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STUDENT PERCEPTION OF THE CLASSROOM ENVIRONMENT IN SECONDARY SCHOOL PHYSICAL EDUCATION

The University of North Carolina at Greensboro ED.D. 1979

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STUDENT PERCEPTION OF THE CLASSROOM ENVIRONMENT IN SECONDARY SCHOOL PHYSICAL EDUCATION

by

Dianne Stanton Ward

A Dissertation Submitted to
the Faculty of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

Greensboro
1979

Approved by

Kate T. Barrett
Dissertation Advisor

APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of the Graduate School at the University of North Carolina at Greensboro.

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October 26, 1979
Date of Acceptance by Committee

WARD, DIANNE STANTON. Student Perception of the Classroom Environment in Secondary School Physical Education. (1979) Directed by: Dr. Kate R. Barrett.

The purpose of the study was to investigate student perception of the classroom environment in physical education. The study compared perceptions of male and female secondary school students in classes taught by male and female teachers.

A total of 822 students from six schools in the State of South Carolina participated in the study. Students were randomly selected from the required physical education classes of 23 male and female teachers. The Learning Environment Inventory (LEI) and an information questionnaire were administered to all students. The LEI, based on the Getzels and Thelen multidimensional theory of classrooms, was a 105-item questionnaire which tested for 15 classroom dimensions typical of secondary school classes.

Data were analyzed on 10 groups formed by student sex and the amount of class time spent with a teacher of a particular sex. This technique was employed due to the variable organization structures which existed within the schools. Collection of data occurred at a time when legal mandates had been issued for coeducational physical education classes.

The GLM procedure of the Statistical Analysis System (SAS) was utilized to compute two-way analysis of variance

on the data. This technique identified those LEI dimensions which produced significant differences among the 10 subgroups based on student sex and teacher sex/time. When significant differences were determined, Bonferroni multiple comparisons were simutaneously calculated to determine which paired comparisons were responsible for the significant F ratio. The Plot procedures of SAS was also employed to illustrate male and female differences within each dimension.

Significant differences were found among the 10 subgroups in 14 of the 15 LEI dimensions at the .05 level of probability. Differences in perception of certain dimensions were attributable to either of the two main effects and/or the interaction of the two effects.

Post hoc multiple comparisons found distinct differences among the 10 subgroups. Each group formulated at least one LEI dimension which was significantly different from another group. Group 1 (male students taught by male teachers all of the time), Group 2 (male students taught by male teachers most of the time), and Group 10 (female students taught by female teachers all the time) demonstrated more distinct LEI characteristics than did the other groups. Only one LEI dimension was found to be significant for Group 9 (male students taught by female teachers all of the time). The sample size for this group, however, was extremely small.

Female students appeared to be more affected by the varied organizational structures which occurred within the classes. Perceptions of female students changed dramatically with changes in teacher sex and time for many of the LEI dimensions. Male students demonstrated a sensitivity to change in certain of the LEI dimensions. Both male and female students were more satisfied with classes taught all the time by teachers of their same sex.

Classes taught by male teachers had more distinct LEI characteristics than did classes taught by female teachers. Three particular dimensions were significantly perceived by both male and female students: high Apathy, high Disorganization, and low Goal Direction. For the female teacher, no particular pattern was demonstrated.

ACKNOWLEDGMENTS

Numerous persons have contributed to the production and completion of this study. The efforts of these individuals are gratefully acknowledged at this time.

The writer would like to thank her advisor, Dr. Kate Barrett, for the support and direction extended by her throughout the process of this study. Her ability to critically appraise, yet thoughtfully guide contributed untold proportions to this work. A special appreciation is extended to Dr. Pearl Berlin who contributed to the inception of this project and continually gave support by her interest and encouragement. Sincere appreciation is expressed to the remaining committee members, Dr. Gail Hennis, Dr. Richard Weller, and Dr. Marie Riley, for their continued interest and critical appraisal.

Dr. John Spurrier of the Department of Statistics, the University of South Carolina and Ms. Dorsey Condon and Ms. Ione Cockrell of the Computer Service Center were invaluable contributors to the statistical procedures and computer programming utilized in this study. Sincere appreciation is extended to these individuals.

To the students, teachers, and administrators who made this study possible, the writer expresses a deep appreciation and a hope that the information can be of some benefit.

A special note of graditude is expressed to Mrs. Frances Blanton whose expert design and typing skills contributed to the quality of this manuscript. Her expedient and skillful technique and her kind, genial nature were particularly helpful in the final stages of preparation.

To my parents who have always been a source of great support for me and my daughters Johnna and Faris, who have shared in all my efforts, I express my most sincere love and appreciation. Also, to friends too numerous to mention, a sincere note of appreciation is extended.

And finally to the one person who helped me put it all together, lending not only technical advice but never ending moral support, my husband, Bruce McClenaghan, I express my greatest love and sincere appreciation.

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CHAPTER I

INTRODUCTION

Throughout the field of education, effort is continually being made to improve the quality of a student's learning experience. Various areas within the educator's control are subject to evaluation and adaptation for the major purpose of enhancing learning. Classroom environment is one aspect of the educational process which has recently come under consideration.

Sprinthall and Moser (1971) stressed the importance of the learning environment in a number of critical areas: the learning of skills and knowledges, the students' attitude toward school, the development of learning processes, and the social stratification of students. Moreover, these authors were of the opinion that learning and attitudes toward learning have been a direct result of the schooling process. Macdonald, Wolfson, and Zaret (1973) emphasized the importance of the conditions and quality of the environment as being more important than the particular learning experiences themselves. Some authors have been even more emphatic on the effect that classroom environment has on the individual. Bauer (1975) stated that encounters with teachers, curriculum, peers, and other cultural forces

produce opinions about self, learning, and education which will influence behavior throughout life.

While classroom environment, or climate as it has been called, has been recognized as an important concern within the learning process, there are two main problems connected with its study: (a) a valid conception of environment, and (b) the appropriate methodology for its study. Throughout educational literature, the concept of environment has been conceived of through several interpretations. One conception which occurs periodically in the literature interpreted environment as the physical properties of the classroom. Such factors as the color of the walls, the temperature of the room, and the amount of background noise were major concerns with this approach. Another and probably the most commonly held conception of the classroom environment, assessed the nature and frequency of a teacher's particular classroom behavior as the primary influence upon the class's unique atmosphere.

One shortcoming in these orientations to environment has been the narrowness of their focus. Within each, environment was viewed as being produced by a single factor. Other variables within the classroom were not considered or deemphasized. This eliminated all other classroom variables from receiving consideration in the assessment and understanding of environment. Recently, a new conception of environment has been utilized in research

literature which perceives classroom climate as a complex educational component comprised of a number of variables (Walberg, 1974). These variables function both independently and interactively to produce a unique learning atmosphere within each class.

Getzels and Thelen (1960) have constructed a theory for studying the classroom in which classrooms are viewed as complex social systems. Within this model, school classes, teacher and student personality needs, individual role-expectations, and classroom climate are thought to interact and to predict group behavior including learning. Such variables as the teacher, the student, the particular subject matter, the materials and teaching techniques, and the organizational structure are examples of the factors which are considered to affect the learning environment of a classroom. If environment does have a potential to affect learning, research efforts should broaden to include an assessment of all factors as they interact within the classroom to add to the knowledge gained through the assessment of a single factor (Randhawa & Fu, 1973; Trickett & Moos, 1973).

One attempt to consider multiple factors in the classroom environment has been in the area of the "hidden curriculum." Research has shown that a "hidden curriculum" exists within some classrooms which may have a definite

effect on learning (Cowell, 1972; Jackson, 1968). The "hidden curriculum" is defined as those factors operating implicitly within the learning environment of which individuals are often unaware. Examples of hidden curricula which may affect the learner are such factors as the struggle for power between the student and teacher and the dynamics of a group-oriented process (Jackson, 1968). Although the hidden curriculum research has considered a number of classroom influences, the information is limited to those factors which are implicit within the classroom.

Certain research studies do exist, however, on the interactive multifactor classroom environment. For example, research conducted with Harvard Project Physics, an experimental approach to teaching physics, found classroom characteristics did interact and affect learning (Anderson, 1968, 1970; Walberg, 1968, 1969a, 1969b). The studies discovered that perceived satisfaction seemed to relate positively to individual productivity and achievement under a variety of conditions. The possibility that climate variables may be valid predictors of academic success requires the study and assessment of the total classroom environment.

In addition to the conceptionalization of environment, a second problem associated with the evaluation of classroom environment has been the selection of appropriate methods through which to collect information. The single

factor approach to environment has utilized a variety of techniques for obtaining information on classrooms. Studies involving the most common research focus, the teacher, have utilized classroom observation as the basis for data collection. A teacher's impact upon the classroom environment is measured through the amount and kind of interaction allowed through a specially designed observation system (Flanders, 1970; Rosenshine, 1970). Typically, each observation system requires a trained observer or observers to visit the classroom for one or more visits and record the nature of the classroom interaction. This process is time consuming, difficult to quantify, and often lacking in internal consistency. Also, observers bring themselves into the group which may alter the normal behavior pattern causing the behavior to be contrived or false (Randhawa & Fu, 1973). Compounding these concerns is the awareness of the observer's own individual bias which may affect the information through observation.

Although observation systems have been the most frequently employed technique for gathering information in classrooms, student perception may be a more appropriate method for use in determining environment. This approach to data collection requires students to report their feelings or impressions of a particular circumstance. Research to date indicates that students' perceptions of the classroom may have a direct influence on their behavior which

includes learning (Bauer, 1975; Silbergeld, Koenig, & Manderscheid, 1975). Limited information was available, however, on student perception of the classroom learning environment per se. Since student perception appears to be a key to student behavior, research on the classroom learning environment as perceived by students seems valuable.

It is suggested that all subject matter areas must begin to look at their particular classroom learning environments (Walberg, 1969a). Physical education has many classroom variables which could influence learning. How these variables interact and affect students can provide potentially valuable information for the researcher and teacher in physical education. The classroom research which does exist in physical education is mainly on observation of teacher behavior or student attitude with some recent efforts devoted to the hidden curriculum (Bain, 1976; Bookout, 1967; Locke, 1977). As a whole, however, research on classroom environment in physical education is limited and in need of additional support.

Statement of the Problem

It was the purpose of this study to determine students' perceptions of the physical education learning environment. The study sought to assess the dimensions of classroom environment as perceived by secondary school students in physical education.

More specifically, the researcher sought to answer the following questions:

1. What do students perceive as the dimensions of the classroom learning environment in physical education?

2. Are there differences in the perceptions of male and female students or of students relative to the sex of the teacher when assessing the classroom learning environment in physical education?

Definitions

The following definitions represent key ideas around which this study focused. The terms have been defined as they existed for the conduct of the research.

1. Coeducational class: a class which has 40%-60% of its composition being female students.

2. Dimensions of the classroom environment: those concepts identified by the Learning Environment Inventory (LEI), an instrument for measuring student perception of the classroom environment (Anderson, 1973; pp. 25-26; Lawrenz, 1976, p. 316).

a. cohesiveness: the extent to which a feeling of intimacy exists among individuals in the class.

b. diversity: the extent to which a class provides for a range of student interests and activity.

c. formality: the extent to which behavior within the class is structured by formal rules.

d. speed: the extent to which students perceive the rate of progress of a class by comparing themselves with other members of the group.

e. environment: the extent to which a class is supplemented by adequate space and equipment.

f. competition: the extent to which students perceive themselves in contention with other members of the group for attention, grades, or other forms of reward.

g. friction: the extent to which conflict exists among members of the class.

h. goal direction: the extent to which goals of a class are recognized by the class members.

i. favoritism: the extent to which differential treatment of students exists in the class.

j. difficulty: the extent to which work of the class is perceived to be difficult.

k. apathy: the extent to which students feel no affinity with class activities.

l. democratic: the extent to which all students participate in class decisions.

m. cliqueness: the extent to which special groups or cliques exist in the class.

n. satisfaction: the extent to which students find satisfaction with the class.

o. disorganization: the extent to which the class is perceived as being unorganized.

3. Learning environment (climate): the atmosphere or setting produced within a class as a result of multiple variables functioning independently and interactively to produce a particular impression.

4. Physical education classroom: the gymnasium, playing field, court, or other area where instruction is conducted under the classification of physical education.

5. Required physical education: the unit of instruction required by law at the secondary school level.

6. Secondary school: a school dealing with students who are at least in the ninth and no more advanced than the twelfth grade.

7. Single-sex class: a class composed exclusively of students of one particular sex.

8. Student perception: the cognitive and affective impression that each student formulates through daily classroom involvement.

Assumptions Underlying the Study

The following assumptions were accepted in regard to the study:

1. Student self-report is a valid source of information for the study.

2. The physical education classroom experience has some influence on a student's perceptions of physical education.

3. Students will respond honestly and accurately.

4. The Learning Environment Inventory (LEI), properly administered, is a valid instrument for use with physical education classes.

Scope of the Study

The boundaries of the research were established by the following factors:

1. Data on student perception of the classroom learning environment were obtained through the administration of the Learning Environment Inventory (LEI), an instrument designed to assess student perception of the learning climate.

2. Subjects for the study were 822 secondary school students from five school districts in South Carolina.

3. Classes were selected randomly from the required physical education program at each of the schools. All students had been enrolled in required physical education classes since the beginning of the school year. Subjects were from 41 classes of the 23 teachers involved with the study.

4. Students who had ever failed physical education were eliminated from the study.

CHAPTER II

REVIEW OF LITERATURE

The conceptualization and assessment of classroom environment has recently gained a more important position as an area of theoretical and methodological concern (Apple, 1976; Randhawa & Fu, 1973; Walberg, 1976). The learning potential of a classroom is thought to be directly related to environment (Anderson, 1970, 1971; Anderson & Walberg, 1968; Anderson, Walberg & Welch, 1969; Walberg, 1969a, 1969b; Walberg & Anderson, 1968, 1972).

Environment has traditionally been conceptualized as the product of a single factor's influence with such elements as a classroom's physical properties and teacher behavior being common areas for study. It is becoming increasingly apparent, however, that studying the classroom environment entails more than focusing on single factors; it requires looking at the environment as a complex educational component comprised of a number of interacting variables. It is the complex interaction of these variables which gives the educational setting its distinct characteristics (Talmadge & Eash, 1979).

In addition to the problem of conceptualization, the method of data collection in classroom environment research

has been a concern. Observation systems have been the primary technique utilized in studying the classroom. This method, however, has not provided the most accurate information since the observer brings an outside influence as well as a personal bias into the classroom. Through the utilization of a student self-report technique, the problem of a biased outsider is eliminated. Student's perceptions are vital to the study of classroom environment since motivation for learning greatly depends upon their interest and satisfaction in a particular subject area (Yamamoto, Thomas & Karns, 1969).

In order to best understand the ramifications of this educational component and its value to physical education, it was necessary to study the literature on classroom environment. The areas selected for review which directly related to this study were: (a) the classroom environment and its effects on learning, (b) the Learning Environment Inventory, and (c) the classroom environment in physical education. The secondary school level was selected as the focus for investigation in this study as a supplement to traditional environment inquiry which has usually centered on the elementary school.

Classroom Environment and Its effects on Learning

Much of the consistent variability in student performance can be attributed to the aptitude of the learner and the environment of learning, leaving only a small portion to be determined by the teacher's actual instruction (Walberg, 1970). In view of the importance of environment as a manipulatable factor in the learning process, educational researchers are broadening the focus of interest from measures of the individual to include measures of the classroom.

Certain questions need to be answered in studying classroom environment. How can environment be assessed? What are the research findings pertaining to subject matter, grade level, teacher sex, and classroom characteristics and their relationship to the classroom learning environment?

Assessment of Classroom Environment

In studies which viewed environment as a dynamic social system with multiple interacting factors, the self-report technique has been utilized effectively, particularly when student perception was the desired information. In employing self-report, it was necessary for the researcher to determine the degree of objectivity desired from the respondents. Low inference measures required respondents to make few judgmental responses, but utilized quantitative

information such as number of actual practice opportunities or amount of educational resources. In responses which required high inference decisions, the subjects responded in a subjective manner giving feelings or perceptions about such things as class organization, instructional materials, or teaching style (Rosenshine, 1970). This high inference method of assessment usually took the form of a questionnaire with a number of statements depicting typical classrooms. The respondent was asked to indicate the degree to which these statements reflected the particular classroom in question.

In addition to selecting the degree of objectivity desired from a respondent, researchers studying the field of environment have also considered theories which have provided the basis upon which many assessment instruments were constructed. The Murray needs press was a theory which utilized a dual concept of personal needs and environmental press in order to understand the classroom environment. In this theory, environment was seen to be a complex of press factors related to a corresponding set of personality needs. Press, in this case, was seen on a general label for stimulus, treatment, or process variables (Randhawa & Fu, 1973). The term "need" referred to particular characteristics of individuals including factors such as drive, maturation, and goals.

Stern, Stein, and Bloom (1956) developed the High School Characteristics Index based on the Murray needs model. The classroom learning environment was measured by assessing students' perceptions of 30 independent press scales through a 300-item true/false questionnaire. Factor analysis was used to select the prominent press variables. A second instrument designed utilizing the Murray need's model was the Class Atmosphere Scale (CAS) which was developed with the assumption that "perception was the primary determinant of manifest classroom behavior" (Silbergeld et al., 1975, p. 151). The CAS measured perceived perception along 12 climate dimensions and discriminated statistically among teachers, subjects, and classes, as well as classes conducted by the same teacher.

Based on Murray's need press theory, the Class Activities Questionnaire (CAQ) was developed by Steele, House, and Kerins (1971) to assess cognitive and affective dimensions of the instructional setting. The CAQ utilized student observation for a more objective method of climate assessment and assessed four major dimensions of the instructional environment, each dimension being composed of a number of factors. The 16 factors were represented by a 25-item questionnaire. The CAQ was used successfully in a large-scale evaluation of the State of Illinois' gifted program (Steele et al., 1971).

Lewin (1936) developed a theory that behavior was the result of two independent forces operating in a dynamic space. These variables, person and environment, had to be reduced to similar dimensions in order to be compared quantitatively. Based on this concept, Rayder and Bödy (1975) developed the Educational Forces Inventory to assess an individual's classroom behavior in relationship to the environment. Force fields were plotted by determining particular influences in the classroom, the teaching style for example, and measuring the subject's perceived strength of these influences. When all subjects' force fields were plotted, the environmental factors which had the most influence on the learning environment were determined.

Getzels and Thelen (1960) proposed a theory for studying classrooms in which each classroom was viewed as a unique social system. The theory supported the idea that within all working groups, including the classroom group, certain characteristics exist in common. All groups have a goal they seek to achieve, have participants who are enjoined to achieve the goal, have a system for control or leadership, and have their own unique character. Basically, the theory stated that the participants within a group are governed by their individual role expectations. In classrooms, both teacher and student continually struggle with the interactions of self and role.

This concept of independent and interactive classroom factors generated the Learning Environment Inventory (LEI), an instrument which assessed environment within that given context. The LEI was selected as most appropriate for use in this study and will be discussed in detail at a later point in this chapter.

Research Findings on Classroom Environment

Subject matter, grade level, and classroom learning environment. Many educators claimed that the quality of the educational experience was more closely related to the method or process of learning than to the content of the subject matter (Anderson, G. J., 1971). In fact, many contemporary theorists (Bruner, 1960; Macdonald et al., 1973) stressed a student-centered discovery process of learning as more important than the particular content. The actual effects of subject matter on student perception of the learning environment have been somewhat overlooked in educational evaluation. In addition, grade level and pupil sex were potentially important variables which need to be considered (Anderson, G. J., 1971).

Subject matter was found to produce different environmental effects as evidenced through certain research studies. Trickett and Moos (1973) developed the Class Environment Scale (CES) to assess the psycho-social environment of junior high and senior high school classrooms. The

90-item true/false questionnaire measured nine dimensions of the classroom and was found to discriminate significantly among 38 high school classrooms representing a variety of grade levels and subject matter areas.

Grade level was found to correlate negatively with positive attitudes toward the curriculum and toward others within the school setting (Neale, Gill, & Gismer, 1970; Yamamoto et al., 1969). As the grade level increased, attitude became less favorable for both boys and girls. Utilizing a semantic differential research technique, Yamamoto et al. (1969) found learning environment to be a function of grade level and subject matter. Student sex, although not a significant factor itself, was found to be a determinant of learning environment as it interacted with grade level and subject matter.

Teacher sex and classroom learning environment. Teacher sex seemed to have a significant influence on student perception of the classroom environment particularly as it interacted with other classroom variables. Subject matter and teacher sex interacted in a study by Ryans (1960) which found female English and social studies teachers to score higher than male teachers on systematic classroom behavior. Male teachers, on the other hand, tended to score higher with regard to emotional adjustment. In the math and science area, female teachers were found to have

more favorable attitudes toward pupils, more democratic practices, permissive educational viewpoints, and better verbal understanding, while male teachers scored significantly higher on emotional stability (Ryans, 1960). It should be noted, however, that Ryans utilized an observational data collection technique and his findings should be considered within that context.

In a research study designed to investigate the relationship of teacher heterosexuality to measures of student learning, Walberg, Welch and Rothman (1969) hypothesized that the correlation between male teacher heterosexuality and a measure of student learning would be higher for the sample of girls than for boys. Their theory of heterosexuality was based on literature which showed references to particular female behavior and on the fact that few females were involved in physics either as teachers or students.

The study considered the proportion of girls in the class as a variable which could influence the degree of effect of heterosexuality in each teacher's class. It was thought that heterosexuality needs predict heterosexual teacher behaviors in the classroom, as evidenced by such behaviors as disciplining students of the same sex, yet praising students of the opposite sex. As the proportion of girls in the classroom rises, the teacher's heterosexual needs and behavior may become less intense, hence the

employment of proportion of girls as a control variable. Chi-square tests showed that teacher heterosexuality was the only independent variable significantly related to the 10 measures of learning. The relationship was found for male students and was positive in the area of Science Understanding, but negative in several affective measures. The authors speculated that the notion of same-sex identification seemed to hold while girls' learning as measured in this study seemed less determined by the heterosexual attributes of the male teacher (Walberg et al., 1969).

Student/class characteristics and classroom learning environment. Certain teacher or student characteristics may be important considerations in determining the classroom learning environment. Lovitz (1974) found a significant relationship existed between the degree of stress felt by students in a particular classroom and class organization. Goldberg (1968) found compulsivity, or the measure of desired achievement in school, to be strongly related to pupils' perceptions of teacher behavior. Analysis showed that when pupils were differentiated as high or low on the compulsivity scale, their ratings of teachers' behaviors were significantly different. High compulsives, or those who worked carefully in order to achieve in school, perceived teachers as more non-authoritarian. Low compulsives, those less concerned

with doing well in school, perceived teachers as more authoritarian.

Johnson and Ahlgren (1976) studied the relationship of competitiveness and cooperativeness to the classroom through an extensive survey of an entire suburban school district. Student attitudes toward cooperation and competition were related through correlation coefficients to attitudes toward school personnel relationships, motivation to learn, relationships with other students, involvement in learning activities, personal worth as a student, and restraints in student behavior. Utilizing the Minnesota School Affect Assessment, Johnson and Ahlgren (1976) found cooperation and competition to be independent of one another, a person could be either low or high on either variable. Cooperativeness rated positively toward relationships with school personnel and motivation to learn, as well as with peer interaction and involvement in learning activities. Student restraints, or the desire for teacher control and set rules, also related positively to cooperativeness. Except at the high school level, self worth and one's ability to cooperate showed a high degree of relationship. Competitiveness appeared to be a more positive effect as students approached high school. All of the findings in the study should be considered carefully as only relationships were assessed, not cause and effect.

Summary

Subject matter, grade level, teacher sex, and selected pupil/class characteristics were shown to contribute to students' perceptions of the classroom learning environment. Often it was the interaction of these factors which caused the variability rather than the effect of a single characteristic. Student sex, however, showed little influence as a single factor and questionable influence as an interactive factor.

The Learning Environment Inventory

After a thorough review of the available instruments which measured the secondary school classroom learning environment, the Learning Environment Inventory was selected as most appropriate for use in this study. The development of the instrument and summaries of studies which utilized the LEI and its earlier forms are presented here with emphasis placed on particular findings relevant to this study.

Evolution of the Instrument

The LEI was a tool developed through a series of research and evaluation studies conducted by Harvard Project Physics (Anderson, 1970, 1971; Anderson et al., 1969; Walberg, 1968, 1969a, 1969b, 1969c; Walbert & Anderson, 1968). Harvard Project Physics was an experimental secondary school course which used a variety of new instructional

media and emphasized the philosophical, historical, and humanistic aspects of physics (Randhawa & Fu, 1973).

The initial studies conducted on Project Physics utilized the Classroom Climate Questionnaire (CCQ) to assess pupils' perceptions of the learning environment (Walberg, 1969b). The CCQ was a 90-item questionnaire based on the Group Dimension Description Questionnaire (GDDQ) as developed by Hemphill and Westie (1950). Although this questionnaire was designed to measure characteristics of adult groups rather than student classroom characteristics, the scales produced results which suggested certain dimensions which might be related to learning (Walberg, 1969b). Through an administration to 500 high school physics classes, the CCQ was updated utilizing factor analysis to determine the most appropriate dimensions of classroom environment (Walberg, 1969b). Although the updated scales of the CCQ were valid, additional use showed that they were unreliable and repetitious. Walberg's continued interest in developing an effective measure of classroom environment caused him to begin work on an extension of the CCQ. This new instrument was the LEI.

The LEI, as well as the CCQ and GDDQ, was based on the Getzels and Thelen (1969) theory which considered the classroom as a social system. In this context, the classroom was conceived as involving two phenomena which were both independent and interactive. The phenomena were the

institutions themselves which had certain roles ane expectations to fulfill certain goals. Secondly, the classroom system contained individuals (students and teachers) with particular personalities and needs who must function within the context of expected roles and personal goals. It was this independent/interactive conception of the classroom upon which the LEI was constructed.

The original LEI consisted of 14 scales measuring particular dimensions of the classroom. The dimensions selected for inclusion in the instrument were concepts which were judged to be good learning predictors, relevant to sociophychological theory, or valuable to the social psychology of the classroom (Anderson & Walberg, 1872). Each of the scales was assessed through seven item-statements which described that dimension of the classroom learning environment. The respondent was asked to indicate on a four-point scale the degree of agreement or disagreement with which each item described a particular class. The mean response of the seven items was the score for that particular dimension. A class mean could be computed by utilizing all students' scores for a particular dimension. The 14 scales were as follows (Walberg, 1969b, p. 444):

1. Cohesiveness
2. Friction
3. Cliqueness
4. Satisfaction
5. Speed
6. Difficulty
7. Apathy
8. Favoritism
9. Formality
10. Goal Direction
11. Democratic
12. Disorganization
13. Diversity
14. Environment

Research conducted using the LEI demonstrated the need for continued development of the instrument (Walberg & Anderson, 1972). In its most current form, the LEI had a total of 105 items measuring 15 classroom dimensions (Anderson et al., 1969; Anderson, G. J., 1971). Six of the items in the original questionnaire were modified and a "competitiveness" scale added. The LEI developed as an outgrowth of Harvard Project Physics to a position of accepted national and international use (Randhawa & Fu, 1973; Walberg, 1974).

Studies Utilizing the LEI

Within the last ten years, the environment has emerged as an important area of investigation in educational and social science research (Walberg, 1974). A series of studies conducted since 1966 have demonstrated that student perception of the classroom learning environment can be measured reliably and that environmental dimensions themselves

are valid predictors of learning (Walberg, 1969a). These variables within the classroom can also be manipulated and predicted from class size, characteristics of its members, mean intelligence, prior interests and achievement of pupils, and instructional factors (Anderson et al., 1969; Walberg & Ahlgren, 1970). Environmental and instructional variables, as well as individual aptitude and personality, have been shown to interact and produce differences in student perception (Anderson, 1968; Walberg, 1969b).

Affective and cognitive aspects of the learning environment. An investigation into the structural and affective dimensions of group climate was the purpose of a study conducted by Walberg (1968). In this study, 2000 juniors and seniors in 72 classes of Harvard Project Physics were given an IQ measure and the CCQ, an earlier form of the LEI. Through multiple regression analysis, the structural aspects of the classroom were found to predict the affective dimensions of the classroom. Canonical correlation revealed that a high degree of difference existed between the two measures with four main variables accounting for the difference. For the first variate generated, students who perceived their classes as disorganized and stratified also saw themselves as alienated, dissatisfied, and in conflict with on another. The second variate was more complex. Students in classes high on this canonical variable saw

themselves as being treated equally but having little say in class activities. Also they felt verbally restrained in class, less strictly controlled, and somewhat goal similar. Affectively, they saw themselves as having more heterogeneous interests, internal friction, and satisfaction as well as less classroom intimacy. The third variate suggested a closely controlled classroom where each student had a small but equal voice. The class gave up a degree of personal intimacy but exhibited a degree of group cohesiveness. The final variant was one of an automatic teacher who played favorites. Students felt the goals of the class were clear but students were not treated equally. There was some class intimacy but more internal friction and less heterogeneity of interests (Walberg, 1968).

Walberg and Ahlgren (1970) investigated the predictability of the LEI scales from a variety of teacher, student, and class characteristics. The LEI, three cognitive, and three noncognitive pretests were included as predictors with seven personality scales, an IQ test, and 20 biographical items selected for assessment. In a random sample, 56 teachers from the National Science Teachers Association agreed to teach a new course, Harvard Project Physics. After canonical correlations were computed on the pretest and environment batteries, a single significant correlation, which the authors called "cognitive-pretest," related

pretest and posttest batteries. The personality measures also produced a significant correlation which the authors called "acquiescence." Results showed that measures of student perception of the social environment of learning predicted cognitive and noncognitive learning in high school physics classes. The prediction was still significant after IQ, initial achievement, and interest in subject were statistically held constant. The implication of the findings was that cognitive and noncognitive learnings might be affected by manipulation of certain variables which affect classroom climate.

Student sex and the classroom learning environment. From 113 classes, climate properties of the LEI were related to gains in four measures of learning in an effort to explore group influence on individual learning (Anderson & Walberg, 1969). Many significant relationships occurred between classroom social climate and cognitive learning with the effects appearing qualitatively more important for female than for male students. Cohesiveness of the class interacted with student ability for females, confirming an hypothesis that high-ability females would respond positively to class intimacy while low-ability females would respond negatively. Friction produced differing effects for varied ability levels. Low Friction scores promoted achievement learning for students for low

ability, with students of highest ability being stimulated by high Friction. In this study the original form of the LEI was used which did not have a competition score. The author interpreted high Friction as a measure of competition and low Friction as a cooperation measure. High Difficulty scores appeared to produce greater learning. Cliqueness in classes tended to be negatively related to learning for boys but depended upon ability in girls. Other findings suggested that classroom social climate does affect individual learning and that climate properties affect learning as assessed by certain measures differently for students of different sex and mental abilities.

Teacher effect and course content. Walberg (1968) proposed to study the effect of teacher personality in determining classroom climate. The CCQ was used to measure student perception of the environment and two comprehensive measures of value and needs, the Allport-Vernon-Lindzey Study of Values and Edwards Personal Preference Schedule, were selected for administration to teachers. An attitudinal measure of teacher personality, the Minnesota Teachers Attitude Inventory, was also employed. Thirty-six male physics teachers voluntarily took the battery of personality tests. Some 2000 physics students in the experimental Harvard Project Physics course took the CCQ and an estimated IQ measure. The findings suggested several predictable

relationships among teachers' personalities and classroom climates, supporting the Getzels-Thelen theory of class as a social system. The personality pattern of the teacher, his/her needs, values, and attitudes interacted and predicted the climate of the class.

The effect of teacher experience on classroom climate was studied by Anderson et al. (1969). They proposed to determine the effect of teachers with and without prior experience in teaching a new course, Harvard Project Physics. With 75 teachers classified into groups of inexperienced experimental, experienced experimental, and experienced control, the study had as its hypothesis that a difference would exist in the learning climate of the three groups as perceived by students. A multiple discriminant analysis was used to separate the groups of classes in discriminant space. The distances between the rotated controls showed the two groups using the experimental courses to be closest together in discriminant space with the Control group being the furthest separated group. Both multivariant hypotheses were supported. Highly significant differences were found among the social climates of learning in the three groups, and the course effects appeared to account for considerably more variance than teacher selection and course experience.

Anderson, G. J., (1971) investigated the relationship of course content to pupils' perceptions of their classroom learning environment and the relationship of environmental measures to the effect of teacher sex and possible sex/course interaction. It was hypothesized that science and math classes would be found at one extreme of environment with humanities and languages at another. Randomly sampled classes within eight schools in Montreal, Canada, representing four major course groupings, were selected for study. The Science grouping was represented by physics, biology, and chemistry classes. Algebra and geometry represented Mathematics, and Humanities was represented by English and history classes. French was the fourth grouping.

Students were tested for IQ estimate by the Henmon-Nelson Test of Mental Abilities and for perception of classroom environment by the 15 dimension LEI. In addition, class size, girl/boy ratio, and class mean IQ were controlled and used as covariants. Results showed neither teacher sex nor teacher sex/course content interaction had any significant influence on student perception. Content, however, related significantly to the 15 LEI dimensions. Three significant orthogonal sets of learning environment differences associated with course content were uncovered. The first dimension accounted for 49% of the learning environment variance with dimension two and three accounting for

31% and 20%, respectively. Math classes were clearly separated from others while in one dimension humanities was at one extreme and science at the other.

The major course grouping were found to have the following characteristics (Anderson, G. J., 1971, p. 273):

> 1. Science: formal, fast paced; lacking Friction, Favoritism, Cliqueness, and Disorganization.
>
> 2. Mathematics: high scores on Friction, Favoritism, Difficulty, Cliqueness and Disorganization with low Formality and Goal Direction scores.
>
> 3. Humanities: lowest on Speed and Difficulty; resembling Math classes on Goal Direction and Science on Favoritism.
>
> 4. French: informal, fast paced, highly Goal Directed; lacking Friction, Favoritism and Disorganization. (p. 273)

A study to determine student perception of the learning environment in biology, chemistry, and physics was conducted using ten dimensions from the LEI. Lawrenz (1976) randomly selected 238 students from three types of science classes and assessed their perceptions of the classroom climate and achievement in science using the Test of Achievement in Science.

Significant results were found among the students' perceptions of environment in the three courses, with analysis revealing differences on nine of the 10 scales. Biology rated highest, then chemistry, then physics on the Diversity, Formality, Friction, Favoritism, and Cliqueness scales, with that order being reversed for Democratic

and Satisfaction scales. Chemistry, physics, and biology classes, respectively, were rated as highest on Difficulty and lowest on the Disorganization scale. Three contrasts were found to be significant: biology with physics, biology with chemistry, and chemistry with physics. Results for biology and physics were all significant at .01 level. Through discriminant function it was determined that of the 10 scales the most discriminating scales for course effects were Difficulty, Friction, and Formality.

Using eight subject areas, Walberg and Anderson (1972) studied the predictive validity of secondary school classes using the 15 scales of the LEI. Students took the LEI, an IQ measure, and achievement tests from each of the course areas. From 64 classes of physics, biology, chemistry, geography, math, and English Literature, it was found that both IQ and LEI scales contributed to the prediction of the total mean values even with IQ partialed out as a covariant analysis. The LEI scales were not found to be significantly diverse across subject areas except in two cases: Environment and Friction. These dimensions seemed to be more important in math, physics, and history classes. The results also showed that in classes which students rated as higher on Intimacy, Environment, Satisfaction, and Democracy, and lower in Speed, Friction, Favoritism, Cliqueness, Disorganization, and Apathy were the classes

in which students scored higher on standardized achievement tests. Relationships between the scales and achievement were consistent across classes of different mean IQ levels and nearly constant across subject areas.

Socioeconomic status. Randhawa and Michaylwk (1975) investigated rural and urban classrooms as potential effectors of differing classroom environments. They proposed to assess the differences in classes of various type subject matters and grade levels, the interaction between grade levels and subjects, and the effect of rural and urban classrooms on student perception.

For the study 96 classrooms from rural and urban Saskatchewan were selected. Approximately half were 8th grade and half 11th grade with equal division between rural and urban areas. The classrooms represented one of four subjects: mathematics, science, English, or social studies. Students were given the LEI and the Primary Mental Abilities Test (PMA) which served as a measure of aptitude. The testing was done by randomized data collection, a technique developed by Walberg and Welch (1967). The analysis of the data showed 8th grade classes to have higher social environment scores than 11th grade students; however, on the PMA the reverse was true with 11th grade students scoring higher. Eighth grade classrooms were characterized by Formality, Friction, Favoritism, and Cliqueness. Rural

classrooms were characterized by Cohesiveness, Cliqueness, Disorganization, and Competitiveness with urban classrooms being characterized by Environment, Difficulty, and Satisfaction.

Walberg, Singh, and Rasher (1977) conducted a study of student perception of the learning environment using five schools in India. Students were randomly selected from classes in either general science or social studies from five schools. An IQ test, the LEI, and an achievement test in the subject were given to those students rated by teachers and other students as most and least studious. Correlations between student perception of the learning environment and end of course achievement tests ranged from .41 to .81. With IQ controlled, the median partial correlation of perception and achievement was .43 for general science and .58 for social studies. Multiple regression analysis showed that the LEI scales accounted for substantial achievement variance beyond that accounted for by IQ.

Individual and group learning. Using 49 classes of Harvard Project Physics, Anderson and Walberg (1968) compared class gains in understanding, achievement, and attitude to group preceptions of classroom climate. The study used 14 scales of the CCQ with reliabilities over .40 and three criterion measures of achievement: Test on

Understanding Science, Physics Achievement Test, and a semantic differential test which measured the degree of interest in physics.

Results showed the weighted battery of class mean climate scores predicted 33%, 46%, and 34%, respectively, of the variances in the three criterion measures. Only Achievement, however, was statistically significant. It was found that Disorganization, Formality, and Social Heterogeneity were negatively related to achievement gains. Canonical analysis was used to explore this multidimensional model of learning. The first variate accounted for 51% of the variability in the complex criterion with high scores occurring in Friction, Personal Intimacy, and Strict Control scales, with low scores on Disorganization, Stratification, Subserviance, and Formality. The second variate showed a linear combination of climate scores related to the three criterion measures. The variate was characterized by gains in Physics Achievement which were not compatible with Science Understanding and positive attitudes toward physics. The authors speculated that the second variate demonstrated the current emphasis on achievement and authoritarian schooling which may be antithetical to a climate which fosters scientific understanding and interest.

A study examining the effects of class properties on individual learners was conducted using 800 pupils from

physics classes which employed the Harvard Project Physics course (Anderson, 1970). The students took the original LEI, criterion measures of physics achievement (understanding, science aptitude, and pupil activity), and an IQ measure. Results showed significant relationships and substantial differences in the effect of the classroom climate on different types of learning. Student sex and achievement level were also found to be variables which, in many cases, contributed significantly to perception of classroom climate. The results suggested that characteristics of class groups had significant effects on learning and that there were wide differences in these effects for students differing in ability and sex.

In a study designed to investigate the effects of student biographical and personality characteristics, intelligence, and perceived classroom climate on learning, Walberg (1969b) sampled students from classes of 57 physics teachers. The teachers agreed to teach any one of three physics courses entitled, "Multi-Media Systems" or Harvard Project Physics, or another "new" type science course, the Physical Sciences Study Committee. Students were measured on the 14 scale LEI, seven personality scales, 20 items from the Biographical Inventory, and an IQ measure. The fraction of girls in class and number of students in class were also used as variables. Of the five independent

variables three were shown to significantly predict the criteria: the learning environment variables, the biographical items, and the miscellaneous variable (carried almost solely by IQ). Biographical items and the learning environment scales each predicted a little less than 25% of the residual variance. IQ by itself accounted for about 12% of the variance in the cognitive criteria.

Canonical analysis revealed two significant components of relationship among the 15 independent variables and the dependent variables. The first variate was characterized by many independent variables positively correlated with learning. The second variate was characterized by the opposite of cognitive and noncognitive learning. The rotated loading implied two independent factors relating the independent and dependent variables. The first factor was characterized by classes of non-authoritarian students with high IQ's and high marks who saw their classes as difficult. These classes gained the most on the cognitive criteria. The second factor was characterized by classes with high gains on the noncognitive criteria. The results showed class characteristics to have a significant influence on class achievement.

Using eighth grade and 11th grade classes, Randawa and Hunt (1876) sampled classes in math, science, social studies, and English in order to determine the similarity

among aspects of the underlying classroom environment structure. The LEI and the PMA were administered to randomly selected students from classes in each of the four subject areas. From the analysis, three common factors were obtained for the 11th grade sample. Factor I was defined as the LEI formative characteristic group. Scales defining this factor seemed to reflect the emerging group interactions. The second factor was identified as the LEI operational characteristics factor. Significant positive loadings in this factor were obtained with the Formality, Environment, Goal Direction, and Apathy scales, with significant negative loadings on the Friction, Favoritism, and Democratic scales. The third factor clustered the PMA variables and seemed an obvious indicator of classroom intellectual climate. A congruent factor matrix for grade 8 indicated that Factor II was most similar to the criterion factor. Factor III was next in similarity with Factor I being the least similar.

Students from 144 physics classes were tested on six cognitive and noncognitive learning criteria, the LEI, and a measure of IQ (Walberg, 1969a). Multiple correlation showed the 14 environment scales to significantly predict all post tests. Difficulty was the best predictor of cognitive post tests with noncognitive measures being predicted best by the affective scales of Satisfaction, Friction, Cliqueness, and Apathy. Canonical plotting

revealed two learning environments which could be termed "cognitive and noncognitive press." These factors were significant predictors even with IQ, initial physics achievement, and interest in physical science partialed out.

A study to determine individual achievement and differing perceptions of classroom climate was undertaken by Walberg and Anderson (1968) as an alternative to using the class as the unit of analysis. Some 2100 high school physics students involved in the preliminary analysis of Harvard Project Physics served as subjects for the study. They were given a battery of cognitive, affective, and behavioral criterion measures including the Physics Achievement Test, the Science Process Inventory, the Semantic Differential for Science Student, and the Pupil Activity Inventory. The first form of the CCQ was also given to measure student perception of the classroom social environment.

Results showed 32 statistically significant correlations between measured perceptions of classroom climate and the learning variables adjusted for gain. For example, students who gained most on the Physics Achievement Test, perceived their class as socially homogeneous, intimate groups working toward one goal. Students who grew more in science understanding saw their classes as well organized with little interpersonal friction, egalitarian and unstratified, but

with great variety in student interest. Thus, different perceptions of classroom climate seemed to be associated with achievement and science understanding, two types of cognitive growth.

Affective growth in the course was also predicted by perceptions of the social climate from students who enjoyed greater satisfaction from laboratory works, perceived their class as unstratified, democratic, clearly goal defined, and satisfying. Gains in physics interest were shown by students who thought their classes were well organized and unstratified. The researchers concluded that students with various perceptions of classroom climate grew in different ways during the course. The variables which correlated most often with the student learning variables could be considered in three groups: Coaction, Isomorphism, and Organization. With Coaction, variables relating to teacher centered and student center structure, there was only one correlation with learning. Isomorphism, or perceived class equality, correlated with learning in 11 instances. The Organization variables were structural measures of the classroom (Goal Direction, Disorganization, and Formality) producing eight correlations with learning. Thus, it appeared that individual learning could be predicted from individual measures of classroom climate (Walberg & Anderson, 1968).

Factor analysis of the LEI. Structural aspects of the LEI were the object of a study by Ellet, Perkins, and Payne (1967). Through a simple principal component analysis the authors investigated the possibility of rearranging scales and simplifying factors. The sample for validation consisted of 4465 secondary students representing a wide variety of urban/rural differences and socioeconomic backgrounds. Ages ranged from 12 to 18 years with 14 being the average. Males and females were equally represented. Individual student responses to the 105 LEI items measuring 15 dimensions of classroom environment were subjected to a principal components factor analysis and variances rotation. The analysis revealed only six pertinent factors accounting for approximately 24% of the total test variance. Of the 105 LEI items, only 18 failed to load 30 or greater on one of the six factors. Thus, it seemed that the instrument's intended empirical structure was not comprised of 15 separate factors, but of six global characteristics of the classroom learning environment.

The authors felt the factors emerging from this analysis represented a more global, or generalized, view of environment with the tighter structure of six factors. The assessment of the new factors was based on the magnitude of items loading in relation to each other and the number of items having common context. There seemed to be two

broad categories of classroom dimensions, one representing interpersonal considerations and the other centering on instructional considerations. The interpersonal factors were numbers 1, 3, 4, and 5 and the instructional ones were numbers 2 and 6. Factor 1 consisted of student perception dealing with tension, involvement, and class organization. Factor 2 was characterized by cohesive, goal oriented, and controlled class activity. Factor 3 depicted general alienation from other students and academic activities. General school interpersonal trauma represented Factor 4, with Factor 5 being grounded in perception of student interests, work, and friendship. Factor 6 was interpreted as the rigidity of the instructional demands.

The authors concluded that future use of the LEI in educational research should consider the instrument as measuring more global student perceptions. Also, they suggested considerable item/scale revision of the instrument. Ellet et al. cautioned others in their interpretation of research findings who might assume that meaning and feeling for a particular instrument item may not be the same as that of the respondent.

Summary

Studies utilizing the LEI in its original or revised form took many different research directions and supported a number of theories or hypotheses on student perception of the classroom environment. The most significant findings were:

1. Non-cognitive measures of the classroom were predictable from cognitive measures.

2. Group influences on individual learning were important especially for female students and students with different mental abilities.

3. Teachers' personality, needs, values, and attitudes in many cases predicted classroom climate.

4. Course effect was an important factor in student perception of the learning environment. The different types of subject areas were more influential than teacher selection and experience.

5. Teacher sex and teacher sex/course content interaction did not have a significant influence in accounting for differences in classroom perception.

6. The classroom learning environment, as measured by the LEI, could predict learning.

7. Grade level and socioeconomic status caused differing environmental perceptions.

8. Individual perceptions were influenced by group perception of the learning environment.

9. The LEI's structure may actually represent six global characteristics of the classroom learning environment, as opposed to its apparent structure of 15 separate factors.

10. Students' actual perceptions may not be measurable by their response to a particular item of the LEI.

The Learning Environment in Physical Education

Darst (1978) directed comment to the importance of the classroom learning environment in the creation of life-long enjoyment of physical activity. He felt secondary school physical education teachers could make an impact on students' feelings about activity by providing an appropriate classroom learning environment.

> Secondary physical education curriculum planners need to become concerned with effective ways to create learning environments that will accomplish the goal of teaching students to enjoy physical activities for a lifetime. This is not an easy task, particularly within the rigid authoritarian, negative atmosphere that many secondary teachers seem to find reinforcing for themselves and their administrators. (p. 44)

A survey of physical education literature produced little specific information regarding students' perceptions of the secondary school classroom environment. Teaching, as an area of inquiry, historically has received little attention in physical education research as evidenced by the fact that prior to 1970 only 10% of the research in

physical education was conducted in the area of teaching with only 5% being published data (Nixon & Locke, 1973). Recently, more effort has been applied to teaching as a research area (Cheffers, 1977; Locke, 1977).

Development of systematic classroom observation has provided a technique for recording and analyzing events occurring in school classes. This technique allows for the collection of more extensive descriptive records of actual classroom happenings in order to better understand the events which have occurred. Descriptive-analytic instruments developed as early as the late 1940's (Bellack & Davitz, 1963; Flanders, 1970; Medley & Mitzel, 1963; Withall, 1949) have provided the basis for adaptations used with physical education classes (Bookhout, 1967; Cheffers, 1972; Dougherty, 1970; Mancuso, 1972; Morgenegg, 1978). In addition, a number of studies have designed and standardized their own observation systems (Adler, 1972; Anderson & Barrette, 1978; Bain, 1976; Barrett, 1971; Fishman, 1974; Laubach, 1975). Although up until 1977 only 50 studies had been conducted in physical education, the initiation of descriptive-analytic research provided an invaluable tool for the collection and examination of classroom data (Cheffers, 1977).

Selected descriptive-analysis research in physical education has been included in this review for one main

purpose: the enlightening information about the classroom contained in such research. Although observational analysis employs a different strategy from the self-report technique, both methods of inquiry have the similar purpose of attempting to learn more about the physical education classroom.

Bookhout (1967) produced the first published research in physical education involving data from systematic observation (Locke, 1977). Using a modified version of OScAR, an observation schedule developed by Medley and Mitzell (1958), Bookhout studied the social-emotional climate of selected physical education classes through the observation of teaching behavior. Thirty-six female teachers and pupils selected from one of each teachers' ninth grade girl's physical education classes served as subjects. Class climate, defined by the author as "perceptions of teaching behavior which relax interpersonal tension" (Bookhout 1967, p. 338), was assessed by Reed's Pupil Inventory. Two 30-minute visits to each class with data recorded by the modified OScAR technique served as the assessment measure for teacher behavior.

A factor analysis of the 14 teaching variables and one climate variable yielded six factors which accounted for 82% of the total variance. Factor 1 represented a teaching behavior pattern which was related to a supportive climate. Factor 2 was a negative class climate loading

which represented classes common in teaching behavior having defensive climates. The last four factors were only somewhat related to climate. Bookhout compared her findings to six existing classroom studies and found teaching behavior of physical education teachers to be similar to that of other teachers. She did note, however, that further research needed to be conducted using different grade levels, a broader range of climate-related behavior, and men as well as women physical education teachers.

Bain (1976) conducted a study of the "hidden curriculum" in physical education which she defined as the values implicitly represented in the educational environment. After a thorough study of the hidden curriculum literature, six characteristics of classrooms were selected for use by Bain. The characteristics were: Achievement, Autonomy, Orderliness. Privacy, Specificity, and Universalism. Bain and four trained assistants conducted observations of six male and six female teachers using the author designed Implicit Values Instrument for Physical Education (IVI-PE).

Differences in implicit values were found between male and female teachers which the author explained as being either a reflection of societal sex influences or differences in the educational philosophy of the two traditionally separate male and female classes. The observers felt male teachers were less involved in directed instruction than were their female counterparts. However,

the Achievement dimension did not reflect a sex-related variance as hypothesized by the author. It was speculated that Achievement had two interpretations, instructional and competitive, which should be investigated in future research.

An important contribution to the research on physical education classrooms has been a result of the Teachers College Videotape Data Bank Project (Anderson, 1978). The intent of the project was to collect a number of videotapes of physical education classes to be used as raw data for individual and joint descriptive-analytic research efforts. Using a limitation of 83 tapes, samples of classes were taken in three major program areas: elementary school programs, girls' senior high school programs, and boys' senior high school programs. Coeducational high school classes were included when offered. Five counties in three states were selected which were varied in terms of urban-rural characteristics and per capital income. The sampling area was a geographical spread throughout a 100-mile radius of New York City. A random sample of five school districts was selected from each county within which one high school and two elementary schools were randomly selected.

From this sample various types of descriptive-analyses using various instruments have been conducted (Anderson &

Barrette, 1978; Cheffers & Mancini, 1978; Fishman & Tobey, 1978; Morgenegg, 1978). From such analysis much as been learned about classes in physical education, including an awareness of the complexity of the teaching-learning setting (Anderson, 1978). The following is a categorized summary of the information obtained utilizing this data source.

Analysis of the General Teaching Model

Utilizing an adaptation of Flanders Interaction Analysis, extremely low non-verbal behaviors were recorded for all teachers with student behavior predominantly nonverbal (Cheffers & Mancini, 1978). Analysis of teacher behavior in general has established a teacher-student contribution ratio of 2:1 (Flanders, 1970), but CAFIAS analysis (Cheffer's Adaptation of the Flander's Interaction Analysis System) of all 83 videotapes found these classes to have more student contributions at a rate of 3:2 (Cheffers & Mancini, 1978). Predominant teaching behaviors were lectures and the giving of information or direction to students. Very little praise, acceptance of student feelings, questioning, or constructive criticism of any kind was evidenced (Cheffers & Mancini, 1978). The students' main role was responding to the teacher (Anderson & Barrette, 1978; Cheffers & Mancini, 1978; Morgenegg, 1978).

Anderson and Barrette (1978) found physical education teachers were highly interactive and used the majority of class time for instructional purposes. Talk was the main technique of communication and was utilized exclusively in 50% of student-teacher interaction and in 85% of the interaction in combination with another strategy. Student-teacher dialogue about the lesson was curiously missing and teachers almost never redirected questions to students (Anderson & Barrette, 1978).

Teachers were not extremely efficient in organizing classes (Hurwitz, 1978). Management of students required 20% of teacher time and the organizational system employed caused students to spend 35% of class time waiting and only 36% involved in movement activity (Anderson & Barrette, 1978). Costello and Laubach (1978) found two-thirds of elementary physical education class time was nonmovement behavior with only one-fourth class time spent in movement behavior related to achieving the physical education objectives. This ratio was fairly consistant across elementary and secondary school classes (Hurwitz, 1978). Costello and Laubach (1978) also found smaller classes in elementary schools had a greater percentage of waiting time, received slightly less information, and had more game playing time than larger classes. Teaching aids and written materials were seldom or almost never used. In

addition, the use of teacher or student demonstration as a primary mode of communication was not indicated by these findings as is the popular belief about physical education teachers (Anderson & Barrette, 1978; Hurwitz, 1978).

In general, classroom atmosphere was fairly positive. Teachers reaction to students was of a positive nature, and they infrequently utilized punishment or other behavior correcting techniques. Although students had few negative reactions, they were more frequently neutral than positive (Hurwitz, 1978).

Teachers on the whole were concerned with the individual student as evidenced by their communication maneuvers (Morgenegg, 1978). Approximately 77% of their feedback was to individual pupils, and 50%-75% of their intervening or concurrent instruction was with one student (Fishman & Tobey, 1978). The organizational structure utilized most often, however, was the class working as a whole as opposed to individual or group work (Cheffers & Mancini, 1978).

Instructional feedback was an important component of the teaching-learning setting. Fishman and Tobey (1978) in an analysis of 81 videotapes of elementary and secondary physical education classes found little differences in teachers' individual approaches to administering feedback to their students. The feedback which existed tended to be given to habit and similarity. In CAFIAS analysis by

Cheffers and Mancini (1978), acceptance of student feelings and ideas, praise or questioning behavior were lacking and punishment was virtually absent. In the same analysis the use of sympathetic-empathetic behavior was almost non-existent among male and female teachers.

The type of instructional or augmented feedback given was basically evaluative more than prescriptive. Evaluative feedback is a little easier to administer and tends to be less specific (Fishman & Tobey, 1978). Prescriptive feedback necessitates going beyond indicating what a student is doing correctly or incorrectly but requires the teacher to prescribe what the student must do to correct the performance (Fishman & Tobey, 1978).

A large number of feedback occurrences had no specific referent, but were positive messages of encouragement (Fishman & Tobey, 1978). Most of the feedback provided by teachers was not directed to specific parts or qualities of motor performance, and therefore may have been of limited corrective value. Students involved in dual sports received more feedback than those who engaged in term sports (Fishman & Tobey, 1978).

Sex as a factor of variability. Sex of the teacher and of the student have frequently provided a real or a suspected source of variability in classroom behavior. Only slight sex differences, however, were found between

teacher or student in the Data Bank Videotape analysis (Cheffers & Mancini, 1978; Hurwitz, 1978). One of the few areas of difference was teachers who emphasized more content with elementary school males than with females. Cheffers and Mancini (1978) detected this information through an analysis of all videotapes utilizing CAFIAS.

Costello and Laubach (1978), in a study of 20 elementary physical education classes, utilized the Behavior of Students In Physical Education (Best PED) observation-analysis system to study student behavior. It was found that female students spent a little more time waiting than did male students and spent less time receiving information. Boys, on the other hand, had more practice time, but equal game play time. The results were similar in coeducational and single-sex classes.

In an analysis of all 83 videotapes, Cheffers and Mancini (1978) found minimal differences in the type of teaching or interaction patterns between male and female teachers at both the elementary and secondary school levels. Male elementary school teachers, however, registered a higher ratio of praise to criticism than male secondary teachers and all female teachers. That same elementary male teacher also registered more emphasis on content than did the female counterpart.

Grade level as a factor of variability. Little difference was found between teaching behavior of elementary school and secondary school physical education teachers (Anderson & Barrette, 1978). Forty classes equally divided between elementary and secondary schools were analyzed utilizing Anderson's Descriptive System (1974). Elementary school teachers spent a slightly greater proportion of their class time in behavior classified as instructional while secondary school teachers used a slightly larger proportion of their teaching time observing. Feedback also was given more readily at the elementary school level (Fishman & Tobey, 1978).

Morgenegg (1978), using an adaptation of Bellack's system of describing communication maneuvers of teachers, analyzed 40 videotapes. Half the tapes were elementary and half were secondary. Ten of the elementary tapes were of coeducational classes, seven were all boys classes, and three were all girls. The 20 secondary school classes were equally divided between girls' and boys' classes. Through the analysis, Morgenegg (1978) found the teacher-pupil interchange to be similar across grade levels for both teachers and students with two exceptions. Elementary students were found to "structure," a term classifying the context for subsequent behaviors, slightly more than their secondary counterpart. Also, elementary school

teachers reacted positively to students almost twice as frequently as secondary school teachers.

Elementary classes, especially those taught by male teachers, worked as one unit as opposed to individual or small group work. Secondary classes employed more group or individual class organization, but the predominant organization across all classes was the whole group working as a unit (Cheffers & Mancini, 1978).

Students in lower grades (1-3) were found to have less activity than upper grades (4-6) which was contradictory to the belief that younger students are naturally more active than older students (Costello & Laubach, 1978). Equal information was dispensed to both levels but the upper grades spent more time practicing and game playing.

Summary

The data obtained through videotape analyses provided substantial insight into classrooms in physical education. Although classroom environment was not its main focus, the information obtained utilizing this technique provided assistance in understanding the complexities of the classroom environment. The most significant findings from the physical education studies conducted which directly or indirectly related to the classroom environment were:

1. Classroom environment as a comprehensive, interactive educational component has been given little attention in physical eduation.

2. Systematic observation systems have been utilized to some degree in physical education in an attempt to improve instruction.

3. Real sex differences in classroom behavior by teacher or student appeared to be minimal.

4. Elementary physical education classes may not be conducted much differently than secondary school classes.

5. Physical education classes seemed to have a higher ratio of teacher-student contribution than other subject matter areas.

6. Specific feedback and feedback containing praise or constructive criticism may be missing in physical education classes.

7. Teaching behavior in physical education classes was mostly lecture and giving information.

8. Student behavior in physical education classes was mainly nonverbal.

9. Teacher or student demonstration, teaching aids, and written material were not common to these physical education classes.

10. Student attitude in physical education classes appeared to be neutral, neither negative nor positive.

CHAPTER III

PROCEDURES

The purpose of this study was to determine secondary school students' perceptions of the physical education classroom environment. The study further sought to determine differences in perceptions between male and female students, between students with male and female teachers, and any differences in perception which occurred from a teacher/student sex interaction. The procedural steps involved in this study were as follows: (a) selection of the tool, (b) selection of subjects, (c) collection of data, and (d) treatment of the data.

Selection of the Tool

In selecting the most appropriate tool for use in this study, three criteria were used. The instrument had to: (a) measure the multivariable classroom environment, (b) utilize student self-report as the method of data collection, and (c) be appropriate for use with secondary school students.

The Learning Environment Inventory (LEI) was the instrument selected as most appropriate for use in this study. Utilizing student-reported perception of environment, the LEI was based on the Getzels and Thelen (1960)

theory of classrooms which viewed environment as the outcome of teacher and student role requirements and personality needs. The most recent form of the LEI measured 15 dimensions of the classroom through a 105-item questionnaire. These dimensions were selected as the most appropriate for measuring environment because they were either good learning predictors, relevant to sociophychological theory, or appropriate to classroom social theory. As an assessor of multiple factors in the environment, the LEI considered such variables as interpupil relationships, teacher-pupil relationships, effect of subject matter, and class organization.

Two types of reliability coefficients were available on the LEI based on its use with individuals or classes. The alpha reliability indicated internal consistency or the extent to which an individual responded similarly for each scale item. The intraclass correlation coefficient indicated the group reliability and was based on the ratio of between class variance to within class variance. These coefficients were indicative of the extent to which pupils in the same class responded similarly and the extent to which the 15 scales discriminated among classes (Anderson, 1973). Alpha and intraclass reliabilities for each dimension as well as the entire instrument itself are listed in Appendix A.

As to the validity of the LEI, research has shown the LEI scales predict learning ($p < .01$) in a number of aspects such as understanding, achievement, and interest (Walberg, 1969b). Although the LEI was originally used for high school physics classes, research has been conducted which showed the LEI to have predictive validity in other subject areas such as science, math, humanities, and language (Anderson, 1970). When administered through a random data collection technique, the LEI predicted the mean achievement of the remainder of students in the class who did not take the LEI (Walberg & Welch, 1967). Permission to use the LEI was obtained directly through one of its authors. The letter of release may be found in Appendix B.

Selections of Subjects

Formal letters were sent to six selected school districts in the state of South Carolina asking for assistance in collecting information on student perception of the physical education classroom environment (see Appendix C, Letters to School Districts). Five of the districts agreed to participate in the study contributing a total of six secondary schools.

After the initial acceptance, letters were sent to the principals of each of the schools involved thanking

them for their willingness to cooperate and giving them an overview of the study (see Appendix D, Letters to Principals). Appointments were requested from each school to meet with the principals and a representative from the physical education teaching staff. During these meetings, the researcher acquainted the principal and teachers with the timetable for data collection and the technique for administering the instrument. In addition, school personnel were given an explanation of how the data were to be used. From the physical education representative, information on size of classes, class makeup according to sex, number and sex of teachers within the physical education department, and other pertinent information were obtained. Any further school contacts were made directly with the representative from the physical education staff.

After studying the information given by the physical education teachers, it was apparent that an inconsistency existed among the schools on how the physical education classes were organized and conducted. It should be understood that during this period of data collection, the guidelines of Title IX were being instituted as new mandates with these schools. Programs varied in their methodology of coping with this change in educational policy. One school had classes which were totally

segregated according to sex. One school admittedly had classes which were sex integrated, but which showed male and female students listed on separate class rolls. Two schools varied from teacher to teacher in the way the classes were organized according to sex. In these schools classes were often paired by male and female teachers giving ample opportunity for the male teacher to instruct only male students and the reverse for the female teacher. Only one school had completely coeducational classes.

The largest school had the most complicated classroom structure. Each of the five teachers in this school were assigned classes in required physical education. During a particular class period, all of the teachers with required physical education classes allowed their students to select an activity of their choice from one of the five teachers. This selection occurred every three to five weeks causing the class structure to be varied for each instructional unit. A teacher could, at times, have a class of all male students, but during the next instructional unit have a coeducational class. In all of the schools, however, there was one consistent factor. All students in all of the classes had been in physical education for the entire school year. Since the data collection was scheduled late in the second semester of the physical education class, and in view of the inconsistent

class structure in all schools, it was decided that for this study students would be considered individually irrespective of their particular class structure. The learning environment for an individual student would be any of the teachers, students, or content areas that the individual had encountered during this particular class of required physical education.

In an effort to minimize an individual teacher's effect on the total subjects' perceptions of environment, the greatest number of teachers possible from the particular schools was employed. The only criterion for participation in the study was that the teacher have at least one class of required physical education. A total of 23 teachers (14 male and 9 female) was utilized in the study with a sample of classes selected from each teacher. Classes were selected for the study according to an individual teacher's schedule. If a teacher had one or two required physical education classes, one class was selected. If a teacher had three or more classes, two were selected. Selections were made by randomly drawing the appropriate number from a teacher's possible classes. Table 1 gives the number of teachers, classes, and students who participated in the study.

Of the total student number, 46.8% were male and 53.16% were female. A breakdown by age and grade may be found in Table 2.

Table 1

Distribution of Teachers, Classes, and Students by School

School	Number of Teachers	Number of Classes	Number of Students
1	4	7	132
2	5	10	188
3	2	4	79
4	3	5	114
5	5	8	199
6	4	7	103
Total	23[a]	41	815[b]

[a]Of the teacher number, nine were female and fourteen were male.

[b]Seven students who participated in the study failed to report school affiliation. Total student number was 822.

Table 2

Subject Breakdown By Age and Grade

Age		Grade	
Group	n	Group	n
14 or less	330	9	750
15	404	10	52
16	64	11	5
17 or older	20	12	13
not reported	4	not reported	2

Collection of Data

Prior to actual data collection, the LEI and an informational questionnaire were piloted in one of the schools utilizing a class not selected for participation in the study. The information questionnaire (see Appendix E, Information Questionnaire) and the LEI were easily completed during the given class period. Dates for the collection of final data were arranged by phone with each department representative. All dates fell within the first two weeks in April, 1978.

The researcher visited each school on separate days to administer the LEI and information questionnaire. Where there were two or three classes participating in

the study which met during the same hour, all classes took the LEI and questionnaire concurrently. In no case were there more than three classes tested per period. Teachers remained with their respective classes during the administration of the instrument to act as assistants or to aid in classroom control. The researcher, however, gave all directions and was the central figure during the collection of data.

Students were given a questionnaire, a test booklet, an IBM computer answer sheet, and a pencil. They were instructed on how to fill out the questionnaire and to record their answers directly on the form. A statement was read prior to each test administration which advised students to respond to the questionnaire utilizing physical education as any other class in school. The IBM forms and questionnaire were precoded according to the school, teacher, and section prior to the test administration. The information questionnaire was color coded by sex of the student.

Questions were allowed during the testing only for the purpose of reading or explaining particular words. Any question requiring interpretation was disallowed. The entire period was devoted to test administration and only in a very few cases did students fail to finish the test. Booklets, score sheets, questionnaires, and pencils were

all collected after everyone had finished or at the end of the class period.

Collection of data was completed within a two-week period by the researcher visiting six schools on six different days. Students and teachers alike cooperated in the data collection phase of the study causing little difficulty for the researcher.

Schools, principals, and superintendents were sent letters expressing thanks for participating in the study (see Appendix F, Letters of Thanks). It was explained that the analysis would be conducted on the collective information with each school receiving a copy of the results.

Treatment of Data

Students' perception of the classroom learning environment in physical education was determined by utilizing the LEI. Assessing 15 dimensions of typical school classes, student responses to the LEI questionnaire items were analyzed through descriptive measures. Mean scores and ranking for each dimension were computed for total students as well as for male and female students separately.

Differences in perception between male and female students and among students by sex of the teacher were analyzed through a two-way analysis of variance (ANOVA) procedure by the procedure GLM of the Statistical Analysis

System (SAS). In order to most effectively determine sex related differences, however, the formulation of a new variable, teacher sex/time was required. This variable reflected student-reported information regarding the amount of time spent in class with a male or a female teacher. Student sex and teacher sex/time formulated the two-way model and were employed in an analysis of variance procedure. This procedure also considered the partial effects of each of the main variables as well as the interaction effect. Each effect was determined while controlling for the effect of the other variable. When an LEI dimension was shown to have a significant F value, further analyses were undertaken. The SAS procedure Plot was employed to visually illustrate the student sex and teacher sex/time differences which produced the significant ANOVA results. The Plot also showed student and teacher trends which existed for each individual dimension. In addition, post hoc analysis was computed for each significant F ratio in order to determine which of the means were significant. The Bonferroni multiple comparison technique was utilized which allowed for simultaneous comparison of groups of unequal size.

CHAPTER IV

PRESENTATION, ANALYSIS, AND DISCUSSION

The purpose of this study was to assess secondary school students' perceptions of the classroom environment in physical education. In addition, the study sought to determine if differences existed between the perceptions of male and female students or among the perceptions of students based on the sex of their teachers.

The Learning Environment Inventory (LEI) was utilized to determine student perception and was administered to male and female secondary school students from six selected schools in the state of South Carolina. The instrument assessed 15 classroom dimensions through seven statements each of which were typical of school classes (for complete LEI see Appendix A). Students indicated the extent of their agreement with each statement on a 1-4 scale. The sum of a student's responses to the seven statements was the student score for that dimension. Fifteen scores representing the classroom dimensions were produced for each student with a potential range of 7.0 to 28.0. If a student failed to complete any of the seven statements, no score was computed for that particular dimension. As a result the sample size varied for each of the dimensions.

Class structure for students sampled in this study was not utilized as information due to its variable nature. In most schools students experienced a variety of class structures within the required physical education class in which they were enrolled. Class rolls may have reported a coeducational class structure, but the teacher indicated utilizing sex-segregated units by exchanging students with another teacher. It was decided that for use in this study students would be considered independently, irrespective of the various existing class structures. All data were compiled and analyzed through the Computer Service Center of the University of South Carolina, Columbia, South Carolina. This chapter has as its purpose the reporting and analysis of the data associated with this study.

Classroom Environment in Physical Education Presentation

Student perception of the physical education classroom environment was measured through the 105-item LEI reflecting 15 dimensions typical of school classes. The 822 students participating in the study were asked to indicate their perceptions of the physical education class in which they were currently enrolled.

Mean LEI scores for all students are reported in Table 3. The dimensions receiving the highest scores were Diversity (20.32), Cliqueness (20.14), Friction (19.69),

and Cohesiveness (19.59). Low scores occurred in the Democratic (15.95), Disorganization (16.43), Environment (16.71), and Favoritism (16.75) dimensions.

Table 3

Mean Response to LEI Dimensions for All Students

Variable	n[a]	Mean	Standard Error
Diversity	765	20.32	.087
Cliqueness	768	20.14	.110
Friction	757	19.69	.104
Cohesiveness	770	19.59	.100
Formality	785	19.39	.097
Competitiveness	759	18.97	.108
Goal Direction	755	18.12	.112
Speed	768	17.89	.100
Apathy	758	17.77	.120
Difficulty	755	17.14	.097
Satisfaction	777	17.06	.115
Favoritism	752	16.75	.131
Environment	795	16.71	.102
Disorganization	777	16.43	.123
Democratic	793	15.95	.107

[a]Sample size varies with number of students completing all items of a particular dimension.

Rankings of mean scores by sex of the student are reported in Table 4. Diversity and Cliqueness were ranked first and second by both male and female students. Male students found their classes to be more competitive than did female students as evidenced by the fourth and sixth rankings, respectively, on Competitiveness. Cohesiveness was rated third by female students and fifth by male students. Goal Direction was rated similarly by males and females, at the seventh ranking. The male students seemed to be more pleased with their classes as evidenced by a 10th ranking for the male students and a 12th ranking by the female students for the dimension Satisfaction. Female students were more satisfied with the space and equipment in rating the Environment dimension 11th, while male students ranked it 14th.

Physical education classes were seen as more organzied by male students than by female students in the ranking of the Disorganization 12th; female students rated it 14th. The Favoritism and Democratic dimensions, however, were rated similarly at ranking 13 and 15, respectively. Student mean scores by individual school, teacher, section, and student sex are available in Appendix G.

Table 4

Student Mean Rankings of LEI Dimensions

Male					Female			
Variable	n	Mean	Standard Error	Ranking	Variable	n	Mean	Standard Error
Diversity	349	19.98	.147	1	Diversity	416	20.60	.111
Cliqueness	346	19.86	.166	2	Cliqueness	422	20.37	.146
Friction	342	19.59	.151	3	Cohesiveness	427	19.82	.132
Competitiveness	348	19.27	.156	4	Friction	415	19.78	.143
Cohesiveness	343	19.29	.153	5	Formality	423	19.75	.118
Formality	362	18.97	.158	6	Competitiveness	411	18.27	.149
Goal Direction	334	17.81	.168	7	Goal Direction	412	18.37	.150
Apathy	351	17.77	.162	8	Speed	414	18.23	.143
Speed	354	17.49	.138	9	Apathy	407	17.78	.172
Satisfaction	356	17.40	.157	10	Difficulty	415	17.35	.133
Difficulty	340	16.88	.139	11	Environment	428	17.82	.139
Disorganization	356	16.82	.182	12	Satisfaction	421	16.79	.165
Favoritism	333	16.72	.181	13	Favoritism	419	16.78	.187
Environment	367	16.58	.153	14	Disorganization	421	16.10	.167
Democratic	369	15.84	.153	15	Democratic	424	16.08	.148

Discussion

Results from the administration of the LEI found physical education classes to be high in the dimensions Diversity, Cliqueness, Friction, and Cohesiveness; the lower scored dimensions were Democratic, Disorganization, Environment, and Favoritism. A discussion of these findings with regard to the meaning of the LEI dimensions and the literature surveyed will be presented in this section.

Judging by the item-statements which formulated the dimension Diversity, this classroom characteristic related to the different interests of the group members and varied goals of the class. With approximately 66% of the sample taken from large schools, the probability of students having diverse interests was high. In addition, Goal Direction; which referred to students' awareness of the purpose of the class, was not a high scoring dimension. The high Diversity score and the lower Goal Direction score could indicate that the objectives of these physical education classes were not well defined. Interestingly, students from thesephysical education classes had been members of the class for the entire year.

Cliqueness was the second highest scored dimension and measured the degree of special interests groups formed within the classes. Again, this may have been related to the large-school component within the sample. The nature

of physical education classes, however, could lend itself to high Cliqueness scores. Students, in many cases, are automatically defined into groups based on physical skill level when activities and games are conducted. Also, physical education classes are not usually scheduled by level as are some academic courses which could produce a need for grouping within classes. Another consideration was the coeducational groupings. All schools except one utilized some form of coeducational classes, but for most the year of data collection was the first year in which coeducational class had been employed. This could account for some of the cliques which formed in the classes.

With Cliqueness being a highly rated dimension, it was possible that there might be friction between the male and female students. The Friction rating could be explained by the newly instituted coeducational structure. It was clear from discussion with most of the teachers sampled that they were uncertain of the value of coeducational classes. Students may possibly have perceived teachers' feelings and been influenced by this knowledge. Also, research findings have indicated that physical education classes appear to be conducted more often in a unit approach as opposed to small or individualized groupings (Cheffers & Mancini, 1978). If this were the case, conflict could have occurred between lower skilled and higher skilled class members, particularly in the conduct of competitive activities.

Interestingly, Cohesiveness followed Cliqueness and Friction in high scoring dimensions. The explanation of this finding could be related to classes being together for eight months prior to data collection. Judging by the item-statements, the Cohesiveness dimension was indicative of how well the students knew each other. Or perhaps, the high Cliqueness score explains the Cohesiveness score. With groups existing within the classes, there may have been high cohesiveness within the groups. This could explain the friction which occurred. As groups form and are cohesive, the possibility of between group friction could be high.

The Democratic dimension was reflective of the extent students participated in class decisions. The low score on this dimension was not surprising in view of the reputation schools have for their lack of student participation (Jackson, 1968; Macdonald et al., 1973). Bain's study (1976) indicated that physical education classes did not score high on the autonomy dimension, but did so on orderliness. Formality was the fifth ranked LEI dimension which could relate to the lower score on the Democratic dimension. Classes which are formal, structured, and have definite rules are classes which are not usually democratic.

A related dimension, Disorganization, scored low, an indication that physical education classes were highly

organized which paralleled the Bain (1976) finding. With the low Democratic score, it was consistent that students would perceive their classes as very organized and structured. Also, physical education historically has been highly ordered and teacher-directed which was confirmed by findings from the Videotape Data Bank (Cheffers & Mancini, 1978).

The Environment dimension was low, but judging by the item-statements this dimension may have been difficult for the student to employ with physical education classes. Statements about available books and magazines, displays around the classroom, and the physical properties of the room may have confused the student relative to physical education classes. Looking at the literature, however, could produce a different interpretation of these data. Cheffers and Mancini (1978) reported that the use of written materials and teaching aids was negligible in a sample of physical education classes. If this were characteristic of physical education classes, questions about class resources would produce extremely low scores.

A puzzling finding occurred in the relatively low rating of the dimension Favoritism. With the high score on Cliqueness, a high score on Favoritism could be expected. This low finding, however, may be explained by the action of the teachers. Perhaps, the teachers did not play favorities

with individual students, but instead favored groups of students such as skill groups or sex-related groups.

The dimension Competitiveness as measured by the LEI, was not scored as high as one might have expected. This possibly could relate to a less than competitive environment in these particular physical education classes; or it may be that the item-statements were not as related to competition in a game setting (group) as to competitiveness in academic work (individual). This explanation is similar to that of Favoritism. Groups may be very competitive, but individuals themselves less competitive.

The dimension Speed was scored at a mid-range of the other LEI variables, differing from the results of the Videotape Bank Analysis which found the physical education classroom to be a "fast paced, constantly changing, ... classroom" (Hurwitz, 1978, p. 76). The score on Speed could be explained by the relatively low score on Difficulty, the extent to which the class work was advanced or challenging. If the class work was not difficult, the pace of the class was probably not fast. Also, if physical education classes were taught as a unit, as opposed to being individualized, then the pace for some was too fast and for others too slow. This would produce a mid-range score for Speed.

The Apathy dimension, another mid-range score, could be related to Goal Direction. Apathy referred to the extent class members had concern for the success of the class. If students were unclear as to the purpose of the class, it would be difficult to respond to the Apathy statements. Also, the Data Bank Analysis (Hurwitz, 1978) found physical education students' attitude to be neither negative or positive, but rather neutral. Perhaps, the mid-range score for Apathy was an indication of neutrality.

Satisfaction fell into the lower five scores, which appeared to indicate a degree of dissatisfaction. If the physical education classes were diverse and lacking direction, if tension existed between certain groups, if classes were highly organized with little student input, if classes were slow paced and unchallenging with no learning resources, low scores on Satisfaction seem understandable.

Similar scores were obtained for both male and female students. Analysis of the findings based on sex-related differences will be discussed in the next section.

LEI Differences by Sex of Student and Sex of Teacher

Presentation of LEI Dimensions

To determine differences in student's perceptions of the learning environment, the results from the LEI were compared according to the sex of the student and the sex of

the teacher. Student sex was determined through the color coded student questionnaire. The sex of the student's teacher was not as easily determined, because the information on sex of the teacher for a particular class often was inconsistent. In many cases, teachers exchanged classes, team taught, or rotated teaching assignments. Therefore, the information reported by the schools (class rolls) regarding teacher sex could not be utilized in this study, but is available in Appendix H.

For this study the gender of a student's teacher was determined by asking students on the questionnaire the amount of time they spent with a male or female teacher in their physical education class (teacher sex/time). Responses were indicated on a 1 to 5 scale: (1) all time spent with male teacher (All MT), (2) most time spent with male teacher (Most MT), (3) half time spent with male and female teacher (Half M/FT), (4) most time spent with female teacher (Most FT), (5) all time spent with female teacher (All FT). Both male and female students responded to the question of teacher sex by time. From this information, 10 subgroups were formulated within the sample. The student-reported information and subgroup arrangement are located in Table 5.

For each of the 15 LEI dimensions, a two-way analysis of variance (ANOVA) was computed based on the two main

Table 5

Student Reported Teacher Sex By Time With Teacher

Group	Male Students										Female Students									
	1 All MT		3 Most MT		5 Half M/FT		7 Most FT		9 All FT		2 All MT		4 Most MT		6 Half M/FT		8 Most FT		10 All FT	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
School 1	28	7.31	10	2.61	2	.52	4	1.04	8	2.09	34	7.82	7	1.61	5	1.15	14	3.22	20	4.60
School 2	10	2.61	40	10.44	18	4.70	20	5.22	1	.26	15	3.45	31	7.31	38	8.74	13	2.99	2	.46
School 3	17	4.44	2	.52	4	1.04	13	3.39	0	0	19	4.37	4	.92	3	.69	17	3.91	0	0
School 4	61	15.93	1	.26	0	0	0	0	0	0	0	0	0	0	0	0	1	.23	51	11.72
School 5	7	1.83	28	7.31	21	5.48	19	4.96	6	1.57	1	.23	6	1.38	50	11.49	47	10.80	14	3.22
School 6	33	8.62	8	2.09	12	3.13	10	2.61	0	0	0	0	0	0	6	1.38	31	7.31	6	1.38
Totals[a]	156	40.74	89	23.23	57	14.87	66	17.22	15	3.82										
Totals[b]											69	15.87	48	11.22	102	23.45	123	28.46	93	21.38

[a]Two male subjects failed to indicate school affiliation.

[b]Two female subjects failed to indicate school affiliation.

effects, student sex and teacher sex/time, as well as the interaction effect of the two variables. Where significant differences did exist, a plot of the means of the 10 subgroups was constructed. The plots served as an indicator of patterns or trends which might exist among the subgroups. A further procedure, the Bonferroni multiple comparison technique (Miller, 1974) was utilized to determine significant differences in paired group comparisons. For the purpose of clarity, each LEI dimension was treated separately with all steps of the analysis process contained within that presentation.

Cohesiveness. Mean scores for the 10 subgroups are located in Table 6. Group 10 (FS/All FT) rated their classes as highest in Cohesiveness (20.66) and Group 5 (MS/Half M/FT) rated their classes as being the lowest (18.65).

Through analysis of variance, significant differences were found in the total model which were attributed to the sex of the student. ANOVA summaries are located in Table 7.

A plot of the mean scores for each of the 10 subgroups is located in Figure 1, showing that female students rated their classes as being higher on Cohesiveness as the amount of time with a female teacher increased except for Group 8 (FS/Most FT) which experienced a slight drop. Male students showed a random pattern. Subsequent Bonferroni multiple

Table 6

Mean Scores for Cohesiveness

#	Group	n	Mean	Standard Error
10	(FS/All FT)	92	20.66	.288
6	(FS/Half M/FT)	101	19.88	.272
9	(MS/All FT)	14	19.71	.898
8	(FS/Most FT)	119	19.55	.248
4	(FS/Most MT)	46	19.54	.365
3	(MS/Most MT)	81	19.49	.307
1	(MS/All MT)	140	19.38	.248
2	(FS/All MT)	69	19.25	.315
7	(MS/Most MT)	59	19.25	.373
5	(MS/Half M/FT)	49	18.65	.346

Table 7

ANOVA Summaries for Cohesiveness

Source	df	ss	ms	F Value	PR > F
Group	9	179.77	19.97	2.64	.005*
Student Sex	1	29.61	29.61	3.91	.048*
Teacher Sex/Time	4	26.93	6.73	0.89	.470
Interaction	4	43.22	10.81	1.43	.224
Error	760	5759.08	7.58		

*p < .05

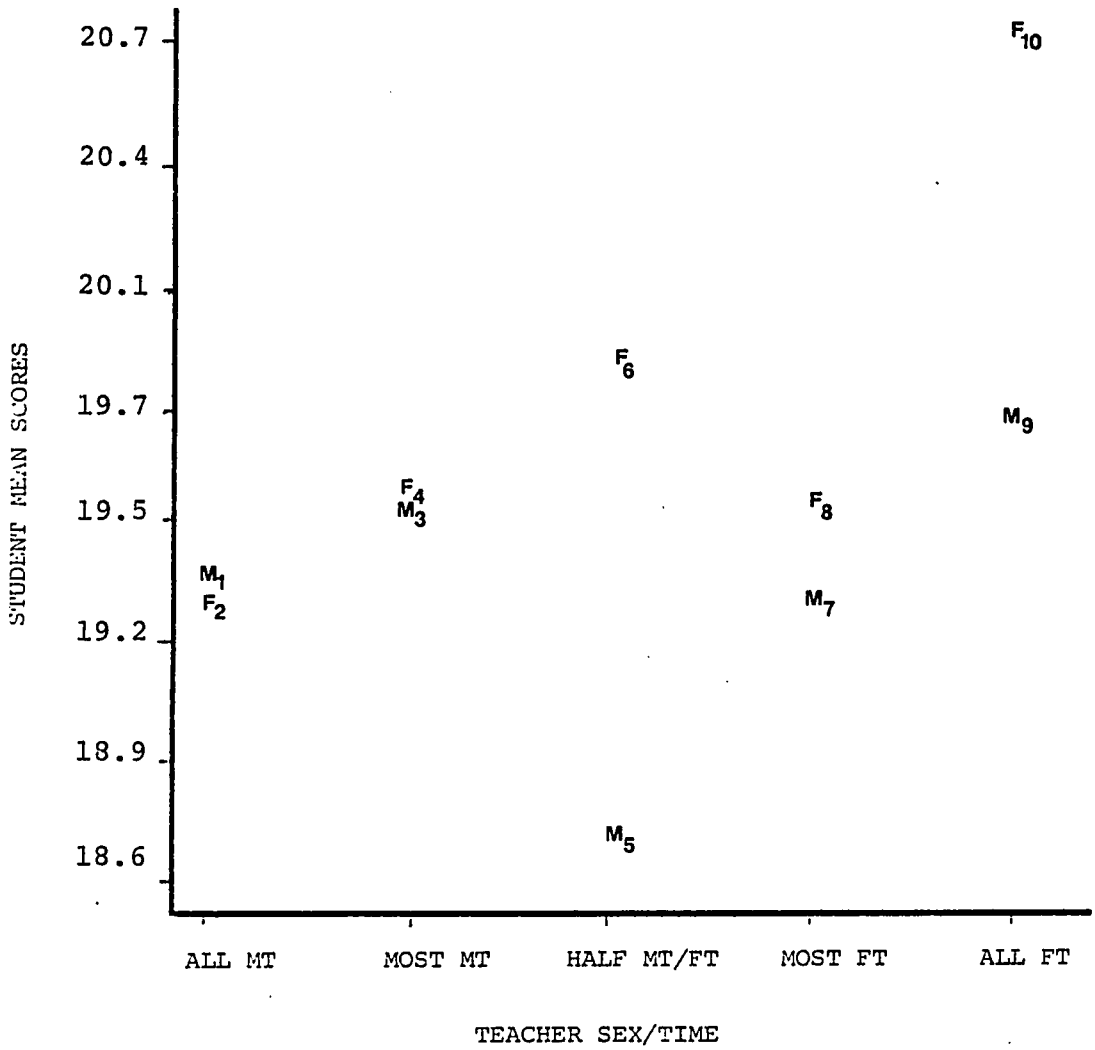

Figure 1. Mean response of Cohesiveness by student sex and teacher sex/time

Note. Plot representations are computer generated and may be somewhat distorted due to narrow span among the mean scores.

comparisons were computed which indicated that Group 10 (FS/All FT) perceived their physical education classes to be significantly higher in Cohesiveness than did Group 1 (MS/All MT) or Group 5 (MS/Half M/FT). These comparisons are located in Table 8.

Diversity. Mean score for the dimension Diversity are ranked from high to low in Table 9. Group 4 (FS/Most MT) perceived their classes as highly diverse (21.26) while group 3 (MS/Most MT) rated their physical education classes as less diverse than did the other groups (19.75). ANOVA summaries listed in Table 10 show a significant difference among the subgroups attributable to the student gender.

A plot of the subgroup means is located in Figure 2 which shows high variability among the female subgroups. Male students demonstrated a similar pattern for all five groups. Test of significance found Group 4 (MS/Most MT) to be greater than either Group 1 (MS/All MT) or Group 3 (MS/Most MT). These comparisons can be found in Table 11.

Formality. Subgroups means on the dimension Formality are listed in Table 12 which show Group 9 (MS/All FT) to have the highest mean score of all other groups (20.77), and Group 5 (MS/Half M/FT) to have the lowest mean score (18.76).

Table 8

Multiple Comparisons of Subgroups for Cohesiveness

Group	
1	Male Student/All Male Teacher
2	Female Student/All Male Teacher
3	Male Student/Most Male Teacher
4	Female Student/Most Male Teacher
5	Male Student/Half Male-Female Teacher
6	Female Student/Half Male-Female Teacher
7	Male Student/Most Female Teacher
8	Female Student/Most Female Teacher
9	Male Student/All Female Teacher
10	Female Student/All Female Teacher

	1	2	3	4	5	6	7	8	9
2	.326								
3	.301	-.549							
4	-.353	-.567	-.978						
5	1.588	1.154	1.687	1.576					
6	-1.399	-1.476	-.944	-.690	-2.563				
7	.291	-.160	.509	.534	-1.130	1.390			
8	-.513	-.740	-.153	-.023	-1.926	.877	-.687		
9	-.435	-.580	-.277	-.203	-1.272	.213	-.562	-.205	
10	-3.477*	-3.231	-2.788	-2.225	-4.128*	-1.971	-3.068	-2.900	-1.201

*p > .05

Table 9

Mean Scores for Diversity by Subgroups

#	Group Type	n	Mean	Standard Error
4	(FS/Most MT)	47	21.26	.314
6	(FS/Half M/FT)	100	20.78	.212
2	(FS/All MT)	69	20.52	.288
10	(FS/All FT)	86	20.49	.242
8	(FS/Most FT)	114	20.29	.219
7	(MS/Most FT)	59	20.25	.316
5	(MS/Half M/FT)	48	20.25	.384
9	(MS/All FT)	14	20.14	.592
1	(MS/All MT)	143	19.90	.204
3	(MS/Most MT)	85	19.75	.308

Table 10

ANOVA Summaries for Diversity

	df	ss	ms	F Value	PR > F
Group	9	121.69	13.52	2.35	.013*
Student Sex	1	47.60	47.60	8.26	.004*
Teacher Sex/Time	4	13.72	3.43	0.60	.666
Interaction	4	38.10	9.53	1.65	.160
Error	755	4351.39	5.76		

*p < .05

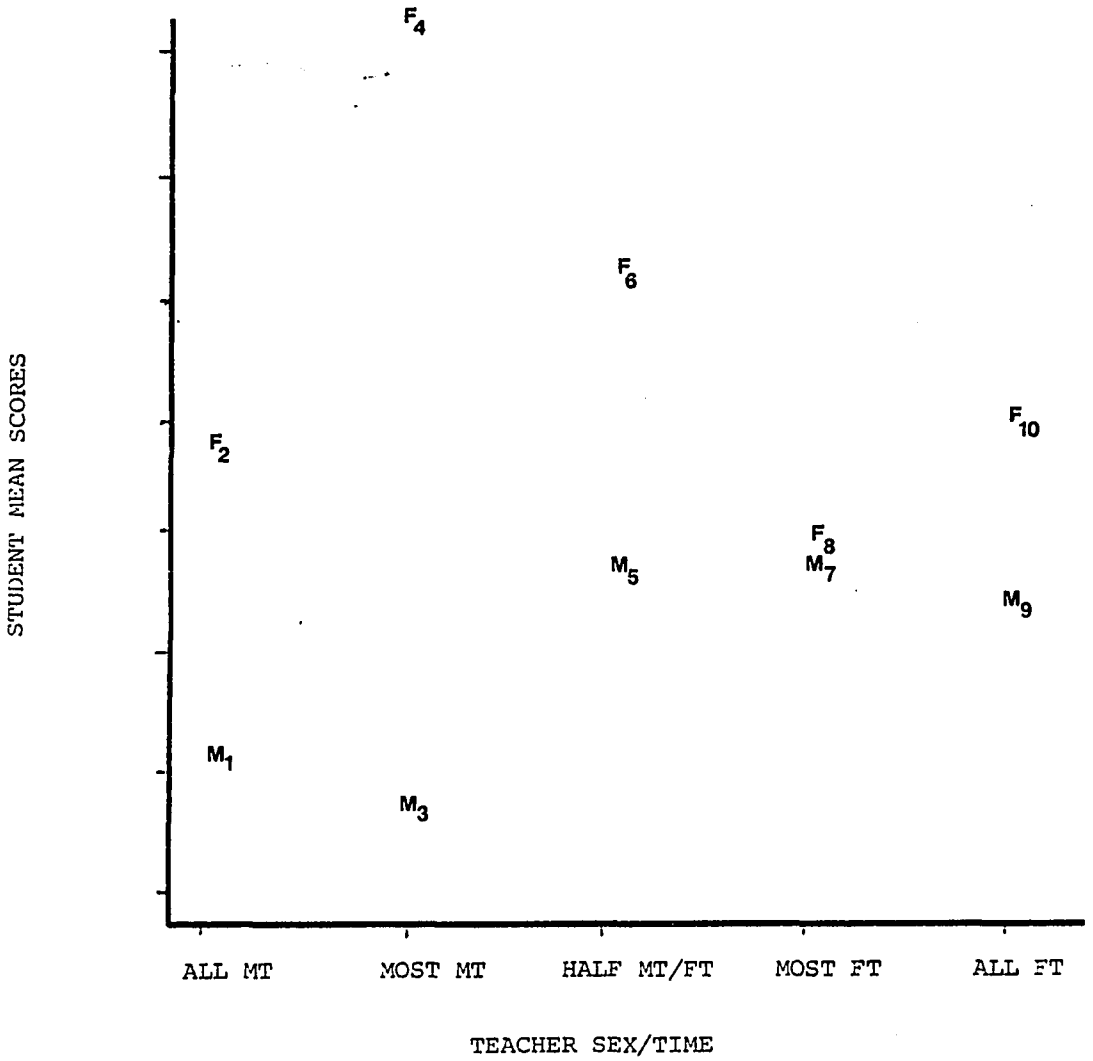

Figure 2. Mean response of Diversity by student sex and teacher sex/time.

Table 11

Multiple Comparisons of Subgroups for Diversity

	1	2	3	4	5	6	7	8	9
2	-1.781								
3	.432	1.976							
4	-3.370*	-1.616	-3.443*						
5	-.886	.602	-1.147	2.041					
6	-2.828	-.687	-2.899	1.119	-1.257				
7	-.967	.628	-1.232	2.133	-.009	1.334			
8	-1.308	.638	-1.559	2.321	.096	1.491	-.092		
9	-.369	.538	-.563	1.522	.147	.930	.156	.216	
10	-1.811	.858	-2.003	1.761	-.551	.826	-.577	-.580	-.499

Group 1 Male Student/All Male Teacher
2 Female Student/All Male Teacher
3 Male Student/Most Male Teacher
4 Female Student/Most Male Teacher
5 Male Student/Half Male-Female Teacher
6 Female Student/Half Male-Female Teacher
7 Male Student/Most Female Teacher
8 Female Student/Most Female Teacher
9 Male Student/All Female Teacher
10 Female Student/All Female Teacher

*$p < .05$

Table 12

Mean Scores for Formality by Subgroups

#	Group Type	n	Mean	Standard Error
9	(MS/All FT)	13	20.77	.818
10	(FS/All FT)	93	20.33	.239
4	(FS/Most MT)	43	20.00	.409
6	(FS/Half M/FT)	100	19.89	.252
7	(MS/Most FT)	62	19.44	.395
8	(FS/Most FT)	119	19.42	.185
2	(FS/All MT)	68	19.19	.331
3	(MS/Most MT)	83	18.82	.294
1	(MS/All MT)	150	18.77	.245

ANOVA summaries showed a significant difference which was not attributable to a particular variable indicating a more complex source of variability. Summaries are listed in Table 13.

A plot of the subgroup means showed male scores to change markedly when in a class taught exclusively by a female teacher. The finding was clouded, however, by the low sample size. Female student groups demonstrated a variable pattern. This plot is reported in Figure 3.

Bonferroni multiple comparisons found Group 10 (FS/All FT) to be significantly greater in Formality than Groups 1

Table 13

ANOVA Summaries for Formality

Source	df	ss	ms	F Value	PR > F
Group	9	256.97	28.55	3.96	.0001*
Student Sex	1	26.29	26.29	3.96	.056
Teacher Sex/Time	4	65.60	16.40	2.38	.060
Interaction	4	47.99	12.00	1.67	.56
Error	775	5581.97	7.20		

*p < .05

(MS/All MT), 3 (MS/Most MT), 5 (MS/Half M/FT). These comparisons are reported in Table 14.

Speed. Female subgroups appeared to be more affected by class speed as seen in the ranking of the dimension Speed. Four female groups ranked Speed as higher than all other groups except for Group 7 (MS/Most FT). Male students scored Speed lower than did the others (17.27). These results can be seen in Table 15.

Significant differences were found for the total model as well as for each of the main effects and the interaction effect when controlling for the other. ANOVA summaries are reported in Table 16.

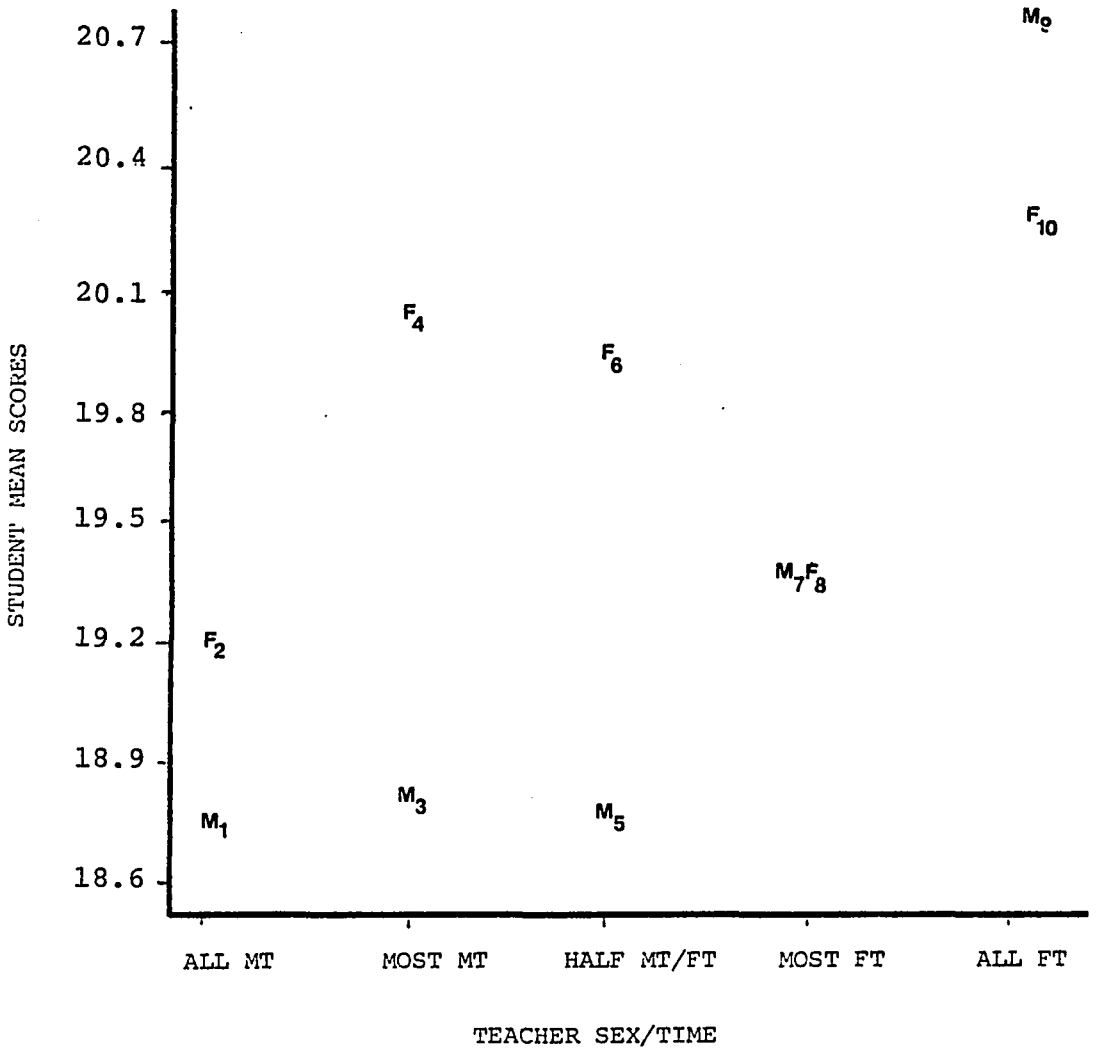

Figure 3. Mean response of Formality by student sex and teacher sex/time.

Table 14

Multiple Comparisons of Subgroups for Formality

Group	
1	Male Student/All Male Teacher
2	Female Student/All Male Teacher
3	Male Student/Most Male Teacher
4	Female Student/Most Male Teacher
5	Male Student/Half Male-Female Teacher
6	Female Student/Half Male-Female Teacher
7	Male Student/Most Female Teacher
8	Female Student/Most Female Teacher
9	Male Student/All Female Teacher
10	Female Student/All Female Teacher

	1	2	3	4	5	6	7	8	9
2	-1.065								
3	-.125	.847							
4	-2.642	-1.547	-2.341						
5	.034	.883	-.128	2.262					
6	-3.223	-1.657	-2.687	.225	-2.495				
7	-1.634	-.518	-1.368	1.060	-1.354	1.048			
8	-1.964	-.561	-1.566	1.214	-1.500	1.290	.036		
9	-2.572	-1.942	-2.436	-.906	-2.424	-1.111	-1.629	-1.721	
10	-4.404*	-2.667	-3.736*	-.673	-3.428*	-1.147	-2.040	-2.458	.549

*p < .05

Table 15

Mean Scores for Speed by Subgroups

#	Group Type	n	Mean	Standard Error
6	(FS/Half M/FT)	97	18.55	.298
7	(MS/Most FT)	62	18.31	.378
8	(FS/Most FT)	119	18.29	.273
2	(FS/All MT)	65	18.26	.355
4	(FS/Most MT)	44	18.20	.507
5	(MS/Half M/FT)	50	17.88	.364
10	(FS/All FT)	89	17.82	.273
9	(MS/All FT)	14	17.57	.542
1	(MS/All MT)	143	17.82	.273
3	(MS/Most MT)	85	17.27	.247

Table 16

ANOVA Summaries for Speed

Source	df	ss	ms	F Value	PR > F
Group	9	202.47	22.50	2.95	.002*
Student Sex	1	45.20	45.20	5.92	.015*
Teacher Sex/Time	4	72.08	18.02	2.36	.052*
Interaction	4	33.15	8.29	1.09	.264
Error	758	5789.56	7.64		

*p < .05

In the plot, a slight upward trend was seen for male students as their time with female teachers increased. This trend, however, was not consistent for male students when taught exclusively by female teachers, Group 9 (MS/All FT). Female students demonstrated a fairly consistent response. The plot may be seen in Figure 4.

Group 1 (MS/All MT) scored the LEI dimension Speed significantly lower than did either Group 6 (FS/Half M/FT) or Group 8 (FS/Most FT). Multiple comparisons of the 10 groups are located in Table 17.

Environment. Group 10 (FS/All FT) or female students in classes taught exclusively by female teachers rated their classes as being higher on the dimension Environment than all the other groups (17.59). Male students in classes taught mostly by female teachers rated Environment as lower than did the other groups (16.17). These scores are available in Table 18. No significant differences, however, were found among the groups as may be seen in Table 19.

Friction. The highest mean score for Friction (20.58) was obtained from Group 2, female students in classes taught by male teachers. The second highest score was from students taught mostly by male teachers (20.33). The lowest scores for Friction were obtained from Group 10 (FS/All FT) (18.82), Group 1 (MS/All MT (19.41), and

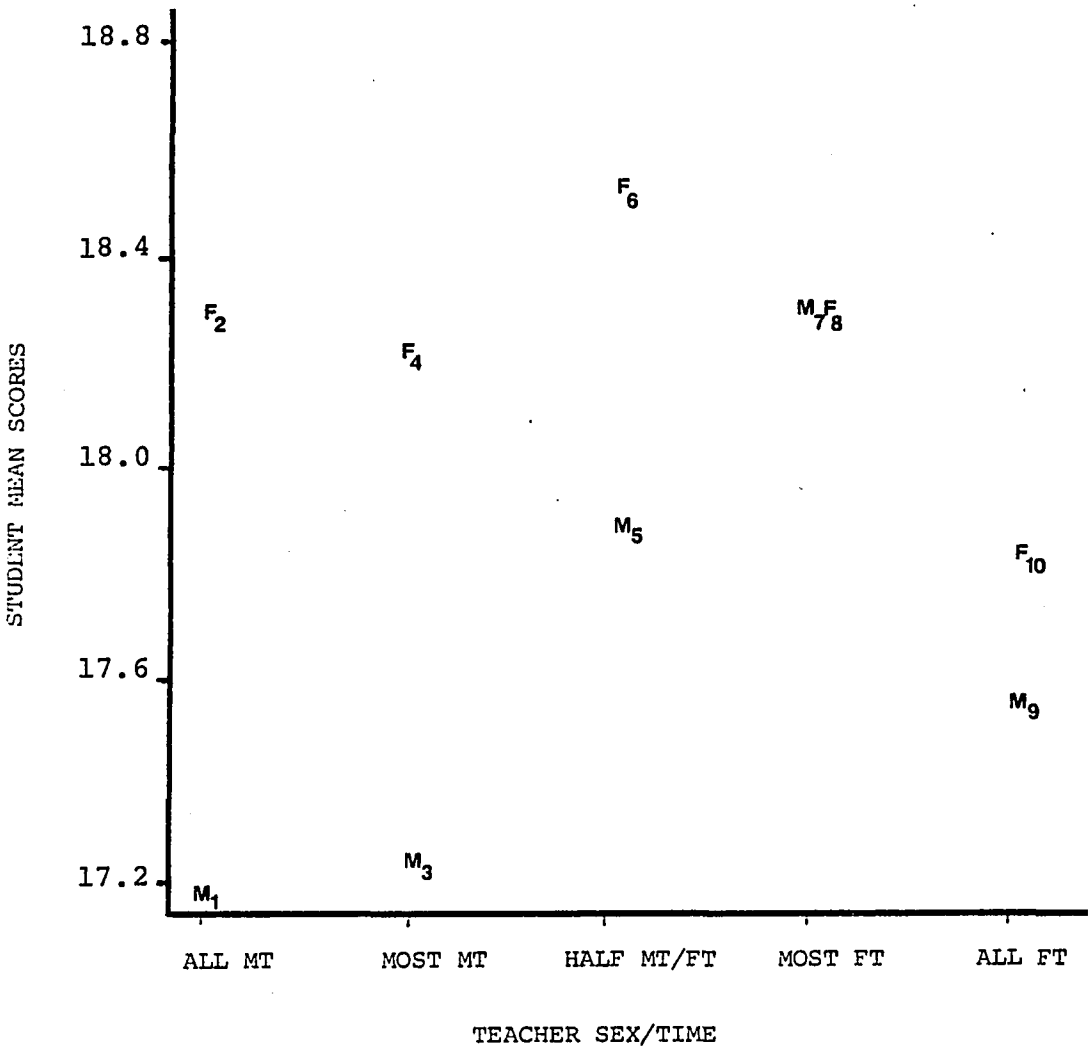

Figure 4. Mean response of Speed by student sex and teacher sex/time.

Table 17

Multiple Comparisons of Subgroups for Speed

	1	2	3	4	5	6	7	8	9
2	-2.747								
3	-.382	2.176							
4	-2.260	.106	-1.820						
5	-1.661	.734	-1.237	.568					
6	-3.908*	-.643	-3.107	-.681	-1.385				
7	-2.809	-.092	-2.244	-.187	-.812	.534			
8	-3.382*	-.057	-2.586	-.167	-.871	.690	.048		
9	-.576	.848	-.377	.747	.369	1.234	.899	.915	
10	-1.861	.979	-1.311	.755	.122	1.790	1.064	1.202	-.313

Group
1 Male Student/All Male Teacher
2 Female Student/All Male Teacher
3 Male Student/Most Male Teacher
4 Female Student/Most Male Teacher
5 Male Student/Half Male-Female Teacher
6 Female Student/Half Male-Female Teacher
7 Male Student/Most Female Teacher
8 Female Student/Most Female Teacher
9 Male Student/All Female Teacher
10 Female Student/All Female Teacher

*$p < .05$

Table 18

Mean Scores for Environment by Subgroups

#	Group Type	n	Mean	Standard Error
10	(FS/All FT)	92	17.59	.252
9	(MS/All FT)	14	17.21	.800
3	(MS/Most MT)	83	16.82	.294
8	(FS/Most FT)	120	16.78	.259
2	(FS/All MT)	70	16.69	.357
1	(MS/All MT)	151	16.65	.271
6	(Half M/FT)	100	16.48	.307
4	(FS/Most MT)	46	16.35	.443
5	(MS/Half M/FT)	56	16.32	.349
7	(MS/Most FT)	63	16.17	.313

Table 19

ANOVA Summaries for Environment

Source	df	ss	ms	F Value	PR > F
Group	9	114.25	12.69	1.52	.137
Student sex	1	2.57	2.57	0.31	.580
Teacher sex/time	4	25.20	6.30	0.75	.556
Interaction	4	21.00	5.25	0.63	.643
Error	785	6566.05	8.36		

Group 9 (MS/All FT) (19.43). Mean scores for Friction are presented in Table 20.

Table 20

Mean Scores for Friction by Subgroups

#	Group Type	n	Mean	Standard Error
2	(FS/All MT)	65	20.58	.345
4	(FS/Most MT)	45	20.33	.406
7	(MS/Most FT)	60	20.23	.444
6	(FS/Half M/FT)	99	20.14	.267
8	(FS/Most FT)	115	19.54	.281
3	(MS/Most MT)	75	19.53	.287
5	(MS/Half M/FT)	48	19.50	.419
9	(MS/All FT)	14	19.43	.635
1	(MS/All MT)	145	19.41	.218
10	(FS/All FT)	91	18.82	.317

Significant differences among the means were found in the total model with particular significance being attributable to the interaction effect of the two main variables. Table 21 contains ANOVA summaries.

Table 21

ANOVA Summaries for Friction

Source	df	ss	ms	F Value	PR > F
Group	9	195.51	21.72	21.72	.004*
Student Sex	1	8.87	8.87	1.11	.290
Teacher Sex/Time	4	30.68	7.67	0.96	.430
Interaction	4	92.97	23.24	2.90	.020*
Error	747	5987.39	8.01		

*p < .05

Female students demonstrated a definite downward trend in their perception of class friction as their time with female teachers increased. Male students, except for Group 7 (MS/Most FT), perceived their classes similarly for the dimension Friction. A plot of the subgroups means for the dimension Friction is contained in Figure 5.

Group 2 (FS/All MT) scored their classes as significantly higher than Group 10 (FS/All FT) in the LEI dimension Friction. Both groups were of female students with Group 2 being taught all by male teachers and Group 10 being taught by female teachers all of the time. Bonferroni multiple comparisons are presented in Table 22.

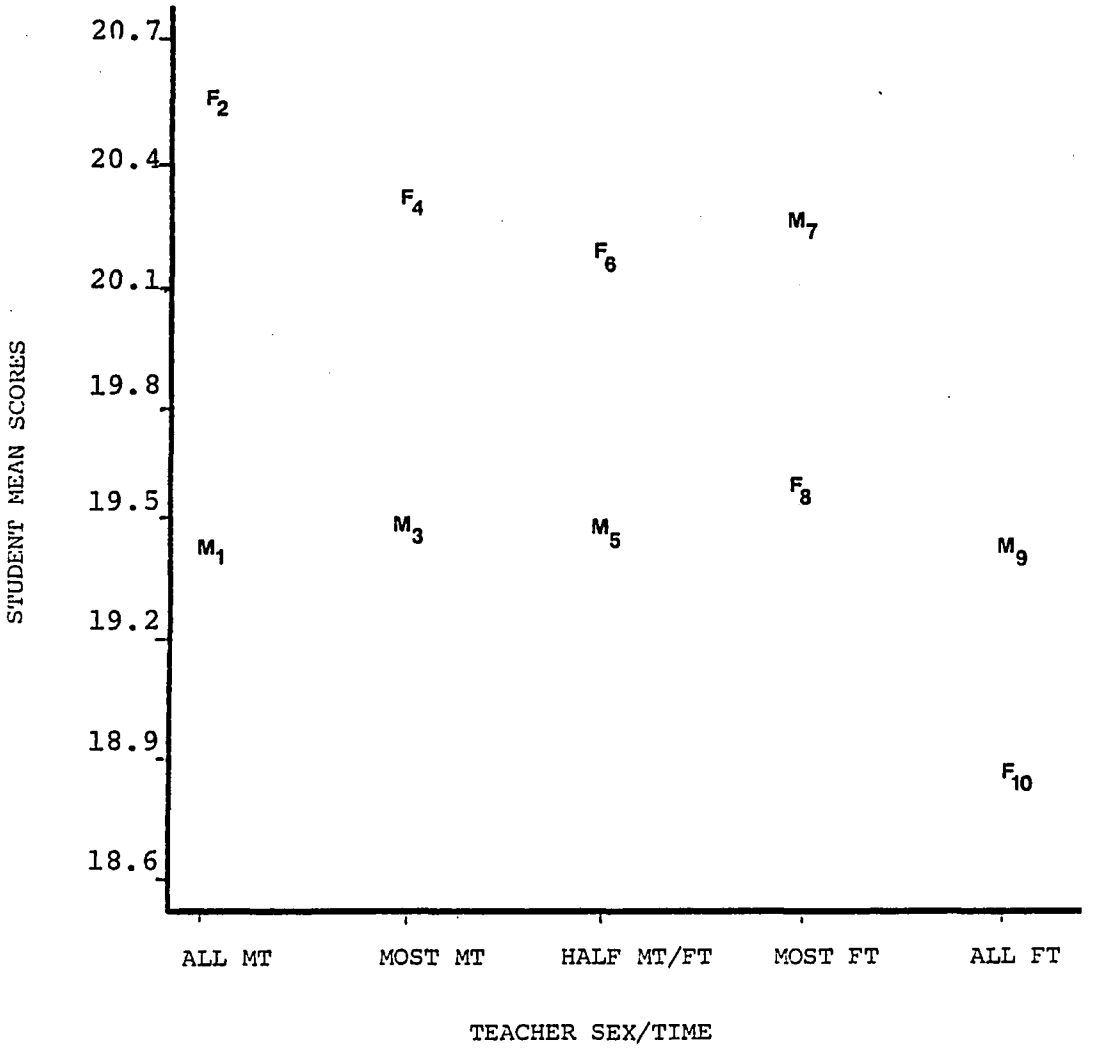

Figure 5. Mean response of Friction by student sex and teacher sex/time.

Table 22

Multiple Comparisons of Subgroups for Friction

	1	2	3	4	5	6	7	8	9
2	-2.787								
3	-.314	2.191							
4	-1.918	.458	-1.499						
5	-.198	2.013	.064	1.419					
6	-1.990	.981	-1.403	.377	-1.288				
7	-1.902	.693	-1.428	.179	-1.338	-.198			
8	-.374	2.380	-.014	1.595	-.081	1.552	1.540		
9	-.024	1.390	.131	1.048	.087	.886	.961	.142	
10	1.539	3.830*	1.606	2.925	1.338	3.204	2.993	1.800	.740

Group
1 Male Student/All Male Teacher
2 Female Student/All Male Teacher
3 Male Student/Most Male Teacher
4 Female Student/Most Male Teacher
5 Male Student/Half Male-Female Teacher
6 Female Student/Half Male-Female Teacher
7 Male Student/Most Female Teacher
8 Female Student/Most Female Teacher
9 Male Student/All Female Teacher
10 Female Student/All Female Teacher

*p < .05

Goal Direction. Group 10 (FS/All FT), scored their classes as higher on the Goal Direction dimension than did the other groups (19.76). Mean scores appear in Table 23.

Table 23

Mean Scores for Goal Direction by Subgroups

Group #	Type	n	Mean	Standard Error
10	(FS/All FT)	91	19.76	.255
9	(MS/All FT)	14	18.71	.835
4	(FS/Most MT)	47	18.15	.489
5	(MS/Half M/FT)	48	18.08	.378
3	(MS/Most MT)	73	18.07	.321
8	(FS/Most FT)	119	18.05	.291
6	(FS/Half M/FT	97	17.91	.299
7	(MS/Most FT)	59	17.86	.443
2	(FS/All MT)	67	17.85	.395
1	(MS/All MT)	140	17.47	.269

Significant differences were found among the subgroup means without being attributable to a particular main or interaction effect. ANOVA summaries are located in Table 24.

Table 24

ANOVA Summaries for Goal Direction

Source	df	ss	ms	F Value	PR > F
Group	9	322.04	35.78	3.89	.0001*
Student Sex	1	11.69	11.69	1.27	.260
Teacher Sex/Time	4	36.13	9.03	0.98	.416
Interaction	4	15.02	3.75	0.41	.802
Error	745	6847.99	9.19		

*p < .05

The plot for Goal Direction showed that all student groups, except for Group 9 (MS/All FT) and Group 10 (FS/All FT), rated this dimension similarly. Group 10 (FS/All FT) demonstrated the greatest departure from the other groups. The Goal Direction plot is displayed in Figure 6.

Group 10 (FS/All FT) scored Goal Direction significantly higher than did Group 1 (MS/All MT), 2 (FS/All FT), 3 (MS/Most MT), 6 (FS/Half M/FT), 7 (MS/Most FT), and 8 (FS/Most FT). Results from the Bonferroni multiple comparison are presented in Table 25.

Favoritism. Group 2 (FS/All MT) rated their classes as being higher on Favoritism (17.81) than other groups,

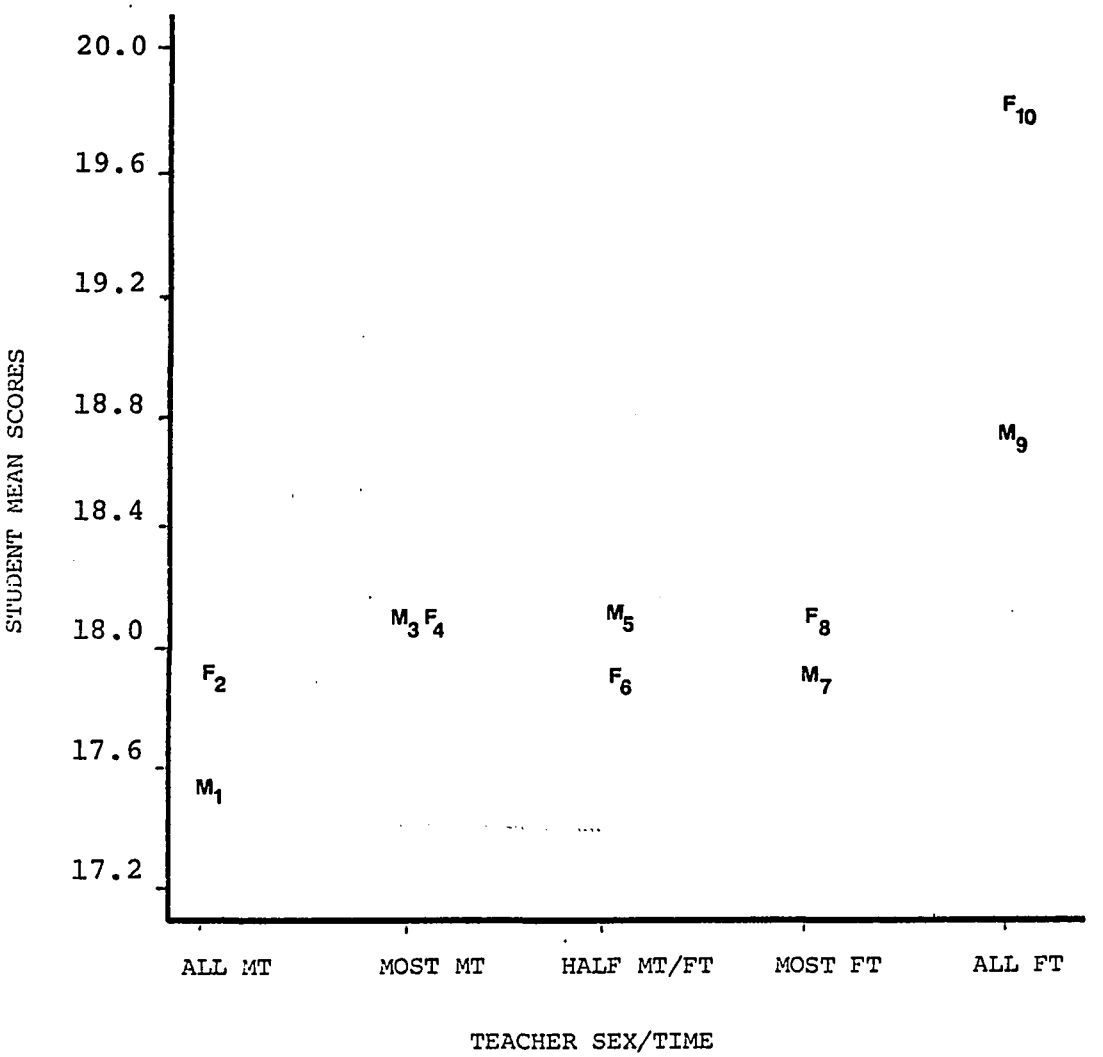

Figure 6. Mean response of Goal Direction by student sex and teacher sex/time.

Table 25

Multiple Comparisons of Subgroups

for Goal Direction

	1	2	3	4	5	6	7	8	9
2	.843								
3	-1.364	-.424							
4	-1.326	-.516	-.142						
5	-1.207	-.405	-.026	.105					
6	-1.088	-.117	.343	.449	.329				
7	-.184	-.025	.385	.480	.371	.086			
8	-1.523	.431	.406	.189	.064	-.345	.385		
9	-1.463	-.969	-.730	-.613	-.685	-.931	.943	-.775	
10	-5.601*	-3.908*	-3.547*	-2.955	-3.097	-4.183*	3.737*	-4.045*	-1.199

Group 1 Male Student/All Male Teacher
2 Female Student/All Male Teacher
3 Male Student/Most Male Teacher
4 Female Student/Most Male Teacher
5 Male Student/Half Male-Female Teacher
6 Female Student/Half Male-Female Teacher
7 Male Student/Most Female Teacher
8 Female Student/Most Female Teacher
9 Male Student/All Female Teacher
10 Female Student/All Female Teacher

*$p < .05$

but female students taught by female teachers all of the time rated their classes as being lowest on Favoritism (15.52). The subgroup means are located in Table 26.

Table 26

Mean Scores for Favoritism by Subgroups

Group #	Type	n	Mean	Standard Error
2	(FS/All MT)	67	17.81	.508
6	(FS/Half M/FT)	98	17.38	.386
7	(MS/Most FT)	63	17.03	.487
1	(MS/All MT)	133	16.95	.275
4	(FS/Most MT)	47	16.79	.388
9	(MS/All FT)	12	16.67	.782
8	(FS/Most FT)	118	16.64	.346
5	(MS/Half M/FT)	49	16.51	.568
3	(MS/Most MT)	76	16.20	.288
10	(FS/All FT)	89	15.52	.383

Significant differences were found among the subgroup means for the total model, but without being attributable to either of the main effects or the interaction effect. ANNOVA summaries are located in Table 27.

Table 27

ANOVA Summaries for Favoritism

Source	df	ss	ms	F Value	PR > F
Group	9	286.55	31.84	2.50	.008*
Student Sex	1	2.87	2.87	0.23	.635
Teacher Sex/Time	4	35.95	8.99	0.71	.589
Interaction	4	68.59	19.40	1.35	.251
Error	742	9442.45	12.73		

*p < .05

The plot for Favoritism demonstrated an observable downward trend for female students except for Group 6 (FS/Half M/FT) as the amount of time spent with female teachers increased. Male students, however, showed little variation as the sex of the teacher changed. The plot for Favoritism is displayed in Figure 7.

The mean for Group 10 (FS/All FT) was significantly lower than for either Group 2 (FS/All MT) or Group 6 (FS/Half M/FT). Group 2 was comprised of female students in classes taught only by male teachers. Group 6 was also female students, but in classes taught half by male and half by female teachers. The comparison of means is presented in Table 28.

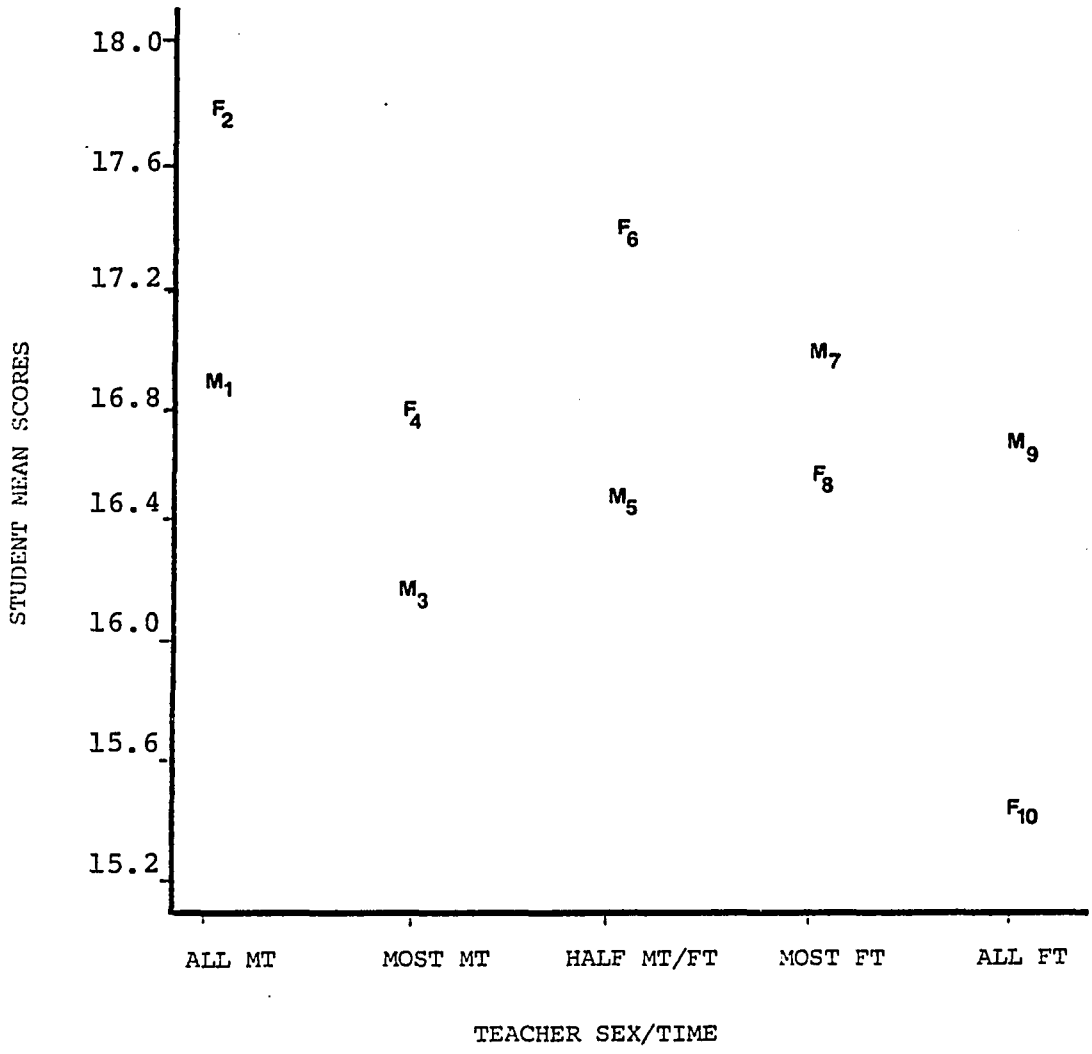

Figure 7. Mean response of Favoritism by student sex and teacher sex/time

Table 28

Multiple Comparisons of Subgroups

for Favoritism

	1	2	3	4	5	6	7	8	9
2	-1.607								
3	1.462	2.691							
4	.265	1.501	-.891						
5	.733	1.932	-.479	.380					
6	-.906	.758	-2.165	-.933	-1.390				
7	-.155	1.237	-1.373	-.356	-.768	.601			
8	.691	2.145	-.835	.246	-.207	1.522	.712		
9	.261	1.019	-.424	.104	-.136	.652	.325	-.029	
10	2.928	3.967*	1.221	1.975	1.565	3.562*	2.579	2.234	1.048

Group
1 Male Student/All Male Teacher
2 Female Student/All Male Teacher
3 Male Student/Most Male Teacher
4 Female Student/Most Male Teacher
5 Male Student/Half Male-Female Teacher
6 Female Student/Half Male-Female Teacher
7 Male Student/Most Female Teacher
8 Female Student/Most Female Teacher
9 Male Student/All Female Teacher
10 Female Student/All Female Teacher

*$p < .05$

Cliqueness. Male students in Group 9 (MS/All FT) and Group 1 (MS/All MT) scored their classes as lowest in Cliqueness (19.31 and 19.37, respectively). Female students taught mostly by males (Group 4) and male students taught mostly by female teachers (Group 7) perceived their classes as high in Cliqueness as shown by the scores 21.15 and 21.00, respectively Mean scores for Cliqueness are presented in Table 29.

Table 29

Mean Scores for Cliqueness by Subgroups

#	Group Type	n	Mean	Standard Error
4	(FS/Most MT)	47	21.15	.400
7	(MS/Most FT)	58	21.00	.414
2	(FS/All MT)	67	20.69	.377
6	(FS/Half MT)	99	20.42	.312
8	(FS/Most FT)	118	20.35	.290
5	(MS/Half M/FT)	51	20.18	.460
3	(MS/Most MT)	79	19.82	.300
10	(FS/All FT)	91	19.69	.274
1	(MS/All MT)	145	19.37	.261
9	(MS/All FT)	13	19.31	.685

The main effects of student sex and teacher sex/time were significant factors in the analysis of variance. The interaction of the two main variables was significant as well. ANOVA results are available in Table 30.

Table 30

ANOVA Summaries for Cliqueness

Source	df	ss	ms	F Value	PR > F
Group	9	246.07	27.34	3.03	.002*
Student Sex	1	34.66	34.66	3.84	.051*
Teacher Sex/Time	4	120.01	20.00	3.32	.010*
Interaction	4	104.61	26.15	2.89	.021*
Error	758	6850.02	9.04		

*p < .05

Four groups of male students demonstrated a definite upward trend in perceived cliqueness as the amount of time with a female teacher increased. This was not true for Group 9 (MS/All FT). Female students showed a similar but less dramatic trend in the opposite direction with the exception of Group 4 (FS/Most MT). A plot illustrating these trends is available in Figure 8.

Multiple comprisons found Group 1 (MS/All MT) was significantly lower in Cliqueness than both Group 4

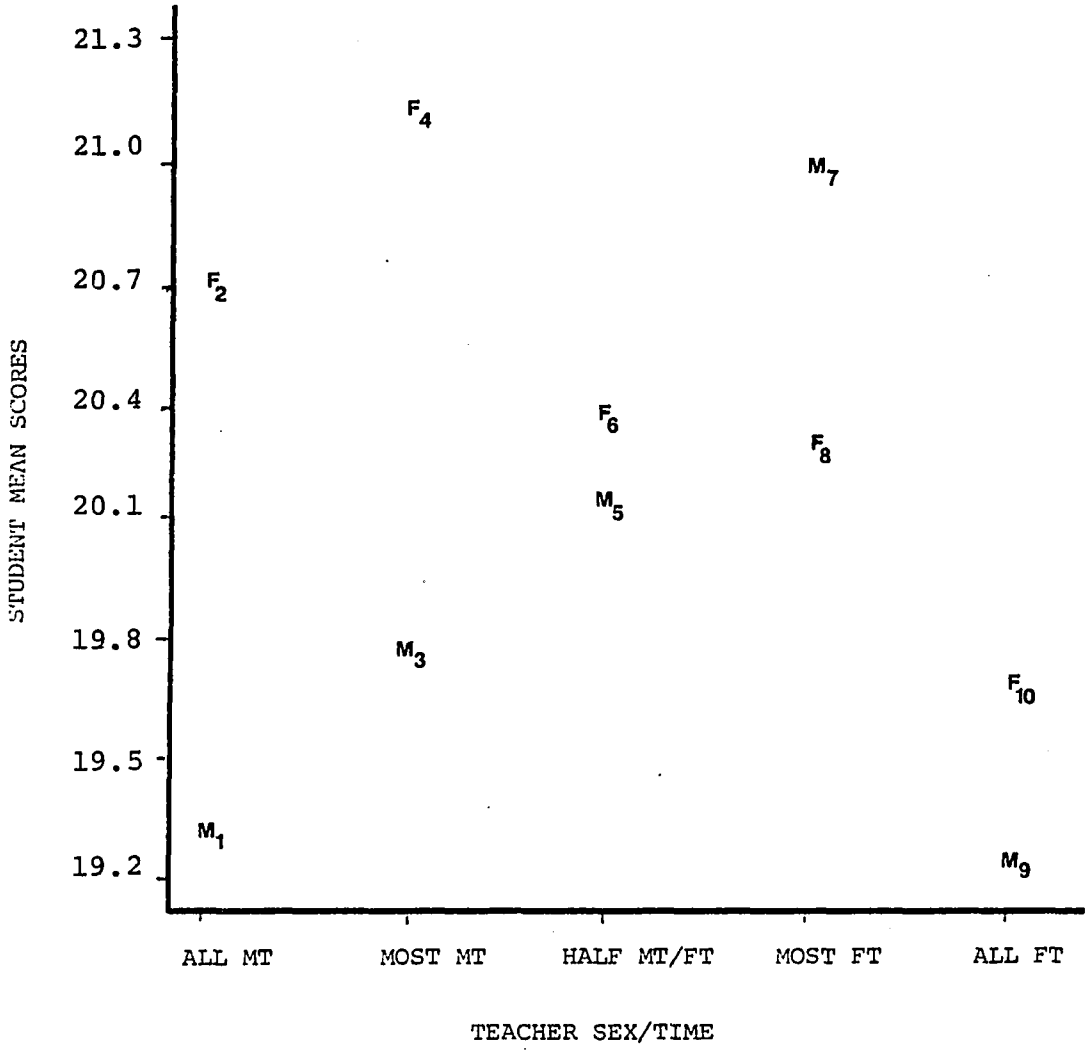

Figure 8. Mean response of Cliqueness by student sex and teacher sex/time.

(FS/Most MT) and Group 7 (MS/Most FT). The complete Bonferroni group comparisons are located in Table 31.

Satisfaction. Female students taught by female teachers all of the time (Group 10) had higher degrees of satisfaction with their physical education classes than did the other subgroups (18.08). Female students taught by male teachers for any time rated their classes as least satisfactory. The mean rankings are contained in Table 32.

Through analysis of variance significant differences were detected among the 10 subgroups. This difference was attributable to the interaction effect of student sex and teacher sex/time. ANOVA summaries are given in Table 33.

An upward trend in Satisfaction was seen for all groups of female students except for Group 4 (FS/Most MT). Male students showed no particular pattern in relationship to the other groups. The plot of the 10 subgroups mean scores is illustrated in Figure 9.

Several group comparisons were found to be significant. Group 10 (FS/All FT) perceived their classes as more satisfactory than did either Group 2 (FS/All MT) or Group 4 (FS/Most MT). Group 3 (MS/Most MT) scored their classes as higher in the Satisfaction dimension than did either Group 2 or Group 4. In addition Group 1 (MS/All MT) rated their classes as significantly higher than Group 4. Group comparisons are found in Table 34.

Table 31

Multiple Comparisons of Subgroups

for Cliqueness

	1	2	3	4	5	6	7	8	9
2	-2.975								
3	-1.088	1.730							
4	-3.534*	-.808	-2.395						
5	-1.657	.913	-.655	1.600					
6	-2.701	.552	-1.326	1.361	-.478				
7	-3.500*	-.581	-2.265	.252	-1.427	-1.158			
8	-2.634	.738	-1.200	1.546	-.339	.187	1.354		
9	.066	1.510	.572	1.954	.921	1.259	1.835	1.184	
10	-.813	2.051	.282	2.697	.921	1.677	2.589	1.562	-.431

Group		
	1	Male Student/All Male Teacher
	2	Female Student/All Male Teacher
	3	Male Student/Most Male Teacher
	4	Female Student/Most Male Teacher
	5	Male Student/Half Male-Female Teacher
	6	Female Student/Half Male-Female Teacher
	7	Male Student/Most Female Teacher
	8	Female Student/Most Female Teacher
	9	Male Student/All Female Teacher
	10	Female Student/All Female Teacher

*$p < .05$

Table 32

Mean Scores for Satisfaction by Subgroups

Group #	Type	n	Mean	Standard Error
10	(FS/All FT)	90	18.08	.326
3	(MS/Most MT)	85	17.82	.307
9	(MS/All FT)	14	17.79	.673
1	(MS/All MT)	149	17.44	.248
5	(MS/Half M/FT)	48	16.96	.447
7	(Ms/Most FT)	60	16.90	.387
8	(FS/Most FT)	120	16.78	.291
6	(FS/Half M/FT)	98	16.67	.365
2	(FS/All MT)	66	16.08	.394
4	(FS/Most MT)	48	15.60	.523

Table 33

ANOVA Summaries for Satisfaction

Source	df	ss	ms	F Value	PR > F
Group	9	363.62	40.04	4.04	.0001*
Student Sex	1	70.86	70.86	7.08	.008*
Teacher Sex/Time	4	41.94	10.49	1.05	.381
Interaction	4	117.01	29.25	2.93	.020*
Error	767	7673.16	10.10		

* $p < .05$

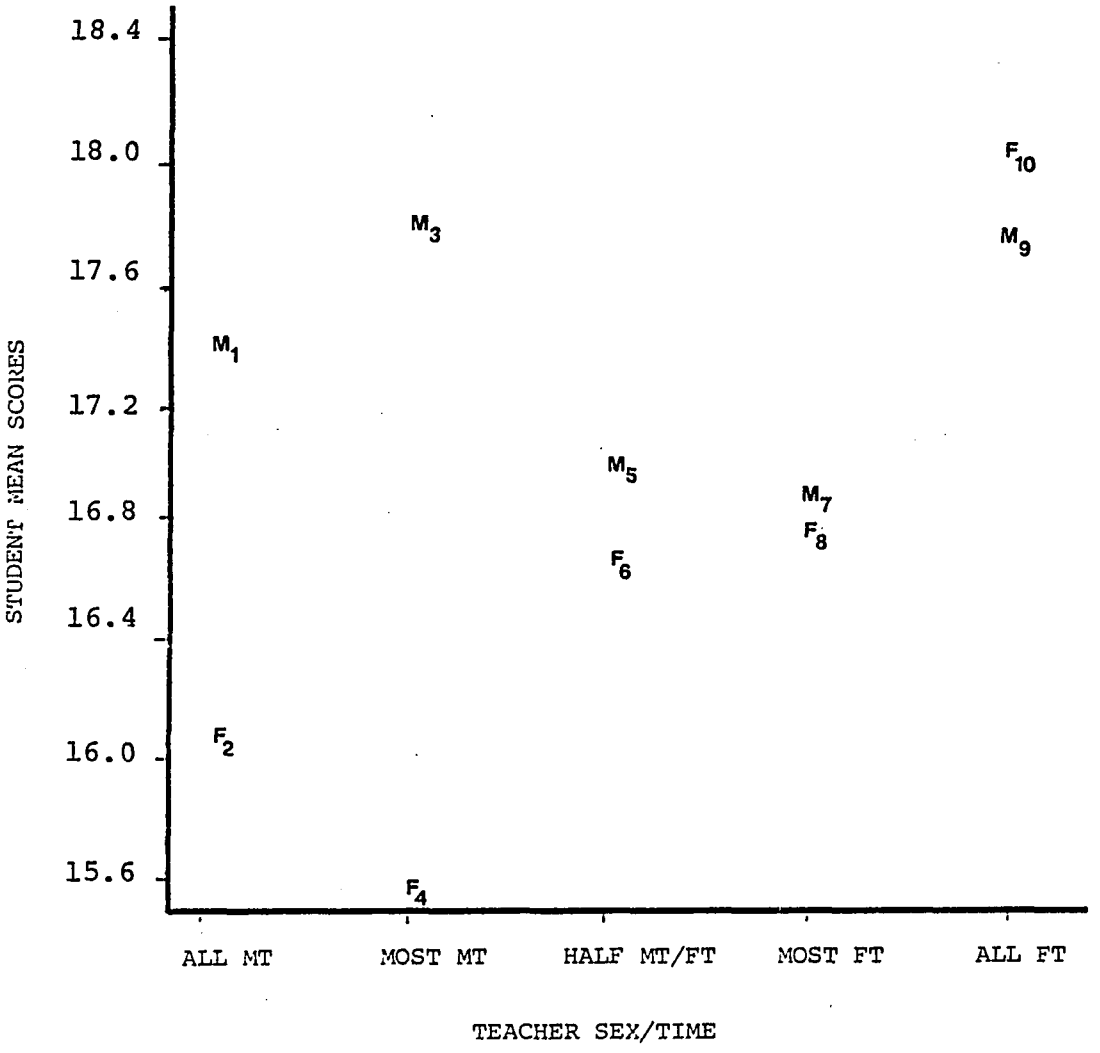

Figure 9. Mean response of Satisfaction by student sex and teacher sex/time

Table 34

Multiple Comparisons of Subgroups for Satisfaction

	1	2	3	4	5	6	7	8	9
2	2.919								
3	-.885	-3.364*							
4	3.503*	.790	3.886*						
5	.923	-1.467	1.515	2.097					
6	1.873	-1.173	2.454	-1.910	.516				
7	1.123	-1.457	1.732	-2.116	.095	-.443			
8	1.700	-1.455	2.320	-2.183	.324	-.262	.233		
9	-.388	-1.835	.041	-2.183	-.861	-1.234	-.943	-1.122	
10	-1.503	-3.901*	-.532	-4.376*	-1.980	-3.041	-2.234	-2.935	-.321

Group 1 Male Student/All Male Teacher
2 Female Student/All Male Teacher
3 Male Student/Most Male Teacher
4 Female Student/Most Male Teacher
5 Male Student/Half Male-Female Teacher
6 Female Student/Half Male-Female Teacher
7 Male Student/Most Female Teacher
8 Female Student/Most Female Teacher
9 Male Student/All Female Teacher
10 Female Student/All Female Teacher

*$p < .05$

Disorganization. Group 1 (MS/All MT) perceived their classes as being the most disorganized of the 10 groups (16.27). Female students taught by all female teachers scored their classes as the least disorganized (14.81). The mean scores are found in Table 35.

Table 35

Mean Scores for Disorganization by Subgroups

Group #	Type	n	Mean	Standard Error
1	(MS/All MT)	147	17.27	.297
6	(FS/Half M/FT)	97	17.24	.381
9	(MS/All FT)	14	17.07	.815
7	(MS/Most FT)	61	16.79	.410
2	(FS/All MT)	68	16.68	.420
5	(FS/Half M/FT)	50	16.40	.515
3	(MS/Most FT)	84	16.27	.345
8	(FS/Most FT)	118	15.93	.311
4	(FS/Most MT)	47	15.83	.426
10	(FS/All FT)	91	14.81	.297

Significant differences were found among the subgroups with one of the main effects, student sex, demonstrating significance when controlling for teacher sex/time and the interaction effect. ANOVA summaries may be found in Table 36.

Table 36

ANOVA Summaries for Disorganization

Source	df	ss	ms	F Value	PR > F
Group	9	471.24	62.36	4.61	.0001*
Student Sex	1	57.17	57.17	5.03	.025*
Teacher Sex/Time	4	64.88	16.22	1.43	.223
Interaction	4	101.87	25.47	2.23	.063
Error	767	8719.32	11.37		

*p < .05

No particular trends were interpretable from the plot of the subgroup means. The plot is represented in Figure 10.

Female students taught exclusively by female teachers (Group 10) found their classes to be significantly lower in the Disorganization dimension than either Group 1 (MS/All MT), Group 2 (FS/All MT), Group 6 (FS/Half M/FT) or Group 7 (MS/Most FT). Bonferroni comparisons may be found in Table 37.

Difficulty. Three of the five female student subgroups rated their classes as more difficult than the other seven groups. Male students in classes taught mostly by male teachers perceived their classes as the least difficult (16.40). Table 38 contains the mean scores for the 10 groups.

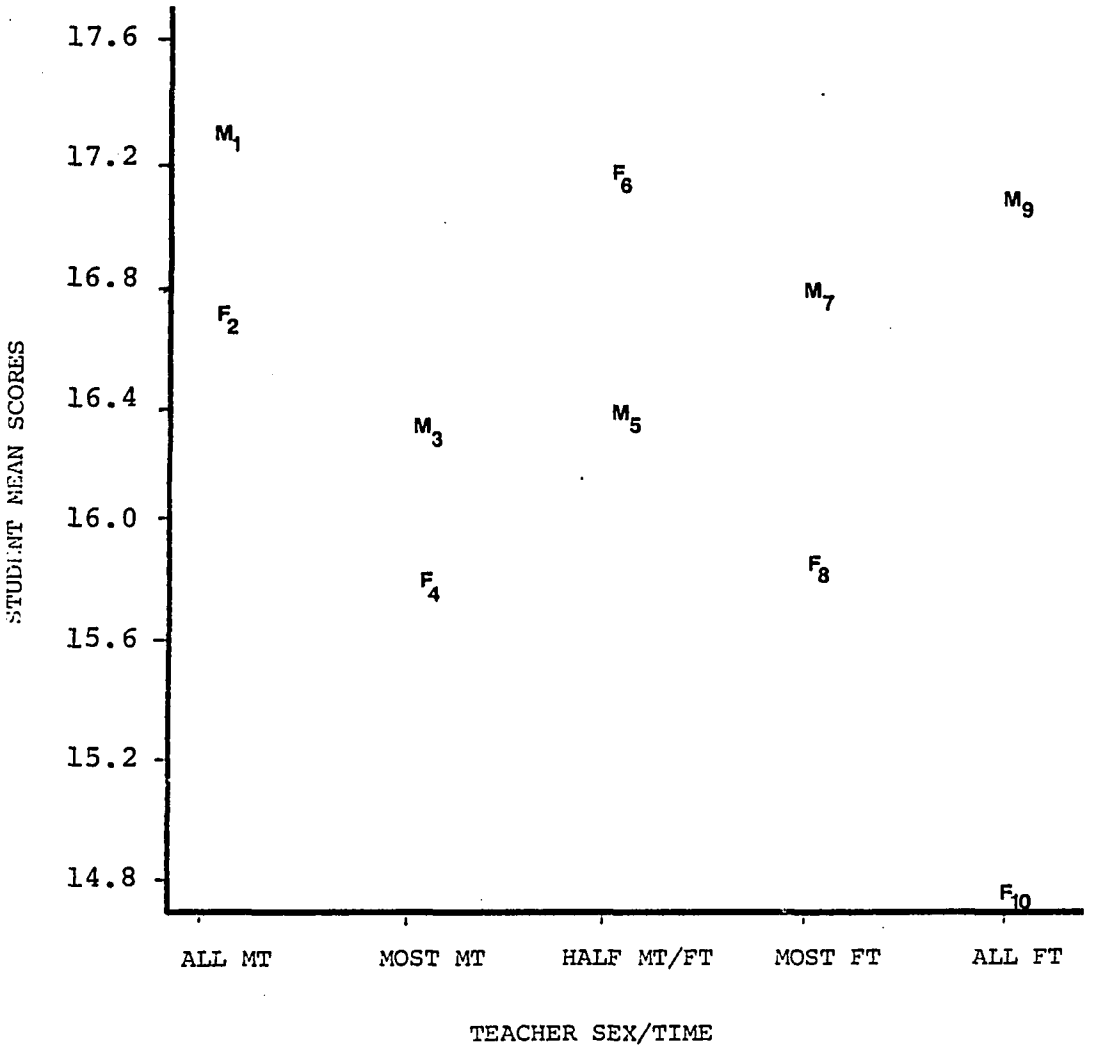

Figure 10. Mean response of Disorganization by student sex and teacher sex/time.

Table 37

Multiple Comparisons of Subgroups for Disorganization

	1	2	3	4	5	6	7	8	9
2	1.204								
3	2.165	.732							
4	2.553	1.324	.723						
5	1.580	.440	-.210	-.832					
6	.079	-.105	-1.917	-2.349	-1.426				
7	.945	-.186	-.905	-1.463	-.602	.817			
8	3.215	1.450	.710	-.176	.822	2.824	1.607		
9	.213	-.399	-.819	-1.209	.659	.172	-.285	-1.195	
10	5.468*	3.448*	2.863	1.679	2.674	4.926*	3.538*	2.379	2.333

Group
1 Male Student/All Male Teacher
2 Female Student/All Male Teacher
3 Male Student/Most Male Teacher
4 Female Student/Most Male Teacher
5 Male Student/Half Male-Female Teacher
6 Female Student/Half Male-Female Teacher
7 Male Student/Most Female Teacher
8 Female Student/Most Female Teacher
9 Male Student/All Female Teacher
10 Female Student/All Female Teacher

*p < .05

Table 38

Mean Scores for Difficulty by Subgroups

#	Group Type	n	Mean	Standard Error
2	(FS/All MT)	65	18.17	.339
4	(FS/Most MT)	46	18.13	.420
8	(FS/Most FT)	115	17.31	.264
5	(MS/Half M/FT)	48	17.29	.278
7	(MS/Most FT)	60	17.12	.350
6	(FS/Half M/FT)	98	17.10	.256
9	(MS/All FT)	12	16.92	.633
1	(MS/All MT)	140	16.91	.251
10	(FS/All FT)	91	16.69	.260

Analysis of variance summaries showed significant subgroup differences attributable to the interaction of the two main effects of student sex and teacher sex/time. ANOVA summaries may be found in Table 39.

Difficulty scores for female students decreased as the sex and amount of time of the teacher changed from all male to all female. Male students demonstrated no particular pattern among the 5 male subgroups. A plot of subgroup means is available in Figure 11.

Table 39

ANOVA Summaries for Difficulty

Source	df	ss	ms	F Value	PR > F
Group	9	188.48	20.94	3.05	.001*
Student Sex	1	36.92	36.92	5.38	.021*
Teacher Sex/Time	4	30.11	7.53	1.10	.357
Interaction	4	89.16	22.29	3.35	.012*
Error	745	5114.64	6.87		

*p < .05

Paired comparisons found Group 2 (FS/All MT) was significantly higher in Difficulty than either Group 3 (MS/Most MT) or Group 10 (FS/All FT). Group 4 (FS/Most MT) also perceived their classes to be more difficult than Group 3 (MS/Most MT). Bonferroni multiple comparisons are located in Table 40.

Apathy. Group 4 (FS/Most MT) and Group 2 (FS/All MT) rated their classes to be more apathetic than the other subgroups with mean scores of 18.95 and 18.70, respectively. Group 10 (FS/All FT) rated their classes as being the least apathetic (16.48). The ranked means for Apathy are located in Table 41.

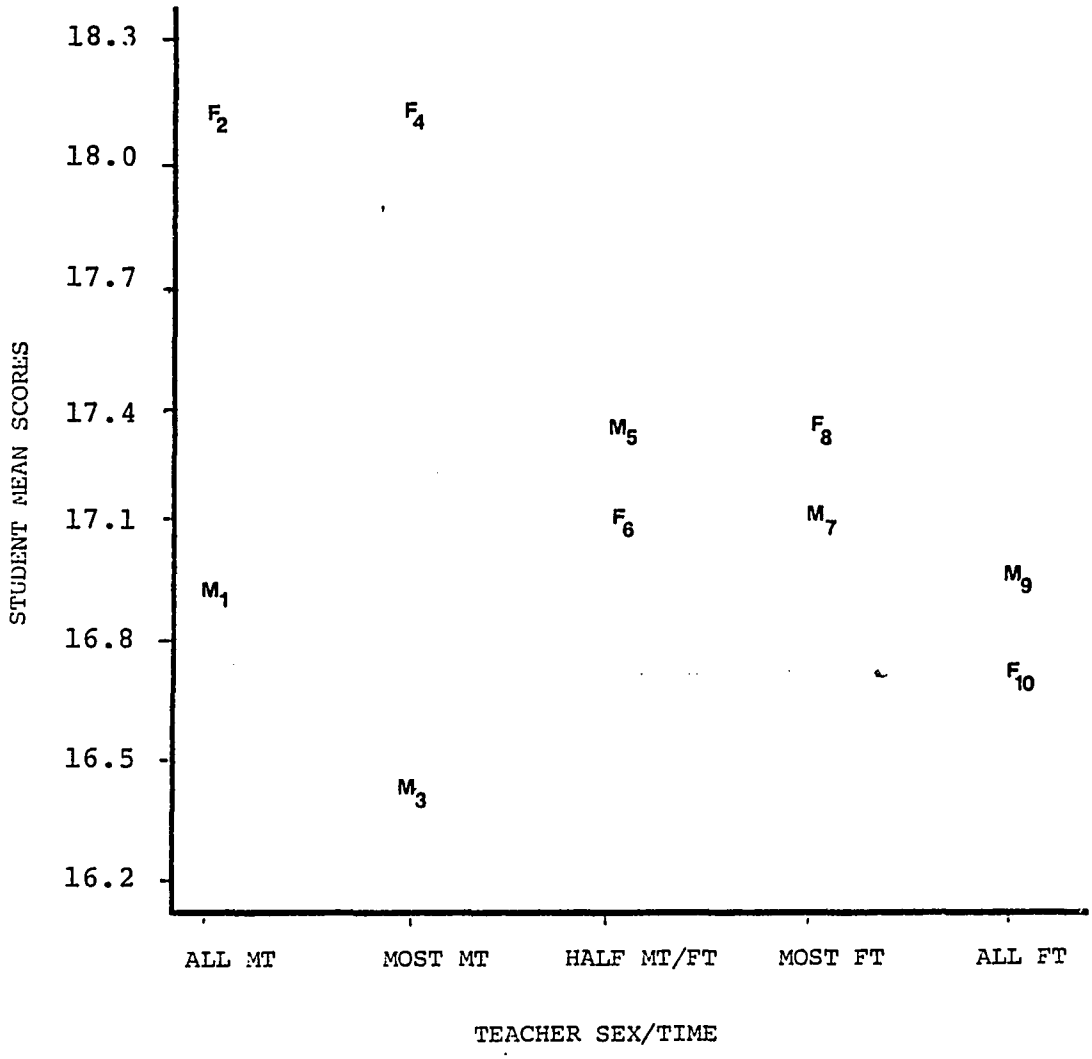

Figure 11. Mean response of Difficulty by student sex and teacher sex/time.

Table 40

Multiple Comparisons of Subgroups

For Difficulty

	1	2	3	4	5	6	7	8	9
2	-3.191								
3	1.401	4.044*							
4	-2.731	.077	-3.569*						
5	-.861	1.760	-1.864	1.551					
6	-.544	2.778	-1.778	2.196	.411				
7	-.501	2.244	-1.602	1.974	.345	-.342			
8	-.663	2.549	-1.921	2.182	.352	-.086	-.039		
9	-.003	1.521	-.637	1.429	.433	.231	.241	.272	
10	.629	3.471*	-.728	3.034	1.282	1.074	.974	1.199	.279

Group 1 Male Student/All Male Teacher
2 Female Student/All Male Teacher
3 Male Student/Most Male Teacher
4 Female Student/Most Male Teacher
5 Male Student/Half Male-Female Teacher
6 Female Student/Half Male-Female Teacher
7 Male Student/Most Female Teacher
8 Female Student/Most Female Teacher
9 Male Student/All Female Teacher
10 Female Student/All Female Teacher

*$p < .05$

Table 41

Mean Scores for Apathy by Subgroups

#	Group Type	n	Mean	Standard Error
4	(FS/Most MT)	44	18.95	.556
2	(FS/All MT)	66	18.70	.424
1	(MS/All MT)	149	17.97	.249
5	(MS/Half M/FT)	50	17.88	.433
6	(FS/Half M/FT)	98	17.80	.348
8	(FS/Most FT)	110	17.79	.340
3	(MS/Most MT)	77	17.60	.351
7	(MS/Most FT)	62	17.47	.414
9	(MS/All FT)	13	17.46	.526
10	(FS/All FT)	89	16.48	.305

Analysis of variance found significant differences among the subgroup means which could not be attributed particularly to the main variables or their interaction effect. Summaries of the analysis are located in Table 42.

Female students demonstrated a definite downward trend in their perception of class apathy as the amount of time with a female teacher increased. Male students, however,

Table 42

ANOVA Summaries for Apathy

Source	df	ss	ms	F Value	PR > F
Group	9	281.49	31.28	2.98	.002*
Student Sex	1	9.04	9.04	0.86	.354
Teacher Sex/Time	4	15.55	3.89	0.37	.330
Interaction	4	59.86	14.97	1.43	.224
Error	748	5303.12	10.50		

*p < .05

exhibited a more consistent scoring pattern. A plot of the subgroup means for Apathy may be seen in Figure 12.

Post hoc tests of significance found Group 10 (FS/All FT) to perceive their classes as significantly lower in Apathy than either Group 1 (MS/All MT), Group 2 (FS/All MT) or Group 4 (FS/Most MT). These were groups comprised of male students with male teachers all of the time and female students with male teachers all and most of the time. Bonferroni comparisons are located in Table 43.

Democratic. The LEI dimension receiving the lowest overall score was Democratic. Group 4 (FS/Most MT) perceived their classes as being very low in democratic characteristics (14.76). Group 10 (FS/All FT) rated their classes as more

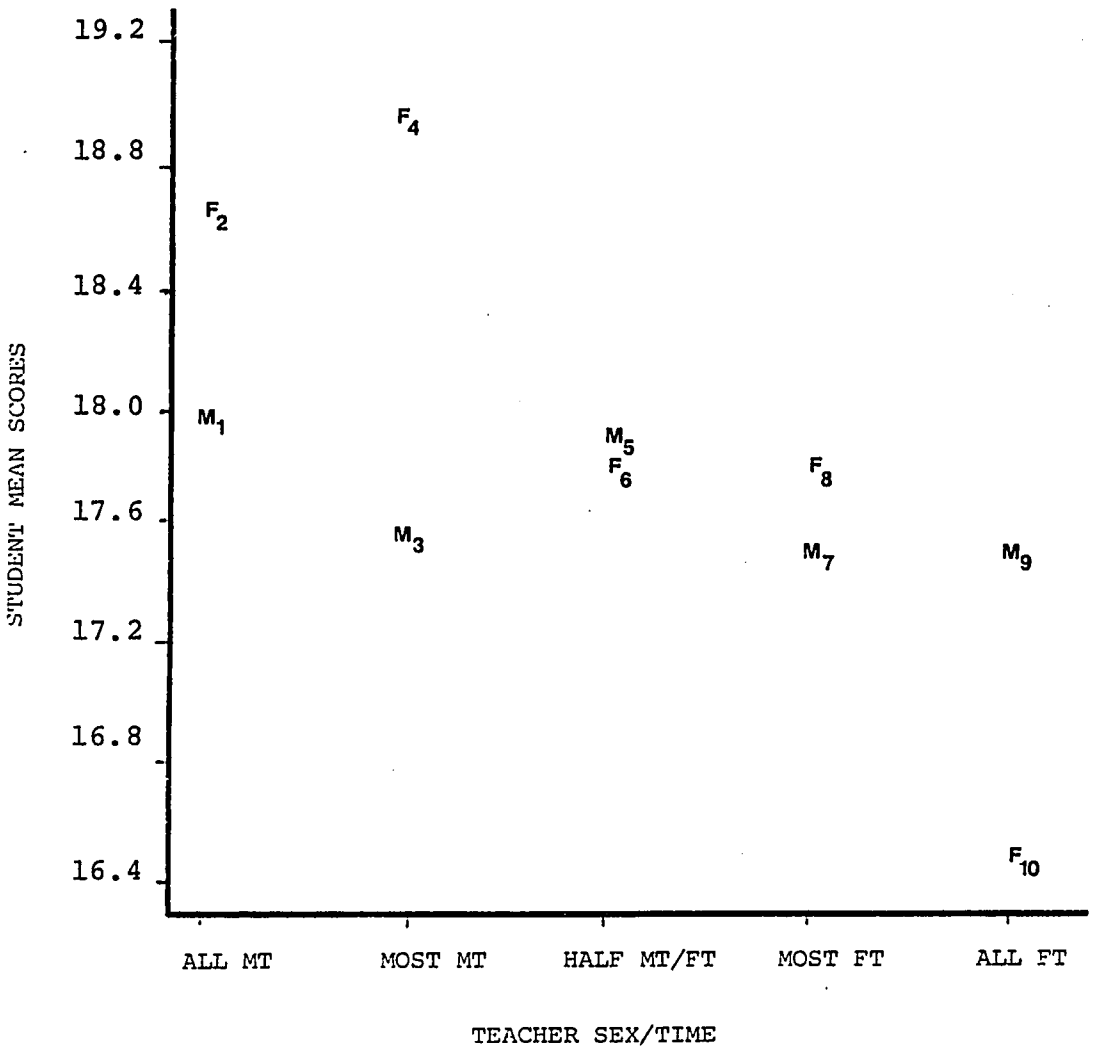

Figure 12. Mean response of Apathy by student sex and teacher sex/time.

Table 43

Multiple Comparisons of Subgroups

for Apathy

	1	2	3	4	5	6	7	8	9
2	-1.525								
3	.811	2.023							
4	-1.778	-.408	-2.217						
5	.163	1.345	-.480	1.604					
6	.404	1.746	-.403	1.970	.149				
7	1.019	2.145	.235	2.329	.670	.624			
8	.431	1.796	-.402	2.013	.161	.111	-.628		
9	.539	1.257	.140	1.460	.415	.350	.006	.347	
10	3.417*	4.207*	2.210	4.139*	2.440	2.768	1.837	2.831	1.017

Group 1 Male Student/All Male Teacher
2 Female Student/All Male Teacher
3 Male Student/Most Male Teacher
4 Female Student/Most Male Teacher
5 Male Student/Half Male-Female Teacher
6 Female Student/Half Male-Female Teacher
7 Male Student/Most Female Teacher
8 Female Student/Most Female Teacher
9 Male Student/All Female Teacher
10 Female Student/All Female Teacher

*$p < .05$

Democratic than did other groups (16.53). Means scores are located in Table 44.

Table 44

Mean Scores for Democratic by Subgroups

#	Group Type	n	Mean	Standard Error
10	(FS/All FT)	92	16.53	.291
1	(MS/All MT)	153	16.50	.236
3	(MS/Most MT)	86	16.10	.290
8	(FS/Most FT)	120	15.89	.276
6	(FS/Half M/FT)	100	15.83	.283
7	(MS/Most FT)	63	15.60	.403
5	(MS/Half M/FT)	52	15.60	.436
2	(FS/All MT)	67	15.54	.400
9	(MS/All FT)	15	15.33	.681
4	(FS/Most MT)	45	14.76	.508

Significant differences were found among the subgroup means which were not attributable to either of the main effects but to the interaction of the two variables. ANOVA summaries are presented in Table 45.

A plot of the subgroup mean scores showed a definite trend in the male student scores and a suggested trend in the female student scores. Male students' scores decreased

Table 45

ANOVA Summaries for Democratic

Source	df	ss	ms	F Value	PR > F
Group	9	177.37	19.71	2.22	.019*
Student Sex	1	1.89	1.89	0.21	.645
Teacher Sex/Time	4	62.32	15.58	1.76	.136
Interaction	4	106.23	26.56	2.99	.018*
Error	783	6950.81	8.88		

*p < .05

as the amount of time with female teachers increased. Female students' scores, however, increased (except for the group taught mostly by male teachers) as their time with female teachers increased. The plot for the dimension Democratic is located in Figure 13.

Multiple comparisons determined that the mean scores for Group 4 (FS/Most MT) were significantly lower than either Group 1 (MS/All MT) or Group 10 (FS/All FT). Paired comparisons may be found in Table 46.

Competitiveness. Group 9 (MS/All FT) and Group 5 (MS/Half M/FT) perceived their classes as being higher in Competitiveness than the other groups with scores of 20.79 and 20.25. Similarly, Group 10 (FS/All FT) and Group 6

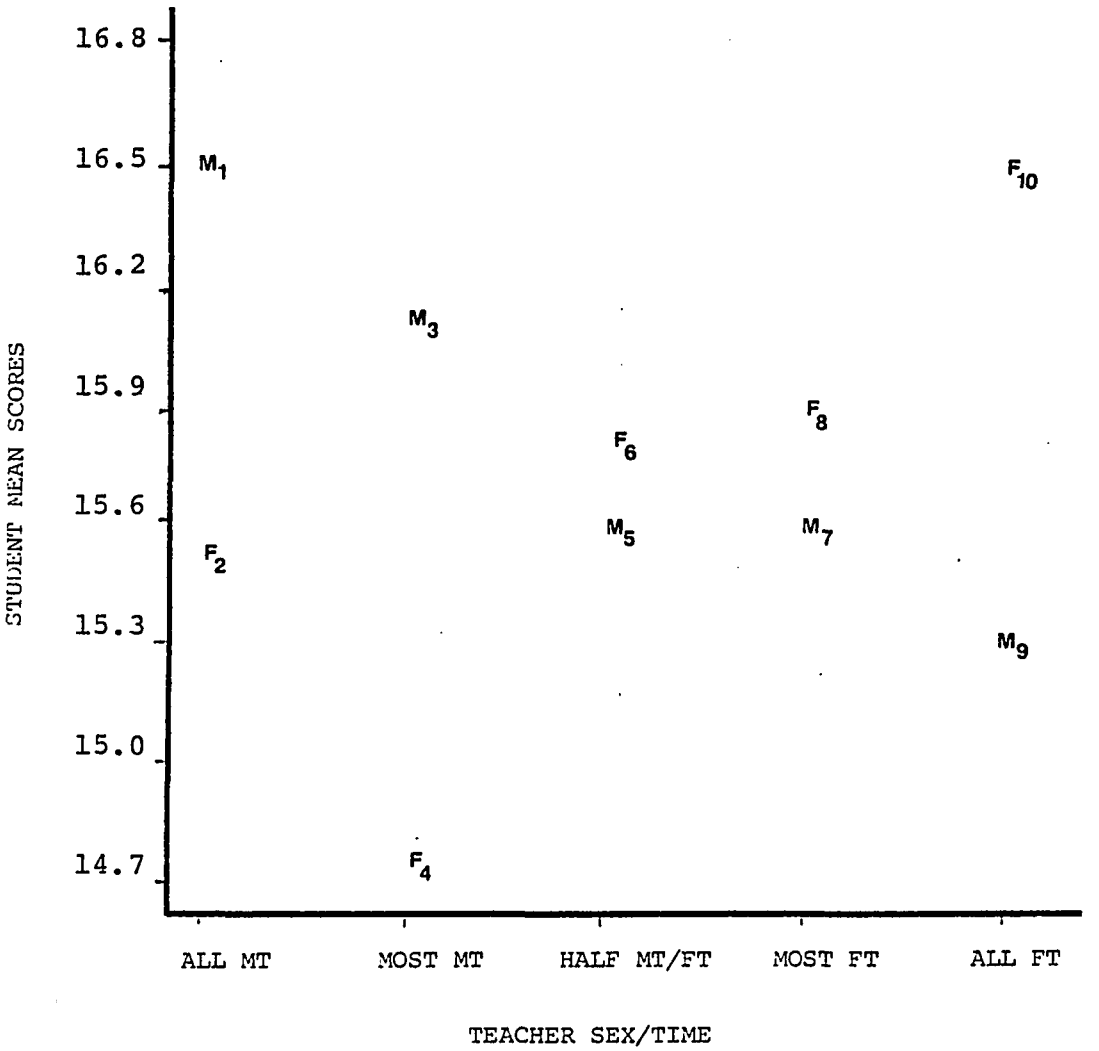

Figure 13. Mean response of Democratic by student sex and teacher sex/time.

Table 46

Multiple Comparisons of Subgroups

for Democratic

	1	2	3	4	5	6	7	8	9
2	2.213								
3	.393	-1.169							
4	3.459*	1.361	2.461						
5	1.897	-.107	.972	-1.386					
6	1.757	-.622	.627	-2.009	-.459				
7	2.018	-.126	1.015	-1.458	-.125	.473			
8	1.603	-.780	.506	-2.181	-.598	-.153	-.622		
9	1.451	.240	.925	-.650	.301	.602	.315	.684	
10	-.075	-.208	-.958	-3.279*	-1.812	-1.632	-1.552	-1.552	-1.446

Group 1 Male Student/All Male Teacher
2 Female Student/All Male Teacher
3 Male Student/Most Male Teacher
4 Female Student/Most Male Teacher
5 Male Student/Half Male-Female Teacher
6 Female Student/Half Male-Female Teacher
7 Male Student/Most Female Teacher
8 Female Student/Most Female Teacher
9 Male Student/All Female Teacher
10 Female Student/All Female Teacher

*p < .05

(FS/Half M/FT) perceived their classes as the least competitive with scores of 17.71 and 18.64. Mean scores for the subgroups are located in Table 47.

Table 47

Mean Scores for Competitiveness by Subgroups

#	Group Type	n	Mean	Standard Error
9	(MS/All FT)	14	20.79	.750
5	(MS/Half M/FT)	48	20.25	.389
4	(FS/Most MT)	45	19.80	.487
2	(FS/All MT)	64	19.61	.378
3	(MS/Most MT)	80	19.56	.286
7	(MS/Most FT)	61	19.05	.376
1	(MS/All MT)	145	18.74	.253
8	(FS/Most FT)	113	18.65	.298
6	(FS/Half M/FT)	99	18.64	.277
10	(FS/All FT)	90	17.71	.276

Analysis of variance detected significant differences among the subgroups means which were attributable to the interaction of the two main effects. The summaries of the ANOVA results are presented in Table 48.

Female students' scores demonstrated a downward trend in Competitiveness as the amount of time with a female

Table 48

ANOVA Summaries for Competitiveness

Source	df	ss	ms	F Value	PR > F
Group	9	188.48	20.94	3.05	.001*
Student Sex	1	36.92	36.92	5.38	.021
Teacher Sex/Time	4	30.11	7.53	1.10	.357
Interaction	4	89.16	22.29	3.25	.012*
Error	745	5114.64	6.87		

*p < .05

teacher increased. Male students, except for Group 7 (FS/Most FT), rated their classes as more competitive as the time with a female teacher increased. The significant effect for Competitiveness was the result of the student sex/teacher sex interaction. The plot is present in Figure 14.

Post hoc multiple comparisons found Group 10 (FS/All FT) to be significantly lower than either Group 2 (FS/All MT), Group 3 (MS/Most MT), Group 5 (MS/Half M/FT), or Group 9 (MS/All FT). These results are found in Table 49.

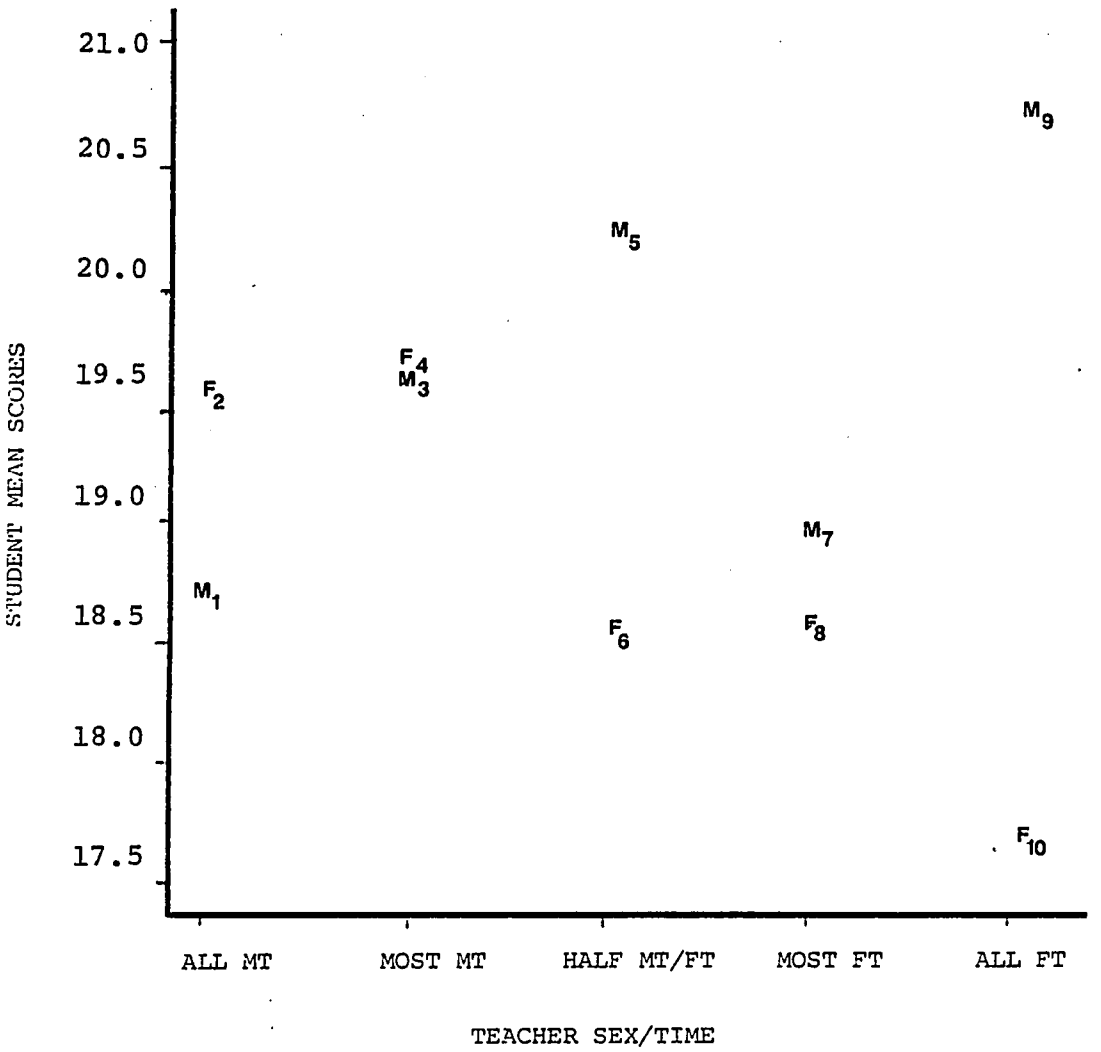

Figure 14. Mean response of Competitiveness by student sex and teacher sex/time.

Table 49

Multiple Comparisons of Subgroups

for Competitiveness

	1	2	3	4	5	6	7	8	9
2	-1.997								
3	-2.036	.962							
4	-2.140	-.337	-.438						
5	-3.122	-1.154	-1.295	-.746					
6	.268	2.086	2.118	2.225	3.155				
7	-.701	1.076	1.038	1.314	2.140	-.872			
8	.227	2.098	2.136	2.234	3.183	-.462	.853		
9	-2.516	-1.371	-1.452	-1.108	-.606	-2.588	-2.015	-2.586	
10	2.631	3.992*	4.143*	3.934*	4.884*	-.462	2.774	2.295	3.680*

Group 1 Male Student/All Male Teacher
2 Female Student/All Male Teacher
3 Male Student/Most Male Teacher
4 Female Student/Most Male Teacher
5 Male Student/Half Male-Female Teacher
6 Female Student/Half Male-Female Teacher
7 Male Student/Most Female Teacher
8 Female Student/Most Female Teacher
9 Male Student/All Female Teacher
10 Female Student/All Female Teacher

*$p < .05$

Summary of LEI dimensions. The LEI produced scores for 15 classroom dimensions reflective of school classes. A summary of the findings from analysis of variance and Bonferroni multiple comparisons are presented in Table 50.

Summary of subgroup characteristics. Of the LEI dimensions, 14 were found to produce significant differences among the subgroups. In Bonferroni post hoc multiple comparisons, a number of paired groupings was found to be significant for each of the 14 dimensions. When a dimension for a particular subgrouping was found to be significantly lower than at least one other subgroup, that dimension was classified as "low". When a dimension was found to be significantly higher than at least one other subgroup, that dimension was classified as "high". A summary of the significant LEI characteristics for the 10 subgroups is presented in Table 51.

Discussion

After a thorough review of the data, it was determined that for clarity, each subgroup would be discussed separately. Characteristics for the subgroups were obtained through ANOVA findings and Bonferroni multiple comparisons.

Group 1 (MS/All MT). Numerous significant LEI characteristics were produced for this group. One explanation

Table 50

ANOVA and Bonferroni Summaries by LEI Dimensions

Dimensions	Group	Student Sex	Teacher Sex/Time	Interaction	Paired Group Comparisons
Cohesiveness	*	*			10 > 1, 5
Diversity	*	*			4 > 1, 3
Formality	*				10 > 1, 3, 5
Speed	*	*	*		6, 8 > 1
Environment					
Friction	*			*	2 > 10
Goal Direction	*				10 > 1, 2, 3, 6, 7, 8
Favoritism	*				2, 6 > 10
Cliqueness	*	*	*	*	4, 7 > 1
Satisfaction	*	*		*	1 > 4; 3 > 2, 4; 10 > 2, 4,
Disorganization	*	*			1, 2, 6, 7 > 10
Difficulty	*	*		*	2 > 3, 10; 4 > 3
Apathy	*				1, 2, 4 > 10
Democratic	*			*	1, 10 > 4
Competitiveness	*			*	2, 3, 5, 4 > 10

*$p < .05$

Table 51

Subgroup Characteristics Based

on the LEI Dimensions

Group		Significant LEI Characteristics
1 (MS/All MT)	Low:	Cohesiveness, Diversity, Formality, Goal Direction, Cliqueness
	High:	Satisfaction, Disorganization, Apathy, Democratic
2 (FS/All MT)	Low:	Goal Direction, Satisfaction
	High:	Friction, Favoritism, Difficulty, Disorganization, Competitiveness, Apathy
3 (MS/Most MT)	Low:	Diversity, Formality, Goal Direction, Difficulty
	High:	Satisfaction, Competitiveness
4 (FS/Most MT)	Low:	Satisfaction, Democratic
	High:	Diversity, Cliqueness, Difficulty, Apathy
5 (MS/Half M/FT)	Low:	Cohesiveness, Formality
	High:	Competitiveness
6 (FS/Half M/FT)	Low:	Goal Direction
	High:	Speed, Favoritism, Disorganization
7 (MS/Most FT)	Low:	Goal Direction
	High:	Cliqueness, Disorganization
8 (FS/Most FT)	Low:	Goal Direction
	High:	Speed
9 (MS/All FT)	Low:	None
	High:	Competitiveness
10 (FS/All FT)	Low:	Friction, Favoritism, Disorganization, Difficulty, Apathy, Competitiveness
	High:	Cohesiveness, Formality, Goal Direction, Satisfaction, Democratic

for such an occurrence could be the homogeneity of this group of classes. Although it was not known whether all of the classes in Group 1 were single-sex or coeducational, it was known that one school (School 4) did utilize single-sex classes taught by teachers of the same sex. Male students from School 4 comprised approximately 40% of Group 1 (see Table 5). Perhaps, it was a similarity in the class members which caused many of the significant LEI dimensions. Another possible explanation for the numerous characteristics could relate to the organizational structure of these classes. It may be that these classes experienced little or no changes in their organization, always having the same male teacher and the same class members. This could have produced more consistent, distinct group characteristics.

The low Cohesiveness score could have related to the low score in Goal Direction and the high score in Disorganization. These classes may have had little organized instruction or specific direction given resulting in individuals functioning independently with little opportunity to know other students. If the notion of lack of directed instruction is valid, this supports Bain's (1976) findings in which male teachers were observed to be less involved in instructive behavior than were their female counterparts.

The homogeneous nature of classes appeared to have little effect on the dimension Cohesiveness. The Cohesiveness score was unexpectedly low in that these classes had been together for eight months prior to data collection. Cohesiveness, also, may have been a sex-related dimension which male students rated lower than did female students. This was evidenced by the significant F ratio for one of the main effects, sex of student. Similar findings occurred for high ability female students in a study by Anderson and Walberg (1969).

The high Apathy scores may have resulted from student or teacher attitude regarding the class. It has been found that student attitude toward school and the schooling process becomes more negative as the grade in school increases (Neale et al., 1970; Yamamoto et al., 1969). It may be that these secondary school male students were generally apathetic because of age-related characteristics. Ellet et al. (1976) determined that the LEI measured more global characteristics with "general alienation" being one of the six factors obtained. The high Apathy score may have been a part of the student's general feeling of total alienation toward school and not specifically apathetic toward physical education classes.

The significantly high Apathy score, however, could have been related to teacher apathy, possibly evidenced in

students' perceptions of low Goal Direction and high Disorganization. The lack of defined purpose and class organization could have caused students to perceive their classes as more apathetic. In every instance, the male teacher had additional responsibilities in the area of coaching. Often he was hired primarily for the particular coaching assignment having additional responsibilities in the area of teaching. Teacher's interests may not have been primarily with physical education but rather with coaching. Students may have perceived teacher's interest in physical education as secondary causing perceptions of high apathy.

The low Formality score may have been related to the lack of direction and class organization and be another indication of a less structured, involved class. The low score could, however, simply have been related to a laizzez-faire attitude within these classes. Together with the low Goal Direction and high Disorganization scores the classes appeared to be generally less productive. Walberg and Anderson (1968) discovered a similar study with physics classes. The organizational dimensions of Goal Direction, Disorganization, and Formality were found to be directly related to certain measures of learning. Students who perceived their classes as highly goal-oriented, organized, and formal, scored significantly high on eight criteria of learning. It may be that these classes, low

in Goal Direction and Formality, and high is Disorganization, were not oriented toward learning as were other classes.

Cliqueness was low, as was Diversity which would lead one to expect a high Cohesiveness score. This, however, was not the case. The Cliqueness and Diversity scores could have related to a homogeneous nature within these classes with few special interests groups occurring. These students, also, perceived their classes as democratic which may have indicated that some degree of sharing occurred within these classes. Democratic was a dimension which produced a significant interaction effect between student sex and teacher sex/time. Male students with male teachers tended to perceive their classes as more democratic.

Satisfaction for male students taught by male teachers all of the time was high which may have been related to the degree of change experienced. Students undergoing change, particularly a dramatic change like coeducational physical education classes, would probably feel less satisfied than those students experiencing little change. Group 1 students may have been involved with an unchanging class structure with which they were familiar and comfortable as compared to other class groups.

Group 2 (FS/All MT). This group also defined a number of significant LEI characteristics, three of which were

similar to Group 1's (MS/All MT) perception. Female students similarly perceived their classes as being low in Goal Direction and high in Apathy and Disorganization. With both male and female students having a similar perception of classes taught by a male teacher all of the time, it appeared that the teacher may have been the factor which generated these perceptions. Bain's (1976) findings for male teachers would be further affirmed by the similarity in results from Group 1 and 2.

Although similar in several characteristics, female students in this group also perceived certain LEI dimensions exactly opposite to the male students in Group 1 (MS/All MT). The female students were not satisfied with their classes, possibly related to their being in a new classroom situation, having a male teacher all of the time. Also, they may have been a minority in a predominantly male student class which would have been an uncommon situation for most female students. Satisfaction was found to be related to student sex with different perceptions occurring based on the student's gender (see Table 50). Other significant LEI dimensions may have been related to students' dissatisfaction. High scores occurred on the Friction, Favoritism, Difficulty, and Competition dimensions. All but Favoritism were found to produce a significant interaction effect when analyzed. These perceptions may

have reflected the type of class activities and method of class organization utilized. Classes may have been conducted as a unit rather than using individual or small group organization, similar to other classroom situations in physical education (Cheffers and Mancini, 1978). If class activities were similar for all students regardless of skill level, female students may have been frustrated at the skill demands. Female students may have been in classes with a male student majority or in classes conducted as they would be for male student classes. If so, choices of activity may have been made without consideration of the female students, thus producing perceptions of Favoritism, Friction, Difficulty, and Competition.

Group 3 (MS/Most MT). These male students exhibited similar significant LEI dimensions to those in Group 1 (MS/All MT) having a high Satisfaction score and low scores in Diversity, Formality, and Goal Direction. Similar to Group 1, perhaps these classes were informal, nondirected, and fairly homogeneous. These findings, similar for Groups 1 and 2, indicated that male teachers may be informal and less goal directed in their teaching. These classes were also perceived as being less difficult, but more competitive. It may be that the possible presence of female students could have caused male students to perceive the activities

as "watered down" and the class climate less competitive. The Competitiveness score was probably not related to a measure of group competition as much as to individual competition, perhaps for the teacher's attention.

Group 4 (FS/Most MT). Female students in classes taught mostly by male teachers reflected similar perceptions to female students in all male taught classes, having low Satisfaction scores and high Apathy and Difficulty scores. Satisfaction and Difficulty were directly related to sex interaction of student and teachers as seen in the significant F value for these two dimensions (see Table 50). The Apathy score appeared to be related more to the male teacher as evidenced by high Apathy scores in three of the four groups taught by male teachers all or most of the time. Democratic was also an interactive dimension which indicated that female students perceived their male teachers as less democratic, while the male student perceived the male teacher as more democratic.

The high Diversity and Cliqueness scores were probably related to class composition. Female students perceived these classes as being composed of diverse and special interest groups, possibly due to male student enrollment in these classes. The Diversity score may have been caused by frequent changes in class structure and the switching of teachers and/or of students.

Group 5 (MS/Half M/FT). The low score in Cohesiveness appeared to be related to the sex of the male students as was similarly discussed in Group 1 (MS/All MT), with Cohesiveness being related to the students' gender (see Table 50). The low score, however, may have been related to the nature of the classes' structure. Having male and female teachers half of the time may have caused many changes in structure and organization, thus producing low perceptions of Cohesiveness. The low Formality score appeared to be a consistent perception related to male students perceiving male teachers. Perhaps, male teachers tended to treat male students less formally than they did their female students.

Competitiveness was also a significant dimension for Group 5, similar to the findings for Group 3 (MS/Most MT). Perhaps female members of these classes produced a significant effect, possibly in competing for the teacher's attention. As mentioned previously, the Competitiveness score was probably not related to the degree of group competition as much as it was to competition among individual group members.

Group 6 (FS/Half M/FT). Students in this group perceived their classes similarly to Group 1 (MS/All MT), and Group 2 (FS/All MT) in the low Goal Direction and high Disorganization scores. It may be that their classes were without definite direction and were not all organized. The

organization score was similar to a classroom analysis by Hurwitz (1978) in which it was determined that teachers of physical education were not extremely efficient in organizing classes. With this study, however, it may have been the switching of teachers and class members which produced these significant characteristics.

Similar to Group 2 (FS/All MT), students in Group 6 (FS/Half M/FT) perceived their classes as higher in Favoritism. Speed was also a highly rated dimension. These characteristics were probably related to the girls' skill level and to the type of activities conducted within these classes. If these classes were coeducational as well as taught half by male and half by female teachers, the traditional competitiveness of physical education activities could have produced high scores in Speed and Favoritism. Competitiveness was not a significantly scored dimension, however, which could have related to the nature of the dimension itself. The item-statements seem to indicate that individual competitiveness was being measured as opposed to group competitiveness.

Group 7 (MS/Most FT). Similar to findings in Group 1 (MS/All MT), Group 2 (FS/All MT), and Group 6 (FS/Half M/FT), Group 7 (MS/Most FT) had low Goal Direction and high Disorganization scores indicating a possible lack of direction

in many classes. It has been found that Goal Direction and Disorganization were two important dimensions in determining the learning potential of certain classes (Walberg & Anderson, 1968). Perhaps, the Goal Direction and Disorganization scores indicated a less productive classroom atmosphere.

Cliqueness was another highly scored dimension indicating that special interest groups may had formed within the classes. This dimension was a complex one being the only LEI dimension to be significant in all aspects of the analysis of variance procedures (see Table 50). It may have been significant for a variety of reasons. One possibility may be the composition of the classes. Male students may have been in classes where female students were of the majority, thus feeling that special groups had formed within the classes. A similar finding occurred in Group 4 (FS/Most MT) which was the exact opposite of Group 7 (MS/Most MT) in its male and female student/teacher arrangement. The organizational structure could have caused students to feel cliques had formed in both groups of classes; or male and female groups actually may have formed within these classes.

Group 8 (FS/Most FT). This group had few significant LEI characteristics which may have related to an everchanging

class structure. Another contributing factor could have been because a fairly equal portion of students in Group 8 came from five of the six schools. Because organizational practice in the schools was different, little consistency was obtained. Goal Direction, however, was low which indicated poor awareness of class purpose. This may have been produced from teachers and class members changing frequently. The high Speed score similarly could have reflected this changing environment.

Group 9 (MS/All FT). This group lacked specific definition in that only one LEI dimension was significantly different from the other groups. Compared to Group 2 (FS/All MT), the exact opposite to Group 9, this group should have had more significant characteristics. The answer probably lies with the size of Group 9 which had only 15 students. It would be difficult to obtain significant results with such a small sample size. The single distinguishing characteristic of Group 9 was the high Competitiveness score. This score, like Group 2 (FS/all MT), probably related to students being the minority sex with a teacher of an opposite sex. These students may have felt left out or felt a lack of cooperation from students of the opposite sex.

Group 10 (FS/All FT). More significant characteristics were formulated for this group than for any of the others. The only similarity to Group 1 (MS/All MT) was in the high Satisfaction and Democratic score. Both dimensions produced an interaction effect between the main effects of student sex and teacher sex/time. Group 1 and Group 10 were organizational structures of traditional physical education classes: male teachers with male students and female teachers with female teachers. If, in addition, most classes were composed of all female students, the members of Group 10 were in the most familiar and probably the more comfortable class arrangement. This could further account for the high Satisfaction score.

The high Cohesiveness, low Friction, Favoritism, and Competitiveness scores may also have been related to a homogeneous, non-threatening class setting. Of the total number of students in Group 10, approximately 55% were from School 4 which employed a sex-segregated organization class structure (see Table 4). This information increased the possibility of homogeneous classes. A similar finding occurred in a study by Ryan (1960). He found female math and science teachers had more favorable attitudestoward students and more democratic practices.

The low Apathy score could have been related to the scores on Goal Direction, Disorganization, and Formality.

Walberg and Anderson (1968) found high Goal Direction and Formality, and low Disorganization scores to correlate highly with eight learning criteria. If this were true for Group 10, Apathy would possibly be low and learning high. Bain (1976) observed that female teachers appeared to be more involved with direct instruction than were the male teachers in a study of secondary school physical education.

Interestingly, female students in Group 10 perceived their classes as less difficult than did other groups. Group 1 (MS/All MT) had opposite scores in Goal Direction, Formality, and Disorganization yet did not perceive their classes as low in Difficulty. Perhaps though satisfying and productive, female students in classes taught by female teachers all of the time were not challenged.

Summary

Student perception of classroom environment in physical education differed for students relative to their sex and the sex of their teacher. Of the 15 LEI dimension, 14 were found to produce significant differences among the subgroups based on student sex and teacher sex/time. Environment was the only dimension which failed to produce significant effects.

Multiple comparisons found distinct differences among the 10 subgroups. Each group formulated at least one

significantly different LEI dimension. Group 1 (MS/All MT), Group 2 (FS/All MT), and Group 10 (FS/All FT) demonstrated more distinct characteristics than did the other groups. Only one LEI dimension was found to be significant for Group 9 (MS/All FT). The number of students in this group, however, was extremely small.

Female students appeared to be more affected by the varied organizational structures. Certain LEI dimensions affected male students. Both male and female students were more satisfied with classes taught by teachers of the same sex.

Classes taught by male teachers had more distinct LEI characteristics than did classes taught by female teachers. Three perceived dimensions were found to be significant by both male and female students: high Apathy, high Disorganization and low Goal Direction.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The classroom environment is a complex, multidimensional setting which students perceive differently based on certain sex, grade, subject matter, personality, and classroom characteristics. Students' perceptions of the classroom environment are important because of the possible effects these perceptions may have on learning.

It was the purpose of this study to determine students' perceptions of the classroom learning environment in physical education. More specifically, this investigation sought to: (a) determine what students perceived as the dimensions of the classroom learning environment in physical education, and (b) determine if differences existed in perceptions of male and female students or in students relative to the sex of the teacher regarding the classroom learning environment in physical education.

The Learning Environment Inventory (LEI), a 105-item questionnaire assessing 15 dimensions of the classroom, and an information questionnaire were administered to 822 students from the classes of 21 different teachers from six secondary schools in the State of South Carolina. Data

were analyzed based on total student and male/female student response. In addition, analysis was conducted on 10 subgroups of students formulated by student sex and by the amount of class time spent with a teacher of a particular sex.

The GLM procedure of Statistical Analysis System (SAS) was utilized to compute two-way analysis of variance on the data. This technique identified those LEI dimensions which produced significant differences among the 10 subgroups. The Plot procedure of SAS was also employed to present a visual display of how each of the subgroups scored the LEI dimensions. When significant differences were determined, Bonferroni multiple comparisons were simultaneously calculated to determine which paired comparisons were responsible for the significant F ratio.

Overall, students perceived their classes to be high in the dimensions Diversity, Cliqueness, Friction, and Cohesiveness, and low in Democratic, Disorganization, Favoritism, and Environment. Apathy, Speed, and Goal Direction were rated as mid-range dimensions. These perceptions, however, varied based on student sex and teacher sex/time.

Significant differences were found among the 10 subgroups formulated by student sex and teacher sex/time in 14 of the 15 LEI dimensions. Only one, Environment, failed

to produce a significant F value. Differences in perception of certain dimensions were attributable to either of the two main effects and/or the interaction of the two effects. Multiple comparisons found each group to be significantly different from other groups in at least one LEI dimension.

Conclusions

On the basis of this investigation and from the analysis of the data, the following conclusions seem appropriate.

1. Overall, the classroom environment in physical education was found to be diverse, organized, and undemocratic. Students also perceived the existence of special interests groups and friction occurring among the class members. Environment, or perceptions of classroom resources, equipment, and teaching material, were perceived as limited. Feelings of class cohesiveness were relatively high and favoritism relatively low.

2. Student perceptions of the environment in the physical education classroom varied based on the students' sex and the sex of the teacher/time. In many cases an interaction caused by teacher/student sex occurred causing perceptions to differ.

3. Different organizational structures based on teacher sex/time seemed to have a greater effect on female students. Male students were less affected, generally

exhibiting a more consistent perception regardless of the sex of the teacher.

4. Both male and female students were more satisfied with classes taught exclusively by teachers of a similar sex.

5. Classes taught by male teachers were perceived by male and female students as lacking direction, disorganized, and apathetic.

Recommendations

On the basis of the results of this study, the following recommendations should be considered for further study.

1. A similar study should be conducted which controls for class composition in order to assess the effects of male and female students in coeducational classes or in sex-segregated classes.

2. In order to determine the effects of classroom environment on learning, a similar study should be conducted in physical education which compares perceived classroom environment and course achievement, controlling for ability if possible. This type study could assess possible effects of classroom environment on a students' success in class.

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APPENDIX

APPENDIX A

LEARNING ENVIRONMENT INVENTORY

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LEARNING ENVIRONMENT INVENTORY

Items and Reliabilities

Item	Scale	Alpha Reliability 1967	Alpha Reliability 1969	Intraclass Correlation 1967	Intraclass Correlation 1969	Test - Retest Reliability	1969 Frequency % Distribution of Responses				Correlation of Item With Scale	
1.	Cohesiveness	.78	.69	.82	.85	.52	1	2	3	4	1967	1969
1.	Members of the class do favors for one another.						4	21	69	5	.42	.42
18.	A student has the chance to get to know all other students in the class.						13	37	37	13	.66	.67
32.	Members of the class are personal friends.						3	23	54	20	.55	.43
56.	All students know each other very well.						22	60	14	3	.78	.66
*R58.	Students are not in close enough contact to develop likes or dislikes for one another.						8	34	45	12	.65	.62
R71.	The class is made up of individuals who do not know each other well.						7	35	48	11	.76	.70
91.	Each student knows the other members of the class by their first names.						4	29	47	20	.73	.62
2.	Diversity	.58	.54	.43	.31	.43						
4.	The class has students with many different interests						1	6	52	40	.53	.59
11.	Interests vary greatly within the group.						1	15	55	29	-	.62
34.	Some students are interested in completely different things than other students.						1	8	58	32	.61	.59
37.	Class members tend to pursue different kinds of problems.						2	24	67	7	.52	.45
72.	The class divides its efforts among several purposes.						4	43	51	2	.51	.40
86.	The class is working toward many different goals.						7	50	38	6	.54	.45
95.	Different students vary a great deal regarding which aspects of the class they are interested in.											

Item	Scale	Alpha Reliability 1967	Alpha Reliability 1969	Intraclass Correlation 1967	Intraclass Correlation 1969	Test - Retest Reliability	1969 Frequency % Distribution of Responses				Correlation of Item With Scale	
3.	Formality	.64	.76	.82	.92	.55	1	2	3	4	1967	1969
7.	Students who break the rules are penalized.						8	31	45	16	.50	.65
16.	The class has rules to guide its activities.						7	30	57	6	.67	.61
48.	Students are asked to follow strict rules.						16	50	23	11	-	.70
R59.	The class is rather informal and few rules are imposed.						13	30	43	14	.60	.72
61.	There is a recognized right and wrong way of going about class activities.						3	23	62	11	.48	.55
68.	All classroom procedures are well-established.						7	34	52	7	.54	.48
81.	There is a set of rules for the students to follow.						6	33	53	8	.69	.72
4.	Speed	.77	.70	.71	.81	.51						
27.	The pace of the class is rushed.						14	47	26	13	.70	.70
R73.	The class has plenty of time to cover the prescribed amount of work.						16	32	46	7	.77	.66
75.	Students do not have to hurry to finish their work.						15	36	42	7	.78	.67
85.	There is little time for day-dreaming.						15	29	41	15	.41	.44
87.	The class members feel rushed to finish their work.						8	50	31	11	.81	.75
93.	The class has difficulty keeping up with its assigned work.						8	60	26	6	.68	.59
102.	The course material is covered quickly.						7	44	41	8	-	.39

Item	Scale	Alpha Reliability 1967	Alpha Reliability 1969	Intraclass Correlation 1967	Intraclass Correlation 1969	Test - Retest Reliability	1969 Frequency % Distribution of Responses 1	2	3	4	Correlation of Item With Scale 1967	1969
5.	Environment	.65	.56	.76	.81	.64						
2.	The books and equipment students need or want are easily available to them in the classroom.						12	35	45	8	.51	.55
12.	A good collection of books and magazines is available in the classroom for students to use.						38	45	12	5	.61	.52
26.	The students would be proud to show the classroom to a visitor.						15	35	44	6	.57	.57
36.	The room is bright and comfortable.						21	29	43	7	.63	.61
55.	There are displays around the room.						21	36	33	10	.50	.46
R57.	The classroom is too crowded.						16	51	22	10	.53	.48
90.	There is enough room for both individual and group work.						8	27	56	8	.64	.49
6.	Friction	.78	.72	.77	.83	.73						
8.	There is constant bickering among class members.						30	50	13	7	.52	.57
30.	Certain students have no respect for other students.						8	31	43	18	.69	.65
44.	There are tensions among certain groups of students that tend to interfere with class activities.						13	54	26	7	.70	.61
69.	Certain students in the class are responsible for petty quarrels.						18	45	29	8	.74	.68
82.	Certain students don't like other students.						4	27	56	12	.66	.58
88.	Certain students are considered uncooperative.						5	36	48	11	.65	.60
103.	There is an undercurrent of feeling among students that tends to pull the class apart.						12	60	24	4	.60	.58

Item	Scale	Alpha Reliability 1967	Alpha Reliability 1969	Intraclass Correlation 1967	Intraclass Correlation 1969	Test - Retest Reliability	1969 Frequency % Distribution of Responses 1	2	3	4	Correlation of Item With Scale 1967	1969
7.	Goal Direction	.86	.85	.71	.75	.65						
10.	The class knows exactly what it has to get done						11	34	41	13	.70	.69
R23.	The objectives of the class are not clearly recognized.						14	46	34	7	.76	.71
R60.	Students have little idea of what the class is attempting to accomplish.						12	52	27	8	.78	.73
65.	The objectives of the class are specific.						7	20	46	7	-	.73
67.	Each student knows the goals of the course.						6	38	49	7	.77	.77
83.	The class realizes exactly how much work it is required to do.						6	39	51	5	.70	.73
96.	Each student inthe class has a clear idea of the class goals.						7	46	42	4	.76	.73
8.	Favoritism	.77	.78	.53	.76	.64						
9.	The better students' questions are more sympathetically answered than those of the average students.						27	42	19	11	.62	.63
R14.	Every member of the class enjoys the same privileges.						7	20	55	18	.66	.58
22.	The better students are granted special privileges.						33	45	15	7	.71	.73
24.	Only the good students are given special projects.						41	49	7	3	.62	.61
49.	The class is controlled by the actions of a few members who are favored.						33	53	11	3	.66	.65
74.	Students who have past histories of being discipline problems are discriminated against.						25	48	15	11	.57	.68
98.	Certain students are favored more than the rest.						16	51	26	7	.76	.74

Item	Scale	Alpha Reliability 1967	Alpha Reliability 1969	Intraclass Correlation 1967	Intraclass Correlation 1969	Test - Retest Reliability	1969 Frequency % Distribution of Responses				Correlation of Item With Scale	
9.	Cliqueness	.74	.65	.77	.71	.68	1	2	3	4	1967	1969
5.	Certain students work only with their friends.						4	22	50	24	.63	.56
R20.	Students cooperate equally well with all class members.						14	41	40	5	.64	.57
28.	Some students refuse to mix with the rest of the class.						9	35	42	14	.60	.59
31.	Some groups of students work together regardless of what the rest of the class is doing.						7	36	46	11	.65	.58
76.	Certain groups of friends tend to sit together.						3	9	53	35	.62	.56
R97.	Most students cooperate equally with other class members.						4	28	64	4	.53	.52
100.	Certain students stick together in small groups.						1	15	64	20	.70	.63
10.	Satisfaction	.80	.79	.34	.84	.71						
6.	The students enjoy their class work.						13	39	43	5	.66	.67
17.	Personal dissatisfaction with the class is too small to be a problem.						15	27	47	11	.58	.52
R21.	Many students are dissatisfied with much that the class does.						11	45	32	13	.67	.67
R38.	There is considerable dissatisfaction with the work of the class.						11	53	27	9	.68	.72
52.	The members look forward to coming to class meetings.						22	52	23	3	.68	.65
63.	After the class, the students have a sense of satisfaction.						19	46	32	3	.75	.73
79.	Students are well-satisfied with the work of the class.						10	42	45	3	.77	.72

Item	Scale	Alpha Reliability 1967	Alpha Reliability 1969	Intraclass Correlation 1967	Intraclass Correlation 1969	Test - Retest Reliability	1969 Frequency % Distribution of Responses				Correlation of Item With Scale	
11.	Disorganization	.81	.82	.82	.92	.72	1	2	3	4	1967	1969
3.	There are long periods during which the class does nothing.						21	44	22	14	.62	.65
19.	The work of the class is frequently interrupted when some students have nothing to do.						17	45	25	13	.58	.59
R33.	The class is well organized.						12	27	49	12	.80	.82
40.	The class is disorganized.						26	45	19	10	.80	.81
R45.	The class is well organized and efficient.						12	32	46	10	.74	.76
70.	Many class members are confused during class meetings.						6	44	36	14	.58	.53
94.	There is a great deal of confusion during class meetings.						12	57	23	8	.68	.71
12.	Difficulty	.66	.64	.84	.78	.46						
13.	The work of the class is difficult.						8	54	32	6	-	.67
46.	Students are constantly challenged.						7	47	38	7	.55	.44
R53.	The subject studied requires no particular aptitude on the part of the students.						27	53	17	3	.58	.54
66.	Students in the class tend to find the work hard to do.						4	49	41	7	-	.63
R78.	The subject presentation is too elementary for many students.						19	68	10	3	.56	.50
R101.	Most students consider the subject-matter easy.						10	59	29	2	.60	.64
104.	Many students in the school would have difficulty doing the advanced work of the class.						7	39	42	12	.60	.54

Item	Scale	Alpha Reliability 1967	Alpha Reliability 1969	Intraclass Correlation 1967	Intraclass Correlation 1969	Test - Retest Reliability	1969 Frequency % Distribution of Responses				Correlation of Item With Scale	
13.	Apathy	.83	.82	.79	.74	.61	1	2	3	4	1967	1969
39.	Failure of the class would mean little to individual members.						21	39	32	9	.67	.66
50.	Students don't care about the future of the class as a group.						8	28	47	17	.74	.74
54.	Members of the class don't care what the class does.						11	46	35	8	.64	.67
R84.	Students share a common concern for the success of the class.						15	55	28	2	.72	.72
R89.	Most students sincerely want the class to be a success.						7	36	50	8	.71	.68
92.	Failure of the class would mean nothing to most students.						11	44	38	7	.74	.73
R99.	Students have a great concern for the progress of the class.						10	61	27	3	.72	.71
14.	Democratic	.67	.67	.54	.67	.69						
25.	Class decisions tend to be made by all the students.						13	24	47	16	.62	.62
29.	Decisions affecting the class tend to be made democratically.						9	21	56	14	.53	.56
R35.	Certain students have more influence on the class than others.						3	18	52	27	.57	.52
R42.	Certain students impose their wishes on the whole class.						15	53	26	6	.50	.50
51.	Each member of the class has as much influence as any other member.						10	42	40	8	.63	.66
62.	What the class does is determined by all the students.						10	46	38	7	.49	.56
R80.	A few members of the class have much greater influence than the other members.						7	47	39	7	.63	.62

Item	Scale	Alpha Reliability 1967	Alpha Reliability 1969	Intraclass Correlation 1967	Intraclass Correlation 1969	Test - Re-test Reliability	1969 Frequency % Distribution of Responses				Correlation of Item With Scale	
15.	Competitiveness	.78	.78	-	.56	-	1	2	3	4	1967	1969
15.	Most students want their work to be better than their friends' work.						6	32	43	19	-	.67
41.	Students compete to see who can do the best work.						12	45	34	10	-	.79
43.	A few of the class members always try to do better than the others.						3	19	63	15	-	.55
47.	Students feel left out unless they compete with their classmates.						16	63	17	3	-	.54
R64.	Most students cooperate rather than compete with one another.						5	24	64	7	-	.56
77.	There is much competition in the class.						13	61	22	3	-	.71
105.	Students seldom compete with one another.						10	38	45	7	-	.74

Note. The 1967 data for individuals are based on data from a random sample of 464 students who participated in the Harvard Project Physics evaluation, 1967-1968, and the 1967 data for class means include 29 large physics classes. The 1969 data include 64 classes in a variety of subject areas and 1048 individual students. Test-re-test data are based on the responses of 139 students in 3 Boston High Schools (see note in text).

*R denotes an item with reverse polarity.

APPENDIX B

LEI LETTER OF RELEASE

APPENDIX B

LEI Letter of Release

University of Illinois
at Chicago Circle
College of Education
Box 4348
Chicago, Illinois 60680
February 8, 1978

Ms. Dianne S. Ward
516 Westover Rd.
Columbia, S.C. 29210

Dear Ms. Ward:

I think you've done your best to get the LEI. I do suggest however that you try Mr. Burns one more time because I recently got a call from one of his staff that was presumably putting the finishing touches on the final copy.

On the other hand, if you don't get final copies and want to go ahead and mimeograph the LEI yourself as several hundred investigators have done, I certainly have no objection. Of course I no longer hold copyright. Even so, I can probably find a copy of the key or xerox it, so you can also score it yourself.

I'm terribly sorry for the inconvenience and delay this is no doubt causing you; but I do think you're working in a promising area, and I wish you good luck in finishing up.

Sincerely,

Herb Walberg

APPENDIX C

LETTERS TO SCHOOL DISTRICTS

APPENDIX C

Letters to School Districts

College of Health and
Physcial Education
U.S.C.-Columbia, S. C.
September 1, 1977

Dr. Richard Riley
Riector of Research
Richland County Schools
School District # 1
Columbia, S.C. 29201

Dear Dr. Riley:

I am currently completing the dissertation requirements for the Ed.D. degree from the University of North Carolina at Greensboro. My dissertation topic is "Student Perception of the Secondary School Physical Education Learning Environment." In order to study this topic adequately I need to assess students' perceptions of the physical education classroom. The method of data collection consists of a 105-item questionnaire which asks for student response on a 1-4 agree to disagree scale. This tool can be administered within one class period.

In no way will any physical education teacher or any of the district's schools be discredited by the collection of such data. The resulting data will consist of how students view the physical education class in which they are enrolled. All school districts, schools, and teachers will be held confidential and reported data will be anonymous.

For your study and consideration I have taken the liberty of including a copy of the Learning Environment Inventory (LEI) and a brief description of the proposed research.

I do hope your research committee will find it agreeable for your school district to be used as part of my dissertation research.

Yours truly,

Dianne S. Ward

APPENDIX D

LETTERS TO PRINCIPALS

APPENDIX D

Letters to Principals

September 15, 1977

Dr. Ross Gayle, Principal
Berl P. Lynn High School
Columbia, S.C. 29208

Dear Dr. Gayle:

Thank you for agreeing to allow me to present my research proposal to your physical education staff. Hopefully, they will be interested in the topic and will cooperate with my research on the physical education learning environment.

I will contact the department chairperson directly and schedule an appointment. Thank you for your part in facilitating my dissertation research.

Yours truly,

Dianne S. Ward

cc: Ms. Katie Welhenn

APPENDIX E

INFORMATION QUESTIONNAIRE

APPENDIX E

Information Questionnaire

Directions: Circle your answer.

1. Class in school:

   a. 9th
   b. 10th
   c. 11th
   d. 12th

2. Age:

   a. 14
   b. 15
   c. 16
   d. 17 or older

3. If you have had male and female teachers in this class, estimate the percentage of time spent with the teachers.

   a. All time spent with male teacher(s)
   b. Most time spent with male teacher(s)
   c. Half of time with male and female teacher(s)
   d. Most of time spent with female teacher(s)
   e. All time spent with female teacher(s)

4. Have you ever failed a semester of physical education?

   a. Yes
   b. No

APPENDIX F

LETTERS OF THANKS

APPENDIX F

Letters of Thanks

College of Health and
Physical Education
U.S.C.-Columbia, S.C.
September 22, 1978

Ms. Katie Welhenn
Berl P. Lynn High School
Columbia, S.C. 29208

Dear Katie:

Thank you for participating in the data collection phase of my dissertation research. I am now in the process of finalizing the analysis and will have a report prepared for you by the end of this semester.

Thank you for your patience in waiting for the results of the study.

Yours truly,

Dianne S. Ward

KSW:kh

APPENDIX G

MEAN SCORES OF SCHOOL, TEACHER, SECTION AND SEX

Mean Scores of School, Teacher, Section and Sex

School Number 1

	Section 1						Section 2					
Variable	n(M)	M	S.D.	n(F)	M	S.D.	n(M)	M	S.D.	n(F)	M	S.D.
Teacher No. 1 (M)												
Cohesiveness	9	19.78	1.48	16	19.62	1.75	8	17.50	2.88	10	18.90	1.85
Diversity	9	19.89	1.36	16	20.37	1.92	8	19.75	2.25	10	19.70	3.06
Formality	8	18.62	2.13	16	18.56	2.28	8	17.25	2.81	10	16.60	1.90
Speed	8	18.00	3.02	16	17.87	1.67	8	17.87	1.73	10	18.10	1.85
Environment	8	16.75	1.75	16	18.19	1.87	7	14.71	2.87	10	14.80	2.04
Friction	9	19.11	3.18	16	19.06	2.98	5	18.80	2.17	10	22.70	3.62
Goal Direction	8	18.00	2.00	15	18.47	1.96	8	18.62	2.13	10	15.50	3.47
Favoritism	8	15.75	2.55	16	17.75	2.89	8	16.87	1.73	10	21.30	4.19
Cliqueness	9	17.67	2.55	16	19.62	2.53	8	20.87	2.47	10	23.50	2.80
Satisfaction	8	17.50	2.56	14	16.57	2.50	8	18.50	1.60	10	14.20	2.91
Disorganization	9	16.11	3.10	16	15.87	2.03	8	17.12	3.80	10	19.10	3.28
Difficulty	8	17.37	1.30	16	17.56	1.55	7	17.14	1.86	10	18.40	2.27
Apathy	9	18.00	1.94	16	17.25	2.77	8	16.87	2.42	10	22.11	4.26
Democratic	8	15.50	1.51	16	16.44	2.39	7	16.00	3.16	10	11.70	2.26
Competitiveness	8	19.11	2.15	16	19.00	1.63	8	20.50	3.74	10	22.50	3.63

Mean Scores of School, Teacher, Section and Sex

School Number 1

	Section 1						Section 2					
Variable	n(M)	M	S.D.	n(F)	M	S.D.	n(M)	M	S.D.	n(F)	M	S.D.
Teacher No. 2 (F)												
Cohesiveness	6	21.17	3.54	13	22.23	2.55	6	20.67	1.50	17	20.23	4.05
Diversity	6	20.83	2.23	13	19.92	1.98	4	19.00	1.83	16	20.31	2.55
Formality	6	21.67	3.44	13	22.00	1.91	6	19.83	2.23	17	19.23	2.19
Speed	6	17.50	1.76	13	18.08	2.36	6	17.00	1.79	17	17.70	3.04
Environment	6	18.50	2.43	13	17.31	2.21	6	17.17	1.72	17	16.82	2.48
Friction	6	18.83	1.72	12	19.67	2.53	6	18.83	2.23	16	19.00	2.58
Goal Direction	6	20.83	2.14	12	21.25	2.93	6	17.17	2.56	16	18.19	2.97
Favoritism	5	16.60	4.16	13	15.77	2.80	5	16.80	2.95	17	14.88	3.46
Cliqueness	6	17.50	1.05	13	19.38	2.33	5	20.00	2.74	17	19.59	3.70
Satisfaction	6	17.17	2.56	13	17.46	2.73	6	18.67	1.97	16	16.31	3.17
Disorganization	6	15.17	2.56	13	13.69	2.32	6	16.50	1.87	17	15.29	3.77
Difficulty	6	17.17	2.14	13	18.31	1.70	5	16.00	2.24	17	17.76	3.15
Apathy	6	17.17	1.72	13	15.15	1.95	5	17.20	2.05	16	18.25	3.86
Democratic	6	16.83	3.43	12	16.00	3.95	5	16.00	2.24	17	16.23	2.31
Competitiveness	6	22.67	3.20	12	20.17	3.46	6	19.83	2.64	18	19.06	3.15

Mean Scores of School, Teacher, Section and Sex.

School Number 1

	Section 1						Section 2					
Variable	n(M)	M	S.D.	n(F)	M	S. D.	n(M)	M	S.D.	n(F)	M	S.D.
Teacher No. 3 (M)												
Cohesiveness	3	17.00	3.60	1	18.91	1.81	10	20.80	3.26	5	19.80	3.03
Diversity	3	15.67	5.03	11	19.45	1.63	9	20.44	2.07	5	20.80	0.84
Formality	3	16.33	5.51	12	18.17	2.29	12	18.33	2.19	5	18.40	1.82
Speed	3	17.00	].65	11	19.45	4.91	10	16.30	2.06	4	15.00	3.16
Environment	3	15.00	1.73	12	15.42	2.39	12	17.58	2.23	5	17.20	2.49
Friction	2	16.50	9.18	12	21.00	3.67	12	19.58	2.43	4	19.75	2.50
Goal Direction	3	17.00	1.00	12	18.58	1.88	12	18.58	2.71	5	18.60	3.65
Favoritism	3	16.67	4.16	11	17.91	6.01	9	16.00	3.46	5	15.80	3.11
Cliqueness	3	17.33	6.11	11	21.64	3.04	11	18.91	2.17	5	21.00	3.39
Satisfaction	3	15.67	0.58	12	16.67	3.02	11	18.91	2.77	4	15.75	2.87
Disorganization	3	18.33	2.89	12	18.00	3.38	12	16.33	4.03	5	16.00	5.70
Difficulty	3	16.33	1.53	12	17.08	1.97	12	16.42	2.11	4	16.25	2.99
Apathy	3	17.00	2.65	12	18.42	2.06	12	16.42	3.58	5	18.60	3.21
Democratic	3	16.33	0.58	12	15.50	3.78	12	18.08	3.48	4	16.00	1.15
Competitiveness	3	17.00	2.65	12	19.25	2.01	12	18.17	2.79	5	18.25	3.77

Mean Scores of School, Teacher, Section and Sex

School Number 1

	Section 1					
Variable	n(M)	M	S.D.	n(F)	M	S.D.
Teacher No. 4 (M)						
Cohesiveness	7	19.57	2.37	7	20.43	2.15
Diversity	8	20.12	2.10	7	20.71	3.25
Formality	8	19.75	2.82	6	18.17	1.94
Speed	8	16.62	1.41	7	17.14	2.67
Environment	8	18.00	2.93	7	16.43	3.91
Friction	8	20.12	2.70	7	21.00	3.42
Goal Direction	8	18.25	2.19	7	16.71	2.81
Favoritism	8	16.75	3.15	7	17.71	3.35
Cliqueness	8	20.25	2.55	7	22.29	3.45
Satisfaction	8	15.87	3.04	7	15.28	1.89
Disorganization	8	17.75	2.37	7	15.71	2.63
Difficulty	8	15.75	1.98	7	15.86	2.48
Apathy	8	18.00	1.19	6	20.50	3.21
Democratic	8	16.00	2.45	7	15.00	2.38
Competitiveness	8	18.37	1.77	7	19.14	3.13

Mean Scores of School, Teacher, Section and Sex

School Number 2

	Section 1						Section 2					
Variable	n(M)	M	S.D.	n(F)	M	S.D.	n(M)	M	S.D.	n(F)	M	S.D.
Teacher No. 1 (M)												
Cohesiveness	17	19.65	3.60	6	20.67	2.80	2	18.00	4.24	11	18.54	3.08
Diversity	18	20.78	1.77	6	20.83	2.71	2	21.50	2.12	11	20.91	2.30
Formality	16	19.25	1.18	5	21.00	1.58	2	22.50	4.95	9	21.00	1.94
Speed	18	17.17	2.25	5	19.00	2.34	2	17.50	4.95	10	17.90	2.77
Environment	17	15.76	1.98	6	17.33	2.42	2	11.50	0.71	11	16.73	1.62
Friction	13	19.77	1.30	6	21.50	2.88	2	21.00	1.41	10	19.00	1.70
Goal Direction	15	18.13	2.47	6	18.00	4.19	2	13.50	4.95	11	19.27	2.05
Favoritism	14	16.28	1.90	6	14.50	2.07	2	15.00	1.41	11	15.09	3.42
Cliqueness	15	20.00	2.53	6	20.67	3.26	2	23.00	2.83	11	20.64	2.33
Satisfaction	16	18.37	1.78	6	16.17	2.23	2	14.00	2.83	11	16.18	3.71
Disorganization	18	16.22	3.67	5	14.40	2.30	2	16.50	3.53	11	16.45	3.08
Difficulty	14	16.21	1.42	6	18.67	2.50	2	19.50	3.53	10	18.00	2.54
Apathy	15	17.60	2.61	6	18.17	1.47	2	18.00	2.83	9	18.33	2.78
Democratic	17	15.47	2.69	4	17.00	2.45	2	16.00	1.41	11	14.36	2.87
Competitiveness	16	20.81	1.68	5	21.60	3.50	2	17.00	-	11	19.50	3.36

Mean Scores of School, Teacher, Section and Sex

School Number 2

	Section 1						Section 2					
Variable	n(M)	m	S.D.	n(F)	M	S.D.	n(M)	M	S.D.	n(F)	M	S.D.
Teacher No. 2 (M)												
Cohesiveness	6	18.50	1.64	12	20.08	3.00	5	19.80	3.70	11	19.09	2.70
Diversity	7	21.57	2.88	12	20.50	1.31	7	21.57	1.51	11	21.91	2.91
Formality	6	18.33	3.20	12	21.17	1.64	6	21.50	2.59	9	20.78	3.49
Speed	7	17.57	1.81	12	16.92	1.24	6	17.83	1.83	10	19.30	2.58
Environment	7	18.14	2.79	12	19.33	1.67	7	18.43	4.68	9	15.67	2.55
Friction	7	20.00	3.91	11	19.09	1.87	5	19.80	2.39	11	21.82	2.23
Goal Direction	5	18.40	1.14	12	20.25	1.54	6	18.67	2.66	11	18.73	4.15
Favoritism	5	15.80	1.64	11	15.54	3.61	7	17.57	5.71	11	18.73	2.57
Cliqueness	5	19.00	2.55	12	18.08	1.38	7	17.43	3.21	10	21.60	4.27
Satisfaction	5	18.00	3.74	12	19.50	3.20	6	18.00	3.46	10	14.80	4.85
Disorganization	6	15.00	2.00	11	13.54	2.77	6	15.83	3.71	11	17.00	3.22
Difficulty	6	17.67	2.42	12	17.42	2.27	5	16.60	2.41	11	18.64	3.07
Apathy	4	19.50	2.08	12	14.83	2.69	6	17.67	3.14	11	19.73	5.14
Democratic	6	16.67	2.16	12	16.67	1.82	7	15.14	1.34	10	13.60	4.40
Competitiveness	5	16.40	2.30	12	18.50	1.73	5	19.00	2.34	11	21.90	2.47

Mean Scores of School, Teacher, Section and Sex

School Number 2

	Section 1						Section 2					
Variable	n(M)	M	S.D.	n(D)	M	S.D.	n(M)	M	S.D.	n(F)	M	S.D.
Teacher No. 3 (F)												
Cohesiveness	16	20.81	2.59	6	20.17	2.04	4	19.25	2.06	9	21.33	2.00
Diversity	15	20.47	2.90	6	21.00	2.97	4	20.75	0.91	9	21.78	1.39
Formality	16	20.62	3.12	7	20.29	0.95	4	16.25	4.92	9	20.78	2.05
Speed	17	17.53	2.90	7	19.14	2.73	4	18.50	4.20	9	18.11	3.06
Environment	17	16.76	2.49	7	18.57	1.81	4	14.25	3.30	9	17.33	3.81
Friction	17	19.18	3.79	7	19.71	2.69	4	20.25	1.71	9	21.22	2.28
Goal Direction	17	20.00	3.39	7	19.57	1.99	3	14.00	0.00	9	19.00	3.32
Favoritism	16	13.25	4.02	7	16.43	4.08	4	15.75	0.96	9	16.67	3.64
Cliqueness	16	19.81	2.71	7	20.71	3.09	4	21.25	3.20	9	19.78	1.56
Satisfaction	16	18.56	4.05	7	17.28	2.56	4	15.00	2.00	9	15.89	5.30
Disorganization	15	14.73	3.67	7	12.71	3.73	4	18.75	4.79	9	15.44	3.13
Difficulty	17	16.18	1.81	7	19.43	3.21	3	15.67	4.04	9	19.44	2.60
Apathy	16	15.62	3.95	5	16.40	4.72	4	20.25	2.22	9	17.44	4.85
Democratic	16	15.75	3.04	7	14.57	2.70	4	13.00	4.97	8	16.37	3.20
Competitiveness	17	20.47	2.67	7	20.14	3.39	4	19.25	2.22	8	18.12	3.14

Mean Scores of School, Teacher, Section and Sex

School Number 2

	Section 1						Section 2.					
Variable	n(M)	M	S.D.	n(F)	M	S.D.	n(M)	M	S.D.	n(F)	M	S.D.
Teacher No. 4 (F)												
Cohesiveness	8	19.37	2.33	10	20.00	2.00	7	18.86	1.77	4	20.00	2.16
Diversity	7	18.28	2.21	10	21.30	1.49	7	19.57	3.15	4	22.50	0.58
Formality	7	18.57	3.73	11	20.54	1.03	8	20.87	3.44	4	22.25	2.87
Speed	7	16.71	1.89	9	18.78	2.73	8	18.37	3.07	4	19.00	3.16
Environment	6	16.83	1.94	10	6.40	2.55	8	12.37	2.20	4	17.75	1.26
Friction	7	20.57	1.40	10	18.60	2.50	8	19.37	1.92	4	20.75	1.50
Goal Direction	6	17.67	2.58	10	19.30	2.63	7	19.00	5.00	4	18.50	2.01
Favoritism	8	16.62	3.62	10	14.90	3.18	8	18.12	3.91	4	16.00	2.16
Cliqueness	8	18.00	2.45	9	19.00	3.00	6	19.33	2.73	4	21.00	2.16
Satisfaction	8	19.62	1.99	10	19.20	1.62	6	19.33	2.42	4	15.50	3.41
Disorganization	6	15.17	2.71	10	14.70	2.67	7	15.28	4.50	4	19.50	3.70
Difficulty	7	16.14	1.68	10	18.20	3.05	8	17.62	0.92	3	18.00	0.00
Apathy	8	17.12	2.36	9	15.33	2.64	8	15.75	2.43	4	18.00	5.03
Democratic	8	15.12	2.90	11	16.64	3.47	7	16.14	4.45	3	15.67	3.21
Competitiveness	8	19.17	2.93	11	19.67	3.81	8	20.12	3.04	4	21.50	3.11

Mean Scores of School, Teacher, Section and Sex

School Number 2

	Section 1						Section 2					
Variable	n(m)	M	S.D.	n(F)	M	S.D.	n(M)	M	S.D.	n(F)	M	S.D.
Teacher No. 5 (M)												
Cohesiveness	5	20.80	3.63	18	21.11	2.32	12	20.17	1.80	9	18.89	2.76
Diversity	5	19.40	1.52	18	21.55	1.98	10	19.80	2.15	9	20.78	2.05
Formality	5	16.00	4.24	16	20.25	2.43	12	19.50	1.44	9	19.44	2.40
Speed	5	17.00	1.00	17	17.06	3.63	11	17.45	2.54	9	19.67	2.64
Environment	5	15.20	4.76	18	16.72	2.87	10	17.40	2.22	9	16.33	2.78
Friction	5	20.80	2.17	17	20.88	2.03	12	19.33	1.07	9	19.33	3.64
Goal Direction	4	14.00	3.74	18	18.22	2.53	8	19.25	2.66	9	17.89	2.47
Favoritism	4	18.00	4.24	17	17.18	2.85	8	15.12	1.81	9	16.89	1.90
Cliqueness	5	20.40	3.51	18	20.61	2.66	9	19.33	1.66	9	20.44	3.54
Satisfaction	5	16.60	4.72	18	16.67	2.45	10	18.00	3.33	9	14.89	3.85
Disorganization	5	19.20	5.07	17	16.94	2.46	11	16.36	3.83	9	15.89	1.90
Difficulty	5	17.00	4.36	17	17.65	3.87	12	16.92	1.97	8	17.12	2.75
Apathy	5	18.80	4.32	16	18.00	1.93	9	16.11	2.52	9	18.89	2.42
Democratic	5	16.20	3.42	18	16.55	3.24	12	16.58	2.15	9	14.55	3.91
Competitiveness	5	17.80	3.83	16	19.56	3.46	11	19.45	2.88	9	19.78	2.73

Mean Scores of School, Teacher, Section and Sex

School Number 3

	Section 1						Section 2					
Variables	n(M)	M	S.D.	n(F)	M	S.D.	n(M)	M	S.D.	n(F)	M	S. D.
Teacher No. 1 (F)												
Cohesiveness	4	22.00	3.56	7	20.43	2.51	6	18.33	2.50	15	18.27	3.26
Diversity	4	21.75	2.75	7	21.71	1.98	7	21.29	2.69	15	20.53	2.32
Formality	4	21.25	2.99	7	21.43	1.27	7	20.15	21.19	14	20.36	2.47
Speed	2	19.00	1.41	7	18.4	2.41	7	16.57	3.31	13	20.08	3.40
Environment	4	19.25	3.86	7	19.00	2.58	6	18.17	2.32	15	16.80	3.78
Friction	4	21.25	1.50	7	20.29	2.93	7	19.00	2.52	13	19.61	2.10
Goal Direction	3	19.33	2.52	7	20.57	1.81	6	18.83	2.93	12	17.17	4.30
Favoritism	3	17.00	4.58	7	14.57	4.12	6	14.33	1.63	14	17.50	5.24
Cliqueness	4	18.75	0.96	7	20.86	2.27	7	19.86	2.54	14	19.36	2.76
Satisfaction	4	17.50	3.32	7	19.43	2.82	7	17.29	2.56	14	15.57	4.20
Disorganization	4	19.00	6.22	7	13.71	2.87	7	14.14	2.19	14	15.21	4.08
Difficulty	4	18.75	3.30	7	19.14	1.68	7	16.57	1.90	13	19.46	2.85
Apathy	4	17.50	2.52	7	17.4	4.67	7	15.86	3.98	13	17.92	4.41
Democratic	4	17.00	2.94	7	17.14	3.29	7	15.14	3.02	14	16.14	2.80
Competitiveness	5	18.00	2.74	6	19.33	1.86	7	18.29	2.50	15	17.43	3.18

Mean Scores of School, Teacher, Section and Sex

School Number 3

	Section 1						Section 2					
Variable	n(M)	M	S.D.	n(F)	M	S.D.	n(M)	M	S. D.	n(F)	M	S.D.
Teacher No. 2 (M)												
Cohesiveness	11	20.18	2,09	11	19.27	1.90	8	19.62	2.92	10	17.40	1.35
Diversity	10	21.30	2.31	11	20.54	2.30	8	20.00	1.69	10	21.80	2.30
Formality	11	22.54	1.97	11	20.09	1.37	8	19.75	1.98	10	19.00	2.62
Speed	11	20.18	2.18	11	18.00	3.19	8	19.62	4.31	10	18.50	3.33
Environment	11	17.27	2.33	11	19.36	2.06	8	16.75	2.12	10	16.70	1.89
Friction	10	20.20	1.99	11	18.91	2.74	8	21.12	4.82	10	21.20	3.08
Goal Direction	11	18.00	3.74	11	17.54	2.98	7	19.14	1.77	10	18.30	2.87
Favoritism	11	17.54	2.73	10	16.20	3.61	9	18.67	4.85	8	19.62	2.82
Cliqueness	11	21.73	2.49	11	20.18	2.56	8	22.12	2.85	10	21.80	3.33
Satisfaction	11	15.91	1.64	11	16.54	2.70	9	18.11	2.71	9	14.00	2.55
Disorganization	11	16.27	1.42	10	15.40	0.70	9	15.67	2.74	10	16.80	2.10
Difficulty	11	19.00	2.49	10	18.50	2.68	7	17.14	1.86	10	18.40	2.59
Apathy	11	16/91	2.55	11	18.82	2.18	9	17.55	3.21	9	20.11	3.95
Democratic	11	16.09	2.51	11	15.91	2.17	10	15.50	3.53	9	16.22	4.47
Competitiveness	11	20.83	2.36	11	18.27	2.41	10	17.75	2.96	10	19.20	3.08

Mean Scores of School, Teacher, Section and Sex

School Number 4

	Section 1			Section 1 and 2		
Variable	n(M)	M	S.D.	n(M)	M	S.D.
Teacher No. 1 (M)						
Cohesiveness	10	18.40	2.80	20	18.30	3.21
Diversity	10	19.70	2.21	22	19.77	2.31
Formality	10	17.60	1.78	20	19.10	1.86
Speed	9	15.33	2.18	22	16.36	2.65
Environment	10	18.60	3.47	22	17.59	2.15
Friction	8	19.37	2.26	21	19.43	2.71
Goal Direction	10	16.70	2.58	21	16.81	2.77
Favoritism	7	16.71	2.50	18	18.28	2.63
Cliqueness	9	21.11	2.09	21	19.90	3.13
Satisfaction	10	16.10	3.78	21	17.48	2.06
Disorganization	10	16.60	2.27	20	18.40	3.10
Difficulty	8	15.87	3.40	21	15.67	3.29
Apathy	9	19.33	2.60	21	18.76	3.19
Democratic	10	16.50	2.17	22	16.82	3.57
Competitiveness	8	21.75	3.10	20	19.00	2.49

Mean Scores of School, Teacher, Section and Sex

School Number 4

	Section 1 and 2						Section 1					
Variable	n(F)	M	S.D.	n(F)	M	S.D.	n(M)	M	S.D.	n(F)	M	S.D.
Teacher No. 2 (F)							Teacher No. 3 (M)					
Cohesiveness	30	21.27	2.74	21	19.95	1.68	27	20.30	2.43			
Diversity	30	20.57	2.29	19	20.84	2.54	29	20.10	2.48			
Formality	30	20.40	2.36	22	20.27	28	17.64	3.95				
Speed	27	17.00	1.98	21	17.86	1.90	29	17.10	2.92			
Environment	29	18.03	2.50	22	17.32	2.46	29	15.24	3.97			
Friction	30	17.67	3.02	22	18.86	3.06	28	19.96	2.83			
Goal Direction	29	20.28	2.09	22	19.77	2.22	28	16.50	3.78			
Favoritism	29	14.55	2.60	21	15.81	3.63	29	16.70	2.90			
Cliqueness	30	19.50	2.62	20	19.75	2.00	26	19.54	3.14			
Satisfaction	28	19.36	2.44	21	18.05	2.58	29	16.31	3.22			
Disorganization	30	14.23	2.30	20	14.60	2.04	29	17.96	3.29			
Difficulty	29	15.65	1.76	22	16.32	2.98	29	17.14	3.62			
Apathy	27	16.07	2.76	22	16.45	2.36	29	19.17	3.08			
Democratic	30	16.73	1.95	22	16.86	3.51	29	16.24	2.32			
Competitiveness	29	17.45	1.70	22	17.45	3.03	27	17.93	3.22			

Mean Scores of School, Teacher, Section and Sex

School Number 5

	Section 1						Section 2					
Variable	n(M)	M	S.D.	n(F)	M	S.D.	n(M)	M	S.D.	n(F)	M	S.D.
Teacher No. 1 (F)												
Cohesiveness				29	20.93	3.02	8	16.75	1.67	15	19.27	1.71
Diversity				28	19.82	2.46	9	19.89	2.57	14	19.93	2.16
Formality				30	19.53	2.45	10	18.20	3.12	15	19.13	2.29
Speed				29	18.34	3.42	7	19.57	2.22	15	19.73	4.45
Environment				30	16.13	3.48	10	15.40	3.31	15	14.87	3.29
Friction				30	20.13	3.07	8	19.62	2.13	15	19.60	2.61
Goal Direction				38	17.82	3.62	9	16.55	3.39	14	15.79	3.53
Favoritism				29	18.24	4.40	8	16.87	1.96	14	16.79	4.4.
Cliqueness				28	20.93	2.75	9	20.44	1.81	15	21.07	3.28
Satisfaction				30	16.70	4.20	11	16.36	3.58	14	16.14	4.29
Disorganization				30	17.20	4.16	9	18.33	3.32	15	18.33	3.35
Difficulty				28	16.75	2.30	7	16.71	3.50	15	14.80	3.47
Apathy				28	17.68	3.75	9	19.44	3.17	14	19.14	3.32
Democratic				30	16.13	2.96	11	13.36	2.80	15	15.47	3.48
Competitiveness				39	17.17	2.05	8	20.25	3.15	12	16.54	2.40

Mean Scores of School, Teacher, Section and Sex

School Number 5

	Section 1						Section 1					
Variable	n(M)	M	S.D.	n(F)	M	S.D.	n(M)	M	S.D.	n(F)	M	S.D.
Teacher No. 2 (F)							Teacher No. 3 (M)					
Cohesiveness	10	17.90	3.54	13	18.69	2.39	17	18.71	1.69	5	20.40	2.07
Diversity	10	17.80	4.52	14	20.14	2.07	19	19.53	1.77	5	21.40	2.61
Formality	11	18.64	3.07	14	18.43	2.21	19	17.84	3.45	5	17.80	1.64
Speed	10	18.50	3.57	12	18.67	2.99	18	17.28	2.58	5	19.60	2.30
Environment	11	13.73	1.55	13	14.69	2.90	19	16.58	2.52	5	17.20	4.21
Friction	8	18.37	2.92	10	20.30	3.43	14	19.36	2.40	4	21.25	3.40
Goal Direction	9	14.78	2.22	14	16.00	3.26	18	18.39	2.68	5	17.20	2.86
Favoritism	10	18.10	4.25	14	18.71	2.97	17	16.41	2.03	5	12.60	2.88
Cliqueness	10	21.90	3.60	13	22.00	3.60	19	20.21	2.17	5	21.60	2.30
Satisfaction	11	15.09	3.78	14	15.36	2.34	18	18.17	2.26	5	18.80	2.95
Disorganization	10	18.70	3.62	13	18.31	3.12	17	17.18	3.57	5	17.20	1.48
Difficulty	8	17.00	3.89	14	17.71	2.05	17	16.82	1.59	4	19.25	2.63
Apathy	10	17.80	2.86	13	18.77	2.17	18	17.55	3.63	4	15.75	2.50
Democratic	11	15.45	5.13	14	14.21	3.62	19	15.68	2.52	5	14.40	3.71
Competitiveness	10	21.50	3.03	14	19.00	3.70	16	20.00	2.71	3	19.00	2.65

Mean Scores of School, Teacher, Section and Sex

School Number 5

	Section 1						Section 2					
Variable	n(M)	M	S.D.	n(F)	M	S.D.	n(M)	M	S.D.	n(F)	M	S.D.
Teacher No. 4 (M)												
Cohesiveness	13	15.23	2.35	4	18.25	3.40	6	18.00	2.53	13	19.15	2.61
Diversity	12	20.17	2.82	4	20.75	1.50	10	19.60	3.47	11	22.18	2.04
Formality	11	17.09	3.27	4	17.75	2.99	10	18.80	2.10	13	19.38	2.60
Speed	13	18.31	2.46	4	17.75	2.50	9	16.89	2.76	12	18.42	2.50
Environment	12	14.67	3.63	4	16.00	2.00	4	16.00	2.53	13	15.54	3.69
Friction	13	19.54	2.85	3	19.33	1.15	7	19.00	2.00	13	20.00	1.68
Goal Direction	11	15.91	3.21	4	18.25	3.10	7	17.86	2.41	13	17.69	2.56
Favoritism	13	18.46	2.79	4	16.50	3.00	10	16.90	4.17	13	17.31	4.07
Cliqueness	11	21.73	3.90	4	19.50	4.36	6	20.67	2.58	13	19.54	3.12
Satisfaction	11	15.73	1.90	4	16.00	3.37	9	18.11	1.45	13	16.54	2.66
Disorganization	13	18.85	3.60	4	14.25	0.96	8	18.25	1.58	12	17.25	3.19
Difficulty	12	16.00	1.65	4	17.50	3.11	8	19.25	2.60	11	16.73	2.10
Apathy	13	19.77	3.39	4	1925	2.75	7	17.43	4.03	12	17.17	3.13
Democratic	12	15.33	3.42	4	17.00	4.32	10	17.50	2.84	13	16.00	2.68
Competitiveness	13	19.31	3.01	4	19.00	3.16	9	19.67	3.12	11	19.00	2.79

Mean Scores of School, Teacher, Section and Sex

School Number 5

	Section 1						Section 2					
Variable	n(M)	M	S.D.	n(F)	M	S.D.	n(M)	M	S.D.	N(F)	M	S.D.
Teacher No. 5 (F)												
Cohesiveness	6	21.00	2.97	16	17.81	2.69	5	19.40	2.88	16	20.25	2.24
Diversity	7	21.14	7.67	16	19.62	1.67	5	21.20	1.79	16	20.37	1.20
Formality	8	18.87	1.88	16	18.12	2.55	6	19.17	2.32	16	19.15	2.82
Speed	7	17.00	2.45	15	19.80	3.00	5	16.40	1.52	16	18.62	2.55
Environment	8	15.00	2.33	16	14.94	2.79	6	15.83	2.23	16	15.37	2.06
Friction	8	20.37	1.68	14	20.36	2.65	5	20.20	1.92	15	20.93	3.17
Goal Direction	8	19.00	2.62	17	16.29	2.57	5	16.80	2.39	16	16.62	3.07
Favoritism	6	14.00	3.29	18	17.83	3.55	5	18.00	1.22	15	18.40	2.38
Cliqueness	8	21.00	2.00	17	21.41	2.85	5	21.40	1.14	16	21.75	2.54
Satisfaction	7	17.28	3.50	17	15.53	2.29	5	18.00	1.58	15	14.67	3.50
Disorganization	8	15.50	4.87	15	18.47	2.95	6	17.17	2.48	15	19.33	3.13
Difficulty	7	15.71	1.98	17	16.82	2.65	5	18.00	2.74	14	17.43	2.24
Apathy	8	16.87	3.48	17	19.00	2.42	5	17.60	2.41	16	20.37	3.84
Democratic	8	15.62	2.07	17	15.59	2.76	5	17.80	2.59	16	14.37	3.03
Competitiveness	8	19.67	2.50	18	18.00	2.38	4	19.25	3.86	15	19.33	2.64

Mean Scores of School, Teacher, Section and Sex

School Number 6

	Section 1			Section 1			Section 2		
Variable	n(F)	M	S.D.	n(F)	M	S.D.	n(M)	M	S.D.
Teacher No. 1 (M)				Teacher No. 2 (F)					
Cohesiveness	30	18.70	2.53	12	21.83	3.04	19	19.00	1.79
Diversity	26	19.73	2.52	12	20.75	2.73	19	20.53	2.14
Formality	29	19.72	1.39	12	21.17	2.52	18	18.72	1.96
Speed	30	17.10	2.02	12	19.25	3.39	19	17.47	2.32
Environment	30	17.43	1.99	12	18.33	3.08	19	17.47	2.04
Friction	30	18.60	2.61	12	20.00	3.64	18	21.55	4.37
Goal Direction	29	19.07	2.67	12	19.42	2.68	19	18.15	2.45
Favoritism	28	16.57	3.93	11	15.54	4.01	19	17.94	3.61
Cliqueness	29	18.69	313	11	20.18	3.06	18	21.55	3.60
Satisfaction	30	17.73	2.96	12	18.83	2.76	18	15.67	2.14
Disorganization	30	15.43	3.78	12	14.67	3.50	19	16.21	3.36
Difficulty	29	16.34	2.72	12	17.42	1.83	19	17.32	2.06
Apathy	26	16.73	3.05	12	15.92	3.26	19	18.74	2.23
Democratic	29	16.69	1.98	12	16.25	2.00	18	15.94	2.44
Competitiveness	29	18.00	3.48	11	19.09	2.30	18	18.50	2.55

Mean Scores of School, Teacher, Section and Sex

School Number 6

	Section 1			Section 1			Section 2		
Variable	n(M)	M	S.D.	n(M)	M	S.D.	n(M)	M	S.D.
Teacher No. 3 (M)				Teacher No. 4 (M)					
Cohesiveness	7	18.86	1.57	10	19.50	2.12	20	20.55	3.19
Diversity	8	18.87	2.03	9	19.44	3.36	17	18.76	3.15
Formality	10	19.00	3.16	11	18.18	3.40	21	19.81	2.50
Speed	8	18.25	2.66	10	18.40	2.27	21	17.29	1.98
Environment	10	16.50	2.12	11	17.91	2.39	22	16.82	2.92
Friction	9	19.00	2.00	10	18.40	2.27	22	18.04	3.17
Goal Direction	9	18.00	3.00	8	18.87	2.03	16	18.56	3.26
Favoritism	7	15.43	1.51	9	17.11	3.26	18	16.78	3.81
Cliqueness	10	18.30	3.86	9	19.00	4.03	22	17.86	3.67
Satisfaction	10	17.50	2.41	11	19.09	1.92	20	19.10	3.52
Disorganization	10	17.30	2.06	10	16.20	3.08	20	15.70	3.71
Difficulty	8	16.37	1.30	10	16.20	2.66	18	17.72	2.22
Apathy	10	17.80	3.05	11	17.18	2.79	17	16.71	2.69
Democratic	10	16.50	2.37	11	17.18	2.52	22	16.82	3.33
Competitiveness	9	18.11	2.09	10	19.10	2.42	22	18.27	2.57

APPENDIX H

SCHOOL REPORTED TEACHER SEX OF MALE AND FEMALE STUDENTS

APPENDIX H

School Reported Teacher Sex of Male and Female Students

	MALE STUDENTS				FEMALE STUDENTS			
	Male Teacher		Female Teacher		Male Teacher		Female Teacher	
	n	%	n	%	n	%	n	%
School 1	41	10.7	11	2.9	50	11.5	30	6.9
School 2	52	13.6	37	9.7	68	15.6	31	7.1
School 3	15	3.9	21	5.5	22	5.1	21	4.8
School 4	62	16.2	0	0	0	0	52	12.8
School 5	46	12.0	35	9.1	23	5.3	95	21.8
School 6	63	16.5	0	0	0	0	43	9.9
Totals[a]	279	72.9	104	27.2	163	37.5	272	63.3

[a]Four students failed to indicated school affiliation.