

THE MEANING and PERCEPTION OF SCHOOL BUILDINGS

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ABSTRACT

This study explores how people interpret and perceive school buildings, and how specific meanings influence people's judgements. The survey included photographic images of different architectural styles, an adjective rating scale, and questions related to familiarity, and friendliness. Results indicated that preferred school building images were described as dynamic, complex, attractive, and interesting. Disliked images were static, common, boring, simple, and unattractive. Generally, high-tech and post-modern school buildings, which the respondents described as not very familiar, were considered more flexible than traditional school buildings. Results from this study can be influential in expanding the people's vision of building images beyond their everyday experiences with school building.

INTRODUCTION

School design is a topic of renewed interest in the construction of new facilities and an increasing awareness of different educational approaches. School buildings are civic landmarks that reflect a community's values. More citizens are increasingly aware that architecture for education can make a difference in the quality of learning that children can enjoy. Although there have been explorations into prototypes, simple answers for designing school buildings, most schools buildings are very similar to each other.

It is the intention of this study to show how future teachers are socialized by their education to interpret school buildings differently from each other. A study of school building images was selected because of the importance that people usually attach to buildings of this sort as well as their interpretation and meaning. The aim of this study is to determine specific meanings the physical environment has for people, how they are interpreted, and what these meanings communicate.

Research studies have shown that designers and users are very different in their reactions to and preferences for building features. That is why a study of building

image preferences are important for understanding the meaning people attribute to their everyday environment. However, the meaning aspect of the environment particularly users' meaning and their preferences have been neglected and continue to be neglected (Rapoport, 1982).

As Brubaker (1998) states, "just as every person is unique, every school building should be unique as well." Each school building should have a character with its unique physical features. Each should comprise a variety of formal characteristics and physical expression reflecting users' values. Therefore, it is important identify how differences in meanings are associated with differences in architectural style, as well as preferences for various school building images.

The main research questions for the study are:

- What kind of meanings specific physical environment does have for people?
- How are these meanings interpreted?
- What do these meanings communicate with people?

CURRENT STATUS OF RESEARCH

A variety of studies have been conducted about the imageability and meaning of different environments such as office buildings, housing, and health care facilities. For example, Nasar (1989) examined the connotative meaning of various house styles that residents can infer from them. Groat (1982), focused on the meanings conveyed by modern and post-modern architecture. Recent empirical research on school buildings focused mainly on interior issues. Researchers studied ambient conditions (such as lighting, temperature (King & Marans, 1979, Humphreys, 1978), air or sound (King & Marans, 1979, Weisman, 1979), physical arrangements in indoors (Weinstein, 1979, Rivlin and Rothenberg, 1976), the internal layout, the full setting, privacy (Brunetti, 1972, Mack, 1976, Ahrentzen and Evans, 1984, Gump, 1979) open classroom (Weinstein, 1979, Gump, 1979, Coterell, 1984, Evans and Lovell, 1979), and classroom size (Gump, 1987). Few studies have concentrated on school building imageability and the symbolic meaning and differences in people's perception. For example, Sanoff's

building-image study (1994) was applied in a student, teacher, and parent workshop for the Davidson Elementary School project. Its purpose was to increase the people's level of awareness to variations in the visual character of school buildings. The main intention was to expand the participants' vision of building images beyond their everyday experiences with school buildings and also to increase their sensitivity to the importance of physical expression of the school buildings.

PERCEPTION AND INTERPRETATION OF PHYSICAL ENVIRONMENT

People react to environments in terms of the meanings the environments have for them (Rapoport, 1982). An individual interacts with its surroundings, making sense of them by giving meanings to them as "good" or "bad", "unique" and "common", "complex" or "simple". People like certain forms because of what they mean. They know their environments in terms of explicit verbal constructs, that is to say, descriptive and evaluative adjectives which they create out of their own personal daily experiences and attributes to that particular environment (Kelly, 1955).

However, for this project an adjective rating scale was used to obtain an impression of a people's reaction to a specific physical environment. It has been shown that the semantic differential is more appropriate when analyzed for groups of persons (Osgood et al., 1957). Also semantic differential scales were found to be generalized and suitable for all people in all places (Osgood et al., 1957). Ittelson (1976) refers to the physical environment as having esthetic and systematic qualities, which various components relate to each other. In addition to these characteristics, the presence of meanings and motivational messages carried by the physical environment together with concepts related to esthetic, social, and systemic qualities of environment should be considered in any study of environment perception. Rapoport (1982) also mentions that it is the situation that communicates with people at the same time influencing people's behavior, but it is the physical environment that provides the cues. Basically, human beings perceive and act towards things (both objects and people) on the basis of the meanings, which these have for them. These meanings are handled in and modified through an interpretive process used by people in dealing with the things, which they encounter (Blumer, 1969 cited in *The Meaning of the Environment* by Rapoport, 1982).

MEANING AND PERCEPTION IN ENVIRONMENTAL DESIGN RESEARCH

Examples of empirical studies dealing with meaning and perception issues are relatively rare in the environmental design research literature. Nearly all the research studies can be characterized by their implicit rather than explicit reference to some specific concepts derived from the architectural literature (Groat, 1985). Only rarely is an explicit relationship indicated. Thus, with regard to latter, this study considers certain aspects of physical environment such as the concept of complexity, diversity, ambiguity etc. which can also be categorized as descriptive concepts. Also, some evaluative concepts such as like, dislike by showing relationships among them will be mentioned.

There are relationships among concepts that are associated with the physical environment such as complex, diverse, interesting, ambiguous, and unique. Complexity is one of the most controversial aspects of architectural form. Purcell (1984) also defines the potential significance of complexity as an important compositional factor in aesthetic experience. Complex features together with contradictory ones are the source of the ambiguity and tension characteristic to the medium of architecture.

Berlyne (1960) also demonstrated in his study that "the more complex the stimuli and the stronger the investigatory reflex elicited by people." He also states that diversity, complexity, novelty, and ambiguity in a composition are conditions which lead to "arousal" and "attention". Basically, the buildings defined with these concepts as a result of the intention of designer have effects on the perceptions of the observer. It has been concluded that stimuli which are both complex and perceptually well organized are intrinsically interesting and attractive (Purcell, 1984). However, it has been demonstrated that people are able to interpret simple physical settings easier than the complex ones (Rapoport, 1982). Rapoport and Kantor (1967) have expressed the awareness of the need for greater perceptual interest in the physical world. Within the studies of perception there are four groups of variables, which are observers, modes of observation, physical environments, and attributes of environments (Sanoff, 1975). Thus, the survey conducted in this study focuses on the visual attributes of school environment. The aim is to assess the relationship between visual satisfaction and users perception of complexity, novelty, attractiveness, uniqueness, and ambiguity.

METHODOLOGY

The subjects for this study were 17 undergraduate and 14 graduate students in education and future teachers. Graduate students were selected because they have some experience and knowledge of school environments. Undergraduate students were selected to see if their limited educational knowledge would account for any differences in their preferences compared to those

interesting-boring, unity-variety, unique-common, static-dynamic, and dislike-like. After completing the first section, subjects were asked to choose one of the images related to the questions asked in the second section of the survey. Questions required respondents to link learning styles to appropriate building images. The purpose for this procedure was to examine people's perceptions and preferences for school images (Figure 1: Survey Form).

Figure 1: Survey Form

architectural composition

Now rate each of the following criteria for each image. You have 5-point rating scale which means:

e.g. hot 1 2 3 4 5 cold

1) unattractive 1 2 3 4 5 attractive

A 1 2 3 4 5
B 1 2 3 4 5
C 1 2 3 4 5
D 1 2 3 4 5
E 1 2 3 4 5
F 1 2 3 4 5
G 1 2 3 4 5
H 1 2 3 4 5

2) complex 1 2 3 4 5 simple

A 1 2 3 4 5
B 1 2 3 4 5
C 1 2 3 4 5
D 1 2 3 4 5
E 1 2 3 4 5
F 1 2 3 4 5
G 1 2 3 4 5
H 1 2 3 4 5

3) ambiguity 1 2 3 4 5 clarity

A 1 2 3 4 5
B 1 2 3 4 5
C 1 2 3 4 5
D 1 2 3 4 5
E 1 2 3 4 5
F 1 2 3 4 5
G 1 2 3 4 5
H 1 2 3 4 5

4) interesting 1 2 3 4 5 boring

A 1 2 3 4 5
B 1 2 3 4 5
C 1 2 3 4 5
D 1 2 3 4 5
E 1 2 3 4 5
F 1 2 3 4 5
G 1 2 3 4 5
H 1 2 3 4 5

5) unity 1 2 3 4 5 variety

A 1 2 3 4 5
B 1 2 3 4 5
C 1 2 3 4 5
D 1 2 3 4 5
E 1 2 3 4 5
F 1 2 3 4 5
G 1 2 3 4 5
H 1 2 3 4 5

6) unique 1 2 3 4 5 common

A 1 2 3 4 5
B 1 2 3 4 5
C 1 2 3 4 5
D 1 2 3 4 5
E 1 2 3 4 5
F 1 2 3 4 5
G 1 2 3 4 5
H 1 2 3 4 5

7) static 1 2 3 4 5 dynamic

A 1 2 3 4 5
B 1 2 3 4 5
C 1 2 3 4 5
D 1 2 3 4 5
E 1 2 3 4 5
F 1 2 3 4 5
G 1 2 3 4 5
H 1 2 3 4 5

8) dislike 1 2 3 4 5 like

A 1 2 3 4 5
B 1 2 3 4 5
C 1 2 3 4 5
D 1 2 3 4 5
E 1 2 3 4 5
F 1 2 3 4 5
G 1 2 3 4 5
H 1 2 3 4 5

architectural styles

The following questions will try to find out how you feel about different school buildings.

1. Which of the images look like the best possible learning environment for the pupil?

A B C D E F G H

2. Which of the images seems to provide an environment of maximum desirability for pupils and teachers engaged in the learning process?

A B C D E F G H

3. Which of these images seems to stimulate children's learning processes?

A B C D E F G H

4. Which one of these images seems appropriate for traditional way of education, which is not able to provide varieties in learning and facilities?

A B C D E F G H

5. Which one of these images seems to be the best for future learning environments which provide a great variety of spaces to accommodate different programs with many choices of facilities, and use of technology?

A B C D E F G H

6. Which type of school building is the most familiar to you?

A B C D E F G H

7. Which of these school images is the most inspiring to you?

A B C D E F G H

8. Which of these images has the most "friendly" character of school building?

A B C D E F G H

Date: _____

Sex: Male _____ Female _____

of graduate students.

First, a large number of photographs of school buildings were evaluated and eight different images of school buildings reflecting different architectural styles were selected. The architectural styles were classical, modernism, post-modernism, neo-modernism, and high-tech. These images were grouped according to different architectural trends since it is possible to see different attitudes applied in the design of school buildings. The images were presented to the subjects, who were requested to rate each image on a 5-point polar opposite adjective rating scale having various evaluative and descriptive concept pairs such as unattractive-attractive, complex-simple, ambiguity-clarity, in-

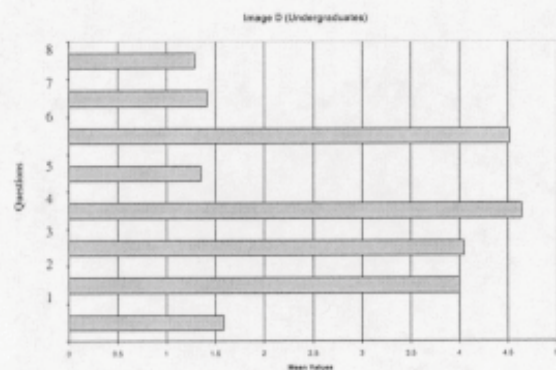
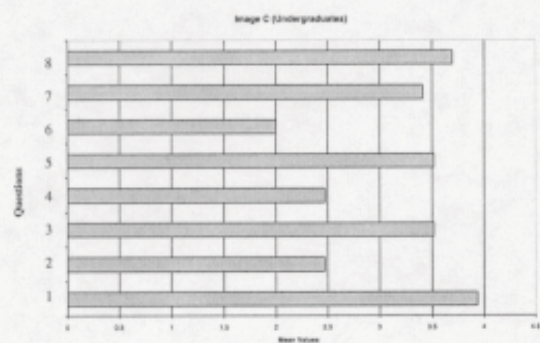
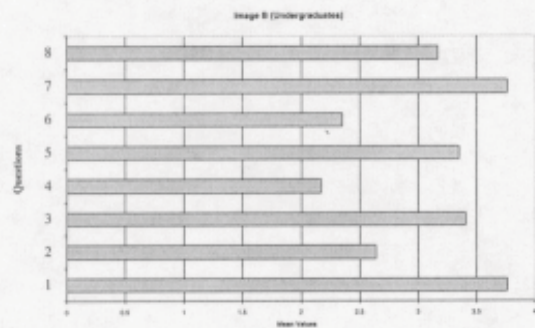
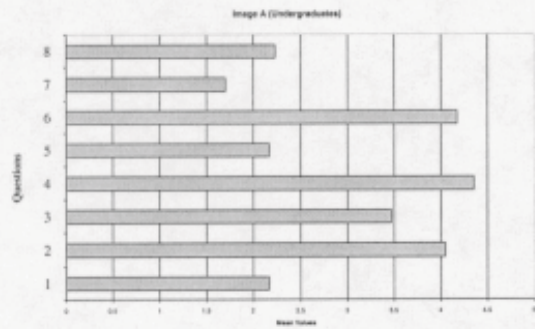
In order to prevent any biased result, all landscape features and people were erased from the images. For this particular study, respondents were expected to concentrate on the physical appearance of school buildings without being influenced by any other environmental features.

DATA ANALYSIS

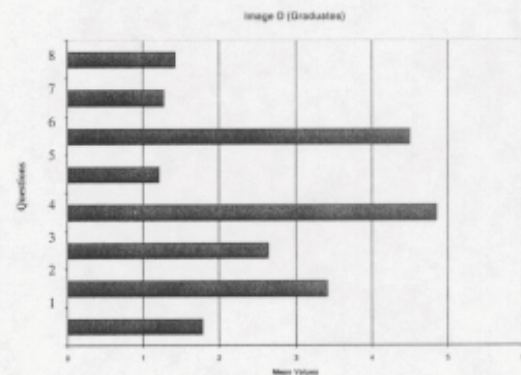
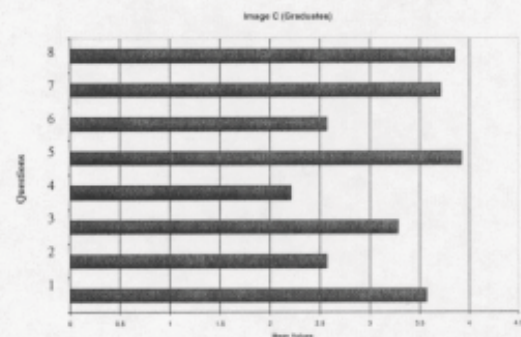
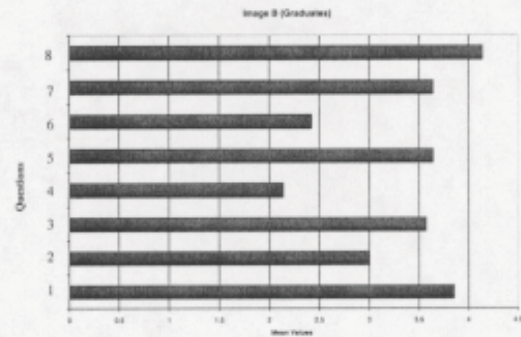
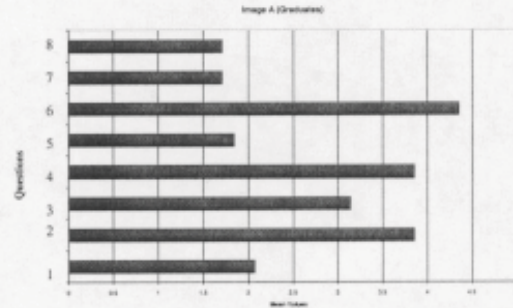
For the analysis of the survey data, descriptive statistics were used and the data presented in a bar-graph format. As a result of a comparison between responses of the two groups to the rating scales and learning styles, it was seen that responses were very similar.

Figure 2: Analysis of Results of Graduate and Undergraduate Students

Analysis of results for undergraduate students



Analysis of results for graduate students



According to the respondents image A (modern) was disliked and found relatively boring, static, simple and

unattractive. It was also considered as an appropriate school building image for a traditional approach to



education, and described as a building type not being able to provide variety in learning facilities (Figure 2: Analysis of Results of Graduate and Undergraduate Students). Images B and C, which were typical post-modern school types with towers at the main entrance, were definitely liked by both groups and were considered as relatively dynamic, unique, interesting, complex, and attractive school building images. These two school building images had the highest mean values (Figure 2). All respondents, on the other hand, disliked image D (modern), which was similar to image

A. It was selected as the most static, common, boring, simple, and unattractive school building image. However, it is interesting that in the second part of survey image D was considered as the most appropriate image that provided a variety of spaces to accommodate different programs and facilities by both groups (Table 1: Learning Styles Associated With Building Images). Image E, which was also representative of a modern building, was also disliked by both groups of students, although both groups of respondents considered it as dynamic in form with unique characteristics, and in-

teresting. However, undergraduate students classified it as attractive, simple, and appropriate for traditional way of education while graduate students classified it as complex but unattractive (Figure 2 and Table 1). Image F, which is an example for high-tech building type, was the only image that was liked and considered as attractive, and the most inspiring school building image by undergraduate students, whereas graduate students disliked and considered it unattractive. Other than these differences, both groups considered image F as relatively dynamic, unique, interesting,

CONCLUSION

An imageability study such as this one characterizes important differences and similarities between future educators as the potential users of school buildings. This study is believed to convey useful insights into the issue of the meaning of a building. Both groups mainly liked high-tech and post-modern school building types, which are not very familiar to them. Thus, it can be said that the most preferred attributes of physi-

Undergraduate Students		Graduate Students	
Important Aspects	Image	Important Aspects	Image
The best possible learning environment	G	The best possible learning environment	G
Creating maximum desirability in learning processes	G	Creating maximum desirability in learning process	G
Stimulating learning process	G	Stimulating learning process	F & G
Appropriate for traditional way of education	E	Appropriate for traditional way of education	A
Provide variety of spaces for Different facilities	D	Provide variety of spaces for different facilities	D
The most familiar school building image	H	The most familiar school building image	G
The most inspiring school building image	F	The most inspiring school building image	G
The most friendly school building image	F & G	The most friendly school building image	F

Table 1: Learning Styles Associated with Building Image

complex, and the most friendly school building image (Figure 2 and Table 1). Image G was moderately liked by both groups, and was evaluated as relatively dynamic, unique, interesting, complex, and unattractive (Figure 2). Both groups selected image G as the best possible learning environment, which stimulates the learning process of students (Table 1). Graduate students also considered image G as the most familiar and the most inspiring one. Different from the graduate students, undergraduate students evaluated it as the most friendly image (Table 1). Image H, which is a traditional school building, was disliked by both groups and classified as relatively static, common, boring, and simple school building image (Figure 2). Undergraduate and graduate students selected image H as attractive and the most familiar (Table 1).

As a result, it was seen that the most preferred school building images were described as dynamic, complex, attractive, and interesting, whereas disliked images were described as static, common, boring, simple, and unattractive. In general, high-tech school building images together with post-modern, both of which are not very familiar, were considered more appropriate for providing a variety of spaces to accommodate different programs and facilities than traditional school building types. On the other hand, all subjects definitely disliked modern school buildings.

cal environments are uniqueness, ambiguity, interestingness, attractiveness, variety, and complexity. On the other hand, less-preferred school building images were considered as simple, boring, static, common, unattractive.

Secondly, this study also demonstrated that students who prefer complex forms and consider them unique, ambiguous, interesting and attractive. This conclusion supports Purcell's statement (1984) that people find complex environments more attractive and unique. It is certain that physical features of environment have different impressions on people and they effect the perceptions and interpretation processes of people in different ways. That is why this study provided an insight into evaluating people's perceptions of the meanings and cues provided by a particular physical environment. Results from this kind of empirical study in environmental perception can be of significant influence in effecting a greater visual impact of designed environments.

Thirdly, this study demonstrates the negative perceptions of the institutionalized schools of the 1950's and 1960's that respondents described as very simple, plain boxes such as images A and D. Such buildings will always be seen perceived as a basic school image, however, the design diversity that has emerged with

the new forms of high-tech combined with the use of traditional design details and materials can be welcomed in school building design. The preferences of respondents also showed that users of specific buildings expect to see variety in the physical expression of buildings. However, these results cannot be generalized since the sample size was quite small. It is worth to repeat the same study with higher number of respondents. Also, further research can be conducted to compare differences in perception between students and teachers who are the main users of school buildings.

There is a need for variety in the design of schools and a need to encourage innovation and variation in the visual character of school buildings. Perceptions of building users should be acknowledged as a significant factor in the shaping of school buildings.

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