallies

total	39	0	0	15	0	0	49	0	0	30	0	0	5	0	0	
percent	5.4			2.1			6.8			4.2			.7			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	138	0	0	12	0	0	54	0	0	29	0	0	
percent	.3			19.3			1.7			7.5			4.1			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	12	0	0	2	0	0	11	0	0	118	0	0	70	0	0	
percent	1.7			.3			1.5			16.8			6.8			
number	7			17			8			18			8			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	106	0	0	2	0	0	2	0	0	12	0	0	8	0	0	
percent	14.8			.3			.3			1.7			1.1			
number	18			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #10 Grade 1 Date 2/8 Activity Rn./Ob. Cors

teacher talk	32.77	student talk	5.94
teacher nonverbal	31.71	student nonverbal	27.47
total contribution	64.48	total contribution	33.40
silence	1.17	teacher as teacher	100
confusion	0.95	environment as tea.	
total	2.12	student as teacher	

teacher question ratio-

verbal 8.06 nonverbal 4.44 total 7.36

teacher response ratio-

verbal 27.64 nonverbal 54.33 total 45.62

pupil initiation response ratio-

verbal 71.43 nonverbal 2.32 total 14.60

unstructured ratio-

verbal 12.50 nonverbal 33.33 total 15.22

% verbal 39.66 % nonverbal 60.34 content cross 35.95

% class structure-whole 22.5 part 77.5 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8-8	14.10	4. 6-8	6.26	7.	
2. 5-5	13.47	5. 5-6	5.09	8.	
3. 6-6	7.95	6. 8-6	3.39	9.	
				10.	

Matrices tallies

total	24	0	0	28	0	0	10	0	0	110	0	0	15	0	0
percent	2.5			3.0			1.1			11.7			1.6		
number	2			12			3			13			4		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	2	0	0	171	0	0	43	0	0	74	0	0	111	0	0
percent	.2			18.1			4.6			7.8			11.8		
number	14			5			15			6			16		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	15	0	0	5	0	0	16	0	0	253	0	0	35	0	0
percent	1.6			.5			1.7			26.8			3.7		
number	7			17			8			18			8\		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	4	0	0	5	0	0	2	0	0	9	0	0	11	0	0
percent	.4			.5			.2			1.0			1.2		
number	18\			9			19			10			20		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #10 Grade 1 Date 1/20 Activity Rn/Rh/Bal

teacher talk	35.69	student talk	2.98
teacher nonverbal	37.18	student nonverbal	21.97
total contribution	72.86	total contribution	24.95
silence	0.89	teacher as teacher	62.03
confusion	1.29	environment as tea.	37.97
total	2.19	student as teacher	

teacher question ratio-
verbal 8.27 nonverbal 0.82 total 4.63

teacher response ratio-
verbal 33.33 nonverbal 49.62 total 42.37

pupil initiation response ratio-
verbal 26.67 nonverbal 18.10 total 19.12

unstructured ratio-
verbal 75.00 nonverbal 5.00 total 16.67

% verbal 39.96 % nonverbal 60.06 content cross 60.64

% class structure-whole 43.3 part 56.7 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-5	36.48	4. 6-5	4.67	7.	
2. 8-8	13.02	5. 3-3	4.47	8.	
3. 5-6	5.27	6.		9.	
				10.	

Matrices tallies

total	24	0	0	3	0	0	7	0	4	29	0	33	21	0	0				
percent	2.4			.3			1.1			6.2			2.1						
number	2			12			3			13			4						
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e				
total	2	0	0	163	0	70	115	0	126	41	0	2	38	0	19				
percent	.2			23.2			24.0			4.3			5.7						
number	14			5			15			6			16						
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e				
total	27	0	0	9	0	0	22	0	0	73	0	108	2	0	0				
percent	2.7			.9			2.2			18.0			.2						
number	7			17			8			18			8						
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e				
total	18	0	20	6	0	0	2	0	0	13	0	0	9	0	0				
percent	3.8			.6			.2			1.3			.9						
number	18			9			19			10			20						
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e				

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #10 Grade 3 Date 2/8 Activity R/Rh/Relay

teacher talk	29.13	student talk	10.21
teacher nonverbal	28.30	student nonverbal	27.70
total contribution	57.43	total contribution	37.91
silence	2.70	teacher as teacher	27.40
confusion	1.95	environment as tea.	43.32
total	4.65	student as teacher	29.28

teacher question ratio-
verbal 1.20 nonverbal 0.71 total 0.98

teacher response ratio-
verbal 12.73 nonverbal 11.58 total 12.00

pupil initiation response ratio-
verbal 9.56 nonverbal 1.08 total 3.37

unstructured ratio-
verbal 15.38 nonverbal 50.00 total 23.53

% verbal 41.29 % nonverbal 58.71 content cross 71.17

% class structure-whole 72.8 part 21.8 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-5	22.0	4. 8-8	9.68	7. 5-6	3.0
2. 5-8	20.95	5. 6-8	3.90	8.	
3. 8-5	20.5	6. 6-6	3.23	9.	
				10.	

Matrices tallies

total	5	0	0	6	0	0	2	0	0	3	2	0	4	0	0			
percent		.4			.5			.3			.4			.3				
number		2			12			3			13			4				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	2	0	0	59	114	156	38	86	156	20	18	1	51	31	0			
percent		.2			24.7			21.0			2.9			6.2				
number		14			5			15			6			16				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	8	0	0	2	0	0	4	1	118	123	99	143	11	0	0			
percent		.7			.2			9.2			27.4			.8				
number		7			17			8			18			8				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	2	0	0	2	0	0	2	0	0	6	19	1	15	19	2			
percent		.2			.2			.2			2.0			2.7				
number		18			9			19			10			20				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #10 Grade 3 Date 1/20 Activity Run/Rhy

teacher talk	35.77	student talk	1.12
teacher nonverbal	29.03	student nonverbal	64.79
total contribution	64.79	total contribution	32.49
silence	0.66	teacher as teacher	67.23
confusion	2.06	environment as tea.	32.77
total	2.72	student as teacher	

teacher question ratio-
verbal 3.57 nonverbal 0.91 total 2.26

teacher response ratio-
verbal 19.62 nonverbal 52.75 total 31.73

pupil initiation response ratio-
verbal 41.67 nonverbal 1.19 total 2.59

unstructured ratio-
verbal 60.00 nonverbal 50.00 total 55.56

% verbal 38.95 % nonverbal 61.05 content cross 55.15

% class structure-whole 85.3part 14.7no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-5	26.78	4. 5-6	8.90	7.	
2. 8-8	19.19	5. 6-8	6.74	8.	
3. 8-5	10.21	6.		9.	
				10.	

Matrices tallies

total	19	0	0	15	0	0	5	0	7	6	0	27	8	0	0
percent	1.8			1.4			1.1			3.1			.7		
number	2			12			3			13			4		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	2	0	0	148	0	68	149	0	68	82	0	34	38	0	0
percent	.2			20.2			20.3			10.9			3.6		
number	14			5			15			6			16		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	11	0	0	5	0	0	4	0	3	188	0	143	2	0	0
percent	1.0			.5			.7			31.0			.2		
number	7			17			8			18			8		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	2	0	0	3	0	0	2	0	0	22	0	0	7	0	0
percent	.2			.3			.2			2.1			.7		
number	18			9			19			10			20		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #10 Grade 5 Date 1/20 Activity V.B. Game

teacher talk	19.77	student talk	3.13
teacher nonverbal	24.41	student nonverbal	48.81
total contribution	44.18	total contribution	51.94
silence	1.25	teacher as teacher	100
confusion	2.63	environment as tea.	
total	3.88	student as teacher	

teacher question ratio-
verbal 5.00 nonverbal 4.35 total 4.79

teacher response ratio-
verbal 12.07 nonverbal 10.07 total 10.63

pupil initiation response ratio-
verbal 80.00 nonverbal 70.77 total 71.33

unstructured ratio-
verbal 40.0 nonverbal .72 total 3.38

% verbal 25.53 % nonverbal 74.47 content cross 23.53

% class structure-whole 2 part 98 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8\-8\	23.90	4. 6-8	6.88	7. 6-8\	4.63
2. 5 -5	13.14	5. 6-6	6.63	8.	
3. 8\-6	10.64	6. 8-8	5.63	9.	
				10.	

Matrices tallies

total	4	0	0	4	0	0	3	0	0	11	0	0	5	0	0	
percent	.5			.5			.4			1.4			.6			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	95	0	0	44	0	0	45	0	0	132	0	0	
percent	.3			11.9			5.5			5.6			16.5			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	6	0	0	2	0	0	5	0	0	114	0	0	12	0	0	
percent	.8			.3			.6			14.3			1.5			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	274	0	0	8	0	0	2	0	0	21	0	0	10	0	0	
percent	34.3			1.0			.3			2.6			1.3			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #10 Grade 5 Date 2/8 Activity Ru/Rh/Pach

teacher talk	31.84	student talk	6.62
teacher nonverbal	29.83	student nonverbal	27.09
total contribution	61.67	total contribution	33.71
silence	3.14	teacher as teacher	74.18
confusion	1.47	environment as tea.	25.82
total	4.62	student as teacher	

teacher question ratio-
verbal 5.97 nonverbal 0.87 total 3.89

teacher response ratio-
verbal 24.11 nonverbal 39.81 total 33.61

pupil initiation response ratio-
verbal 14.14 nonverbal 1.48 total 3.97

unstructured ratio-
verbal 14.29 nonverbal 33.33 total 20.00

% verbal 39.93 % nonverbal 60.07 content cross 56.86

% class structure-whole 100 part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-5	18.73	4. 8-8	10.64	7. 6-8	4.01
2. 8-5	13.58	5. 6-6	5.22	8.	
3. 5-8	12.78	6. 5-6	4.08	9.	
				10.	

Matrices tallies

total	25	0	0	20	0	0	9	0	0	35	0	31	20	0	0
percent	1.7			1.3			.6			4.4			1.3		
number	2			12			3			13			4		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	2	0	0	253	0	62	167	0	61	68	0	16	99	0	29
percent	.1			21.1			15.3			5.6			8.6		
number	14			5			15			6			16		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	23	0	0	2	0	0	31	0	54	269	0	130	11	0	1
percent	1.5			.1			5.7			26.7			.8		
number	7			17			8			18			8		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	2	0	2	2	0	0	2	0	0	22	0	0	47	0	0
percent	.3			.1			.1			1.5			3.1		
number	18			9			19			10			20		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #11 Grade 1 Date 1/20 Activity Exer./Circuit

teacher talk	42.32	student talk	2.50
teacher nonverbal	26.97	student nonverbal	27.09
total contribution	69.29	total contribution	29.57
silence	1.12	teacher as teacher	100
confusion		environment as tea.	
total	1.12	student as teacher	

teacher question ratio-
verbal 6.92 nonverbal 2.06 total 5.08

teacher response ratio-
verbal 43.89 nonverbal 70.59 total 54.52

pupil initiation response ratio-
verbal 75.00 nonverbal 49.77 total 51.90

unstructured ratio-
verbal 33.33 nonverbal 1.85 total 5.69

% verbal 44.82 % nonverbal 55.18 content cross 41.57

% class structure-whole 57.8 part 37.2 no tea. influence 5.0

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	21.60	4. 6-8	8.86	7. 8-8	3.37
2. 3 -3	12.11	5. 8-6	6.24	8.	
3. 8\ -8\	9.86	6. 5-6	4.87	9.	
				10.	

Matrices tallies

total	16	0	0	5	0	0	63	0	0	79	0	0	11	0	0
percent	2.0			.6			7.9			9.9			1.4		
number	2			12			3			13			4		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	2	0	0	148	0	0	95	0	0	90	0	0	33	0	0
percent	.2			18.5			11.9			11.2			4.1		
number	14			5			15			6			16		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	11	0	0	2	0	0	5	0	0	109	0	0	10	0	0
percent	1.4			.2			.6			13.6			1.0		
number	7			17			8			18			8\		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	106	0	0	5	0	0	2	0	0	0	0	0	9	0	0
percent	13.2			.6			.2			0			1.1		
number	18\			9			19			10			20		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #11 Grade 1 Date 2/11 Activity Exer./Kickball

teacher talk	43.96	student talk	8.29
teacher nonverbal	19.78	student nonverbal	25.37
total contribution	63.74	total contribution	33.67
silence	2.00	teacher as teacher	100
confusion	.60	environment as tea.	
total	2.60	student as teacher	

teacher question ratio-

verbal 21.07 nonverbal 6.90 total 17.53

teacher response ratio-

verbal 31.84 nonverbal 60.36 total 42.76

pupil initiation response ratio-

verbal 42.17 nonverbal 27.95 total 31.95

unstructured ratio-

verbal 5.71 nonverbal 2.82 total 3.77

% verbal 52.85 % nonverbal 47.15 content cross 55.64

% class structure-whole 100 part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-5	11.09	4. 5-6	4.90	7. 8-6	3.4
2. 5-8	6.79	5. 4-8	4.00	8.	
3. 6-8	6.69	6. 8-8	3.60	9.	
				10.	

Matrices tallies

total	34	0	0	6	0	0	23	0	0	61	0	0	55	0	0
percent	3.4			.6			2.3			6.1			5.5		
number	2			12			3			13			4		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	6	0	0	206	0	0	81	0	0	88	0	0	42	0	0
percent	.6			20.6			8.1			8.8			4.2		
number	14			5			15			6			16		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	34	0	0	2	0	0	48	0	0	183	0	0	33	0	0
percent	3.4			.2			4.8			18.3			3.3		
number	7			17			8			18			8		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	69	0	0	2	0	0	2	0	0	6	0	0	20	0	0
percent	6.9			.2			.2			.6			2.0		
number	18			9			19			10			20		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #11 Grade 3 Date 2/3 Activity Exer./Circuit

teacher talk	37.97	student talk	7.49
teacher nonverbal	20.04	student nonverbal	32.28
total contribution	58.01	total contribution	39.77
silence	2.22	teacher as teacher	100
confusion		environment as tea.	
total	2.22	student as teacher	

teacher question ratio-
verbal 9.69 nonverbal 1.94 total 7.24

teacher response ratio-
verbal 28.57 nonverbal 51.72 total 37.73

pupil initiation response ratio-
verbal 77.46 nonverbal 50.65 total 55.70

unstructured ratio-
verbal 30.91 nonverbal 2.58 total 10.00

% verbal 45.46 % nonverbal 54.54 content cross 54.22

% class structure-whole 47.9 part 52.1 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	14.56	4. 6-8	6.94	7. 8 -6	4.43
2. 8 -8	13.50	5. 5-8	6.12	8. 8 -5	3.90
3. 8 -5	8.70	6. 5-6	4.64	9.	
				10.	

Matrices tallies

total	29	0	0	9	0	0	9	0	0	36	0	0	22	0	0
percent	3.1			.9			.9			3.8			2.3		
number	2			12			3			13			4		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	2	0	0	205	0	0	101	0	0	72	0	0	40	0	0
percent	.2			21.6			10.7			7.6			4.2		
number	14			5			15			6			16		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	23	0	0	2	0	0	16	0	0	151	0	0	38	0	0
percent	2.4			.2			1.7			15.9			4.0		
number	7			17			8			18			8		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	151	0	0	17	0	0	4	0	0	0	0	0	21	0	0
percent	15.9			1.8			.4			0			2.2		
number	18			9			19			10			20		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #11 Grade 3 Date 2/11 Activity Exer./Nor. Kickball/Para.

teacher talk	43.74	student talk	2.9
teacher nonverbal	25.85	student nonverbal	25.34
total contribution	69.60	total contribution	28.23
silence	1.86	teacher as teacher	100
confusion	.31	environment as tea.	
total	2.17	student as teacher	

teacher question ratio-
verbal 8.56 nonverbal 2.90 total 6.74

teacher response ratio-
verbal 21.37 nonverbal 76.79 total 46.91

pupil initiation response ratio-
verbal 28.57 nonverbal 24.49 total 24.91

unstructured ratio-
verbal 25.0 nonverbal 1.67 total 4.41

% verbal 46.95 % nonverbal 53.05 content cross 63.60

% class structure-whole part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-5	23.27	4. 5-8	7.55	7.	
2. 8-5	10.34	5. 5-6	5.58	8.	
3. 6-8	8.07	6.		9.	
				10.	

Matrices tallies

total	16	0	0	11	0	0	12	0	0	75	0	0	25	0	0	
percent	1.7			1.1			1.2			7.8			2.6			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	4	0	0	267	0	0	134	0	0	93	0	0	24	0	0	
percent	.4			27.6			13.9			9.6			2.5			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	10	0	0	2	0	0	20	0	0	185	0	0	6	0	0	
percent	1.0			.2			2.1			19.1			.6			
number	7			17			8			18			8			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	59	0	0	2	0	0	1	0	0	3	0	0	18	0	0	
percent	6.1			.2			.1			.3			1.9			
number	18			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #11 Grade 5 Date 2/1 Activity Volleyball

teacher talk	50.13	student talk	2.78
teacher nonverbal	21.88	student nonverbal	24.66
total contribution	72.02	total contribution	27.44
silence	.54	teacher as teacher	100
confusion		environment as tea.	
total	.54	student as teacher	

teacher question ratio-
verbal 6.48 nonverbal 1.06 total 4.75

teacher response ratio-
verbal 37.34 nonverbal 87.27 total 50.23

pupil initiation response ratio-
verbal 22.58 nonverbal .73 total 2.94

unstructured ratio-
verbal 14.29 nonverbal 0.0 total 11.11

% verbal 52.91 % nonverbal 47.09 content cross 67.71

% class structure-whole 97.7 part no tea. influence 2.3

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-5	36.95	4. 5-8	6.19	7.	
2. 8-8	10.49	5. 6-8	4.75	8.	
3. 8-5	8.52	6. 5-6	3.14	9.	
				10.	

Matrices tallies

total	51	0	0	5	0	0	8	0	0	43	0	0	26	0	0			
percent	4.6			.4			.7			3.9			2.3					
number	2			12			3			13			4					
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	2	0	0	375	0	0	187	0	0	62	0	0	6	0	0			
percent	.2			33.6			16.8			5.6			.5					
number	14			5			15			6			16					
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	37	0	0	1	0	0	24	0	0	273	0	0	6	0	0			
percent	3.3			.1			2.2			24.5			.5					
number	7			17			8			18			8					
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	2	0	0	1	0	0	0	0	0	0	0	0	6	0	0			
percent	.2			.1			0			0			.5					
number	18			9			19			10			20					
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #11 Grade 5 Date 2/15 Activity Volleyball

teacher talk	34.26	student talk	12.79
teacher nonverbal	10.0	student nonverbal	35.08
total contribution	44.26	total contribution	47.87
silence	1.8	teacher as teacher	100
confusion	6.07	environment as tea.	
total	7.87	student as teacher	

teacher question ratio-
verbal 14.36 nonverbal 6.90 total 13.42

teacher response ratio-
verbal 43.98 nonverbal 72.04 total 52.43

pupil initiation response ratio-
verbal 47.44 nonverbal 53.74 total 52.05

unstructured ratio-
verbal 2.7 nonverbal .43 total .99

% verbal 53.11 % nonverbal 46.89 content cross 31.07

% class structure-whole part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 8\ -8\	8.20	4. 8 -8\	7.21	7. 5 -6	3.44
2. 8 -8	7.95	5. 6 -8	5.08	8. 8\ -3	3.36
3. 5 -5	7.62	6. 8\ -2	4.18	9. 8 -5	3.11
				10.	

Matrices tallies

total	63	0	0	34	0	0	32	0	0	33	0	0	29	0	0	
percent	5.2			2.8			2.6			2.7			2.4			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	173	0	0	27	0	0	82	0	0	24	0	0	
percent	.2			14.2			2.2			6.7			2			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	39	0	0	2	0	0	82	0	0	198	0	0	72	0	0	
percent	3.2			.2			6.7			16.2			5.9			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	229	0	0	2	0	0	1	0	0	74	0	0	22	0	0	
percent	18.8			.2			.1			6.1			1.8			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #12 Grade 1 Date 1/28 Activity Ex/Da/Pc

teacher talk	36.37	student talk	4.46
teacher nonverbal	26.48	student nonverbal	31.23
total contribution	62.85	total contribution	35.69
silence	0.78	teacher as teacher	48.59
confusion	0.68	environment as tea.	51.41
total	1.45	student as teacher	

teacher question ratio-
verbal 12.27 nonverbal 3.00 total 9.38

teacher response ratio-
verbal 28.39 nonverbal 69.36 total 50.00

pupil initiation response ratio-
verbal 58.70 nonverbal 35.09 total 38.04

unstructured ratio-
verbal 4.76 nonverbal 2.56 total 3.33

% verbal 41.51 % nonverbal 58.49 content cross 42.29

% class structure-whole 87.7 part 12.3 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-5	18.01	= 4. 3 -3	7.08	7. 5-3	3.69
2. 8-8	10.58	5. 8\ -8\	6.60	8. 8-6	3.49
3. 6-8	7.08	6. 3 -5	4.17	9.	
				10.	

Matrices tallies

total	14	0	0	2	0	0	30	0	0	49	0	69	27	0	0		
percent	1.4			.2			2.9			11.4			2.6				
number	2			12			3			13			4				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	3	0	0	95	0	98	21	0	76	32	0	55	18	0	11		
percent	.3			18.7			9.4			8.4			2.8				
number	14			5			15			6			16				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	24	0	0	23	0	1	19	0	0	79	0	130	9	0	0		
percent	2.3			2.3			1.8			20.3			.9				
number	7			17			8			18			8\				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	22	0	89	18	0	0	2	0	0	7	0	0	7	0	1		
percent	10.8			1.7			.2			.7			.8				
number	18\			9			19			10			20				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #12 Grade 1 Date 2/11 Activity E/Tag/J/Rh

teacher talk	36.35	student talk	4.27
teacher nonverbal	31.57	student nonverbal	26.88
total contribution	67.92	total contribution	31.14
silence	0.94	teacher as teacher	67.92
confusion		environment as tea.	32.08
total	0.94	student as teacher	

teacher question ratio-
verbal 5.15 nonverbal 1.65 total 3.95

teacher response ratio-
verbal 34.72 nonverbal 78.31 total 59.28

pupil initiation response ratio-
verbal 84.00 nonverbal 24.76 total 32.88

unstructured ratio-
verbal 66.67 nonverbal 1.77 total 14.29

% verbal 40.61 % nonverbal 59.39 content cross 40.96

% class structure-whole part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	19.28	4. 8\ -8\	4.78	7.	
2. 3 -3	11.32	5. 5 -6	3.84	8.	
3. 6 -8	6.40	6.		9.	
				10.	

Matrices tallies

total	18	0	9	6	0	12	40	0	0	64	0	113	10	0	2
percent	2.3			1.5			3.4			15.1			1.0		
number	2			12			3			13			4		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	2	0	0	189	0	32	101	0	18	63	0	32	32	0	15
percent	.2			18.9			10.2			8.1			4.0		
number	14			5			15			6			16		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	19	0	12	4	0	3	7	0	1	197	0	40	29	0	11
percent	2.6			.6			.7			20.2			3.4		
number	7			17			8			18			8\		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	6	0	70	2	0	0	2	0	0	0	0	0	5	0	6
percent	6.5			.2			.2			0			.9		
number	18\			9			19			10			20		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #12 Grade 3 Date 1/28 Activity Ex./Norbal

teacher talk	36.42	student talk	7.27
teacher nonverbal	22.89	student nonverbal	33.17
total contribution	39.39	total contribution	40.43
silence	0.25	teacher as teacher	92.48
confusion		environment as tea.	7.52
total	0.28	student as teacher	

teacher question ratio-
verbal 7.43 nonverbal 1.87 total 5.85

teacher response ratio-
verbal 34.73 nonverbal 59.28 total 47.01

pupil initiation response ratio-
verbal 80.46 nonverbal 66.25 total 68.80

unstructured ratio-
verbal 58.57 nonverbal .76 total 12.91

% verbal 43.69 % nonverbal 56.31 content cross 44.86

% class structure-whole part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	17.38	4. 3 -3	4.18	7. 5-6	3.09
2. 8\ -8\	14.95	5. 8\ -6	3.68	8.	
3. 8 -8	5.96	6. 6 -8	3.17	9.	
				10.	

Matrices tallies

total	18	0	0	5	0	0	33	0	0	91	0	3	20	0	0	
percent	2.1			.4			2.8			7.9			1.7			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	200	0	49	85	0	20	76	0	0	76	0	0	
percent	.2			20.8			8.8			6.3			3.8			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	33	0	0	22	0	0	17	0	0	116	0	18	29	0	0	
percent	2.8			1.8			1.4			11.2			2.4			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	261	0	0	41	0	0	2	0	0	0	0	0	3	0	0	
percent	21.8			3.4			.2			0			.3			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #12 Grade 3 Date 2/11 Activity E/Tag/J/So

teacher talk	42.46	student talk	5.43
teacher nonverbal	24.12	student nonverbal	25.93
total contribution	66.58	total contribution	31.35
silence	1.81	teacher as teacher	87.94
confusion	0.26	environment as tea.	12.06
total	2.07	student as teacher	

teacher question ratio-
verbal 9.32 nonverbal 2.68 total 7.60

teacher response ratio-
verbal 28.07 nonverbal 69.64 total 48.67

pupil initiation response ratio-
verbal 71.43 nonverbal 46.18 total 50.35

unstructured ratio-
verbal 4.44 nonverbal 1.44 total 2.17

% verbal 48.15 % nonverbal 51.85 content cross 52.80

% class structure-whole 61.3 part 37.9 no tea. influence 0.8

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	21.53	4. 5-6	4.91	7. 5-3	3.53
2. 8\ -8\	8.79	5. 8-8	4.31	8. 8-5	3.36
3. 6 -8	5.77	6. 8-6	3.79	= 9. 3-5	3.36
				10.	

Matrices tallies

total	21	0	0	23	0	0	27	0	0	56	0	38	30	0	0			
percent	1.8			2.0			2.3			8.1			2.6					
number	2			12			3			13			4					
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	3	0	0	270	0	22	90	0	19	99	0	3	39	0	2			
percent	.3			25.2			9.4			8.8			3.5					
number	14			5			15			6			16					
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	21	0	0	10	0	0	18	0	0	158	0	4	43	0	0			
percent	1.8			.9			1.6			14.0			3.7					
number	7			17			8			18			8\					
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			
total	85	0	52	2	0	0	2	0	0	3	0	0	21	0	0			
percent	11.8			.2			.2			.3			1.8					
number	18\			9			19			10			20					
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e			

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #12 Grade 5 Date 1/28 Activity Ex/VB/KKB

teacher talk	40.28	student talk	7.59
teacher nonverbal	19.74	student nonverbal	31.48
total contribution	60.02	total contribution	39.07
silence	0.61	teacher as teacher	93.62
confusion	0.30	environment as tea.	6.38
total	0.91	student as teacher	

teacher question ratio-
verbal 14.84 nonverbal 1.83 total 10.96

teacher response ratio-
verbal 19.72 nonverbal 43.02 total 28.51

pupil initiation response ratio-
verbal 68.00 nonverbal 62.70 total 63.73

unstructured ratio-
verbal 72.55 nonverbal 1.03 total 15.83

% verbal 48.18 % nonverbal 51.82 content cross 49.09

% class structure-whole 100 part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	22.87	4. 8\ -6	3.95	7.	
2. 8\ -8\	11.2	5. 6 -8\	3.64	8.	
3. 8 -8	6.17	6.		9.	
				10.	

Matrices tallies

total	20	0	0	2	0	0	8	0	0	32	0	3	38	0	0		
percent	2.0			.2			.8			3.5			3.8				
number	2			12			3			13			4				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	2	0	0	200	0	18	107	0	0	72	0	1	30	0	0		
percent	.2			22.1			10.8			7.4			3.0				
number	14			5			15			6			16				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	41	0	0	19	0	0	24	0	0	75	0	41	14	0	0		
percent	4.1			1.9			2.4			11.7			1.4				
number	7			17			8			18			8\				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	193	0	0	37	0	0	2	0	0	3	0	0	6	0	0		
percent	19.5			3.7			.2			.3			.6				
number	18\			9			19			10			20				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #12 Grade 5 Date 2/11 Activity Ex/VB

teacher talk	41.21	student talk	8.20
teacher nonverbal	26.24	student nonverbal	22.70
total contribution	67.45	total contribution	30.89
silence	1.34	teacher as teacher	95.74
confusion	0.32	environment as tea.	4.26
total	1.65	student as teacher	

teacher question ratio-
verbal 9.14 nonverbal 1.18 total 6.55

teacher response ratio-
verbal 22.54 nonverbal 74.39 total 47.77

pupil initiation response ratio-
verbal 86.54 nonverbal 34.72 total 48.47

unstructured ratio-
verbal 2.22 nonverbal 2.00 total 2.11

% verbal 49.72 % nonverbal 50.28 content cross 53.98

% class structure-whole 100 part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	27.11	4. 6-8	5.75	7. 8\ -5	3.78
2. 8\ -8\	6.70	5. 5-6	4.89	8.	
3. 8 -8	6.15	6. 3-3	4.33	9.	
				10.	

Matrices tallies

total	19	0	0	16	0	0	20	0	0	76	0	30	32	0	0
percent	1.5			1.3			1.6			8.4			2.5		
number	2			12			3			13			4		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	2	0	0	307	0	11	158	0	9	106	0	1	36	0	1
percent	.2			25.1			13.2			8.4			2.9		
number	14			5			15			6			16		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	27	0	0	5	0	0	14	0	0	186	0	2	88	0	0
percent	2.1			.4			1.1			14.2			6.9		
number	7			17			8			18			8\		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e
total	98	0	0	2	0	0	2	0	0	4	0	0	17	0	0
percent	7.7			.2			.2			.3			1.3		
number	18\			9			19			10			20		
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #13 Grade 1 Date 1/28 Activity Ex/Dance

teacher talk	35.63	student talk	7.74
teacher nonverbal	35.34	student nonverbal	20.92
total contribution	70.96	total contribution	28.65
silence	0.38	teacher as teacher	73.93
confusion		environment as tea.	26.07
total	0.38	student as teacher	

teacher question ratio-
verbal 9.64 nonverbal 1.20 total 6.25

teacher response ratio-
verbal 35.48 nonverbal 73.40 total 59.02

pupil initiation response ratio-
verbal 22.22 nonverbal 3.20 total 8.33

unstructured ratio-
verbal 27.78 nonverbal 28.57 total 28.0

% verbal 43.36 % nonverbal 56.64 content cross 56.64

% class structure-whole 100 part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-5	20.92	4. 3-3	6.88	= 7. 3-5	4.39
2. 8-8	14.80	5. 5-8	4.49	8. 5-3	4.20
3. 8-5	7.07	6. 5-6	4.39	9. 6-8	3.72
				10.	

Matrices tallies

total	29	0	0	7	0	0	15	0	0	71	0	71	24	0	0		
percent	2.8			.7			1.4			13.6			2.3				
number	2			12			3			13			4				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	2	0	0	186	0	39	153	0	12	54	0	0	42	0	0		
percent	.2			21.5			15.8			5.2			4.0				
number	14			5			15			6			16				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	26	0	0	12	0	0	26	0	37	98	0	114	13	0	0		
percent	2.5			1.1			6.0			20.2			1.2				
number	7			17			8			18			8				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	5	0	0	5	0	0	2	0	0	0	0	0	4	0	0		
percent	.5			.5			.2			0			.4				
number	18			9			19			10			20				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #13 Grade 1 Date 2/10 Activity E/Rhy/Bal

teacher talk	41.16	student talk	6.03
teacher nonverbal	20.00	student nonverbal	29.74
total contribution	61.16	total contribution	35.77
silence	3.07	teacher as teacher	71.22
confusion		environment as tea.	28.78
total	3.07	student as teacher	

teacher question ratio-
verbal 13.51 nonverbal 0 total 10.54

teacher response ratio-
verbal 40.77 nonverbal 56.90 total 48.37

pupil initiation response ratio-
verbal 75.44 nonverbal 44.48 total 49.70

unstructured ratio-
verbal 0 nonverbal 0 total 0

% verbal 47.20 % nonverbal 52.80 content cross 58.52

% class structure-whole 100 part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5 -5	12.28	4. 8-5	6.24	7. 5-6	4.97
2. 8\ -8\	7.20	5. 5-8\	6.14	8. 6-8	4.44
3. 8\ -5	6.93	6. 5-8	5.61	9.	
				10.	

Matrices tallies

total	33	0	0	9	0	0	20	0	0	48	0	9	35	0	0		
percent	3.5			1.0			2.1			6.0			3.7				
number	2			12			3			13			4				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	0	0	0	137	0	87	30	0	43	46	0	8	41	0	9		
percent	0			23.7			7.7			5.7			5.3				
number	14			5			15			6			16				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	23	0	0	0	0	0	14	0	0	91	0	65	43	0	0		
percent	2.4			0			1.5			16.5			4.6				
number	7			17			8			18			8\				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	74	0	51	0	0	0	0	0	0	0	0	0	29	0	0		
percent	13.2			0			0			0			3.1				
number	18\			9			19			10			20				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #14 Grade 1 Date 1/23 Activity E/Rhy/Relay

teacher talk	43.66	student talk	8.71
teacher nonverbal	26.44	student nonverbal	19.11
total contribution	70.10	total contribution	27.82
silence	.2	teacher as teacher	75.84
confusion	1.88	environment as tea.	24.16
total	2.08	student as teacher	

teacher question ratio-
verbal 2.76 nonverbal 1.08 total 2.11

teacher response ratio-
verbal 11.26 nonverbal 35.37 total 19.74

pupil initiation response ratio-
verbal 11.36 nonverbal 15.03 total 13.88

unstructured ratio-
verbal 60.0 nonverbal 0 total 15.38

% verbal 54.26 % nonverbal 45.74 content cross 67.03

% class structure-whole 100 part no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-5	26.24	4. 6-8	7.92	7.	
2. 8-5	13.86	5. 8-6	5.25	8.	
3. 5-8	11.98	6. 5-6	4.85	9.	
				10.	

Matrices tallies

total	13	0	0	5	0	0	4	0	0	24	0	0	8	0	0		
percent	1.3			.5			.4			2.4			.8				
number	2			12			3			13			4				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	2	0	0	220	0	62	121	0	62	122	0	0	38	0	0		
percent	.2			27.9			18.1			12.1			3.8				
number	14			5			15			6			16				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	12	0	0	15	0	0	18	0	60	104	0	60	4	0	0		
percent	1.2			1.5			7.7			16.2			.4				
number	7			17			8			18			8				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	29	0	0	6	0	0	0	0	0	19	0	0	2	0	0		
percent	2.9			.6			0			1.9			.2				
number	18			9			19			10			20				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #14 Grade 1 Date 2/15 Activity Exercise/Duck Duck Goose

teacher talk	29.05	student talk	7.12
teacher nonverbal	23.42	student nonverbal	32.49
total contribution	52.47	total contribution	39.61
silence	1.03	teacher as teacher	78.07
confusion	6.89	environment as tea.	21.93
total	7.92	student as teacher	

teacher question ratio-
verbal 4.73 nonverbal 2.02 total 3.68

teacher response ratio-
verbal 41.90 nonverbal 51.13 total 47.06

pupil initiation response ratio-
verbal 22.58 nonverbal 38.87 total 35.94

unstructured ratio-
verbal 14.29 nonverbal 1.82 total 3.23

% verbal 43.05 % nonverbal 56.95 content cross 43.05

% class structure-whole 90.5 part 9.5 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-8	10.79	4. 8-8	7.12	7. 5-6	4.13
2. 8-5	10.33	5. 6 -8	4.59	8. 3-8	3.67
3. 5-5	8.50	6. 8 -3	4.48	9. 8-8	3.44
				10.	

Matrices tallies

total	13	0	0	9	0	0	31	0	0	25	0	34	7	0	0		
percent	1.3			1.0			3.6			6.8			.8				
number	2			12			3			13			4				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	2	0	0	108	0	33	38	0	31	55	0	0	63	0	0		
percent	.2			16.2			7.9			6.3			7.2				
number	14			5			15			6			16				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	6	0	0	2	0	0	31	0	17	97	0	76	12	0	0		
percent	.7			.2			4.5			19.9			1.4				
number	7			17			8			18			8				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		
total	108	0	0	2	0	0	2	0	0	60	0	0	9	0	0		
percent	12.4			.2			.2			6.9			1.0				
number	18			9			19			10			20				
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e		

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #14 Grade 3 Date 2/15 Activity Exercise/Steal the Bacon

teacher talk	28.68	student talk	6.98
teacher nonverbal	29.99	student nonverbal	25.41
total contribution	58.67	total contribution	32.39
silence	2.07	teacher as teacher	74.59
confusion	6.87	environment as tea.	25.41
total	8.94	student as teacher	

teacher question ratio-
verbal 6.82 nonverbal 4.46 total 5.90

teacher response ratio-
verbal 33.33 nonverbal 52.76 total 46.00

pupil initiation response ratio-
verbal 40.63 nonverbal 25.32 total 28.62

unstructured ratio-
verbal 7.69 nonverbal 3.39 total 4.71

% verbal 42.53 % nonverbal 57.47 content cross 50.71

% class structure-whole 87.6 part 11.2 no tea. influence

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-5	14.39	4. 8-3	6.76	7. 6-8	3.27
2. 5-8	8.29	5. 3-8	6.11	8.	
3. 8-5	7.20	6. 5-6	5.23	9.	
				10.	

Matrices tallies

total	7	0	0	7	0	0	22	0	0	21	0	58	12	0	0
percent		.8			.8			2.4			8.6			1.3	
number		2			12			3			13			4	
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	5	0	0	136	0	28	79	0	28	43	0	0	72	0	0
percent		.5			17.6			11.7			4.7			7.9	
number		14			5			15			6			16	
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	15	0	0	5	0	0	10	0	28	83	0	91	24	0	0
percent		1.6			.5			4.1			19.0			2.6	
number		7			17			8			18			8	
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	57	0	0	2	0	0	2	0	0	63	0	0	19	0	0
percent		6.2			.2			.2			6.9			2.1	
number		18			9			19			10			20	
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

CAFAIS OBSERVATION DATA PER TEACHER BY LESSON
MEAN PERCENTAGES AND RATIOS

Teacher #14 Grade 3 Date 1/23 Activity Exercise/Movement/Relay

teacher talk	39	student talk	6.52
teacher nonverbal	26.43	student nonverbal	27.36
total contribution	65.43	total contribution	33.88
silence	.35	teacher as teacher	88.82
confusion	.35	environment as tea.	11.18
total	.70	student as teacher	

teacher question ratio-
verbal 11.93 nonverbal 2.25 total 8.68

teacher response ratio-
verbal 27.67 nonverbal 55.80 total 40.74

pupil initiation response ratio-
verbal 76.79 nonverbal 11.06 total 23.71

unstructured ratio-
verbal 90.7 nonverbal 7.69 total 59.42

% verbal 45.87 % nonverbal 54.13 content cross 41.21

% class structure-whole 98.9 part no tea. influence 1.1

Parent cell percentages

parent cell	%	parent cell	%	parent cell	%
1. 5-5	19.44	4. 8-8	5.70	7. 5-6	5.70
2. 8-8	8.85	5. 8-3	5.36	8.	
3. 6-8	7.10	6. 3-8	5.01	9.	
				10.	

Matrices tallies

total	14	0	0	3	0	0	30	0	0	41	0	33	21	0	0	
percent	1.6			.3			3.5			8.6			2.4			
number	2			12			3			13			4			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	2	0	0	154	0	1	86	0	1	87	0	0	51	0	0	
percent	.2			18.0			10.1			10.1			5.9			
number	14			5			15			6			16			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	28	0	0	10	0	0	13	0	0	148	0	61	4	0	0	
percent	3.3			1.2			1.5			24.3			.5			
number	7			17			8			18			8\			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	
total	24	0	0	39	0	0	2	0	0	3	0	0	3	0	0	
percent	2.8			4.5			.2			.3			.3			
number	18\			9			19			10			20			
agent	t	s	e	t	s	e	t	s	e	t	s	e	t	s	e	

BIBLIOGRAPHY

BIBLIOGRAPHY

Agnew, Michele. "Comparisons of Female Teaching and Coaching Behaviors in Secondary Schools." Completed Research in Health, Physical Education, and Recreation, 20 (1978), 133.

Allard, Raymond Joseph. "Teacher Behavior Directed Toward Individual Students in Physical Education Classes: The Influence of Student Gender and Class Participation." Diss. University of Massachusetts, 1979.

Amidon, Edmund J., and J. B. Hough, eds. Interaction Analysis: Theory, Research and Application. Reading, Massachusetts: Addison-Wesley, 1967.

Barrette, Gary Thomas. "A Descriptive Analysis of Teacher Behavior in Physical Education Classes." Dissertation Abstracts International, October, 1977, 38:1973A, 1974.

Batchelder, Ann Streeter. "Process Objectives, Observed Behaviors, and Teaching Patterns in Elementary Math, English, and Physical Education Classes." Diss. Boston Univ., 1976.

Beale, Judith Carol. "Employment of the Elementary School Physical Education Specialist and a Model for Change." Dissertation Abstracts International, March, 1975, 36:5912A.

Brown, Janie Poole. "A Description of Dyadic Student/ Teacher Interactions in the Physical Education Activity Class." Diss. University of North Carolina at Greensboro, 1980.

Cheffers, John, and others. Interaction Analysis: An Application to Nonverbal Activity. 2nd edition. Minneapolis: Association for Productive Teaching, 1980.

Cheffers, John T. F. "Observing Teaching Systematically." Quest, 28 (1977), 17-28.

Chertok, Harry L. "A Comparison of Two Methods of Teaching Ball Handling Skills to Third Grade Students." Completed Research in Health, Physical Education, and Recreation, 19 (1976), 133.

Costello, John Anthony. "A Descriptive Analysis of Student Behavior in Elementary School Physical Education Classes." Diss. Columbia Univ. Teachers' College, 1977.

Countiss, Joyce Ruth. "The Effects of Training in the Spectrum of Teaching Styles on the Attitudes and Classroom Behavior of In-Service Physical Education Teachers." Dissertation Abstracts International, July, 1976, 37:175A, 176.

Crowe, Patricia Barbara. "An Observational Study of Teachers' Expectancy Effects and Their Mediating Mechanisms on Students in Physical Education Activity Classes." Diss. University of North Carolina at Greensboro, 1977.

Dauer, Victor P., and Robert P. Pangrazi. Dynamic Physical Education for Elementary School Children. 5th ed. Minneapolis: Burgess Publishing Company, 1975.

DeGenaro, Paul. "Experimental Use of the Video Tape Recorder as an Evaluative Instrument and Observational Tool in the Supervision of Student Teachers of Physical Education." Diss. Ohio State Univ., 1969.

Doenges, Rudolf E. "Use of Elementary Students as Modifiers of Physical Education Teacher Behavior." Completed Research in Health, Physical Education, and Recreation, 19 (1977), 133.

Dougherty, Neil J., and Diane Bonanno. Contemporary Approaches to the Teaching of Physical Education. Minneapolis: Burgess Publishing Company, 1979.

Eble, Kenneth Eugene. The Craft of Teaching. San Francisco: Jossey-Bass Publishers, 1976.

Faulkner, Marsha E. "A Comparison of the Teaching Behavior of Male and Female Pre-Service Secondary Physical Education Teachers." Completed Research in Health, Physical Education, and Recreation, 19 (1977), 134.

Flanders, Ned A. Analyzing Teaching Behavior. Reading, Massachusetts: Addison-Wesley Publishing Company, 1970.

Gaudet, Eugene E. "Interaction Analysis as the Independent Variable on In-Service Training for Adapted Physical Education Teachers." Diss. Boston Univ., 1982.

Getty, Harold L. "Effects of Instruction and Supervision in Interaction Analysis on the Teaching Behavior of Student Teachers." Completed Research in Health, Physical Education, and Recreation, 20 (1978), 135.

Grant, Barbara Moll. "A Method for Analyzing the Non-Verbal Behavior (Physical Motions) of Teachers of Elementary School Language Arts." Dissertation Abstracts International, October, 1970, 31:1685A.

Gusthart, John Leonard. "A Descriptive Study of the Instructional Behavior of Preservice Physical Education Teachers as They Progressed Through Field-Based Experiences." Dissertation Abstracts International, July, 1982, 43:107-A.

Hall, J. Tillman, Nancy Hall Sweeny, and Jody Hall Esser. Physical Education in the Elementary School. Santa Monica, California: Goodyear Publishing Company, Inc., 1980.

Hendrickson, Carmon E. "The Use of the Cheffers Adaptation of Flanders Interaction Analysis System in a Pre-Service Training Program of Physical Education Teachers." Completed Research in Health, Physical Education, and Recreation, 19 (1977), 135.

Hensley, Ralph Willard. "An Assessment of Physical Education Programs in Selected Elementary Schools." Dissertation Abstracts International, August, 1974, 36:765A.

Hoffman, Hubert A., Jane Yound, and Stephen E. Klesius. Meaningful Movement for Children: A Development Theme Approach to Physical Education. Boston: Allyn and Bacon, Inc., 1981.

Hope, Dorett M. "The Development and Evaluation of Recreation Programs and Their Effect Upon the Morale and Functioning of Elderly Nursing Home Residents." Diss. Boston Univ., 1978.

Hughley, Jr., Carey. "Modification of Teaching Behaviors in Physical Education." Dissertation Abstracts International, November, 1973, 34:2368A.

Humphrey, James H., Alice M. Love, and Leslie W. Irvin. Principles and Techniques of Supervision in Physical Education. Princeton, New Jersey: Princeton Book Company, 1980.

Keane, Francis J., and John T. F. Cheffers. "The Relationship of Sex, Leader Behavior, Leadership Style and Coach Player Interaction." Paper presented at the American Alliance for Health, Physical Education and Recreation Convention, Kansas City, March, 1978.

Kirchner, Glenn. Physical Education for Elementary School Children. 4th ed. Dubuque, Iowa: Wm. C. Brown Company Publishers, 1978.

Kletch, Gail Lee Sparbanie. "A Study of the Effect of Selected Variables on the Observation of Selected Teacher Behaviors in a Physical Education Activity Class." Dissertation Abstracts International, January, 1978, 38:4026A.

Kramer, Melvin. "A Factor Analytic Study of the Relationship Between Teacher Personality and Selected Classroom Patterns of Verbal Interaction." Dissertation Abstracts International, October, 1973, 34:1753A.

Lewis, Katherine Ann. "The Effect of Interaction Analysis on Achieving Verbal Control of Teaching Styles in Elementary Physical Education." Dissertation Abstracts International, March, 1980, 40:4958A.

Locke, L. F. "Research on Teaching Physical Education: New Hope for a Dismal Science." Quest, 28 (1977), 2-16.

Lombardo, Bennett John. "The Observation and Description of the Teaching Behavior and Interaction of Selected Physical Education Teachers." Diss. Boston Univ., 1979.

Lydon, Mary C., and John T. F. Cheffers. "The Effect of Variable Decision-Making Teaching Models on Elementary Age Children: Measures of Body Coordination and Self-Concept." Paper presented at the American Alliance for Health, Physical Education and Recreation Convention, Seattle, April, 1978.

Mancini, Victor H., John T. F. Cheffers, and Leonard D. Zaichkowsky. "Decisionmaking in Elementary Children: Effects on Attitudes and Interaction." Research Quarterly, 47 (1976), 80-85.

Mancini, Victor H., Enza Inturrisi, and Patricia A. Frye. "The Use of Interaction Analysis: Its Effect on Attitudes and Teaching Behaviors of Student Teachers." Paper presented at the American Alliance for Health, Physical Education and Recreation Convention, New Orleans, March, 1979.

Mancuso, Josephine Theresa. "The Verbal and Nonverbal Interaction Between Secondary School Physical Education Student Teachers and Their Pupils." Dissertation Abstracts International, July, 1974, 35:172A.

Mangold, Lana Carole Paramore. "Pupil-Teacher Dyadic Interaction in Desegregated Elementary Classrooms." Dissertation Abstracts International, July, 1974, 35: 172A.

Martinek, Thomas J., Leonard D. Zaichkowsky, and John T. F. Cheffers. "Decision-Making in Elementary Age Children: Effects on Motor Skills and Self-Concept." Research Quarterly, 48 (1977), 349-357.

Martinek, Thomas J., and Susan B. Johnson. "Teacher Expectations: Effects on Dyadic Interactions and Self-Concept in Elementary Age Children." Research Quarterly, 50 (1979), 60-70.

Mawdsley, Roberta H. "Comparison of Teacher Behavior in Regular and Adapted Movement Classes." Diss. Boston Univ., 1977.

Nygaard, Gary Allen. "An Analysis of Verbal Interaction in Physical Education Classes." Diss. University of Oregon, 1971.

Oien, Fred M. "Teacher Behavior Directed Toward Individual Students in Physical Education Classes: Perceived Student Skill and Personality as Variables." Diss. University of Massachusetts, 1979.

Ortiz, Alba Alicia. "A Study of Teacher-Pupil Dyadic Verbal Interactions in Four First Grade Classrooms." Dissertation Abstracts International, February, 1977, 37:5042A.

Quarterman, Jerome. "A Descriptive Analysis of Teaching Physical Education in the Elementary Schools." Diss. Ohio State Univ., 1978.

_____. "An Observational System for Observing the Verbal and Nonverbal Behaviors Emitted by Physical Educators and Coaches." Physical Educator, 27 (March 1980), 15-20.

Rochester, Diane A. "The Effects of Supervision and Instruction in Use of Interaction Analysis on Teaching Behavior and Effectiveness of Pre-Service Teachers." Completed Research in Health, Physical Education, and Recreation, 19 (1977), 140-141.

Scriber, K. "The Relationship Between Perceived Teaching Behavior and Observed Teaching Behavior of School Health Educators." Masters Thesis, State University College at Cortland, 1977.

Siedentop, Daryl. Physical Education: Introductory Analysis. Dubuque, Iowa: W. C. Brown Company, 1972.

Singer, Robert, and Walter Dick. Teaching Physical Education: A Systems Approach. 2nd ed. Boston: Houghton-Mifflin Company, 1980.

Stevens, Mary E., Victor H. Mancini, and Patricia A. Frye. "Effects of Instruction and Supervision in Interaction Analysis on the Teaching Behavior of Selected Physical Educators." Paper presented at the American Alliance for Health, Physical Education and Recreation Convention, Boston, April, 1981.

Thomas, Maxine Lorine. "The Relationship Between Self and Students' Perception of Affective Characteristics and Selected Verbal and Nonverbal Behaviors of Seventh Grade Physical Education Teachers. Dissertation Abstracts International, November, 1980, 41:2009A, 2010.

Twa, Hughie Ian. "A Comparison of Male and Female Physical Education Teachers' Verbal and Nonverbal Interaction at the Elementary School Level." Diss. University of Oregon, 1979.

Vogel, Richard D. "The Effects of Instruction and Supervision in Cheffers Adaptation of Flanders Interaction Analysis System on the Teaching Behavior of Student Teachers." Completed Research in Health, Physical Education, and Recreation, 19 (1977), 142-143.

Williams, Wendell Clarence. Student-Teacher Perception and Elementary School Classroom Verbal Interaction." Dissertation Abstracts International, October, 1972, 33:1452A.

Wood, David E. "Analyzing Adventure Education: Behavior Patterns, Relating Objectives, Sequencing Activities, and Discovering Student Perspective." Paper presented at the American Alliance for Health, Physical Education and Recreation Convention, New Orleans, March, 1979.

Young, Richard Morrison. "The Effects of Various Reinforcement Contingencies on a Second Grade Physical Education Class." Dissertation Abstracts International, February, 1974, 34:4852A.

Zakrajsek, Dorothy Berlin. "Patterns of Instructional Time Utilization and Related Teacher Characteristics for Seventh Grade Physical Education in Selected Schools." Dissertation Abstracts International, March, 1974, 34: 5701A.