THE ROLE OF PERMANENT STUDENT ARTWORK IN STUDENTS' SENSE OF OWNERSHIP IN AN ELEMENTARY SCHOOL

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ABSTRACT: The objective of this study is to determine if the physical design of learning environments can foster a sense of student ownership in the learning process. Accommodation of permanent student artwork to school interior spaces may enhance student ownership. Sense of ownership incorporates personalization, sense of control, territoriality, and involvement. The authors uncover a significant association between school design and students' sense of ownership. Furthermore, within a school incorporating permanent artwork, the stronger students' perceptions are that their artwork can be permanently displayed, the greater their sense of ownership is.

Keywords: *sense of ownership; territoriality; sense of control; personalization; student involvement*

"Why is it that children in the early grades of schools are curious, creative, risk-taking problem solvers and why is it that those qualities diminish as they pro-

ENVIRONMENT AND BEHAVIOR, Vol. 35 No. 2, March 2003 250-263
DOI: 10.1177/0013916502250133
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ceed upward through the grades?" (B. Alberts, President of the National Academy of the Sciences, 1997).

This study investigates the potential role of a design element, incorporation of permanent student artwork, to enhance student sense of ownership over the learning process. Children need to influence the conception, execution, and evaluation of their academic work to be engaged in learning. Engagement with schoolwork is significantly affected by children's perception of control over their academic and social life (Bandura, 1997; Weiner, 1986). Unfortunately, trends in student engagement indicate that many students are performing below average and are not engaged in the learning process (Beuscher, Keuer, Muchlich, & Tyra, 1997). The problem of student engagement is not a new one. Children's motivation in school has been a central concern of researchers and educators for many years. In 1910, John Dewey noted that one of the critical failings of schools was our tendency to conceive of them as separate places where lessons were learned and habits formed and that students were not able to conceive of how education would benefit them in life. Abstract concepts and principles learned in contemporary schools frequently exhibit little relevance to the environment in which students live, play, and work (Davis, Hawley, McMullan, & Spilka, 1997). This gap between students' lives and the learning that takes place within the school remains an important failing of modern education.

By enmeshing students in meaningful, relevant class work, this gap begins to close. Children who engage in the challenges of ongoing learning activities increase their competencies across time and feel pride and satisfaction in their accomplishments (Kinzig & Nakai, 1995). They believe that what they are learning is either interesting and/or valuable; that as a result of being involved and putting forth effort, they will acquire some bit of useful knowledge, learn an important skill, or grow in some way (Steinberg, Brown, & Dornbusch, 1996).

To increase engagement, students must have a personal stake and belief that what they are doing is worthwhile. Personal stake is often referred to in learning theory as *intrinsic motivation*. Intrinsic motivation occurs when individuals undertake an activity because it is interesting, enjoyable, satisfying, or personally challenging. It comes from within (Amabile, 1989). When

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AUTHORS' NOTE: *We thank the children, teachers, and parents who participated in our research. This research was partially supported by a Graduate Research Fellowship from the Environmental Design Research Association and the College of Human Ecology, Cornell University.* *Correspondence and requests for reprints should be directed to Jennifer Platten Killeen, e-mail: jennifer.p.killeen@usdoj.gov.*

intrinsic motivation is involved in a learning process, essentially the motivational goal or gold at the end of the rainbow is fused with the task itself (Sternberg & Lubart, 1995). A 1983 study by Amabile found that children who enjoyed creative expression intrinsically produced significantly more creative works than did those who were motivated only to please their teacher.

The construct sense of ownership consists of the ability to have control over the learning environment, to personalize the environment, to express territoriality, and to be involved in one's learning. Sense of ownership is hypothesized to play an important role in learning engagement and ultimately may enhance a student's higher order thinking skills, specifically, creative problem solving. By enabling students to assert control over, personalize, express their territoriality, and become involved in their learning environment, educators encourage success of their students as well as foster a sense of ownership for the school environment.

Control. Engaged students must believe that they have some control over how well they do in school, that their performance is somehow related to their effort. Several decades of research have demonstrated that an important contributor to academic success or failure is a student's expectation about whether he or she has any control (Bandura, 1997).

Personalization. Personalization is the student's ability to externalize expressions and share with their peers important aspects of their lives. Children need to be able to express their self-identity. The act of including personal artwork or class work of the student may help the individual to feel a part of the classroom environment. The act of personalizing a space not only generates a stronger sense of self-identity in the individual student but also mirrors the values and culture of the school community. Personalization is typically manifested through the work of school projects, artwork, and the like that are then posted in semipublic and public spaces. The creation of these works is an example where the individual, the psychosocial, and the physical context all interact to develop and sustain a creative process (Altman, 1975).

Territoriality. The concept of territoriality is closely related to personalization and control. One of the functions of territorial behavior is the communication of personal identity. Territoriality is the feeling individuals and groups have that they can control what happens in a place—that they can use it as they like and can change it physically to reflect their preferences and identities (Taylor, 1988).

Territories permit people and groups to display their personalities and values through means of the physical environment. People put their personal stamp on places not only to regulate access to others but simultaneously to present themselves to others, to express who they are and what they believe and thereby establish their distinctiveness and uniqueness territorially (Brown, 1987; Taylor, 1988).

Involvement. The relationship of involvement to student learning is the extent to which students are attentive, interested, and participate in class and school activities. Involvement of students in their learning process means that there are active plans to increase the potential interactions of each individual student with his or her environment to facilitate the process of learning (van Wagenberg, Krasner, & Krasner, 1981). Involved learners are imbued with powers of introspection, granted knowledge and feelings about learning, and sometimes even control it. The teacher becomes the facilitator of learning; they pose the problems, create the challenges, and allow students to work out their own ideas and solutions.

Sense of ownership extends beyond pedagogical issues; it is also a product of the school setting. The physical environments that students occupy and the extent to which they feel involved in shaping them or caring for them are an important domain for learning (Moore & Lackney, 1993; Olds, 2001; Trancik & Evans, 1995). A gap exists between developmental and educational research and the implementation of supportive design in learning environments. Researchers in the field of environmental design claim that design characteristics (i.e., classroom layout, classroom size, etc.) can make substantial differences in education (Moore & Lackney, 1993; Olds, 2001). Voltz and Damiano-Lantz (1993) found that ownership in learning could be achieved by engaging students in the creation of their physical environment. Their study investigated ways to engage children with learning disabilities into the classroom curriculum through the use of bulletin boards, displaying children's work on the walls, and so on.

One way to engender sense of ownership in children is through child participation in the design of environments. Children who participate in the design of spaces develop a sense of meaningful involvement and responsibility in society (Hart, 1987). One of the most important outcomes of children's participation in design is their sense of environmental competence. Environmental competence is the "knowledge, skill, and confidence to utilize the environment in order to carry out one's own goals and to enrich one's experience" (Saegert & Hart, 1978, p. 160). By building a child's environmental competence, the participant feels as though he or she has created a unique space—one in which the child has ownership over.

The objective of this study is to determine if the physical design of the learning environment can influence students' sense of ownership (control, personalization, territoriality, and involvement) over the learning process. Schools that include permanent student artwork in the interior spaces of school buildings will foster student ownership. The ability to increase student engagement is dependent on students' opportunities to "own" their work. Students who can acquire a sense of connectedness, active involvement, and personal investment in their learning are able to better understand and retain information, and therefore these senses promote a desire to learn.

METHOD

DESIGN

The independent variable is permanently displayed student artwork as a central feature of school design. Specifically, the physical design of the learning environment is operationalized as the creation and inclusion of student artwork permanently displayed within the school. In the experimental school, all of the permanent student artworks are ceramic tile displays that were installed atop block walls of school hallways. These installations are of large proportions (nothing under 9 feet of hallway area) and are placed throughout the entire school building (see Figures 1 through 3).

DEPENDENT VARIABLE

The dependent variable is pupil's sense of ownership. Initial development of this instrument began with a literature review of relevant studies. The concept of sense of ownership is understood as "the (student's) development of a sense of connectedness, active involvement, and personal investment in the learning process" (Voltz & Damiano-Lantz, 1993, p. 18). For students to develop a sense of ownership, and ultimately a stronger engagement with their learning, they need to personalize their learning space, express their territoriality, have a sense of control, and be involved in classroom and school activities. These four dimensions were developed as the framework for the dependent measure sense of ownership (see Appendix).

Personalization is the student's ability to externalize their expressions and share with their peers important aspects of their lives. A sample item from the survey that addresses the dimension of personalization is: "I can fix up a place within the school the way I want to."

Figure 1: Welcome Sign With Davidson Elementary Students (Approximate Size: 6' × 30')

Figure 2: Painted Tiles Along Interior Corridor Wall (Approximate Size: 6' × 9')

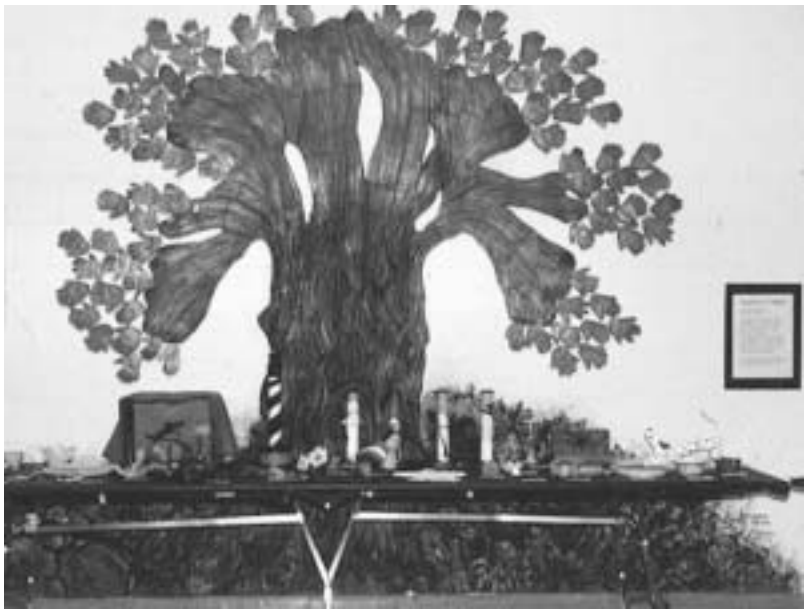

Figure 3: Tree of Hands Ceramic Tile Wall Display (Approximate Size: 9' × 9')

Territoriality is the feeling an individual or group has that they can control what occurs in a space and that they can use it as it is or change it physically to reflect their own preferences (Taylor, 1988). An example of an item for territoriality is: "I get upset when other students purposefully harm my school."

The concept of control measures the students' ability to exert control over their learning process and environment. An example of a question in the survey relating to control is: "Teachers let me decide how I want to learn in my classes."

Involvement of students in their learning process means that there are active plans to increase the potential interactions of each individual student with his or her environment to facilitate the process of learning (van Wagenberg et al., 1981). A sample question adapted from Moos's (1979) school involvement subscale is: "I get involved in a lot of school activities."

The instrument is a summated rating scale of these four dimensions (α = .89). Participants respond with degrees of agreement or disagreement on a 3-point Likert scale (*really true*, *sort of true*, and *not true*). The draft questionnaire was analyzed in a focus group of fourth and fifth graders. After this discussion, changes were made to the instrument to clarify specific questions.

The questionnaire was then pilot tested in an elementary school with 150 students from the fourth and fifth grades. None of the students in the focus group or the pilot testing are included in the present sample.

PARTICIPANTS

Three hundred seventy-seven fourth- and fifth-grade students (M = 10.50 years) from the same school district participated in the study. None of the participants had prior history of participating in psychological research.

The gender and racial composition of the two schools were equivalent: 51% and 52% male at the experimental and control school, respectively; 11% African American, 86% White, and 3% other and 19% African American, 77% White, and 4% other at the experimental and control school, respectively. Mean levels of parental education and income are also comparable at the two schools: experimental school parental education M = 3.90 and income M = 6.38 and control school parental education M = 3.30 and income M = 5.80. Parental education was assessed on a 5-point scale (1 = not a high school graduate, 2 = high school graduate or equivalent, 3 = associate degree: academic/occupational, 4 = bachelor' degree, and 5 = graduate degree: MA/MS, PhD, or JD). For two-parent households, parental educational levels were averaged. Family income was measured on a scale of 1 to 7 (1 = *less than $15,000*, 2 = *$15,000 to $24,999*, 3 = *$25,000 to $34,999*, 4 = *$35,000 to $44,999*, 5 = *$45,000 to $54,999*, 6 = *$55,000 to $64,999*, and 7 = *$65,000 or more*). Both schools have the same state-mandated curriculum and are nonclassified schools (i.e., neither of the chosen schools is part of a magnet program).

SETTING

The experimental school was chosen due to the extensive amount of permanent student artwork displayed throughout the school. At the experimental school, all students (kindergarten through fifth grade) are continuously involved in the process of both designing and creating artwork for their school. The student artwork is not "selected" per se but emanates from class projects. These projects are incorporated into the curriculum of all grade levels. The artwork reflects a particular aspect of the lesson being learned. For example, in the Welcome Sign located near the main office (see Figure 2), the kindergartners made tile leaves as they learned about nature and the changing of seasons, the clouds were made by third graders who were studying the earth and its atmosphere in science class, and the fourth graders designed Victorian homes as part of their curriculum lesson on the Victorian era and its

architectural influence in their town. Each tile is personalized with the name and age of each student who made it.

The control school incorporates the more typical, temporary display of student artwork on bulletin boards and walls. There are no permanent installations of student artwork in the control school.

Both schools are part of the same school district and were constructed according to the same architectural program with similar costs. The experimental and control school are structurally equivalent (the same number and size of classrooms, hallways, support spaces, etc.).

PROCEDURE

Questionnaires were administered in the classroom by the researcher with the teacher of the classroom present. This helped to ensure uniformity of survey administration and eliminated the need to train teachers.

The procedure followed for each classroom was consistent. Each student was handed one copy of the survey instrument, sense of ownership, at his or her desk. The researcher read over all directions and gave an example of the proper way to indicate their answer. The directions stressed that all answers should be filled in and if students felt that they could not decide on the exact answer, then they should select the one that best described how they felt. The students were allowed to ask for clarification concerning a question during the allotted time. Only the researcher answered questions (not the teacher) and typically would read the question to the student. If further clarification were necessary, the researcher would restate the question in simpler terms. Each student was allowed as much time as necessary to complete the questionnaire, but the average length of time was 15 minutes. Upon completion of the surveys, students were asked to review their answers and make sure that each question had an answer circled.

RESULTS

Sense of ownership is significantly stronger ($M = 1.76$, $SD = .29$) in the experimental school with permanent artwork in comparison to the control school ($M = 2.10$, $SD = .30$), $t(351) = 3.51$, $p < .0001$ (1 equals a strong sense of ownership and 3 a weak sense of ownership). Inclusion of statistical controls for income or parental education had no effect on this difference between the two schools.

After the initial analysis, some correlations were calculated in the experimental school to test the hypothesized relation between student artwork and sense of ownership. The relation between sense of ownership and amount of permanently installed artwork for each student was significant ($r = .44$, $p < .05$). Those students who have work on display at the present time have a stronger sense of ownership. As well, those students who perceive that their work will be exhibited in the future also indicate a stronger sense of ownership ($r = .42$, $p < .05$).

DISCUSSION

The purpose of this study was to examine whether the permanent display of artwork incorporated into the physical design of a school would enhance children's sense of ownership over the learning process. When the experimental school, whose walls are covered in permanent student artwork, is compared with a control school with temporary student artwork, the students' sense of ownership is significantly greater.

Student engagement may be significantly influenced by sense of ownership. Student engagement and performance is significantly affected by the amount of control a student has over his or her academic success or failure (Bandura, 1997). By allowing students to play a role in the design and aesthetics of their school, they feel a stronger sense of ownership for their learning environment. Given positive linkages between sense of ownership and learning (Skinner, Wellborn, & Connell, 1990; Voltz & Damiano-Lantz, 1993), children in the experimental school ultimately may become more effective learners.

Sense of ownership may play a significant role for the development of intrinsic motivation and creativity (Amabile, 1983; Sternberg & Lubart, 1995). Children in elementary school classrooms where teachers were oriented toward supporting autonomy had a higher sense of self and more intrinsic motivation than children assigned to classrooms where teachers were oriented toward controlling behavior (Deci, Schwartz, Sheinman, & Ryan, 1981; Harter, 1982).

A major limitation to this study is the inability to study the same children before and after construction of the experimental school. Due to timing this was not an option for this project. Instead, a cross-sectional design was chosen comparing the experimental school with a well-matched control school. In this design, the issue of self-selection is a major threat to internal validity. Another important adjunct to a longitudinal design would be the assessment

of learning outcomes such as creative problem solving and both math and reading skills.

Statistical controls for parental education and income had no effect on the data. Moreover for the experimental school, there was no relation between the data of children whose parents reported choosing the school compared to those parents who did not select the specific school for their children. In addition, the more artwork a child had incorporated into the experimental school, the greater his or her sense of ownership.

As time passes and there is less space to display permanent artworks on the school walls, it may become increasingly difficult to achieve the results seen herein during the first 5 years of the school. The student population chosen included one grade level that had participated in the original design as kindergartners. A comparison by grade level indicated no interaction between grade level and sense of ownership. The issue of how the school will accommodate students' artwork in the future cannot be answered in this study. Further longitudinal studies should incorporate time into the research design and investigate the issue of space allocation for the display of student artwork.

This research offers new information about the potential significance of school design for children's social and cognitive development. Although this study in particular focused on the element of permanent student artwork, there may be other environmental design variables such as responsive, manipulable objects; visually accessible but clearly structured activity pockets; variable elements that present graduated challenge as skills improve; objects and spaces designed to accommodate developmentally appropriate anthropometric and biomechanical capacities; and a hierarchy of spaces to support the regulation of social interaction from solitude to classwide interactions that might strengthen sense of ownership and facilitate creative problem solving. It is apparent from previous studies that the role of the physical environment in education is a largely unexplored terrain (Moore & Lackney, 1993; Olds, 2001; Trancik & Evans, 1995; Voltz & Damiano-Lantz, 1993; Weinstein & David, 1987).

The U.S. educational system is faced with a crisis. American students perform consistently poorly on standardized exams and emerge from school with only a limited understanding of academic material (Schauble & Glaser, 1996). Compounding these dismal trends, a 1995 General Accounting Office report estimated the cost of bringing the nation's schools into overall good condition at $112 billion. One third of America's schools need extensive repair and building replacements at a cost of $64 billion. Fifty percent of American schools have unsatisfactory environmental conditions such as poor ventilation, heating or lighting problems, or poor physical security (General

Accounting Office, 1995). With a period of exponential growth and renovation in American educational facilities, a myriad of opportunities present themselves to psychologists, educators, and designers interested in the role of the physical learning environment in children's social and cognitive development. This study begins to shed some light onto an area of environmental design that has not previously been researched—the inclusion of student-generated art into the permanent interior design of school facilities.

APPENDIX
ITEMS USED TO SURVEY SENSE OF OWNERSHIP

The survey instrument for sense of ownership contains four subscales (territoriality, personalization, control, and involvement). One of these subscales (involvement) is partially adapted from Moos (1979). The following are the two other subscales (territoriality and personalization) that were developed specifically for this survey instrument. Responses for each are *really true, sort of true,* and *not true*.

TERRITORIALITY

I feel responsible for taking care of (cleaning up) my school.
I have a place within the school that belongs to me (not including your locker).
I clean up messes that occur at my school.
I get upset when other students purposefully harm my school.
This school belongs to all of us—students, teachers, and the principal.

PERSONALIZATION

I can fix up a place within the school the way I want to.
I can put up projects I have created in places where others see them.
My school projects are displayed throughout my school.
You can learn about the kids in the school by the stuff on the walls.

CONTROL

The teachers here care about what I think.
I can make the school look the way I want.
Teachers let me decide how I want to learn in my classes.
I have choices about how I do my schoolwork.
I have choices about what I want to learn about.
I feel like my opinions count.
Kids have a say in how this school is run.

Teachers care about what kids want.
I feel that my art projects can become a permanent part of this school building.
When the teachers make a decision they listen to what kids want.

INVOLVEMENT

Students put a lot of energy into what they do here.
Most students in this school really pay attention to what the teacher is saying.
Very few students take part in class discussions or activities.
Students sometimes present something they've worked on to their classes.
A lot of students seem to be only half awake during classes.
Students sometimes do extra work by themselves in classes.
Students really enjoy classes in this school.
I get involved in a lot of school activities.
I am proud to be a student at my school.
I feel comfortable in this school talking about my schoolwork or projects.

SENSE OF OWNERSHIP (OVERALL)

I am proud to show visitors my school.
I like the way that my school looks.
My school makes me feel good.

Please circle how much of your artwork, projects, or other work is on permanent display at your school:

A lot of my work	**Some** of my work	**Little** of my work	**None** of my work

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