Teachers as Placemakers:
Investigating Teachers' Use of the Physical Setting in Instructional Design

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Project Description

The intent of this study is to assess how and to what extent teachers actively utilize and manipulate the physical classroom environment as part of their instructional design. This proposal is consistent with the goals and objectives of the current university administration in at least three ways. The first is accomplished through the goal interdisciplinary collaboration between the College of Education and the School of Architecture through the newly established Educational Design Institute. The second is met by enhancing the quality of undergraduate teacher education through the expected result of a computer-based instructional model. The third is met through the potential for external funding for further research and development.

It is difficult, if not impossible, to separate instructional activity from the environmental setting within which it occurs. The relationship between the physical setting on behavior and attitudes of both teachers and students is well documented (Gump, 1987; McGuffey, 1982; Weinstein, 1979). However, research investigating the role of the physical classroomsetting as a part of instructional design is minimal (Loughlin & Suina, 1982; Pellegerini & Perlmutter, 1989). The classroom temperature, lighting and air quality would appear to have some effect on the learning environment (McGuffey, 1982). In addition, the cleanliness, orderliness and character that a facility exudes is perceived by teachers to influence children's behavior Lackney, 1996). Further, the arrangement of furniture and the allocation of spaces within the classroom can greatly affect what can be accomplished within a given instructional setting (Weinstein, 1981).

Teachers generally believe that they have some measure of responsibility, influence, and control over their physical setting (Lackney, 1996). They also believe that the physical setting can have both positive and negative effects on their ability to teach and student's ability to focus on learning tasks. To a great degree, teachers feel that have a significant control over classroom adaptability, instilling a sense of personalization and ownership within their students. Many teachers attempt to create learning environments that foster healthy social interaction (Loo, 1972), provide places for student privacy (Moore, 1986), as well as facilitate and maintain an appropriate level of sensory stimulation.

Yet, paradoxically, the researchers postulate some teachers lack adequate knowledge about effectively creating and managing classroom space to support their instructional efforts (e.g., group projects and cooperative learning strategies). Further, educators have disparate perspectives on classroom arrangements. Open instructional areas are perceived as being too distracting and noisy by some teachers, while self-contained

classroomsperceived as too constraining and restrictive. In addition, teachers may have a real or perceived lack of efficacy over their physical classroom. They may expect their school administrators to address these issues through appropriate educational policy.

Further, the researchers postulate that the knowledge acquired by teacher practitioners about the role and impact of the physical setting on learning is gained from direct experience through trial and error experimentation and informal communication amongtheir peers. A more systematic educational model needs to be explored to equip educators with the skills needed to maximize the potential and opportunities that the physical setting could afford them to enhance the efficacy of their instruction. A new teacher-training model must prepare teachers to become environmentally competent "placemakers" (Schneekloth & Shibley, 1995) for student instruction and learning. However, before this model can be developed, the researchers propose that the first step is to establish a conceptual model of the way teachers presently use and manage the physical environment in their instructional curriculum.

The issues that this new training model must address are complex and systemic. Many teachers and administrators tend to focus on pedagogical and interpersonal issues, ignoringthe physical-spatial context in which the teaching-learning process occurs (Loughlin & Suina, 1982; Weinstein,1981). The physical environment of the classroom is often neglected as an integral component of the instructional design that should reflect learning objectives and teaching methods. While great strides are being made to integrate technology and other educational media into the curriculum, the physical setting that houses both the technology and the instruction may actually impede and delimit the effectiveness of the implemented technology. Ironically, the classroom arrangement may remain unchanged despite changes in teaching strategies. As a result, the educational program and the setting in which that program takes place are often in conflict with each other hindering both teaching and learning.

Classroom Arrangement

The majority of the research on the physical environment of the school reflects the era of open education and open plan schools. As a result, much of the research is framed within the historic debate between traditional and open classroom arrangements. Research has focused primarily on student behavior in relationship to various physical dimensions of the classroom such as seating position, classroom furnishing arrangement, spatial density, privacy, noise and acoustics, climate and thermal control, windowless classrooms, vandalism and playyards (Gump, 1987; McGuffey, 1982; Weinstein, 1979). As indicated earier there is very little research on teacher as placemaker of the classroom. Of the various physical dimensions that have been researched, classroom furnishings arrangement appears to be the most salient dimension for supporting curricular objectives.

Traditionally, classroom arrangement is dichotomized according to territorial (space organized by individual desk ownership) or functional (space organized by a specific activity) considerations. Educators have often assumed that row-and-column arrangements, the most common form of territorial classroom arrangement, more appropriate for didactic teaching strategies while functional arrangements, e.g. learning centers, facilitatestudent-centered,

cooperative learning strategies. However, for the investigators' informal observations a classroom may contain elements of both territorial and functional styles depending on the instructional design, although typically one arrangement will dominate over the other.

Territorial arrangement. In territorial arrangements, physical space is partitioned into islands of student-owned space. That is, each student is assigned a desk in which to store personal belongings. This type of spatial arrangement is often thought to be appropriate for lecture instruction to a whole class and is used most often in classrooms with older children. Research on seating position in row-and-column arrangements suggests that front-center seat facilitates achievement (Schwebel & Cherlin, 1972), positive student attitudes toward school and self (Walberg, 1969) and class participation (Adams & Biddle, 1970). The deskdesign, though, may also have a dramatic effect on learner behaviors depending on whether students are placed at a standard desk/chair combination or carrel/free chair combination which provides an increased sense of privacy.

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A caveat though should be noted. The territorial arrangement is not always synonymous with row-and-column arrangements. Territorial desks can be clustered into small groups to facilitate a more cooperative learning, instructional teaching strategy. However, when working in small groups, the territorial arrangement can be either a hindrance or a facilitator to instructional effectiveness.

Functional Arrangement. In functional arrangements, the physical space is divided into common interest areas or learning centers available to all students. This type of spatial arrangement is typically used for small groups of students working on a variety of different activities. Early childhood and open classrooms are examples of this type of functional arrangement.

Research on functional arrangements suggests that spatial arrangement can have an influence on a young learner's location, play activities, and social interaction. Well-defined activity areas can have a positive influence on social interaction and on on-task behaviors (Moore, 1986). Teachers using this style of spatial arrangement must take several variables into consideration for behavioral contingency management due to the increasedresponsibility placed on the student for self-discipline.

Specific design and management strategies teachers may need to consider in functional arrangements would include: clearly delineating interest areas, locating interest areas in parts of

the room that supports that specific activity, e.g. play or reading, separating incompatible activities, making areas visually accessible, providing clearly defined pathways between areas, making materials easily accessible, and providing a variety ofspatial options for privacy, as well as small group or large group work (Weinstein, 1981).

In addition to incorporating different strategies for grouping learners by either self-selection or teacher-selection, varying spatial arrangement within group arrangements can also play a role in the success of a small group activity. Research evidence suggests that spatial relationships among group members can influence the communication patterns in the group (Sommer, 1967), relative status of group members and emergence of a leader (Howells & Becker, 1962) and feelings of affiliation or solidarity that members feel toward one another (Mehrabian & Diamond, 1971).

In forming functional management strategies teachers might consider placing potential group leaders in visible positions, positioning quiet learners opposite the group leader or amore vocal group leader, and moving overly vocal members adjacent to the designated leader to reduce the potential for negative nonverbal communication and eye contact that may inhibit their participation (Weinstein, 1981).

The researchers postulate that teachers may have limited resources with which to manipulate the physical dimension of the classroom. For instance, teachers may be faced with arranging groups using desks not originally designed for group work. The researchers expect to find that the most successful teachers make creative use of the resources at hand to support their curricular objectives.

Research Questions & Methods

Recognizing that there is a range of effectiveness with which teachers integrate the physical setting into their instructional designs, this research proposal explores how National Board certified teachers use physical design and management strategies to support their instructional objectives.

A purposive sample of twenty National Board certified teachers will be selected (To learn more about The World Class Teaching Program see the following site: http://www.educ.msstate.edu/wctp/index.html) Methods of data collection will be structured interview and participant observation in the classroom. A set of interview questions will be developed and used to probe teachers use and understanding of physical design in their instructional planning. For each initial interview, the investigators will conduct a total of 2 hours of observations of each teacher to triangulate and validate the teachers' interviews. The observations, in addition to the initial interview of each teacher, will inform the second follow-up interview to clarify any discrepancies between the interview and the investigator's observation of the teacher'sclassroom. Investigator, theory and data triangulation (Denzin, 1978) and interdisciplinary triangulation (Janesick, 1994) will be followed using interview and observation to provide the rigor and validity necessary to ensure confirmability of each informant's perspective.

The interview and observation data will be analyzed using a constant-comparative analysis method (Janesick, 1994; Lincoln & Guba, 1985). An initial interview and observations will conducted as well as a closure interview to verify interview data and preliminary findings. The data will be categorized and developed into emerging hypotheses for subsequent datacollection.

The participants for the study will include National Board Certified Teachers and an equal number of teachers not currently holding that national certification in the State of Mississippi. Selection of participants will follow a purposive sample (Lincoln & Guba,1985) of Mississippi's 62 National Board certified teachers. A total of 12 teachers will be selected with an equal representation from elementary, middle and secondary.

Time Line

May 1999 Study initiated

June 1999 Interview guide developed

August 1999 Interviews, observations as well as data analysis initiated

December 1999 Interviews and observations completed

January 2000 Complete data analysis and write preliminary report

February 2000 Preliminary report verified by participants

May 2000 Final report completed

Expected Results

1. The results will culminate in a training model for teacher training in environmental planning and design.

2. The data will be incorporated into a computer-based design program to assist teachers in their development of more effective teaching environments. Funding will be sought within the state of Mississippi through foundations such as the Phil Hardin Foundation to develop the computer based design program for practicing teachers and students in teacher education programs.

3. Other external funding will be pursued via teacher education training grants (Prudential Foundation Social Investment Program, RGK Foundation, National Institute on Early Childhood Development and Education, MacArthur Foundation) to expand the study to include pre-service student teachers on a national scope. Part of the study of pre-service student teachers will be supported through other external funding of pilot training

projects within teacher education courses at Mississippi State University in the departments of Educational Leadership and Curriculum and Instruction and Architecture.

4. The study will lead to further quasi-experimental research investigating the effects of physical classroom modification on teacher instructional performance and student social and learning behavior. Further research collaboration would be conducted with the School of Architecture at Mississippi State University through the Educational Design Institute.

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