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The Ohio State University

Ph.D. 1983

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IMPROVING THE PROXEMIC KNOWLEDGE AND BEHAVIORS OF STUDENT ART TEACHERS THROUGH SPECIFIC CURRICULUM INTERVENTION

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

Frank Daniel Susi, B.S., M.Ed

* * * * *

The Ohio State University

1983

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I feel very fortunate to have worked with Dr. Arthur Efland, my adviser, and Dr. Nancy MacGregor during my study at Ohio State. Their encouragement, ideas, and guidance have influenced my development as a teacher and scholar.

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But most of all, I am grateful for the inspiration provided by wife, Barbara, and my children, Margaret and Peter, and my dad.
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Studies in Nonverbal Communication

   Dr. Charles Galloway

Studies in Educational Research

   Dr. Larry Miller, Dr. Donald Sanders
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CHAPTER I
INTRODUCTION

Overview

This chapter provides a background and states the problem, identifies research questions, defines key technical terms, notes limitations and assumptions, and describes the significance of the problem.

Background of the Problem

In recent years researchers in a number of education related disciplines such as psychology, anthropology, sociology, and communications have begun to examine the nature of the physical environment of educational settings. These aspects of classrooms may have an impact on student behaviors, achievement, and attitudes. The emergence of environmental psychology and an increasing awareness of person-environment relations has focused attention on the spatial and proxemic characteristics of classrooms.

Proxemics, the study of ways individuals use space in their environment relative to other persons and objects is one dimension of the study of nonverbal behavior. Nonverbal behavior can be described as an idiom of exchange operating outside of an individual's awareness level, and tends to
have greater impact than words in revealing feelings and emotions. In classrooms, as much as 82% of the signals given off by teachers are nonverbal. Besides proxemics, researchers who study nonverbal behavior also study two other aspects of behavior: (1) kinesics, the patterns of body movement in human interactions such as posture, facial expression, and gestures; and (2) paralanguage, the extra verbal elements associated with speech such as loudness, tone, and pauses (Wolfgang, 1979).

Two major research traditions are concerned with the study of space from social and psychological perspectives. Anthropologists deal with the meaning and use of space in different cultures. Their study is known as proxemics.

Researchers studying space from a psychological orientation deal with the significance of space to individuals in terms of the effects of crowding, territories and other such related constructs. This area of spatial study is known as personal space research and comes under scrutiny by experimental social psychologists and sociologists.

Although the psychological view of spatial study is only peripherally concerned with intercultural variations, considerable overlap exists between the two research traditions.
By contrast, the anthropological tradition views the issue of spatial usage as a cultural matter by asking questions relating to how feelings of crowding differ among various peoples of the world (Weitz, 1974).

Galloway (1979) suggests that teachers need to develop an awareness of the multiplicity of nonverbal messages transmitted within our classrooms. Physical features and classroom spatial usage defined by seat locations and travel routes communicate teacher priorities. These factors can restrict or encourage contacts among all of the individuals involved in the various dimensions of interaction. Teachers need a repertoire of skills and understandings of such nonverbal expressions so that the development of human understanding in classrooms can be encouraged.

Hall (1966), an anthropologist who has studied proxemic behavior, has added to our knowledge of spatial usage by identifying and describing three types of space: (a) fixed feature space, consisting of objects which cannot be moved; (b) semifixed feature space, large but movable objects; and (c) personal space, the "imaginary bubble" which people carry around them that defines their territory. Spatial arrangements are designated as either sociofugal, which discourage interaction or sociopetal which facilitates interaction. Understandings about how these constructs are applied to classroom settings would seem to be useful to teachers.
Most teachers do not explore the full potential of spatial arrangement possibilities in classrooms. Teachers tend to arrange desks in rows, horseshoes, or perhaps clusters of four, each focused toward the chalkboard. In contrast, a more full range of design possibilities which may be more practical for a particular lesson or activity are seldom explored (Weinstein, 1977).

The creation of arousing and pleasant environments within a classroom can increase student interest levels and lessen environmental monotony. Classroom spaces can become preferred environments--places that have a supportive affect on the ability of students to perform work, study, or interact with others (Mehrabian, 1976).

Since spatial arrangements have an effect on instructional interactions between teachers and students, knowledge about spatial utilization in classrooms can be useful to teachers. The basic "sit and learn" educational program in which the teacher does most of the talking can give way to thoughtful use of the available space and facilities to support a variety of learning activities. Just as villagers in a remote part of Thailand could not be expected to know how to use a tractor without being shown, the potential in teaching environments cannot be expected to support desired educational outcomes without prior discussion of its spatial possibilities with teachers. Educators tend to do what they
Educators should learn how to use available space and facilities to enhance instructional practice. The arrangement and use of space can be "read" to gauge and anticipate desired levels of teacher-student and student-student interaction. Classroom spatial arrangements and the resulting use of space by students are the responsibilities of the teacher. Many educators are hindered by an insensitivity to the existing classroom environment as part of an overall communication system functioning between educators and learner. Teachers should be made aware of the spatial qualities of the instructional environment to promote clear communication lines and support interaction patterns appropriate for any given lesson (Sommer, 1977).

Weinstein and Weinstein (1979) reported how minor design changes experimentally introduced into existing classrooms produced changes in student spatial behavior, increased interaction with materials, decreased interruptions by inappropriate behavior, and produced substantial high-level cognitive questioning by students. These findings suggest increases in pupil achievement and time spent in on-task instruction and concomitant increase in learning.

Numerous interwoven dimensions of the instructional situation can affect teaching styles and learning outcomes. These include the physical uniqueness of each classroom
shape and proportion, the types of furniture provided as work surfaces for students, and the special activity characteristics of any given lesson. Environments which are preferable for teachers and students can facilitate the learning process (Feitler, Weiner, & Blumberg, 1970).

In the literature of art education, McFee (1970) describes the importance of creating supportive psychocultural environments in classrooms so the experiences of children can modify their behaviors, attitudes, and development. The room space is a planned physical setting in which learning takes place. The experiences of a child that take place in the school and the art room are key components in the system of forming values about art, the environment, and learning. Art teachers can effectively regulate spatial variables by attending to environmental arrangement possibilities.

In summary, the views of many researchers and theorists has been presented to describe the nature of classroom spatial arrangement and proxemics as parts of the nonverbal communication system that exists in every classroom. An increased awareness of spatial usage and proxemic behaviors should be a part of the repertoire of skills that every art educator must develop to function effectively. A survey of the literature in art education reveals that these concerns are not systematically addressed in programs for preservice teachers. Yet these theories and research outcomes can pro-
foundly affect the quality of instruction that takes place in art classrooms.

Statement of the Problem

By receiving specific instruction in the theory and practice of proxemics and classroom spatial arrangement, this researcher hypothesized that student art teacher knowledge and observable practice within the classroom would be influenced. Three types of change were anticipated as results of this experimental study: (a) a change in measurable knowledge about proxemics and classroom spatial arrangement; (b) an observed ability to apply new knowledge and understandings within the classroom setting; and (c) differences in observable teacher proxemic behavior within classrooms when compared with student teachers who have not received the instruction.

Research Questions

The following subquestions served to guide this investigation:

1. When there is a presence of knowledge about proxemics and classroom spatial arrangement resulting from an experimental treatment, will there be a discernable change in practice?

2. What is the nature of student art teacher proxemic and spatial arrangement practice in their class-
rooms prior to the presentation of the experimental treatment?

3. After the experimental treatment in proxemics and spatial arrangement theory, will observable practice by experimental subjects change to reflect an ability to apply the new knowledge?

4. How will the proxemic and spatial arrangement practices of control group subjects change as a function of normal maturation in the student teaching process?

**Definition of Terms**

Operational definitions of key terms will help to clarify research questions.

*Interaction:* situations in which the teacher and a student or students enter into verbal exchange.

*Instructional units:* the prepared curriculum and strategies for presenting content about proxemics.

*Map:* a scale-drawn diagram of the classroom that shows the placement of fixed and semifixed features in the room and provides a record of teacher-pupil interaction.

*Nonverbal communication:* the contextually mediated system of exchange in which meaning is obtained from stimuli at both conscious and subconscious levels.

*Proxemic behavior:* the psychoperceptual use of an individual's personal space and distance.
Spatial arrangement: The positions of movable furniture within the classroom.

Student teachers: Teacher education majors participating in a supervised experience of instructing students in school classrooms.

Limitations of the Study

The following factors limit the generalizability of the findings of this study:

1. The influence of the cooperating teachers on decisions about spatial arrangements made within their classrooms;
2. The teaching strategies used by the researcher for the presentation of the experimental content;
3. The time frame in which the data were collected;
4. The possibility of experimenter bias that could not be controlled by the research design;
5. The relatively small size of the population (n = 8) studied; and
6. The motivation of the volunteers to participate in the study as part of regular college coursework.

Basic Assumptions

It is assumed by the investigator that student art teachers will become more effective teachers as the result of receiving specific instruction in the theory and content
of classroom spatial arrangement and teacher proxemic behavior.

Further, it was assumed that one part of the responsibility of the student teacher is the arrangement and control of the spatial arrangement within the art classroom. The subjects in this study were assumed to have the freedom to exercise that control.

**Significant of the Problem**

Recently there has been a tendency by researchers to study classroom setting variables such as spatial arrangement, class size, and teacher behaviors. This has occurred because of an acknowledgement by many researchers that the instructional process is overwhelmingly complex. Newly devised methods for observing and analyzing classroom activities and the need to replace simple models of the teaching-learning process with more comprehensive theories have added to the interest in proxemic theories. A research paradigm which has attracted a considerable following by educational researchers is the process-product paradigm. Smith (1979) drew upon the work of Dunkin and Biddle (1974) and Jansen, Jensen, and Mylov (1972) to construct the process-product paradigm (Figure 1). A relationship is shown between teacher and student classroom behaviors and resultant student achievement in cognitive, affective, and psychomotor domains as being influenced by a series of variables.
Setting variables address specific concerns associated with nonverbal aspects of the physical environment. The process-product paradigm shows the significance of context variables within the educational setting. Educational researchers have studied various aspects of the physical environment of the classroom including teacher proxemic behavior and classroom spatial arrangement but the implementation of these findings systematically into preservice art teacher education has been limited. This study represents a step toward helping preservice teachers obtain an understanding of the classroom as a manipulable environmental system which influences teacher behavior and student learning. The research outcomes will contribute:
1. A curriculum for the study of proxemics and spatial arrangement geared to the needs of art teachers;

2. An objective test designed to measure knowledge and ability to apply proxemic theory; and

3. A mapping system for recording teacher proxemic behavior and spatial arrangement tendencies.

These components may be used by others to provide content which can be used in preservice teacher education methodology classes. Findings may be replicated beyond the populations studied in this research project and viewed in a variety of art teacher preparation programs. In addition, content may be developed for in-service teachers. Understandings gained from this study should provide a basis for further study of other aspects of the physical qualities of instructional settings, proxemics, nonverbal communication, and other dimensions of instructional practice in art education.

Summary

Art classrooms are complex environments in which teachers and students are constantly sending and receiving nonverbal messages. One aspect of nonverbal communication is proxemics and spatial arrangement. By receiving instruction about these complex constructs, the investigator assumes that student art teachers will develop a more
complete understanding of the classroom as a tool in the instructional process.

The research questions posed in this study: can student art teachers' knowledge about proxemics and spatial arrangement be increased as a result of receiving specific instruction when measured with a test instrument; then, what changes occurred in the classroom proxemic and spatial arrangement practices of the student teachers?

Theories about the importance of the physical environment of the classroom in the instructional behavior of teachers have been outlined. Art teachers need to have a variety of skills to be maximally effective in their instructional practices. The inclusion of proxemics and spatial arrangement content in their preservice education program can enhance their preparation. This research study is directed toward fulfilling that need.
CHAPTER II

REVIEW OF THE LITERATURE

Overview

This chapter is divided into two sections. First, since this research investigation involves observing and recording of proxemic behavior, selected theories related to the study of proxemics will be examined. These theories were selected because they can be applied in a variety of educational settings including art classrooms. Secondly, outcomes of research studies in classroom spatial arrangement will be described. Studies of the use of space help establish the significance of proxemics and spatial arrangement in classrooms as important areas for preservice teachers to study. Both of the following sections provide a framework for the content of the Proxemics Instruction Unit described in Chapter 3. In the chapter summary, some implications for art educators are drawn.

Selected Theories of Proxemics

To obtain understandings about observation and recording of proxemic behavior, it is necessary to provide a
brief description of proxemics as a set of theories and constructs that fall within the larger domain of study known as nonverbal communication. In this section of the literature review, an overview of nonverbal communication will be presented and the nature of proxemics defined as the study of how individuals use space in their environment. Other spatial models related to proxemics will be described. These descriptions include a behavioral model of spatial usage, an anthropological model, and an organizational development model.

Nonverbal Communication

The study of spatial usage as an aspect of nonverbal communication is an outgrowth of study in a variety of disciplines. Such disparate areas of scholarship as anthropology, environmental psychology, social biology, architecture, urban anthropology, and others delineate the factors which influence proxemic behavior. Although these disciplines differ with respect to their purposes, they acknowledge the importance of spatial behavior and usage practices as integrally related to human behavior (Porteous, 1977).

Wolfgang (1979) describes nonverbal behavior as those behaviors that transcend written and spoken or written words. The study of nonverbal behavior has been divided into at least three areas:

1. Kinesics refers to the study of patterns of body
movement in human interactions. This "body language" is culturally determined. Researchers have not found a gesture or body motion that has the same meaning in all cultures including facial expressions, gestures, posture, head nods, and so forth.

2. **Paralanguage** refers to the extra verbal elements associated with speech such as loudness, tone, pauses and hesitations.

3. **Proxemics** refers to the study of the ways individuals use space in their environment in relationship to one another and to objects.

We acquire nonverbal expressions through inheritance, learning, and modeling. We learn rules such as "don't stare" and "don't spit at people" (Wolfgang, 1979, p. 151). They are learned in specific social contexts such as imitation, when we incorporate mannerisms, expressions, and movements of significant people in our lives such as parents and heros.

Nonverbal behavior can be characterized as operating outside of an individual's awareness level and, as such, it is difficult to manipulate or falsify and tends to have greater impact than words, particularly in revealing feelings and emotions. In classrooms, 82% of the signals conveyed by teachers are nonverbal while 18% are verbal (Wolfgang, 1979).
Territoriality

A basic concept in the study of proxemics is territoriality, wherein an organism lays claim to an area and defends it against members of its own species. In animals, territories offer protection and assure the propagation of species by regulating density. In addition, status and personal and social space are associated with territories as a basic behavioral system characteristic of all living organisms (Hall, 1966).

 Territories are controlled by means of two mechanisms: defense and personalization. Defense consists of the variety of ways an individual or group maintains territorial integrity. Personalization is necessary for an individual's self-identity with a space and also to mark it off in the eyes of other species members (Porteous, 1977).

Porteous (1977) notes that three distinct spatial levels nesting one within the other can serve as a framework for studying territories. They are:

1. **Microspace/personal space**—the minimum space necessary for an organism to exist free of physical or psychic pain. It is an inviolate personal bubble of privacy which we actively defend against intrusion. It is mobile and carried with our bodies as we move through space;

2. **Mesospace** refers to semipermanent areas which are defined by their occupants. They may be static or movable, individual (home, yard), or collective (neighborhood);
3. **Macrospace** is undefended public areas within which individuals wander. It refers to temporarily occupied areas.

**Personalization**

When individuals regard a space as being under their jurisdiction and they defend it as such, personalization is accomplished. Placing family photographs on an office desk is an example. Defense may involve the rearrangement of furniture so that the potential for invasion of the territory is reduced. This may involve the careful placement of a filing cabinet to serve as a screen. In school rooms, defending temporarily vacated personal space usually includes the use of props such as a notebook or open book and pencil. The implication is that an area of extended personal space can be marked and identified while the owner is absent (Porteous, 1977).

**A Behavioral Model of Spatial Theory**

Porteous (1977) theorizes that behaviors always occur in an environment and are comprised of acts which are more than and different from the sum of their parts. On one hand, the human organism can be viewed in a complex relationship with the environment. But the organism, behavior, and the environment are regarded as a single system. The environment can be transformed by humans and the resultant
changes are mediated by the resulting behaviors. He has outlined three behavior models for spatial theory:

1. **Environmental determinism** holds that humans can manipulate environments to produce specific behaviors. The background of this theory traces back to approaches in the version of behaviorism known as operant conditioning. This theory in essence states that objects in the physical environment act as positive and negative reinforcers of innate behavioral tendencies. We tend to avoid aversive stimuli and are attracted to rewarding stimuli. In educational situations this involves the manipulation of proximal objects and behaviors rather than the environment as a whole. The general idea of determinism has been applied to enhance behaviors within the educational setting where the environment sets conditions for the response to occur (Ittelson, Proshansky, Rivlin, & Winkel, 1974);

2. **Environmental possibilism** is a view which sees the environment as the medium by which human beings are presented with opportunities and limits are set to the accomplishment of any endeavor with little effort to discover laws; and

3. **Environmental probabilism** is a moderate viewpoint which uses common sense and asserts reasonable relationships between environment and behavior. Subscribing to a probabilistic model enables researchers to study individual and group behaviors within the educational environment of an art classroom.
Environmental configurations affect interpersonal behavior and personal space—especially in institutional and other public settings such as schools where the spaces can be manipulated to promote interpersonal communication or privacy-seeking behavior (Porteous, 1977). But little is known about how the various alternative affect people (Sommer, 1969).

An Anthropological Model of Spatial Usage

The work of Hall (1966) linked anthropology and the meaning and use of space to different cultures. Others, such as Sommer (1969), have considered the psychological significance of space and focused upon its meaning to individuals in terms of crowding, territory, and architectural design.

Hall (1974) defines proxemics as human transactions when using intimate, personal, social, and public space in various settings which are maintained outside of conscious awareness. One dimension has been identified as proxemic zones or distances which people maintain from one another. They are:

1. **Intimate distance**, for very intimate interactions; usually zero to 6 inches but may extend to 18 inches;

2. **Personal distance**, the distance we maintain between ourselves and others. Usually 18 inches but may extend to 4 feet in instances such as discussion;
3. **Social distance** for impersonal business or at casual social gatherings. It may range from 4 to 12 feet; and

4. **Public distance** for more formal activities such as speeches or small audience presentations. These distances are mediated by at least three variables: the setting of the transaction, the relationship of the persons in the social system, and the feelings or emotions of the parties involved.

How individuals react to spatial usage is a function of context, emotion, and personality differences as seen against a cultural backdrop. The setting can be considered in subsets which include material, spatial, and temporal components. The activity can be work, play, or other such activities and relationships having to do with age, sex, relative status, and so forth.

Various factors influence personal space norms and proxemic practices including:

1. **Characteristics of the physical environment** (number of occupants, available furniture, arrangement of spaces);

2. **Characteristics of individuals** (personality traits, sex, feelings);

3. **Characteristics of the task or relationship of individuals** (conversation, friendship); and
4. Characteristics of the other individuals (leadership, attraction) (Ittelson et al., 1974).

An Organizational Development Model

To obtain an understanding about how spaces can be structured let us now consider a series of constructs developed in the context of social intervention and organizational development theory.

Steele (1971) offers a system of categories to classify the inputs received by individuals or groups from the physical environment. They are:

1. **Instrumental space** or settings may have an effect on the performance of a task, helping or hindering activities by its features. An example: A room located near a source of noise would be negatively loaded for discussion or concentration. The opposite would be well lighted areas for writing or reading or spatial arrangements for co-acting groups.

2. **Symbolic space** or settings are communication mechanisms which tell others what you are like, what your status is, and sends signals which say "stay away" or "come in." Type and arrangement of furniture reflect significantly upon transactions and indicate to others where territorial boundaries are located. An example: The size and location of the teacher's desk conveys to students a territory marked for the teacher.
3. **Pleasure space** or settings do not directly effect work or communication but may make the environment positive, neutral, or negative.

4. **Growth**: When the environment can be a force for learning, stimulation, experimentation, and the like; it may also be neutral or negative. Growth space demands that inhabitants be aware of who they are and how they are using the space. Conversely, a space that requires no conscious effort to use it is likely to be a force for nongrowth because the user is not called upon to think about preferences or devising new ways of doing things.

The research cited in this section indicates a variety of theories and constructs relating to proxemics and spatial arrangement as nonverbal means of communicating values and priorities. Proxemics has been identified as an aspect of nonverbal behavior and, as such, operating outside of an individual's awareness level. Several behavior-environment models have been presented. Also, proxemic zones, distance, territories, personalization, structuring, and other theories defining spatial usage have been described which can be applied to educational settings.

Now that proxemic theories have been examined, it is appropriate to consider research studies which apply proxemic theories in educational settings.
Research Studies in Classroom Spatial Arrangement

In this section, research outcomes describing the affects of spatial arrangement on individuals within educational settings are presented. These include studies of classroom ecology, patterns of teacher proxemic behavior, seating preferences, proxemic patterns, small group ecology, studies of educational settings, and the ecology of participation. In the conclusion of this section, the implications of these research findings and their applications in art classroom settings will be reviewed.

Proxemics in Classrooms

Arranging classrooms for most preferred levels of interaction can result from a knowledge of proxemics theory. Sommer (1967) states that the ways groups arrange themselves can foster group relationships. Many decisions about the physical arrangement of classrooms are determined by ease of maintenance or efficient cleaning considerations. Little cognizance is given to the social functions which take place. An understanding of these occurrences in classroom settings can help teachers manage their surroundings. In the past, the front of classrooms was determined by the location of the windows. Educators felt that light should come over the student's left shoulder. Since classrooms of today feature modern developments in lighting, heating, ventilation, and accoustics, arrangements of space can be
made without spatial encumbrances forced upon early educators.

Many factors are involved in the various types of interaction that occur in art classrooms. Understanding about such factors can help in the various communication behaviors between teachers and students. Spatial arrangements can be planned to coincide with the expected participation levels of students. Attitudes held by teachers about students when assigning seats is but a single manifestation of beliefs and feelings held by the teacher. The arrangement of the classroom and spatial usage is part of a complex nonverbal expression of a teacher's instructional priorities.

Classroom Ecology

A prerequisite to the development of an understanding of proxemics when applied to classroom environments is a knowledge of classroom ecology, the spatial relations of organized groups under a given set of circumstances. Just as biologists study organisms in their natural habitat, educational ecologists attempt to study the organization of people in schools. The arrangement of students in classrooms is a function of such factors as room density, the nature of the activity, the instructor's method of teaching, the type of furniture, and the physical dimensions and shape of the room space. Sommer (1967) suggests that, from a
practical standpoint we must assume that there is no single best spatial arrangement for all classroom tasks.

Sommer (1969) described the usual spatial layout of classrooms as oriented toward the teacher and suggests that, on a nonverbal level, the authority oriented flow of communication is from teacher to student. Audience participation is quite limited and generally drops off as distance increases and eye contact decreases. Those further away and at an angle to the teacher participate least. Such interaction patterns are institutionalized in many schools by assigning seats to students and keeping them there throughout the year. Sommer suggests that students be given freedom to change seats at will and keep the interaction pattern in a fluid state permitting individual differences to emerge in the free choice of seats and involvement in class activities.

The teaching-learning process is a series of communicative events. Teachers and students are concerned with a desired response and an indication of their success is whether they obtain it. Most teacher education programs stress the importance of communication as integral to effective teaching. Not all communication endeavors, however, are concerned with the written and spoken word. Nonverbal skills are part of the total process of communication in which teachers engage (Knapp, 1971).
Adams and Biddle (1970) view the classroom and how it is arranged as a behavior setting; making it easier to act in certain ways, harder to act in others. They investigated the relationship between students and teachers with regard to participation in classrooms and concluded that the main determinant in whether students became involved in classroom interactions was seat location. Students in what they labeled the "action zone," an area extending from the front of the room straight back and diminishing in intensity the further it got away from the teacher, participated more than students outside of the defined area.

The front of the classroom is the foremost strategic point for supervising and teaching according to Adams and Biddle (1970). They suggest that a number of factors coerce teachers into certain locational behaviors. For example, teachers are expected to maintain discipline, as task more easily handled from the front.

Sepperson and Joyce (1971) state that most experienced teachers employ the deductive recitation style of teaching as characterized by delivering information from the front of the room.

Patterns of Teacher Proxemic Behavior

The front of the classroom is symbolically marked by the teacher's desk with personal items placed on it. This is defendable territory and space that is seldom invaded by
students. After analyzing patterns of teacher location, Adams and Biddle (1970) determined that there are principal routes which teachers take as they move about in the classroom space:

1. The footlight parade covers an area across the front of the room. Teachers spend an average of 66% of their time there;

2. The inland excursion consists of a track leading up the front and center of the room. The teacher visits specific children approximately 8% of the time;

3. The grand tour is a general perambulation around the room. This practice occurs approximately 15% of the time and usually involves sight-seeing visits only—no teaching as such takes place. It seems to be a show of interest and symbol of supervision.

Sommer (1974) studied 13 laboratory class sessions of various types including biology, botany, and zoology, and four art laboratories including textile design, painting, and so forth. Instructors' participation behavior was classified as (a) walk and comment, (b) lecture, (c) sit and wait, and (d) leave. In the walk and comment type the instructor moved around the room talking about projects with students. The instructor was mobile and made no set presentation. Lecture referred to the instructor giving a set presentation from the front of the classroom. Leave referred to any case where the instructor gave the assignment
and physically departed from the room. *Sit and wait* referred to any instructor who sat down somewhere in the room and waited for students to come to him or her for advice. In the laboratory class, student-to-teacher and teacher-to-student interaction time occurred 24% of the time whereas small regular classrooms averaged 12% of the time.

**Setting Preferences in Classrooms**

Feitler et al. (1970) examined the relationship between interpersonal needs as identified on the Fundamental Interpersonal Relations Orientation test and preference for physical settings of classrooms. They hypothesized that the meeting or blocking of these needs would be reflected in preferences for particular physical environments in which to teach. The nature of interpersonal interactions, the perceptions of self and others, and a variety of other factors contribute to the gratification or blocking of these needs. The meeting of interpersonal needs provides a feeling of comfort; failure to meet needs leads to feelings of discomfort.

The researchers found no difference in the least desirable settings for both teachers found to have high need-for-control and teachers found to have low need-for-control. Both are shown in Figures 2 and 3.

Although students working in small groups with the teacher nearby would seem to be very desirable and used in
Figure 2. Modular arrangement (Feitler et al., 1970).

Figure 3. Row and column variation (Feitler et al., 1970).
laboratory-type classroom such as art, the researchers suggested that students working without the direct assistance of the teacher are not efficient and are likely to be wasteful of time. The setting shown in Figure 3 was seen as creating ambivalence for teacher and students. The setting is one of high teacher control, although the teacher is not in the traditional teaching position in front of the room.

The setting in Figure 4 was determined to be the most comfortable for both high and low need-for-control teachers. The researchers suggest that this arrangement permits a controlled setting yet allows individual personal interactions to develop among members.

Ranking second in the most comfortable category is the setting in Figure 5 for high need-for-control teachers and the setting in Figure 6 for low need-for-control individuals. Figure 6 is seen as placing the teacher in a potentially helping rather than controlling position. The dyads of students are the focus of class activity. The teacher's mobility to interact with the dyads is high so there is an element of high control available in this setting. Students in dyads are able to interact with one another yet prevented from influencing and being influenced by the larger group by the physical arrangement.
Figure 4. Horseshoe arrangement (Feitler et al., 1970).
Figure 5. Traditional row and column arrangement (Feitler et al., 1970).

Figure 6. Dyad arrangement (Feitler et al., 1970).
Arrangement Patterns of Classrooms

McCorskey and McVetta (1978) studied the three most common classroom arrangements: (a) the horseshoe; (b) the traditional; and (c) the modular. They reported the following figures to identify high, moderate, and low contact positions within each classroom type. The horseshoe arrangement shown in Figure 7 was employed most often in smaller classes such as seminars. A double horseshoe was used in larger groups because of the dead space in the center of the arrangement. The traditional arrangement shown in Figure 8 limits interaction and serves to focus student attention toward the teacher. By limiting contact between and among students, this arrangement makes monitoring behavior easier. The modular arrangement shown in Figure 9 is most frequently found in specialized classroom such as art, science laboratories, home economics, and so forth. It is especially advocated where student-to-student interaction is most important. In group activities, interference from other groups is minimized.

Small Group Ecology

Sommer (1969) investigated why certain seating arrangements seem to be especially suitable for particular activities. These studies can be helpful in understanding the interactions that may occur in modular arrangements. Subjects indicated seating preferences for conversing, cooper-
Figure 7. Contact within the horseshoe room arrangement (McCorskey & McVetta, 1978, p. 102).

H = High Interaction Seat, M = Moderate Interaction
L = Low Interaction
Figure 8. Contact within the traditional room arrangement (McCorskey & McVetta, 1978, p. 108).

H = High Interaction Seat, M = Moderate Interaction
L = Low Interaction
H = High Interaction Seat, M = Moderate Interaction
L = Low Interaction

Figure 9. Contact within the modular room arrangement
ating, competing, and co-acting activities at rectangular and circular tables with six chairs (Figure 10). Some of the reasons indicated by the experimental subjects studied for their choices were:

**Conversing:** The corner-to-corner and across-table arrangements were preferred. The need for physical proximity while allowing eye contact to drift was available to both subjects. Since sustained conversations rarely involve continuous eye contact, the eyes of a conversing person tend to rove about the other individual. Sustained eye contact may be interpreted as aggression;

**Cooperation:** The side-by-side arrangement is the most preferred for mutual cooperation. This arrangement allows for mutual access to tools and materials;

**Competing:** The most preferred arrangement, across the table, reduces proximity of collaboration, retains available eye contact to stimulate competitive effort, provides privacy for one's own work, and allows one to keep an eye on the competition;

**Co-acting:** The more distant arrangement was most preferred when pairs were to work separately at the same table. Eye contact and the monitoring required in other arrangements were not necessary with the more separate configuration.
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<thead>
<tr>
<th>Seating Arrangement</th>
<th>Condition 1 (convening)</th>
<th>Condition 2 (cooperating)</th>
<th>Condition 3 (co-acting)</th>
<th>Condition 4 (competing)</th>
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PERCENTAGE OF Ss CHOOSING THIS ARRANGEMENT

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<th>Condition 2 (cooperating)</th>
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Figure 10. Seating preferences at rectangular and round tables (Sommer, 1969, pp. 62-63).
Doyle (1973) found that the controlling function of room arrangement was important to student teachers. Arrangements which increased the density of students and created more face-to-face contact among individuals made the task of monitoring classroom groups more difficult. Traditional arrangements tend to limit interactions and focus attention on the teacher. By limiting contact among students, the task of monitoring behaviors and being aware of disturbances is easier.

Tracey (1979) investigated the changes in teacher proxemic knowledge and behavior that occur after receiving instruction as part of an in-service workshop series. Using participant observation research techniques for recording field notes, she described the variety of proxemic behaviors used by teachers in classrooms. She found that 62% of the participants in the workshop series changed the spatial arrangements of their classrooms. Factors which seemed to influence the observed changes were grade level taught by the workshop participants and the teachers' perceptions of the expectations of changes by colleagues.

In another study of classrooms employing an intervention research strategy, Weinstein (1977) observed second and third grade self-contained and open-plan classrooms. After reviewing activities and locations of students and discussions with the teacher to determine desirable changes which
could be made, a series of spatial arrangement intervention changes were introduced. The interventions were intending to bring about specific desirable usages of space. A comparison of prechange and postchange data revealed that:

1. Children moved into areas of the room that had been previously avoided;

2. The range of behaviors within certain areas increased; and

3. Frequencies of specific behaviors were changed.

She concluded that while explanations of these findings could be traced to other causes, classroom arrangement was demonstrated to be a significant influence on the behavior of children and seems to have an effect on teaching activity.

These two studies illustrate the relative impact which specific instruction in spatial arrangement and proxemics can have in actual classrooms. Each case involved different research techniques but in both changes occurred which indicate that instruction can upgrade teachers' proxemic skills.

Kritchevsky, Prescott, and Walling (1969) investigated the relationship between educational setting space and the resultant behavior of those who work and play within it in preschool settings. They developed a scheme for analyzing and describing spatial quality in educational settings. Part of their theory involved the assumption that children's play space should allow for self-direction—a notion being that teachers should arrange inviting spaces and allow
children to become involved in self-directed activity. They suggest that good spatial organization is characterized by a situation which:

1. Children in one area can reach those in another by an easily visible path;

2. Teachers and students do not need to walk through work spaces in order to get to another space; and

3. There is no dead or unused space.

When spatial usage is good, goal-related behavior can occur easily and space does not force behaviors contrary to lesson objectives. Many changes in the physical setting can be easily and inexpensively accomplished. They need to be undertaken, however, with sensitivity to the educational goals that are planned.

Ecology of Participation

Several of the following studies have attempted to plot an ecology of participation based upon eye contact, student seat locations and classroom spatial characteristics. These studies establish the significance of proxemics as an important theory with which teachers should be familiar, because it can provide a framework for understanding room arrangement and expected teacher-student interaction.

Eye contact. Argyle and Dean (1965) developed evidence suggesting that eye contact serves a number of different functions in two person encounters. One of the most important they reported, is gathering feedback about the other
person's reactions. Eye contact, in their view, is linked to affiliative motivation and acts in accord with approach and avoidance forces to produce a balance of physical proximity, eye contact, voice volume, and other interpersonal factors. When this balance is disturbed, compensatory changes occur whereby people move to an equilibrium distance. Eye contact duration and glance behavior tend to be shortened when people are closer together. This effect is greatest in opposite-sex pairs.

Studies by Norum, Russo, and Sommer (1967) have shown that students in visual contact with the instructor participate in class activities and discussions more than students in away-facing or behind-the-teacher locations. These researchers suggest that teachers rarely take advantage of spatial arrangement possibilities in classrooms where factors tend to block the educational process exist. Their theory suggests that the perceived relationships between individuals affects how they arrange themselves spatially in whatever level classroom they are occupying.

Classroom spatial characteristics. Sommer (1977) suggests that classroom space can be divided into zones containing people who behave differently, but whether the zones are selected by those people in the first place or affect them afterwards, or a combination of the two is unclear. The relationship between student location and expected participation levels often determine where students will seat
themselves. When the desirable seats are in front, increased interaction occurs because the greater stimulus value of the instructor reaches the most interested students. When the favorable seats are in the middle or rear, the increased expressive value of the instructor for students in front will tend to cancel out the fact that the most interested students are in other rows.

In a study of the ecology of participation, Sommer (1977) tested the expressive contact hypothesis wherein visual contact with the instructor increases interaction. Room arrangement and the position of students within that room determine the type of eye contact possible with the instructor. Students in the center are psychologically closer to the instructor than students at the sides. He found that students in the center of a row participate more than students at the sides with participation greatest in the front row as well as the center section of each row. This finding seems to coincide with similar results obtained by Adams and Biddle (1970). They described an action zone defined as the triangle of participation running across the front of the room and extending in a line down the middle of the room. The intensity decreases as it extends away from the front.

Hesler (1972) studied how both male and female teachers use classroom space and how the use of space affects the perception of teachers by students. He discovered that male teachers tend to move around the classroom more than female
teachers. And male teachers have a tendency to remain in the front of the room, either near or behind the desk. Female teachers spend more time in front of the desk than male teachers. Students indicated that the use of the desk by teachers has a negative effect upon their perceptions of the teacher as warm, friendly, and effective. Teachers are perceived as more affectionate toward students when standing in front of the desk or among them. Students have a more positive feeling when teachers are physically closer. Greater distance between teachers and students lowers the perception by students of teacher warmth and friendliness. The barrier presented by the teacher's desk is perceived as being a strongly negative influence on students' perceptions of teacher warmth, friendliness, and effectiveness. The teacher who moves among the students and is physically closer to students is perceived in positive ways by students.

Schwebel and Cherlin (1972) reported that where students are seated in classrooms affects how they are perceived by the teacher and classmates. Their findings showed that:

1. Teachers assign seats to minimize disruptions;
2. Students assigned to front row seats are more attentive than classmates assigned to middle and back rows; and
3. Those occupying front seats are perceived in a positive way by their teachers and classmates. They theorized that teachers tend to assign seats according to the status of the individuals, a cultural interpretation of personal territory outside of the conscious awareness of the teacher. Another theory suggested: students assigned to front row seats are more responsive and provide feedback desired by the teacher.

Walberg (1969) studied high school students to determine the relationships between seating position in classrooms and personality characteristics. The students were offered five choices of preference for seating: (a) near the front of the room; (b) close to friends; (c) it does not matter; (d) in the back; and (e) near a window. Results indicate that students who chose seats near the front of the room as their first choice tend to be extremely zealous, not overly dependent, tend to be leaders, study more, and are absent for illness less often. Students who chose "in the back" and "near a window" as their preferred answers tended to be unhappy with school, do not care about good grades, and wanted to work alone after completing school. Students who sat in front and center positions expressed high values for learning, those in back positions express negative values. Those who chose to "sit near friends" as their preferred seat positions were more sensitive to criticism and have less desire to be alone.
Student seat locations. A number of factors influence seat location and can have a strong bearing on expected teacher and student verbal interaction patterns when using various modes of presentation.

Adams (1969) studied the location of actors in classrooms and their participation in interaction. He discovered that certain specific locations attracted a disproportionate number of communications. Front and center was the preferred emitter location and a line along the central location was prominent. Locations at the back and along the sides of the room were not significant. Target locations replicated the pattern of emitter locations--front and center. These findings reflect the tendency for classrooms to conform to the center line pattern and has produced a location-communication principle: "The greater the distance a location is from the center line of the room and the greater the distance it is from the center front of the room, the less the likelihood that inhabitants of that location will be involved in the direct communication-interaction system" (p. 319). Additionally, he revealed three patterns of teacher territorial behavior:

1. They spend most time at the front of the class;
2. They stroll the edges of the room and look back; and
3. They visit with students who occupy center line positions.
Koneya (1976) studied the verbal behavior of secondary school students and noted a triangle of participation which extends across the front row and terminates in the middle seat of the middle row of classrooms. This result confirmed the notion of an "action zone" identified earlier by Adams and Biddle (1970). Koneya (1976) found that low and moderate verbalizers avoid central seats to a greater extent than high verbalizers. High and moderate verbalizers exhibited higher verbalization rates when centrally seated than others noncentrally seated. Low verbalizers consistently gave low verbalization rates no matter where they were seated.

Weinstein (1977) reported that the physical environment has little proven impact upon achievement. Seat location seems to be the only physical variable linked to differences in school achievement. However, she speculates that the classroom environment can affect nonachievement behaviors and attitudes. Soft classrooms are spaces where pillows replace chairs, students using writing boards instead of desks, carpeting replaces hard floor and wall surfaces and so forth. Soft classrooms have been associated with better attendance, greater participation, and more positive attitudes toward the instructor, the class, and classmates. These more positive attitudes may eventually result in improved achievement.
Summary

This chapter is made up of two parts: selected theories related to the study of proxemics and research studies in classroom spatial arrangement. Each has been presented as a key aspect of proxemics which is an area of study within the larger field known as nonverbal communication. Theory and research that could be related to art classrooms were selected for the literature review.

As a result of the information presented here, one can conclude that the decisions that art teachers make about spatial arrangements can affect the proxemic behaviors of individuals within the classroom. Researchers have suggested that participation levels can be predicted based upon spatial arrangement, seat location, and eye contact between teacher and students. In addition, differences in type and quantity of teacher-pupil contact were described. Many of these differences are attributable to communication transactions which occur outside of the conscious awareness of teachers.

Various investigators such as Tracey (1979) and Weinstein (1977) have shown that proxemic behaviors of in-service teachers can be altered through instruction and workshop activities. We can suggest, therefore, that understandings about various proxemic theories and spatial arrangement practices can enhance the preparation of preservice art teachers. The inclusion of this content in the
instructional repertoire of student teachers can contribute to the enhancement of communication levels in art classrooms. Additionally, this knowledge will enable art teachers to arrange settings that are suited to the characteristics of their teaching methods and the content being presented.

This review of the literature establishes a body of knowledge derived from the theory and research in proxemics. In this study, this literature is developed into instructional content for student teachers.

In the next chapter, the research methodology to study how students know and apply the content is described.
Chapter III

METHODOLOGY

Overview

In this chapter, methods of subject selection, outcome measures, conditions of testing, description of the experimental treatment, data analysis techniques, and the research design are presented. Each is described separately.

The intent of this research study was to develop a unit of instruction derived from selected theories and outcomes of research about proxemics and spatial arrangement which could be presented to a group of student art teachers. The research questions address differences between experimental and control groups that were anticipated in (a) measurable knowledge, (b) observable teacher behavior, and (c) an observed ability to apply new knowledge and understandings within classroom settings.

Subject Selection

The population studied in this research consisted of eight student teachers who were randomly selected from all who volunteered. The subjects were enrolled in the art education program at Kent State University and doing their student teaching during the Fall semester, 1982. Eight
subjects were selected because that number could represent
the characteristics of student art teachers that were being
investigated. The sample size \( n=8 \) was accepted as a
limitation of the study of Chapter I. The subjects were
considered to be individual instances being investigated in
their classrooms as part of their college program.

**Outcome Measures**

Development of the instruments and techniques for data
collection are presented in terms of validity, reliability,
and utility. Included are the 45-item multiple choice test
and the proxemic mapping system.

**Development of the Test Instrument**

The researcher outlined the content for the test based
upon selected prominent theory and research presented in the
Review of the Literature (Chapter II). Test items to address
major concepts, vocabulary, and potential application were
developed (Appendix B). Computer scored electronic response
forms were selected for use as answer sheets to assure uni­
form accuracy and provide item analysis results for test
items. After several versions of the test were administered,
results were scored by computer. Item analysis techniques
enabled the researcher to identify areas where revisions
were necessary.
Test Reliability

After three revisions using TEM analysis methods, test reliability data were calculated using the Kuder-Richardson 20 formula for estimating reliability. This formula estimates the internal consistency of an objective test by determining how answers to each item on the test relates to the test as a whole. This rational equivalence system tends to give a conservative estimate of reliability (Van Dalen, 1979).

The general Kuder-Richardson 20 formula for estimating reliability is as follows:

$$ r_{tt} = \frac{n}{n-1} \frac{S_{t2} - E_{pq}}{S_{t2}} $$

The reliability for the 45-item Classroom Spatial Awareness Test was calculated as $r_{tt} = .93$ and is considered good.

Establishing Test Validity

Test validity was established by offering the instrument to a jury of experts (Appendix A) in the field of nonverbal communications and proxemic research and theory. An explanation letter (Appendix B), a copy of the Spatial Awareness Test (Appendix C), and a scoring key (Appendix D) were sent to each member. The researcher requested reactions as to the appropriateness of each question, areas of disagreement regarding the interpretation and application of
proxemic theory, and terminology. Responses from the group were studied and revisions to the test were made.

Test Utility

The utility of the test was developed by administering the instrument to groups of students in preservice teacher education classes at Kent State University. This field testing program enabled the researcher to refine functional and aesthetic aspects of the instrument. Also during this time, the directions for administering the test were developed.

Teacher Proxemic Behavior

Three of the research questions involved the nature of teacher proxemic behavior and the spatial arrangements of classrooms. To gather data for responding to the questions, the researcher identified several observable characteristics related to these constructs that can be observed and recorded. They are: (a) the spatial arrangement of the classroom space; (b) the movement patterns of the teacher; and (c) the percentage of time spent in interacting behavior, an indicator of proxemic tendencies.

Instrumentation for collecting multiple aspects of these data were developed by the researcher. In this section, each of the methods for data collection and analysis are described.
The Proxemic Recording System

The Proxemic Recording System consists of two sections: the Situational Data grid/Proxemic Record, and the Field Note Data sheet. Each works in conjunction with the Classroom Plan Map to provide an overall picture of the desired teacher proxemic behavior information.

Situational Data/Proxemic Record

To facilitate the recording of basic background information during the proxemic observation episodes, the Situational Data grid was prepared (Appendix E). The grid includes the name of the participant, date, grade level, school and room, the name of the recorder, starting and stopping times of the observational sessions, and the elapsed time of the sessions in minutes.

The Proxemic Record works in conjunction with the Classroom Plan Map to code (a) the location number at which the teacher pauses or stops, (b) the approximate duration of each stop, and (c) the nature of the teacher behavior observed. The categories of teacher behavior were adapted from Tracey (1979) and defined as follows:

Interacting--an exchange between teacher and pupil(s)
Expository--a verbal presentation by the teacher
Observational--the teacher watches the class or an individual
Managerial--the teacher is engaged in school related activity such as obtaining supplies, checking records, etc.
Each individual behavior occurrence was noted by a ✓ mark on the Proxemic Record.

By numbering each time the teacher pauses or stops consecutively, including the duration and behavior category, a sequence of instructional events was recorded for study. This system was devised to avoid creating a maze of mapping lines. As an example, if the teacher was shown on the map at location number nine, in front of the room, and then moves to location number 10 at the rear of the room, the path that the teacher followed can be reconstructed for detailed study. This kind of information revealed tendencies in teacher proxemic movement and behaviors.

The duration of the behaviors at pause or stop locations was shown using tally marks. Each time a pause or stop occurred, a tally mark was made. A second mark was made if the behavior continued past five seconds. The procedure was repeated until the behavior changed. For example, if an instance of interacting behavior occurred and continued for seven seconds, two marks were made. This indicated an interaction behavior took place and lasted more than 5 seconds but less than 10 seconds.

Field Note Data

Many teacher proxemic behaviors and spatial arrangement practices are influenced by occurrences within the classroom. Therefore, noting this kind of information as part of
the data collection was necessary. A Field Note Data form (Appendix F) guides the observer in making comments about special circumstances, activities, and so forth that were aspects of the class and may have influenced key variables being observed in this study.

Mapping Procedures

To obtain pretest and posttest information required to satisfy the observational part of this study, a system for recording teacher proxemic behavior and spatial arrangement information was developed by this researcher. The system consists of:

1. The preparation of a classroom plan map to show spatial arrangements;
2. The recording system with which to characterize teacher proxemic movements according to location, duration, and type of behavior; and
3. The collection of relevant field note data.

The Classroom Plan Map

The floor plan drawing used by architects to depict spatial arrangements for buildings was the basis for the Classroom Plan Map. This method utilizes a scale drawing of the physical space of a classroom with features labeled according to intended usage. The maps are a form of graphic data that serves as a record for comparing the spatial arrangement practices used by participants in this study.
To expedite mapping procedures during the observational episodes, maps of each classroom were prepared prior to the start of the data collection period.

The maps consist of a scale drawn plan view of the room. The scale used was one-fourth inch equals one foot. The maps were organized around the concepts of fixed feature and semifixed feature space described by Hall (1966). Fixed feature space was defined as relatively non-movable parts such as walls, windows, doorways and so forth. Semifixed feature space was defined as objects that can be moved around within the fixed feature space of the classroom.

In addition to these designations, further identification of features in the room were noted on the maps. These included sinks, storage areas, counter areas, chalkboards, and so forth. Student seat locations were shown by marking an "X" in appropriate places.

To assure that procedures for the observation and mapping of student teacher movement within the classrooms was as unobtrusive as possible, all parts of the system were prepared into packages prior to the arrival of students for their classes.

Reliability of the Observational System

Accurately prepared classroom spatial drawings were necessary to assure that spatial arrangement changes could be determined when comparing pretest and posttest data.
Measuring tapes and graph paper were used to prepare these drawings. After a review of the procedures involved in making the maps was outlined by the researcher, the assistant was able to obtain accurate and consistent results.

To obtain reliable observational data, a video tape of a student art teacher was used to prepare the research assistant. After a period of instruction and practice, a 15 minute episode was identified. Following a series of repeated mappings of the same period, consistent results were obtained. The research assistant was able to obtain 90% consistency of results based upon the percentage of time spent in the four proxemic behaviors.

Training an observer to record the mapping data reduces experimenter bias toward the situations of experimental group subjects. This training method would enable other observers to obtain similar results. Inter-observer agreement is necessary to assure that other researchers would obtain similar results.

Conditions of Testing

This section describes the conditions under which observational data were gathered and the Classroom Spatial Awareness test was administered.

Gathering Observational Data

Pretest observational mapping of the student teachers was done during week six of the student teaching term. The
classrooms of each subject were visited prior to the day of
the observations. The floor plan maps were prepared on
grided engineering forms. All materials were duplicated and
fastened together into packages for the observational
visits. Detail changes in the drawings were made prior to
the beginning of observational periods. In each case, four
packages containing the classroom scale drawing and the
Situational Information sheet/Proxemic Record were used by
the observers.

The schedules of the researcher and assistant were ar-
ranged so that visits to the classrooms of the participants
would be made when at least two consecutive class periods
were being taught. The classes and schedule arrangements
were otherwise determined at random. Since four, 15-minute
observations were to be made of each student for both pre-
test and posttest sessions, two consecutive class periods
were necessary.

Prior to the beginning of the pretest observations,
subjects were informed that the observations would be made
but no other specific information was given. With seven of
the eight subjects, mapping occurred in morning classes.
The eighth subject had only one morning class scheduled so
observations were conducted in the afternoon.

Posttest observational mapping occurred during week
number 10 of the student teaching term. Data gathering was
planned to coincide as much as possible with times and
conditions of the pretest. In cases where the classroom spatial arrangements were changed, the scale drawn maps were revised to reflect the changes. Otherwise, the posttest mapping procedures were identical to those described in the pretest section.

Steps Followed in a Classroom Observation.

1. Enter the classroom and check the accuracy of the floor plan drawings against existing arrangements.
2. Mark pupils' seat locations prior to the beginning of the observation with an X.
3. Enter Situational Information data.
4. Begin the observation by marking the location of the teacher with a 1. Beginning an observation period was initiated at random.
5. Map teacher pause and stop locations using consecutive numbers. These numbers correspond with numbers on the Proxemic Record sheets (Appendix E). Time intervals are noted every 5 seconds by making hash marks under the "Duration" heading. This 5-second interval was selected because it is used in a variety of data collection systems including the Observational System of Instructional Analysis (Duncan & Hough, 1980). This brief time interval enables detailed comparison of percentage of time spent engaged in different behaviors and locations.
6. End the observation after 15-minutes unless the class is completed and students have left the room prior to that time. A position in the room that afforded a full view of the room yet did not intrude into class procedures was selected for observations (e.g., at the side or back of the room).

7. Enter Field Note Data information as appropriate.

Administering the Test Instrument

The Classroom Spatial Awareness Test was administered to both experimental and control subjects one week after the final treatment session. Electronic answer sheets were distributed and directions for completing them were given. Only first names and dates were entered onto the forms. Number two pencils were used by all subjects. Test takers were instructed to answer all questions on the test. If they did not know an answer, they were instructed to make a guess. There was to be no time limit. When completed, test forms and answer sheets were to be returned to the researcher. Subjects who had completed the test could take a break until all test takers were finished. None of the subjects needed longer than 25 minutes to complete the test.

Types of Qualitative Data

A variety of descriptive data were gathered during the study. One type of data are the field notes that were made
on the Field Note Data sheets (Appendix F). Information that pertained to the proxemic aspects of the situations was recorded as the research assistant mapped the proxemic behaviors of the participants.

A second type of data results from the mapping system. The system provides graphic characteristics of teacher movement pathways and spatial arrangements. Frequencies of the proxemic behaviors are descriptive data that are presented as percentages.

A third type of data obtained by the researcher was the diary maintained by the researcher. Observations by and about the participants and their classrooms that may have influenced their behaviors or could have been construed as receiving a treatment outside of the prescribed intervention.

Descriptive Analysis. Narratives

Following the data collection period, information was organized into the following categories that included:

1. Information about the situations participants were teaching in including grade level, course, and class activity;
2. Description of the classroom spatial arrangement characteristics;
3. Description of teacher proxemic movement patterns;
4. Description of the percentage of time participants spent in the four proxemic behavior categories; and
5. Description of changes in spatial arrangement and proxemic patterns displayed by the participants.

**Treatment**

The treatment was administered during three consecutive Monday afternoon sessions during the student teaching seminar class. Usually little or no information related to teacher proxemic behavior or classroom spatial arrangement is included in the teacher education curriculum. Therefore, the content presented in the experimental treatment sessions was assumed to be new to the four experimental group subjects.

Using the selected theories and research presented in Chapter II as the major sources of content, this researcher developed a body of information for the experimental group. This information included lesson objectives (Appendix G) and lesson plans and activities (Appendix H). The specific content was arranged as a series of Structured Overviews (Appendix I). The Structured Overview offers the subjects a sequential framework for organizing the important concepts to be studied. Those concepts were arranged to show relationships among the various components.

Placebo treatments for the control group were designed to approximately correspond with the experimental presentations in time and class organization. The treatments were
entitled "Teacher Enthusiasm" and were presented using a series of structured overviews.

Utility of the Treatment

To facilitate the presentation of the treatment content, rehearsal presentations were made to a group of elementary education students during the Summer term, 1982 at Kent State University. Revisions in materials, activities, and content were made after field testing the delivery of the intervention at that time.

Data Analysis

Analysis of the Test Data

Research Question One addresses the knowledge difference between the two groups after the experimental group received the treatment and asks if a discernable change in practice occurred. To establish the presence of knowledge, results of the Classroom Spatial Awareness Test are presented as mean scores for each group. Item analysis procedures are presented to show differences in performance on each test item and point out group where differences occurred.

Analysis of the Descriptive Data

Descriptions of the changes in the spatial arrangement of classrooms and changes in the proxemic patterns and behaviors of the participants are presented in Chapter IV.
These descriptive analyses of the data obtained from the mapping procedures enable the researcher to utilize qualitative reporting techniques to answer Research Questions Two, Three, and Four (Page 7 and 8).

Research Question Two addresses the nature of classroom spatial arrangement and proxemic practice by student teachers not familiar with the various theories and research. The scale drawings made in pretreatment and posttreatment observations by both experimental and control groups were studied. The basic patterns of classroom arrangement are described in the descriptive analysis narratives (see Chapter IV) written about each participant in the classroom settings.

Research Question Three addresses the issue of observable proxemic practices by experimental subjects reflecting new knowledge. By studying the number and duration of behaviors by subjects in both groups, proxemic behavior information can be presented. These include pathways among students, proxemic behavior frequencies, and spatial arrangement preferences.

Qualitative descriptions were developed from observation of the teacher movement patterns on the plan maps and changes in the arrangement of space within the classroom. Descriptions of teacher characteristics are based on classification systems devised by such scholars as Sommer (1974) and Adams and Biddle (1970) and the descriptions of territorial behavior by Hall (1966) and Porteous (1977).
Research Question Four addresses the spatial and proxemic practices of control group subjects which change as a function of normal maturation into the teaching process. By comparing data obtained from the experimental group with similarly obtained data from the control group, differences of behaviors can be presented.

Qualitative comparisons provide insights as to whether the experimental content influenced the spatial arrangements and the proxemic knowledge and practices used within the classrooms of the student teachers studied.

Research Design

To answer the four research questions posed in Chapter I, an experimental design was selected. Campbell and Stanley (1966) refer to the objective-test data gathering part of this study as a posttest only control group design.

\[
\begin{align*}
R & \quad X \quad O_1 \\
R & \quad O_2 \\
\end{align*}
\]

R=randomly selected subjects  X=experimental treatment  
O=observation (test)

The spatial usage and proxemic mapping portion of the study was undertaken with a pretest-posttest control group design.

\[
\begin{align*}
R & \quad O_1 \quad X \quad O_2 \\
R & \quad O_3 \quad O_4 \\
\end{align*}
\]

R=randomly selected subjects  X=experimental treatment  
O=observation
Threats to Internal Validity

To establish internal validity and rule out all plausible alternative hypotheses that might account for the findings, the researcher has established the following controls:

To assure that participants did not experience events outside of the experimental treatment setting that may have affected their knowledge about proxemics—the threat of contemporary history—the researcher maintained a journal where occurrences related in any way to the study were recorded. Any factor that may have been a confounding variable was noted.

To control for variables resulting from biological or psychological processes as defined by Campbell and Stanley (1966), group membership was randomly determined. The research design used for this study was chosen to permit data collection in a minimum length of time.

Testing effects were minimized by the use of a multiple choice instrument only as a posttest. The proxemic behavior mapping was recorded using specific procedures which are described in the outcome measures section of this chapter.

To control for instrumentation error a fixed printed multiple choice test was utilized and key scored by the computer center at Kent State University.

Random selection and assignment of the subjects into the experimental or control groups from the same pool
accounts for lessened threats posed by statistical regression and selection bias error.

Subject mortality was controlled by using all experimental and control subjects' scores for whom pretest and posttest data acquisition has been completed.

The problem of test effect and sensitization was addressed by the use of nonreactive measurement in the teacher proxemic movement and spatial arrangement mapping techniques which were prepared as part of the pretest and posttest data collection.

**Threats to External Validity**

Since no pretest instrument was administered as part of this design, no threat of testing interaction exists. Pretest mapping forms were not seen by the subjects at any time during the study.

A problem when subjects are volunteers is the threat of interaction of selection. A necessary limitation of the generalizability of findings of this research to the population motivated to volunteer was acknowledged.

The "reflective effect of experimental arrangements" was controlled by using a placebo treatment for the control group which corresponded in time and place with the actual experimental treatment. Since the researcher administered both the treatment and the placebo, experimenter effect were controlled. The content in both treatment and control situ-
ations were presented as regular course content in the student teaching program. Presentation in this manner controls for the novelty effect of testing.

"Multiple treatment interference" was controlled by using a single level of treatment.

Summary

To describe the spatial arrangement and proxemic knowledge and behaviors of the subjects in this study, a variety of qualitative and quantitative data were gathered. In this chapter, the methodology, the development of measuring and recording instruments, and analysis procedures have been presented in detail. The sequence for data gathering has been outlined as follows:

1. Obtain pretest mapping data at each of the eight sites where subjects were student teaching. This data was collected during a 1-week period prior to the presentation of the experimental treatment.

2. The experimental treatment, instruction in the theory and research related to proxemics and classroom spatial arrangement, was presented during three consecutive Monday evening classes as the treatment phase. A placebo instructional sequence, consisting of content related to teacher enthusiasm was presented to control subjects on the following evening.
3. Posttest mapping data for all subjects was collected during the week following the final class in proxemic and spatial arrangement instruction.

4. The multiple choice objective test instruments was administered to all subjects on the Monday evening following the completion of all mapping.

Throughout the entire data collection and treatment presentation, the researcher maintained a diary for recording factors which could have influenced outcomes. In the next chapter, these data are described and summarized.
CHAPTER IV

ANALYSIS OF THE DATA

Overview

In this chapter, the data gathered using the methods and instrumentation described in Chapter III are presented and analyzed.

The first section addresses Research Question 1 and deals with data related to the differences in knowledge between experimental subjects referred to as Group 1 and Control group subjects, referred to as Group 2.

Item analysis data are presented to reflect differences in knowledge about proxemics between the two groups.

The second section addresses Research Questions 2, 3, and 4, and deals with a body of descriptive data collected using the Proxemic Recording System. The system was designed to observe and record factors that influence the proxemic behaviors displayed by the subjects including movement patterns, spatial arrangements, and interaction behavior. Descriptive analysis narratives developed for each subject provide qualitative evidence of the observational information. These data may be used to compare the
performance of members of both groups relative to research questions 2, 3, and 4.

**Changes in Knowledge**

**Research Question 1:** When there is a presence of knowledge about proxemics and classroom spatial arrangement resulting from the experimental treatment, will there be a discernable change in practice?

At the conclusion of the treatment phase of the research study, the Classroom Spatial Awareness Test (Appendix C) was administered to the eight participants. Four members were in the experimental group and four were in the control group. The results of the test were considered to be evidence that a difference in knowledge existed between the two groups.

The experimental group members reflected a greater overall knowledge of the test content than the control group. The mean score for Group 1 (experimental) was 39.73; for Group 2 (control) the mean score was 20.25. The material taught as the experimental treatment appears to be the basis for the difference in scores.

The number of correct answers on each test item for comparison of the two groups is presented in Table 1. Examination of the test results reveals that experimental members were unanimously correct on 33 of the 45 test items.
Table 1
Correct Answers by Group on Each Test Item

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<th>Control Group</th>
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while control group members answered 4 items correctly. On six more questions, at least three of the experimental group members marked correct answers. The experimental subjects scored 159 of 180 possible correct answers compared to 81 correct answers for the control group. On two items, control group members scored better than the experimental group.

A t-test performed on the mean scores for each group indicated statistical significance (p=<.001). The small sample size (n=8) may not accurately reflect a similar ability for other groups. Several replications of the study will be necessary for the difference described to be established conclusively.

The difference in test scores establishes that the experimental group had greater knowledge of proxemics than the control group. The narrative data used to answer Research Questions 2, 3, and 4 will describe how members of the experimental group were able to apply their knowledge in actual classroom situations.

**Observational Data**

The data collected to answer Research Questions 2, 3, and 4 were gathered using the Proxemic Recording System. This series of instruments maps and codes various teacher behaviors in the classroom. It also records field notes taken during the observation periods. In this study, data
collected during the pretest series of observations will answer Research Question 2. Data collected as part of the posttest observations answer Research Questions 3 and 4.

The descriptive data collected during these observational periods are presented as analytic descriptions of the participants proxemic behaviors during their student teaching.

In developing the analytic descriptions, this researcher focused on categories of selected proxemic and classroom spatial arrangement discussed in Chapter II. The narratives for each participant include:

1. Descriptions of the situations in which each participant was student teaching including characteristics of the room, furniture, lesson activity, grade level, and so forth;
2. Description of the spatial arrangement characteristics of the classroom as an aspect of proxemics;
3. Description of the movement patterns of the participants assumed to reflect proxemic practice; and
4. Descriptions of time usage by the participants, notably interacting behavior, which are assumed to be an indicator of general proxemic tendencies.

To answer Research Questions 3 and 4, the individual narratives are extended to include descriptive data about changes which have occurred in the classrooms observed.
Research Question 2: What is the nature of proxemic practice and spatial arrangement observed in all subject classrooms prior to the presentation of the experimental content?

Research Question 3: After instruction in selected proxemic and spatial arrangement theory, will observable practice by experimental group subjects change to reflect the application of new knowledge?

Research Question 4: How will the proxemic and spatial arrangement practices of control group members change as a function of normal maturation into the teaching process?

In order to assure subject privacy, feminine pronouns are used to describe all participants. Actually, two males were subjects in this study, one in each of the two groups. Participants 1-4 were members of Group 1. Participants 5-8 were members of Group 2.

To obtain the data used to develop the analytic descriptions presented here, the investigator and a research assistant visited each classroom to map teacher movement patterns for four randomly selected 15-minute periods for each subject. In each visit, as the assistant recorded teacher movement patterns and behavioral categories, the researcher made field notes of factors which could have influenced the proxemic behaviors of the subjects.
The sites at which observations took place were at the following school levels:

- High School 3
- Middle/Junior High 4
- Elementary 1

Although Participant 7 was the only subject student-teaching in the elementary grades, the physical conditions of the teaching situation were similar to all of the other subjects. In each instance, participants were teaching in an art room designated for that program and furniture used in the room was movable.

**Group 1**

Participant 1 was student teaching in a large middle-class suburban high school setting. The art room was small for the amount of furniture and equipment contained in it. The room was designated for use in drawing and painting courses.

During the pretest observation, Participant 1 was assisting a class of 18 students as they worked on a series of gesture drawings. A model was posed at one end of the room for students to use as a visual reference. Students were asked to make a series of drawings placing the figures entirely on the paper.

The room arrangement is shown in Figure 11. Individual tilting surface drawing desks were arranged side-by-side in
Figure 11. Pretest room arrangement for Participant 1.
two rows of nine each with each row facing the other. The desk rows extended in a column from one end of the room to the other. Narrow spaces at the end of each row end allowed access to the aisles and student seat locations. Another row was created by a series of easels and paint stands arranged parallel to the drawing desks. At one end of this column was the teacher's desk. At the opposite end was a double sink unit. Storage cabinets were located against both side walls. These arrangements created a central aisle between the main furniture units and a perimeter aisle around the entire room.

Teacher movement patterns were confined to the aisles around the perimeter of the room. Center aisle locations were seldom visited even though four students were located in seats there. The side-by-side arrangement of the drawing desks and the tight arrangement of the easels limited teacher movement across the room. Backtracking by the teacher was usually necessary when the teacher had to move from one side of the room to the other. The spatial arrangements seemed to restrict teacher movement among the students.

Participant 1 spent 63% of class time engaged in interacting behavior during the pretest observations.

During the posttest observations, two separate classes of students were drawing from an arranged still life. Objects were placed on a table located in the middle of the room. Various spatial arrangement changes were observed and
are shown in Figure 12. Many of the easels and paint stands had been removed from the room. The four that remained were clustered in a group near the sink area. Participant 1 explained that most easels were not being used on a regular basis and were taken away to provide more usable space in the room. Another change observed was the removal of two drawing desks from the middle of the twin rows located along one side of the room. The changes created an open pathway across the middle of the room. Two clusters of eight desks remained as they had been before. The removed desks were arranged where some of the easels had been and were adjacent to the tables where still life objects were displayed. Some students were seated at small tables of various sizes arranged around the still life. Most student seat locations faced the still life and no view of it seemed obstructed. The changes that were made allowed easier movement in the room and provided better access to student seat locations.

Teacher proxemic movement patterns observed in the posttest tended to be along aisle locations behind students and enabled both to view the still life easily when talking. Even though an aisle was created across the middle of the room, no movement in that pathway was observed. Participant 1 seemed to prefer to move around the room behind the students and avoided movement that could have obstructed student sight lines to the still life.
Figure 12. Posttest room arrangement for Participant 1.
Interacting behavior increased to 86.6% of the class time from the 63% observed in the pretest. All teacher behavior percentages are summarized in Table 3 (pretest) and Table 4 (posttest).

Participant 2 student taught in a suburban middle school with a large art room designated for the crafts portion of the school curriculum. During the pretest observational period, students were working on simple weaving projects using cardboard looms at their seats. Participant 2 was assisting 24 children. The researchers observed two separate classes.

The pretest room arrangement is diagrammed in Figure 13. Students were seated at eight large, general purpose tables arranged in a modular pattern with wide aisles around each table. A double-side sink unit extends out into the room near the window. The teacher's desk was located a few feet away. On the opposite wall the chalkboard and hallway door were located. The storage room doorway was located along one side wall and storage space was available along both side walls and under counters. For two periods each day, the classroom was used for mathematics classes.

Teacher movement patterns were prominent in aisles around tables and were heavily concentrated in the middle of the room. Students in seats along perimeter aisles were seldom visited. Participant 2 displayed a weave of back and forth movement patterns among the tables and behind the
Figure 13. Pretest room arrangement for Participant 2.
teacher's desk. The students who most often raised their hands to solicit teacher attention were located in the most central seats. Students in perimeter locations seldom raised their hands or were visited by the teacher. Generally, students worked at their table spaces and seldom moved from them.

Participant 2 spent 40.4% of class time engaged in interacting behavior during the pretest observations.

During the posttest observational period, two separate classes were observed creating papier mache masks. Various spatial arrangement changes had been made in the room as presented in Figure 14. One table had been removed from the room. Other tables had been pushed back from the center of the room toward the walls creating an open area similar to a horseshoe arrangement. Aisles still existed around the tables but they were narrower. In the open area, Participant 2 had placed a portable chalkboard and used it instead of the wall mounted chalkboard for class presentations. The portable unit was near the teacher's desk and adjacent to the sink units. No students appeared to be crowded in their seat locations.

Teacher movement patterns were concentrated in the center of the horseshoe shaped area. The patterns laced back and forth across the space as Participant 2 responded to solicitations by students. Only occasionally did she move into spaces between or around the tables. No trips along
Figure 14. Posttest room arrangement for Participant 2.
perimeter aisles were observed. Heavy movement patterns were also apparent near the sink units. In that area, supervision of paste mixing and distribution were taking place. The arrangement changes enabled students to have easier access to the sinks and adjacent counter areas.

Participant 2 spent 46.5% of class time engaged in interacting behavior in the posttest observation period compared with 40.4% for the pretest. All teacher behavior data are presented in Table 3 for the pretest and Table 4 for the posttest.

When discussing the spatial arrangement changes with Participant 2 following the observation, she described her reasons for the revisions as discomfort with the arrangement when students were sitting behind her and out of sight. The changes were intended to increase eye contact with the students and improve spatial access to them.

Participant 3 did her student teaching in a suburban high school situation. The small art room was crowded with furniture and seemed to be a tight fit for the average of 18 students per class. The space was designated for a two dimensional media program. No specialized equipment was observed in the room except for easels. During the pretest observation, Participant 3 assisted students who were at work on a variety of drawing and painting projects.

The pretest room arrangement is shown in Figure 15. Student seating consisted of individual desks with
Figure 15. Pretest room arrangement for Participant 3.
adjustable top surfaces and stationary side board for holding paints, inks, and so forth. The drawing tables were arranged into four parallel rows with each desk placed tightly next to the others. These rows were parallel to the window wall. Two other rows of four desks were arranged perpendicular to the others at the rear of the room. There were narrow aisles between the rows and around the perimeter of the room. At the front of the room, several small tables were situated so that an "L" shaped area was created around the teacher's desk. A large philodendron plant was located at the end of the teacher's desk complex and overlapped the aisle across the front of the room and limited access to the teacher's desk. Storage areas were located along the side and back walls of the room. The sink unit was positioned near the hall doorway and opposite the windows.

Teacher movement patterns were observed up and down the narrow aisles where the students were seated. Participant 3 often turned sideways in order to move along some aisles to visit students because some rows were very narrow and students in their seats blocked pathways. Only eight students who were seated at perimeter locations were in easy to visit situations. Some students in the narrow aisles were visited over-the-shoulder while others were approached from positions across the desk. Participant 3 responded to students who raised their hands and spent nearly all of her time
working on an individual basis with them. She spent little time at locations around the teacher's desk.

Participant 3 spent 62.8% of class time in interacting behavior during the pretest observation period.

For the posttest observations, two different classes were observed. Students were developing designs with cut paper. Several changes in the spatial arrangement of the room were observed and are presented in Figure 16. The rows of four desks facing the windows had been divided into rows of two and all but four of the desks had been repositioned to face the windows. This arrangement created walkways between the rows and placed every seat on an aisle. The large philodendron plant had been moved to a table near the windows and no longer presented an obstruction to movement across the front of the room.

Teacher movement patterns in the revised setting were most heavily concentrated along the newly created aisles between the desk rows. Participant 3 continued to approach students from over-the-shoulder as well as across the desk top.

During one of the treatment sessions, Participant 3 indicated that four desks had been completely removed from the room and placed in a storage area. That change provided extra space for arranging the remaining furniture.

Participant 3 spent 56.6% of class time engaged in interacting behavior during the posttest, a decrease of 6%
Figure 16. Posttest room arrangement for Participant 3.
from the pretest. All teacher behavior data are presented in Table 3 (pretest) and Table 4 (posttest).

Participant 4 was student teaching at the high school level in a middle-class, semi-rural community. The well-equipped art room was large for the average of 13 students per class. During the pretest observation period, students were working independently on a variety of metals projects.

Figure 17 shows the room arrangement as it was during the pretest and posttest observations. Eight heavy, general purpose work tables were arranged in a modular pattern. Ample aisle space was available around the tables for student chairs and unobstructed movement. Two teacher's desks were located in the front of the room. A double sink unit and several movable storage cabinets were also placed in the front of the room. Along one side wall, various stations for metal working and supply storage were installed. Various kinds of portable and permanent storage units were arranged along side and back walls and under counters.

The proxemic movement patterns of Participant 4 were confined to a triangle-shaped area defined by imaginary lines drawn from the sink area, across the front of the room, down the side where metal working stations were located, then diagonally across the room to the opposite corner where the sinks were located. Although all movement patterns were observed in the triangle-shaped area, most teacher behaviors occurred at two tables in front of the
Figure 17. Pretest and posttest room arrangements for Participant 4.
room near the teacher's desk and at the rear corner of the room near a large work bench. Few students located themselves outside of the triangle-shaped area. Those who did were not visited by the teacher. Individual students moved around the room space freely and occasionally seated themselves outside of the triangle. This seemed to indicate that they wanted to work alone. Some of the individuals who seated themselves in the area outside of the triangle were engaged in activities not related to the class work.

Participant 4 spent 41.1% of class time in the pretest observation engaged in interacting behavior.

During the posttest observation episode, students were still working on metals projects. No outward changes in the physical arrangement of the room were observed. For a short presentation, Participant 4 asked the class to gather around a single front table. She later indicated informally to the researcher that the grouping of the students was an effort to establish better eye contact with the students and reduce the distance between teacher and students for the presentation.

Teacher proxemic movement patterns changed slightly from those observed during the pretest. Observation of the posttest patterns revealed movements around the perimeter of the room and visitations to locations that previously had been outside of the teacher travel triangle. More students were visited during the posttest observation.
Interacting behavior increased to 55.1% of class time for the posttest compared with 41.1% observed during the pretest. All teacher behavior data are summarized on Table 3 (pretest) and Table 4 (posttest).

**Group 2**

Participant 5 did her student teaching in an inner-city junior high school. The large art room was adequately equipped for a general art program. Class size averaged 17 students. The room was also used for two Health classes daily. During the pretest observation period, students were at work finishing and mounting drawings.

Figure 18 shows the pretest and posttest room arrangements observed. Double student desk units were connected by a small shelf for holding art materials and books. The top surface angle was adjustable. Desks were arranged in rows of four units across the room and four deep. Aisles between the desk units provided access to all student seats and the perimeter of the room. The teacher's desk identified the front of the room. At one side of the front was the supply room door, on the other side of the front, the double sink unit was located. Storage cabinets were located along side walls and adjacent to the sink area.

The proxemic movement patterns observed during the pretest period were confined to the area across the front of the room and behind the teacher's desk. Students who wanted
Figure 18. Pretest and posttest room arrangements for Participant 5.
to talk with the teacher went to the front of the room. Participant 5 made only short trips down aisles in the middle of the room. The visits were short and primarily for observational purposes. Students seated in front row locations were visited most frequently.

During the pretest observations, managerial behavior was the most frequent teacher behavior, occurring 40% of class time. Interacting behavior happened 32.9% of class time.

At the time of the posttest observations, no spatial arrangement changes were observed in the classroom. Teacher movement patterns were concentrated in the area across the front of the classroom near the teacher's desk. A few short trips down the middle aisles between the student desks were observed. All such trips were short and of an observational nature. No trips were made to rear seats or perimeter aisle locations.

Interacting behavior occurred 8% of the class time, a decrease from the 40% observed in the pretest. Expository behavior increased to 45% of class time. All teacher behavior data are summarized in Tables 3 and 4.

Participant 6 completed her student teaching in an upper middle-class suburban junior high school. The art room was large and well-equipped for a general program. Figure 19 shows the pretest and posttest arrangement of the space. The room was divided into two areas: in one part
Figure 19. Pretest and posttest room arrangement for Participant 6.
were 10 tables neatly arranged into two columns of 5 tables each with a wide aisle separating them. Adequate space was available for four students to work comfortably. The second work area was located at the rear of the room and designated for craft activities. Two large work benches and counter top areas were available for student usage.

Adequate project storage space was available around the room. Doorways to teacher office space and the supply room were located along one wall. A sink and counter area were located near the craft area.

During the pretest observation period, one class with 19 students was at work on clay sculpture projects and Participant 6 was assisting individuals with their work. The teacher movement patterns were confined to the area near the work bench and counter area as a series of interactive exchanges took place. Frequent trips to the supply room were apparent.

During another class observed during the pretest phase of the study, 18 students were working on pen and ink drawings in the table area. Students were clustered at three tables in one corner of the grouping and two tables at the opposite end. The locations of students made it necessary for Participant 6 to move back and forth across the space. The center aisle was used most often and the perimeter aisles used less frequently.
Interacting behavior was observed 48.3% of the class time during the pretest data collection.

At the time of the posttest observations, no changes in the spatial arrangement of the room were observed. During one class period, students were at work on a print-making project and Participant 6 was assisting individual students who were working in both areas of the room. Most teacher movement was confined to an area along the wall where the sink, office, and supply room were located. She visited table locations that were near that line of travel and seldom made trips to students along the opposite wall.

During another class, students were working on a drawing assignment in the table area. The class was mainly clustered at three tables at one end of the table grouping and at two tables at the opposite end of the grouping. Teacher movement patterns were confined to the aisle between the two columns of tables and around the tables where students were clustered. No perimeter pathways were traveled.

Interacting behavior occurred 43.6% of class time, a decrease of 4.7% from the pretest. All teacher behavior data are summarized in Tables 3 (pretest) and 4 (posttest).

These observations indicate that no substantial changes in the spatial arrangement of the classroom occurred. Likewise, teacher proxemic movement patterns were basically unchanged. Interactions with students lessened slightly during the time of the study. The observational data
indicate that Participant 6 found and used streamlined pathways across the room space during her teaching experience. Also apparent was her avoidance of proxemic contact with students seated in some areas of the room.

Participant 7 was student teaching at the elementary school level in a middle-class community. Figure 20 shows the room spatial arrangement observed during the pretest and posttest observations. The space was large and well equipped with a supply room and storage spaces for student projects. The teacher's desk location marked the front of the room. Student work spaces were at three large cafeteria-type tables with attached bench seats. These units were portable and mounted on wheels. They were arranged in a horseshoes configuration with one table unit along a back wall opposite the teacher's desk. The two other units flanked the desk. A sink was situated in a rear corner of the room.

During the pretest observation, two separate classes of 22 students each were working on a painting lesson. The teacher proxemic movement pattern most prominent was confined to the area inside of the horseshoe. From that area, Participant 7 often leaned across tables to talk with students who were seated at perimeter seats. Few trips to outside aisles occurred. Participant 7 often went to the teacher's desk area to obtain supplies. On trips to the sink, she often stopped to visit students who were seated at locations near the path of travel.
Figure 20. Pretest and posttest room arrangement for Participant 7.
Managerial behavior occurred 26.5% of class time and interacting behavior occurred 21.9%.

At the time of the posttest observations, a class of third graders was completing a mural activity. Most students were beginning a design assignment at their seats. No spatial arrangement changes were observed. Teacher movement patterns were concentrated in the area within the horseshoe table arrangement once again. Several visits to locations around the perimeter of the room were observed. Much of the interacting behavior took place in the area where the mural was being worked on near the teacher's desk. When students at work on the design assignment had questions about their work, they brought it to the teacher for reaction. The locations of these exchanges varied.

Interacting behavior was observed 35.4% of the class time compared with 26.5% for the pretest. Data summarizing all of the observed teacher behaviors are presented in Table 3 (pretest) and Table 4 (posttest).

These descriptions indicate that proxemic movement patterns changed only slightly during the period of the study. Although no spatial arrangement changes were observed, few options were available with the type of seating units available. The furniture in use seemed to have been chosen more for their utility and ease of maintenance than for meeting the instructional needs of the art program.
Participant 8 did her student teaching in a semi-rural middle school. The art room was small for the average of 31 students per class observed. No specialized equipment was visible in the room although supplies seemed adequate. During the pretest observations, two separate classes were observed working on a drawing lesson.

Figure 21 presents the room spatial arrangements that were observed during the study. Tables were arranged diagonally across the room and were set into three parallel rows. One outside row had three separate tables that seated four students each. The middle row had four separate tables, and the third row had two tables and was closest to the sink area. Narrow aisles were created between the table rows. Students sat along both sides of the tables. At the chalkboard end of the room, the teacher's desk was situated. Storage units were located along one side wall and four unused tables were pushed against the opposite side wall. Counter areas surrounded the sink area.

The proxemic movement patterns observed during the pretest observation took place mostly along the front tables near the chalkboard. The paths of teacher travel were concentrated across the front of the room space and extended down each side to the area where table corners protruded into movement aisles and limited comfortable movement. Few excursions were made along the aisles between the table rows. Most teacher visitations were directed to students
Figure 21. Pretest and posttest room arrangement for Participant 8.
who were seated at the ends of rows and in front seats. No perimeter trips around the room were observed.

Interacting behavior occurred 28.5% of the class time available.

During the posttest observations, students were working on a simple crafts project. No spatial arrangement changes were apparent in the room. Teacher proxemic movement patterns were concentrated in the area along the ends of the three diagonal rows of tables nearest the teacher's desk. Few trips were made to other perimeter locations or along the aisles between the tables rows. When students wanted teacher attention, they went to the teacher. Hand solicitations were not used. Often, several students were standing and waiting to talk with the teacher. Expository behavior by the teacher frequently occurred by the teacher near the chalkboard.

In posttest observations, interacting behavior was observed 33.3% of the time, a slight increase from the pretest. Teacher behavior data are summarized and presented on Table 3 (pretest) and Table 4 (posttest).

Summary of Descriptive Analysis Data

Summary of Teacher Behavior Data

Table 2 presents a summary of pretest observational data. Each teacher behavior category is presented with the percentage of class time participants were engaged in them.
Table 2
Pretest Summary: Percentage of Time Participants Engaged in Teacher Behaviors

<table>
<thead>
<tr>
<th></th>
<th>Interacting (%)</th>
<th>Expository (%)</th>
<th>Observational (%)</th>
<th>Managerial (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group 1:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>63.3</td>
<td>0</td>
<td>3.7</td>
<td>6.5</td>
</tr>
<tr>
<td>Participant 2</td>
<td>40.4</td>
<td>0</td>
<td>2.3</td>
<td>16.7</td>
</tr>
<tr>
<td>Participant 3</td>
<td>62.8</td>
<td>3.6</td>
<td>4.5</td>
<td>2.7</td>
</tr>
<tr>
<td>Participant 4</td>
<td>41.1</td>
<td>0</td>
<td>7.8</td>
<td>4.9</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>51.9</td>
<td>.9</td>
<td>1.78</td>
<td>7.7</td>
</tr>
<tr>
<td><strong>Group 2:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participant 5</td>
<td>32.9</td>
<td>3.3</td>
<td>1.0</td>
<td>40.0</td>
</tr>
<tr>
<td>Participant 6</td>
<td>48.3</td>
<td>0</td>
<td>2.7</td>
<td>12.5</td>
</tr>
<tr>
<td>Participant 7</td>
<td>21.9</td>
<td>0</td>
<td>9.5</td>
<td>26.5</td>
</tr>
<tr>
<td>Participant 8</td>
<td>28.5</td>
<td>15.9</td>
<td>2.0</td>
<td>3.3</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>32.9</td>
<td>5.6</td>
<td>3.8</td>
<td>20.6</td>
</tr>
</tbody>
</table>
Mean percentages for each group are included for reference purposes.

The summaries indicate that the largest percentage of class time spent by both groups was in interacting behavior. Group 1 participants spent considerably more time in interacting behavior than Group 2 participants during the pretest phase of the study. The next highest percentage of time spent by all participants was in managerial behavior.

Table 3 summarizes the posttest observational data. The teacher behavior categories are presented to indicate the percentage of time participants engaged in the various behaviors. The summaries indicate that interacting behavior was still the most prominent behavior for all participants. Group 1 members expended 61.25% of class time, an increase from the pretest percentage. Group 2 members expended 30.18%, a slight decrease from the pretest figure.

Group 2 members spent nearly five times more time in expository behavior during the posttest observation when compared with the pretest: 27.45% compared with 5.6%.

A slight decrease in managerial behavior time was also noted for Group 2 and a slight increase for Group 1.

In Table 4, total amount of time spent in all teacher behaviors, the mean for Group 1 was 76.5% while the mean for Group 2 was 72.45%. These changes show that Group 1 increased the total amount of their teacher behavior time by 18.58% while Group 2 increased their total teacher behavior
Table 3
Posttest Summary: Percentage of Time Participants Engaged in Proxemic Behaviors

<table>
<thead>
<tr>
<th></th>
<th>Interacting (%)</th>
<th>Expository (%)</th>
<th>Observational (%)</th>
<th>Managerial (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>86.6</td>
<td>0</td>
<td>.5</td>
<td>4.2</td>
</tr>
<tr>
<td>Participant 2</td>
<td>46.5</td>
<td>8.6</td>
<td>0</td>
<td>11.9</td>
</tr>
<tr>
<td>Participant 3</td>
<td>56.8</td>
<td>1.9</td>
<td>.4</td>
<td>10.7</td>
</tr>
<tr>
<td>Participant 4</td>
<td>55.1</td>
<td>10.0</td>
<td>4.9</td>
<td>7.9</td>
</tr>
<tr>
<td>Mean</td>
<td>61.25</td>
<td>5.12</td>
<td>1.45</td>
<td>8.68</td>
</tr>
<tr>
<td>Group 2:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participant 5</td>
<td>8.0</td>
<td>45.4</td>
<td>.2</td>
<td>16.4</td>
</tr>
<tr>
<td>Participant 6</td>
<td>43.6</td>
<td>2.0</td>
<td>1.5</td>
<td>20.8</td>
</tr>
<tr>
<td>Participant 7</td>
<td>35.4</td>
<td>16.9</td>
<td>1.4</td>
<td>11.7</td>
</tr>
<tr>
<td>Participant 8</td>
<td>33.7</td>
<td>45.5</td>
<td>.5</td>
<td>7.3</td>
</tr>
<tr>
<td>Mean</td>
<td>30.18</td>
<td>27.45</td>
<td>.9</td>
<td>14.0</td>
</tr>
</tbody>
</table>
Table 4
Percentage of Time Participants Engaged in All Teacher Behaviors

<table>
<thead>
<tr>
<th></th>
<th>Pretest</th>
<th>Posttest</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>62.28</td>
<td>76.5</td>
<td>+18.58</td>
</tr>
<tr>
<td>Group 2</td>
<td>62.9</td>
<td>72.45</td>
<td>+13.18</td>
</tr>
</tbody>
</table>

time by 13.18%. This difference of 5.4% may be attributable to a more thorough understanding of proxemic principles by Group 1 members and an interest in developing their proxemic behavior skills. This idea will be discussed in Chapter V.

Summary of Descriptive Data

Summary of Arrangement Changes

Table 5 presents a summary of the spatial arrangement changes by all participants in the study. The investigator observed changes in the classrooms of three of the four members of Group 1. No changes in the spatial arrangement practices were observed for members of Group 2.

The specific nature of the changes have been presented in the descriptive narratives.

Summary of Proxemic Movement Patterns

Group 1 members appear to have expanded their proxemic patterns of movement in the classroom in tandem with changes
Table 5
Change in the Spatial Arrangement of Classrooms

<table>
<thead>
<tr>
<th></th>
<th>Arrangement Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group 1:</strong></td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant 2</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant 3</td>
<td>Yes</td>
</tr>
<tr>
<td>Participant 4</td>
<td>No</td>
</tr>
<tr>
<td><strong>Group 2:</strong></td>
<td></td>
</tr>
<tr>
<td>Participant 5</td>
<td>No</td>
</tr>
<tr>
<td>Participant 6</td>
<td>No</td>
</tr>
<tr>
<td>Participant 7</td>
<td>No</td>
</tr>
<tr>
<td>Participant 8</td>
<td>No</td>
</tr>
</tbody>
</table>
they made in the spatial arrangement of their classrooms. Three of the four participants increased the amount of time they spent in interacting behavior. Spatial arrangement changes seem to have opened areas in the room that were difficult for the teacher to move to for visitations with students. In every case, more balanced patterns of teacher movement to student seat locations were apparent from the posttest observations.

Group 2 members made only minor changes in their proxemic movement patterns within the classroom space. In most cases, the simplest or most direct pathways in the room were followed. An awareness of proxemic principles was not apparent.

Summary

Data have been presented in this chapter to answer the four research questions posed by this investigator. Various descriptive observations and test score differences between experimental and control groups were presented.

Experimental group members showed a significant difference from the control group in their performance on the Classroom Spatial Awareness Test.

Three of the four members of the experimental group made changes in their classroom spatial arrangements. No arrangement changes were made by control group members.
Differences were observed from the pretest to the post-test in movement patterns in the classroom by experimental group members. Minimal movement pattern changes were observed in control group members.

Descriptive analysis narratives of proxemic behaviors were presented to provide evidence that changes did or did not occur in the studied classrooms.

Implications of this research and conclusions about the findings are presented in the next chapter.
CHAPTER V

CONCLUSIONS AND IMPLICATIONS

Overview

The researcher will use the data presented and analyzed in Chapter IV to draw conclusions and offer suggestions for further study and application of the findings.

Conclusions

The study was designed to investigate four research questions. Question 1 related to the difference in knowledge shown by test scores for experimental and control group members obtained on the Classroom Spatial Awareness test.

Question 2 related to the nature of classroom spatial arrangement and proxemic practice displayed by student art teachers not familiar with the various theories and research in these areas. Questions 3 and 4 related to the changes that occurred in the two groups—-one group influenced by experimental content, the other reflecting normal maturation in the teaching process with no intervention.

A body of selected literature in the areas of proxemics and classroom spatial arrangement was reviewed in Chapter II. The researcher used that information as a conceptual
base for the treatment presented to the experimental group. Subjects in the study were eight art education students at Kent State University who did their student teaching during the Fall semester of 1982.

As the pretest, all participants were observed in their classrooms. The Proxemic Recording System was used to record teacher travel patterns and spatial arrangements in the classrooms.

Following the pretest data collection, an experimental treatment was presented to the experimental group. A placebo treatment was presented to the control group.

At the conclusion of the intervention phase of the study, a series of posttest observations of each participant were made, again using the Proxemic Recording System. The pretest and posttest data were analyzed and studied by the researcher. A series of descriptive narratives that compared and discussed each of the participants as presented and analyzed in Chapter IV.

The results of the study yielded several major findings:

1. A different in knowledge of technical aspects of proxemics was established between the two groups by the Classroom Spatial Awareness Test. The ability to apply the knowledge in classroom practice is discussed in findings 2, 3, and 4.
2. Three of the four participants in the experimental group made observable room arrangement changes. The changes were observed and recorded during the posttest observation period. No spatial arrangement changes were observed in the classrooms of control group members.

3. Changes in patterns of teacher movement were observed in the classrooms where arrangement changes had been made. For control group members, movement patterns were unchanged.

4. Changes in the amounts of class time spent in the teacher proxemic behaviors were observed for both groups. The experimental group increased the amount of time spent in interaction behavior when comparing pretest and posttest data. The control group decreased the amount of time spent in interaction by 8.26%.

Interpretation of the Conclusions

Interpretation of these conclusions should be made while considering the following limitations as outlined in Chapter I:

1. The potential influence of cooperating teachers on the spatial arrangements in their own classrooms;

2. The teaching strategies designed and presented by the researcher for the intervention;
3. The time in the student teaching experience during which the study took place;  
4. Any experimenter bias that could not be controlled by the research design;  
5. The relatively small sample population studied (n=8);  
6. The motivation of the student teachers to participate in the study as part of their regular college program; and  
7. The opportunity to apply newly learned information immediately in classrooms.

Interpretation of the conclusions are grouped into four categories:  
1. Changes in knowledge about proxemics;  
2. Changes in classroom spatial arrangements;  
3. Time spent in interacting behavior; and  

Changes in Knowledge  
1. As a result of participation in the study, experimental group student teachers learned the content of proxemics that was presented in the treatment and obtained better scores on the test of knowledge than control group members.  

The experimental group members were able to answer more test questions correctly than control group participants.
The difference in knowledge between the two groups and reflected in the test scores resulted from the material taught as the experimental intervention. The test analysis revealed that experimental participants had a higher level of knowledge about specific technical aspects of proxemics. This knowledge provided a basis for making spatial and proxemic changes in classrooms.

Changes in Classroom
Spatial Arrangement

2. As a result of participation in the study, experimental group members applied new knowledge and understandings obtained in the treatment phase by changing the spatial arrangements in their classrooms. Control group members made no changes in the spatial arrangements of their classrooms.

Three of the four experimental group members made spatial arrangement changes in their classrooms. The changes reflected approaches and ideas that were presented and discussed as part of the treatment program.

Motivation to make arrangement changes may have been influenced in part by a variety of factors including (a) the time (phase) in the student teaching experience when the new information was presented, (b) a readiness on the part of the participants to try new ideas in their classrooms, (c) the fact that spatial arrangement theories were discussed in the context of classroom application, and/or (d) any possi-
ble influence that may have resulted from the combination of three high school sites and one middle school site used by experimental group members and three middle school sites and one elementary school site used for the control group.

One participant was observed to have made changes in the spatial arrangement of her classroom during the week immediately following the first of the three scheduled treatment sessions. When informally asked why the changes had been made, she commented that "the tight and confined nature of the previous arrangement" had always bothered her. She added that since we had discussed spatial arrangement in class, she felt that the changes could be made.

Similar feelings were expressed by another participant who had modified arrangements in her classroom. Her feelings were similar: "I felt uncomfortable with my back turned to part of the class. After discussing proxemics in class, I knew something had to be done."

In the third changed classroom, the participant commented that "the room felt divided up and some places were hard to get to."

These comments by participants who had changed the spatial arrangements of their classrooms suggest that they were able to reflect upon the information presented as the treatment and were able to analyze the spatial aspects of their environments. In the experimental classroom where no arrangement changes were made, the researcher observed that
the setting was appropriate for the class activity that was started prior to the beginning of the study and was continued throughout. One may speculate that Participant 4 understood proxemic theories to the extent that she knew an arrangement change was unnecessary.

Changes in Interaction Time

3. As a result of participation in the study, experimental group members increased the amount of class time spent in interacting behavior by 15.26%. Control group members showed a slight decrease (8.26%) in the amount of class time spent in interacting behavior.

The increase in the amount of class time experimental group members spent in interacting behavior is traceable to the new information presented in the treatment sessions. In the intervention classes, emphasis on interpersonal behaviors and personal interaction were discussed in the context of proxemic studies. Increases in interaction behaviors by the experimental group members resulted from an awareness of spatial usage possibilities in classrooms and improved accessibility to students that results from changed spatial arrangements.

The decrease shown by the control group does not seem to be a trend for student teachers. Rather, the minor decrease must be considered as a normal fluctuation due, in
part, to factors related to the stage of a lesson, type of class activity, and other such circumstances.

For art educators, the increases in interaction time that arise from receiving instruction in proxemics can enhance instructional practice. The emphasis on personal contact between teacher and student can be mediated by an understanding of spatial and proxemic principles.

**Proxemic Movement Pattern Changes**

4. As a result of participation in the study, the proxemic movement patterns of experimental group members changed to reflect new spatial arrangements. The proxemic movement patterns of control group members did not change significantly.

The teacher movement patterns within all of the classrooms were carefully studied by the researcher. The patterns of travel and movement varied widely. Noteworthy changes occurred between the pretest and posttest observations in the classrooms of experimental group members. While all of the student teachers made efforts to individualize instruction and obtain feedback about their teaching, the changes in movement patterns by the experimental group seemed to have resulted from improved access to all students and more open spaces within the work areas. These changes enabled the student teachers to move into close physical proximity with students.
Several factors may have contributed to the movement pattern changes. Although this study focused upon spatial arrangement, interaction time, and movement patterns, these factors were the visible aspects of more complex environmental variables. Each of the factors being investigated was mediated to some extent by the others, by the unique characteristics of each situation, and by the content of the Proxemic Instruction Unit. These factors seemed to affect the motivation of the experimental subjects to make spatial changes in their classrooms which in turn influenced the movement patterns that were observed.

No spatial changes were observed in the control group and no significant changes in movement patterns were observed.

For art educators, this observation seems significant. Often students in art classrooms are blocked from visitation by the teacher because access to certain areas is limited by spatial arrangements, physical feature, or both. An awareness of these factors would seem to be important in the planning of spatial usage. By avoiding such limitations, more open spaced classrooms would permit freer movement by both teachers and students.

**Implications**

During the course of this study, the researcher identified a number of areas in which additional research would be
appropriate. These include:

1. Research about teacher and student spatial arrangement preferences;

2. Research about proxemic patterns within various classroom arrangements;

3. Research that develops and refines the Proxemic Instruction Unit and the Classroom Spatial Awareness Test;

4. Research that further refines the Proxemic Recording System; and

5. Research about the long-term effects of the proxemic knowledge.

Research About Teacher and Student Spatial Arrangement Preference

Much of the theory and research in proxemics indicates that personality and cultural background influence proxemic behaviors. In classrooms, these characteristics have been studied by Feitler et al. (1970), Sommer (1969), and others. Many of the studies draw parallels among the complex variables that influence teacher and student proxemic behaviors. These variables include expected levels of participation and interaction by both teachers and students, the nature of class activities, grade level, and so forth. Further research into arrangement preferences for both teachers and students and at a variety of educational levels will enable
educators to suggest arrangements most suited to expected lesson outcomes.

A series of models may be developed so that spatial arrangements can be matched to the instructional style of the teacher and the lesson activity. These models, when used in different situations, may enable teachers to positively affect student behaviors.

Research About Proxemic Patterns within Classrooms

Studies that have described proxemic movement patterns need to be further researched in a variety of studio and laboratory instructional settings. Such research would add to the descriptions of proxemic movement already available.

Additional research also needs to consider proxemic and arrangement characteristics in a variety of grade levels, with types of furniture used by students, and the shape of classrooms. These are factors that seem to directly influence proxemic practices of teachers yet operate outside of their conscious awareness.

Refining the Proxemic Instruction Unit and the Classroom Spatial Awareness Test

The theory and research in Chapter II was selected to represent the current state of the field of Proxemics. New content combined with revised Classroom Spatial Awareness Test questions would enable researchers to study knowledge
about classrooms in a variety of laboratory and studio settings such as Home Economics, Industrial Arts, Physical Science, and so forth. Implications from these studies would enhance understandings about the nature of spatial arrangement and proxemics within classrooms where such factors are an integral part of the instructional process.

**Refining and Applying the Proxemic Recording System**

The Proxemic Recording System was developed by this researcher to collect data about selected teacher proxemic behaviors in classrooms. The data permitted the reconstruction of various time frames of classes for study and examination. The system was flexible and can be adapted to collect a variety of information. Further development would enable researchers to study specific teacher proxemic and other instructional behaviors.

The potential for using this system to provide feedback to teachers about their instructional behaviors needs to be explored. The prescriptive use of this instrument can enhance programs in staff development, preservice, and research activities. Outcomes of these applications will enable educators to expand their understandings of spatial arrangement and proxemics in art classrooms as well as other classrooms.
Research About the Long-Term Effects of the Proxemic Knowledge

While the experimental treatment has been shown to influence the spatial arrangement and proxemic behavior practices of student teachers, long-term influences will need to be investigated. After 3, 4, or 5 years have passed, will the experimental participants continue to use the knowledge of proxemics in classrooms or will they revert to a narrower range of practices? This kind of information would help to establish how lasting the treatment was and may offer insights for future instruction.

Applying the Research Findings

This research study has shown that experimental group student art teachers increased their knowledge about proxemics and spatial arrangement. They used the new knowledge to revise settings in their classrooms. The setting changes resulted in increased interaction time with students when compared with pretest data. Revised movement patterns within the classroom resulted from the spatial changes.

This researcher recommends that the experimental content be incorporated into the college coursework of pre-service art teachers. When presented from a theoretical and practical approach, this background can be of benefit to the instructional background of future teachers.
Other applications of this content may be adapted for use in in-service programs for practicing teachers.

The Proxemic Recording System was developed to recreate the spatial and instructional behaviors of teachers in art classrooms. Use of the system offers unique possibilities for the observation and study of teaching by individuals trained to code the various behaviors. The observational techniques can be applied to videotapes as well as first hand observation in classroom settings. Using this system, teacher behavior can be observed along several dimensions and in various teacher behavior categories. The data provide observers and participants with information that can be studied and analyzed in numerous ways.

The Classroom Spatial Awareness Test can be used to assess the proxemic knowledge of teachers in all levels of training and experience. Results of the test can be studied to determine needs and competencies of educators. Used in conjunction with the Proxemic Instruction Unit, the test can measure knowledge of proxemics and spatial arrangement.

The findings of this study have raised many questions and possibilities. Outcomes have demonstrated that new knowledge and understandings about proxemics can be expected to produce a keener awareness of spatiality in classrooms.

In the process of this research project, curriculum tools for the presentation of content, instruments for observing and recording teacher behaviors, and a valid knowl-
edge measuring instrument have been added to the existing research literature in the area of proxemic studies and preservice art teacher education.
APPENDIX A

Jury of Experts
Jury of Experts

Dr. Lee Ekleberry
2540 Eastcleft
Columbus, Ohio  43221

Dr. Charles Galloway
101 Ramsayer Hall
The Ohio State University
Columbus, Ohio  43210

Dr. Robert Sommer
Psychology Department
University of California
Davis, California  95616

Dr. Katherine Tracey
2218 Pine View Circle
Sarasota, Florida  33581
APPENDIX B

Explanation Letter
May 31, 1982

Dr. Robert Sommer
Psychology Department
University of California
Davis, California 95616

Dear Dr. Sommer:

I am involved in completing my doctoral dissertation in art education at The Ohio State University. In my work I have used much of your research and writing in spatial arrangement to prepare curriculum content for presentation to preservice art teachers. The approach being developed will enable these students to understand and use the spatial aspects in their classrooms to enhance learning outcomes.

After the curriculum has been presented, the enclosed test will be administered to measure the experimental subjects' knowledge and the ability to apply these ideas.

To establish content validity for the area the test will appraise, I am contacting a panel of experts, such as yourself, to examine the test and verify the extent to which you feel it measures appropriate content. While this is not an easy task, I do need your assistance.

Enclosed are a copy of the test, a scoring key, an electronic answer sheet, and a return envelope. Please rate each test item according to the scale printed at the top of the electronic answer sheet. Any comments or suggestions you may have would be greatly appreciated.

Although the press of regular business precludes an immediate return, if you could respond by June 18, I would be most grateful. Thank you in advance.

Cordially,

Frank Susi
APPENDIX C

Classroom Spatial Awareness Test
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<td><strong>Classroom Spatial Awareness Test</strong></td>
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<td>1. The interrelated observations and theories about man's use of space as an elaboration of culture is</td>
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<td>B. Spatial ecology</td>
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<td>C. Proxemics</td>
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<td>D. Anthropology</td>
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<td>2. The notion of spatial freedom in classrooms refers to</td>
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<td>A. The ability of teachers to modify furniture placements</td>
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<td>B. When students can change seats at will</td>
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<td>C. The ability to substitute objects within a space</td>
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<td>D. Instrumental space</td>
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<td>3. When visual contact with the instructor increases interaction in classrooms it is referred to as</td>
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<td>A. Paralanguage</td>
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<td>B. The expressive contact hypothesis</td>
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<td>C. Motivational robustness</td>
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<td>D. Visual ecology</td>
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<td>4. How closely people sit or stand, when linked to ____, acts to produce a balance of factors such as voice volume and physical distance.</td>
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<td>A. Eye contact</td>
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<td>B. Classroom ecology</td>
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<td>C. Paralanguage</td>
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<td>D. Kinetics</td>
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<td>5. This signals to others what you are like, indicates status, signals others to &quot;come in&quot; or &quot;stay away.&quot;</td>
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<td>A. Symbolic space</td>
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<td>B. Environmental determinism</td>
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<td>C. Spatial ecology</td>
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<td>D. Temporal-interaction principle</td>
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</table>
6. The concept wherein an organism lays claim to an area and defends it against members of its own species
   A. Environmental expressiveness
   B. Proxemics
   C. Personal space
   D. Territorality

7. The idea that a reasonable relationship exists between environment and behavior
   A. Territorial contextualism
   B. Environmental probabilism
   C. Psycho-social space
   D. Ecological behaviorism

8. The environment can be manipulated to produce specific behaviors is the ____ ? ____ theory.
   A. Spatial contextualism
   B. Proxemic studies
   C. Environmental determinism
   D. Spatiality

9. When an environment such as a classroom is a force for learning it is termed
   A. Growth space
   B. Situational robustness
   C. Environmental potential
   D. Territorial motivation

10. According to Adams, "The greater the distance a location is from the front and center of a room the less is the likelihood that inhabitants of that location will be visited by the teacher" refers to
    A. The territorial microspace theory
    B. The theory of spatial involvement
    C. The location-occupation principle
    D. Educational contextualism

11. The spatial relationships of organized groups such as students within a classroom are termed
    A. Spatial contextualism
    B. The expressive contact hypothesis
    C. Educational territoriality
    D. Classroom ecology
12. Settings which may hinder the performance of activities (because of noise or distraction) are called
   A. Natural microspace
   B. Instrumental space
   C. Robust environments
   D. Symbolic space

13. Sociofugal spaces
   A. Promote freedom of movement
   B. Keep people apart
   C. Define relationships
   D. Draw groups together

14. Relatively nonmovable parts such as walls, doorways, and windows are
   A. Inflexible environments
   B. Sociopetal space
   C. Growth space
   D. Fixed feature space

15. "Bring people together" is defined as
   A. Microspace
   B. Sociopetal space
   C. Personal environment
   D. Proxemics

16. Adams and Biddle refer to a general perambulation around a room by the teacher as:
   A. Environmental exploration
   B. Sociopetal exploration
   C. "Grand tour"
   D. "Footlight parade"

17. The area of nonverbal communication associated with speech such as loudness, tone, pauses, etc. is
   A. Paralanguage
   B. Expressive notation
   C. Verbal ecology
   D. Symbolic speech

18. Student-seat choice in classrooms is a strong index of
   A. The intelligence and drive of students
   B. Expected interpersonal relationship with the teacher
   C. Whether the class is interesting or dull
   D. Internalized parental values about education
19. What approximate percentage of signals given off by teachers in classrooms have been determined by researchers to be nonverbal?
   A. 90%
   B. 80%
   C. 70%
   D. 60%

20. The "action zone" in a classroom refers to
   A. A triangle of participation which extends across the front of the room and reaches up the middle.
   B. The interaction which takes place among the teacher and the two most verbal students in class.
   C. The area where the teacher stands while lecturing defined by the chalkboard, the teacher's desk, and where students are seated.
   D. The area where students congregate when not engaged in seatwork.

21. The study of bodily movement in human interaction is known as
   A. Psycho-spatial theory
   B. Kinesics
   C. Psycho-social studies
   D. Sociofugal behavior

22. The distance we maintain between ourselves and others -- usually 18 inches to 4 feet is called
   A. Proxemic distance
   B. Sociopetal range
   C. Personal distance
   D. Kinetic orientation

23. How individuals react to spatial usage is a function of
   A. Ecological definitions
   B. The psychological state of an individual
   C. Cultural manifestations of context, emotion, and personality
   D. Territorial priorities

24. We often defend temporarily vacated personal space by
   A. Telling others we will be returning soon
   B. Using props and personal property to mark the area
   C. Assuming others will guard it for us
   D. Leaving it and assuming no one will take it
25. Personalization of space is frequently accomplished by
   A. Asking a friend to guard space for us
   B. Displaying a personal insignia or mark in a space
   C. Telling others about our possession of space
   D. Assuming others will be aware of our occupation
      of a space

26. Teacher preference for the arrangement of institutional
    setting ought to be a function of
   A. How the school architect designed the space
   B. Teacher instructional style and needs for control
   C. Administrator preference for spatial arrangements
      in classrooms
   D. How easy it is for custodians to maintain

27. When students in front and center locations receive more
    personal attention and visits by the teacher it is an
    example of
   A. The footlight parade
   B. Normal teacher bias toward highly verbal students
   C. Patterns consistent with sound educational practice
   D. Limited perception of student needs

28. Teachers spend an average of sixty-eight percent of
    their time in this activity
   A. Tending to disruptive students
   B. Paralanguage
   C. Temporal interaction
   D. "Footlight parade"

29. The distance for formal activities such as speeches or
    small audience presentations is called
   A. Macrospace
   B. Formal space
   C. Public distance
   D. Sociopetal distance

30. In the early 1900's, the front of classrooms was
    usually determined by
   A. The location of the door
   B. The location of the windows
   C. The location of heating apparatus
   D. The location of the chalkboard
The next three questions refer to the diagram below. The continuous lines represent teacher movements, the dots are stop points. "X" represents the teacher, "0", the students.

31. Location A refers to which one of the following:
   A. Symbolic space
   B. Sociopetal arrangement
   C. The uses of kinesics
   D. Sociofugal arrangement

32. Pattern B movement refers to which one of the following:
   A. Social distance
   B. Sociofugal space
   C. Footlight parade
   D. Instrumental space

33. The area around location C refers to which of the following:
   A. Sociofugal arrangement
   B. Footlight parade
   C. Expressive contact hypothesis
   D. Paralanguage area
34. The physical environment variable most strongly linked to school achievement is
A. Seat location and distance from the teacher
B. The presence or absence of windows in the classroom
C. The type of furniture and its arrangement in the classroom
D. General aesthetic quality of the classroom

The next three questions relate to the diagrams shown above.

35. Arrangement A is best suited for
A. Coacting
B. Competing
C. Conversing
D. Cooperating

36. Arrangement B is best suited for individuals who are:
A. Cooperating
B. Conversing
C. Coacting
D. Competing

37. Arrangement C is best suited for individuals who are:
A. Cooperating
B. Coacting
C. Conversing
D. Competing
The next three questions refer to the diagrams above. 

X = the teacher  
O = the students

38. Which of the above arrangements has been found to be least comfortable for teachers found to have high need-for-control and teachers found to have low need-for-control?

A. Setting A  
B. Setting B  
C. Setting C  
D. Setting D

39. Researchers found no difference in the most preferred setting for both high need-for-control and low need-for-control teachers. That most preferred setting is:

A. Setting A  
B. Setting B  
C. Setting C  
D. Setting D

40. Which of the above arrangements enhances a teacher's mobility to interact with students so there can be an element of high control available in the classroom?

A. Setting A  
B. Setting B  
C. Setting C  
D. Setting D
41. Surveyed students indicated that teachers who stand behind the desk are perceived as
A. Warm and friendly
B. Generally businesslike and effective
C. Having a negative effect
D. Having a positive effect

42. Which of the following best describes how teachers generally assign seats?
A. Assignments are based on students' reputations
B. Low responders are placed in front seats
C. To minimize disruptions
D. Taller students in back, shorter students in front

43. Most teacher education programs stress the importance of _ ?_ as integral to effective teaching.
A. An adequate budget
B. Environmental variables
C. Good facilities
D. Communication

44. A place that has a positive effect on one's ability to perform work and interact with other is referred to as a
A. High-efficiency territory
B. Task centered environment
C. Non avoidance workspace
D. Preferred environment

45. Which of the following statements about nonverbal communication is most true?
A. Most people are aware of the nonverbal message they send.
B. When simultaneous verbal and nonverbal messages are in conflict, the nonverbal messages are believed.
C. Nonverbal communication is a learned behavior.
D. Sixty-eight percent of signals given off by teachers are nonverbal.
APPENDIX D

Scoring Key
Classroom Spatial Awareness Test

Scoring Key

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APPENDIX E

Situational Data Grid and Sample Classroom Map
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APPENDIX F

Field Note Data Form
Field Note Data

Student Teacher_________________________ Date________
Class Period__________________________

What topic or theme was the class involved with?

What materials were used?

Which best characterizes the nature of this class?

☐ Primarily lecture/discussion
☐ Primarily studio/laboratory activity

Students were working:
☐ in small groups
☐ on individual projects
☐ Other (explain)

Note any aspects of the class, individual students, or school which may have affected the patterns of teacher movement or classroom spatial arrangement.
APPENDIX G

Proxemic Lesson Objectives
Objectives of the Instructional Units

1. The student teachers will increase their knowledge of selected proxemics theories. These models have been chosen because they can be applied in educational settings. They include:
   - Nonverbal Communication
   - A Behavioral Model of Proxemics
   - An Anthropological Model of Spatial Usage
   - An Organizational Development Model

2. The student teachers will increase their knowledge and understanding of selected research studies of classroom spatial arrangement. The content will include:
   - Proxemics in the Classroom
   - Classroom Ecology
   - Patterns of Teacher Proxemic Behavior
   - Seating Preferences in Classrooms
   - Proxemic Patterns in Classrooms
   - Small Group Ecology
   - Studies of Educational Settings
   - The Ecology of Participation

3. The student teachers will learn how to apply the theory and content of proxemics and classroom spatial arrangement in classrooms through a variety of activities and structured learning experiences.
APPENDIX H

Treatment Lesson Plans and Activities
Session I

1. General introduction of proxemics and classroom spatial arrangement as important content for teachers to know about. Content for this introduction is based on background contained in "Significance of the Problem" (Chapter I). (10 minutes)

2. Lecture and discussion are based on the structured overview: Selected Theories of Proxemics. The overview provides a guide whereby students can see how the content is organized and the sequence of information fits together. (60 minutes)

3. Review and summary of key facts and information. (10 minutes)

4. Introduction of "Course Activity" assignment: the keeping of a daily journal of observations of proxemic behaviors in the classroom.

5. Preview of next class session: selected research studies of classroom spatial arrangement. (5 minutes)

Session II

1. Review of proxemic theories discussed in last class session.

   Why is it important for teachers to know about nonverbal behavior in classrooms?
What are the key ideas represented in the theories?

In what ways are you more aware of spatial usage?

What are some observations about proxemics you have observed in your classrooms? (15 minutes)

2. Introduction of selected research studies in classroom spatial arrangement. Organization of the content presentation continues using structured overviews. In addition, research methods used for gathering proxemic are described briefly as the studies are discussed. A lecture and discussion format is used for this phase of the session. (60 minutes)

3. Summary and review of key points. (5 minutes)

4. Preview of the next class session: Completion of the material related to research studies. Class activity will provide an opportunity to plan alternate spatial arrangement possibilities in your classroom. Scale drawings of the room with fixed and semifixed features will be necessary for that session. (10 minutes)

Session III

1. Review of key points from previous session. (10 minutes)
2. Present overview of this session: Research studies by Adams and Biddle, and Feitler, Weiner, and Blumberg. (15 minutes)

3. "Design a Room Arrangement" class activity. Questions:
   . What are the important considerations to consider?
   . Why are some arrangements better suited to certain kinds of activities?
   . What is important to remember about eye contact and distance?

**Problem:** Using your scale-drawn floor plan as a basis, develop three different setting arrangements for your classroom. Remember the notions of fixed and semifixed feature space. Be prepared to describe the advantages and disadvantages of each based upon your teaching style, lesson goals, and the findings of the research studies discussed. (30 minutes)

4. Presentation and sharing of ideas. (30 minutes)

5. Summarize and review the role of spatial planning and proxemic considerations as aspects of lesson planning. (15 minutes)

**Course Activity**

For the next 10 consecutive days, starting tomorrow, you will need to keep a diary (journal) of your classroom
spatial and proxemic behavior observations. Following are the directions for the activity.

1. Obtain notebook materials to be used exclusively for this activity.

2. Make at least one entry per day. There is no prescribed length or content for the diary. Entries may be long or short, depending on what you want to say. They may include things you have read or head, thoughts you have had, something you have seen, felt, or experienced. The only qualification is that what you record should have for you some relationship to what you are learning about classroom spatial arrangement and proxemic behaviors.
APPENDIX I

Structured Overviews of the Experimental Treatments
Structured Overview

SELECTED THEORIES OF PROXIMITY

Nonverbal Communication
An Organizational Development Model
An Anthropological Model
A Behavioral Model

RESEARCH STUDIES IN CLASSROOM SPATIAL ARRANGEMENT

RESEARCH STUDIES IN CLASSROOM SPATIAL ARRANGEMENT

Sommer
Soft Classrooms
Expressive Contact Hypothesis
Affiliative Motivation
Classroom Ecology
Spatial Freedom
The Front of Classrooms
Small Group Ecology

Weinstein

Schwebel and Cherlin

Adams and Biddle
Action Zone
Footlight Parade
Inland Excursion
Grand Tour

Adams
Location-Communication Principle

Feitler, Weiner, and Blumberg
Modular Arrangement
Horseshoe Arrangement
Traditional Row and Column Arrangement
Dyad Arrangement
Nonverbal Communication

A contextually mediated system of exchange that operates outside of the conscious awareness of individuals.

When simultaneous verbal and nonverbal messages are in conflict, the nonverbal tend to be believed. Eighty-two percent (82%) of the signals given off by teachers are nonverbal, according to scholars. Nonverbal signals are difficult to falsify. They tend to have greater impact than words in revealing feelings.

Three Areas of Proxemic Studies

Kinesics
The study of bodily movements in human interaction. Gestures, ways of moving, walking, etc.

Proxemics
The observations and theories about the use of space by man as an elaboration of culture.

Paralanguage
Associated with speech such as loudness, tone, pauses, etc.

Territoriality
When an organism lays claim to and defends space against members of its own species. Ex: carving initials or using a nameplate on a desk.

Personalization
Helps defend, identify and mark space in the eyes of other persons. Ex: arrangement of furniture to block invasion by others or marking spaces with books or pencils.
Anthropological Model

How individuals react to and use space within a cultural context. Spatial usage is a function of context, emotion, and personality differences.

Proxemic Zones

**Intimate Distance** - 0 - 18" Close attention

**Personal Distance** - 18" - 4' The usual distance between ourselves and others in polite conversations.

**Social Distance** - 4' - 12' For impersonal or casual gatherings.

**Public Distance** - Speeches and small audience presentations. Distances mediated by (1) the setting, (2) the relationship of the persons in the social system, and (3) The feelings or emotions of the people involved.

Types of Space

**Fixed Feature** - Objects that cannot be moved.

**Semi-fixed Feature** - The objects within an environment that can be moved.

Types of Spatial Arrangements

**Sociopetal** - facilitates interaction and brings people together. Ex: seats in a tacern where people are comfortable and face each other.

**Sociofugal** - discourages interaction, keeps people apart. Ex: Airport waiting areas where people face away from each other; uncomfortable seats in fast food restaurants.
Organizational Development/Social Intervention Model
This system classifies inputs received by individuals from the environment.

Instrumental Space
Affects the performance of a task. Ex: a library located near a source of loud noise may hinder the performance of reading.

Symbolic Space
Tells others what you are like, what your status is, sends signals that may say "stay away" or "come in." Ex: the size and location of a desk, size of an office, selection of furnishings that reflect an image.

Growth Space
When an environment can be a force for learning, stimulation, and growth. The space demands that the inhabitants be aware of who they are, how they are using the space. Ex: when students take an active role in arranging a classroom space, deciding what goes on the walls, etc.

Pleasure Space
Does not directly affect work or communication but may make an environment positive, negative, or neutral. Ex: the quality and arrangement of furnishings, ambiance, etc.
A Behavioral Model of Spatial Theory

The notion that man, behavior, and environment are a single system. Behavior occurs in environments; environments can be transformed by man.

**Environmental Determinism** - theory that contends man can manipulate environments to produce specific behaviors. Traces back to operant conditioning theories.

**Environmental Possibilism** - a view that the environment is a medium by which man is presented with opportunities. Man does not manipulate the environment; just leaves it alone. "What will happen will happen."

**Environmental Probabilism** - a moderate viewpoint that asserts a reasonable relationship between environment and behavior. Some manipulation may be necessary to achieve goals. The environment can be a factor in behavior.
Soft Classrooms - learning spaces appointed with carpeting, drapes, plants, tiered seats, writing boards instead of desks, indirect lighting, etc. Associated with better attendance, greater participation, more positive attitudes by students toward one another, the class, and the instructor.

Expressive Contact Hypothesis - visual contact with the instructor increases participation; participation diminishes as distance from the instructor increases and eye contact decreases.

Affiliative Motivation - eye contact is balanced by a combination of distance, voice volume, and personal relationship. Ex: when two people are extremely close in distance, eye contact diminishes; at a moderate distance, eye contact increases. At great distances, eye contact decreases.

Classroom Ecology - the study of spatial relationships of organized groups such as teachers and students within classrooms.

Spatial Freedom - the opportunity for students to change seat locations freely. This practice allows individual differences to emerge and keeps interaction patterns fluid. Student seat choice reflects expected level of participation in class.

The Front of Classrooms - in the early 1900's, it was marked by window location (the best light comes over the left shoulder).
Small Group Ecology - certain arrangements are especially well suited for particular activities.

Conversing - corner-to-corner arrangement preferred. Allows close physical proximity, permits eye contact to drift.

Cooperating - side-by-side seating preferred. Allows mutual access to materials.

Competing - across table; reduces proximity, provides privacy, allows keeping an eye on the competition.

Co-acting - distant arrangement preferred. Pairs work separately at same table. No eye contact or monitoring required.

Weinstein: following a comprehensive review of the literature related to physical space in classrooms, she concluded that seat location seems to be the only physical variable linked to differences in school achievement.

Another conclusion: teacher preference for classroom settings should be a function of teacher instructional style and needs for control.

Schwebel and Cherlin: surveyed teachers and found that teachers tend to assign seats to minimize disruptions.
Fessler: surveyed students and found

* Use of desk by teachers has negative affect
* Students have a more positive feeling when the teacher is physically closer. It seems that greater distance between teacher and students lowers perception of warmth and friendliness.
* Teachers who move among the students are perceived more positively by students.

Adams and Biddle: The classroom is a behavioral setting. How it is arranged makes it easier to act in certain ways, harder to act in others.

Action Zone - a triangle of participation extending across the front of the classroom and reaching up the middle. Students in these locations receive more teacher attention and tend to be more involved in classroom interactions than others.

Footlight Parade - covers an area across the front of the room. Teachers spend an average of 68% of their time there. Inland Excursion - a track leading up the rows of the room and back. The teacher visits with specific children. This behavior occurs about 8% of the time.

Grand Tour - a general perambulation around the room. Occurs about 15% of the time; involves sightseeing visits only. No substantive teaching takes place.

Location-Communication Principle - the greater the distance a location is from the center line of the room, the less likely those students will be visited by the teacher.
Feitler, Feiner, and Blumberg investigated the relationship between interpersonal needs and classroom setting preferences. Meeting or blocking of those needs would be reflected in preferences for particular setting arrangements. **Modular Arrangement** - found to be least desirable for all teachers - both high need for control and low need for control. Comments: students waste time when not directly supervised. Frequently found in art classroom settings. **Horseshoe Arrangement** - found to be the most comfortable for both high need for control and low need for control teachers. Comments: a controlled setting that allows interactions to develop among group members. **Traditional Row and Column Arrangement** - Generally comfortable for high need for control teachers. Limits interaction; focuses student attention toward the teacher. Most preferred by student teachers. **Dyad Arrangement** - places the teacher in a potentially helping position, enhances the mobility of the teacher to interact with students.
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