The Importance of Environmental Psychology in Design of Educational Spaces

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ABSTRACT

Educational spaces are of the most important public buildings, since a large number of people in a long time present there, so their design can be discussed from multiple perspectives. One of these aspects is environmental psychology. Given the vast communication between these spaces and students, this subject is of great importance. Environmental psychology in architecture is considered as a new science in psychology. Undoubtedly, architectural space not only has a great impact on creating a friendly, playful and lively environment, but also it can positively affect learning of students and energize them. In this study, after reviewing the environmental psychology terms and definitions, characteristics of space and human needs in environment, the impact of the mentioned things on other items such as furniture of spaces will be discussed. Since the educational spaces must be a place for learning, student interactions can pave the way for various discussions and conversations in specialized fields of the students or social issues, etc. These conversations give students the opportunity to take advantage of various thoughts, and open up new opportunities on solving confronted issues. In addition, the advantage of increased interdisciplinary awareness and increase of the students’ scientific knowledge level can be also mentioned. Finally, an example about impact of communication and social interaction on artists and architects is expressed. The methodology used in this paper is analytical and comparative, and library resources have been used.

INTRODUCTION

Environmental psychology is a subdiscipline of behavioral sciences. Environmental psychology as a branch of psychology, which architects have had a major contribution to its development, studies the human behavior in relation to their habitats. This new knowledge is also known as other names like human relationships, environmental sociology and human ecology [1]. Hall’s studies makes the design of spatial territory possible for architects. Willis’s work teaches architects how to create privacy, and White and Lennard’s analysis has formulated the principles of creating a proper public space for social interactions in Western cities [2]. The importance of applying this knowledge in architecture, especially the educational spaces that deal with a large number of people is very obvious. Among environmental psychology concepts, social interactions have a special status in architecture. The existence of institutions and social organizations depends on mutual social relations. The issue that whether creation of the necessary functionality for social relationships will lead to the growth of a sense of "community" among commercial organizations, institutes and residential neighborhoods has been much talked about in the societies [3].

Research methodology:

The Research methodology used in this paper is analytical – comparative that investigates the main principles of environmental psychology, particularly communications and social interactions, and finally discusses the impact of communications and social interactions on distinguished architects and other artists.

Environmental psychology:

Environmental psychology tends to study the human behavior in a physical environment. As it can be inferred from this definition, environmental psychology studies the relationship between human and physical environment.
environment and the impacts of these two on each other in such a way that his values, attitudes and needs are considered and some issues like perception, cognition, and spatial behavior are discussed. Therefore, environmental psychology studies societal and individual experiences of people of places, which is one of the basic behavior of human being [1].

Human-made environments, such as buildings and cities affect the behavior, particularly when this construction environments lead to crowd or, according to Milgram(1970), “sensory overload”.

Tabaeian believes that environmental psychology complements the general psychology and it does not have an environment. He is of the opinion that environmental psychology studies the experiment of interactions between the environment and human behavior. He believes that enough attention has not been paid to environmental-cultural aspects in traditional psychology, and this phenomenon has resulted in creation of the field of environmental psychology[4].

Fig. 1: The combination of social structure and cultural environment of a person in environmental psychology[4].

Perception:
Perception is the active process of meaning creation through selection, organizing and interpreting of human beings, objects, events and activities. The first interesting point in this definition is the activation of the perception. Human beings are not the passive recipients of the outside world events, because they try to interpret themselves, others and their interactions, and to achieve this goal, they select some items and then organize and interpret them. Perception consists of three processes: selection, organization and interpretation. These processes are continuous combined with each other. Also, since they have interactions with one another, they influence each other [5].

Environmental perception:
Perception is a process that is central to any environment behavior, because it is the source of all environmental information. The environment stimulates all the senses, and makes a person to face some information more than his processing ability. Therefore, perception is not anything like feeling, but instead it is the result of the person’s processing treatment. Sometimes it is difficult to separate a person from the environment in perceptual processing because the two always communicate with each other, and the perceptions depend on the something that the person is doing in the environment [2].

Space characteristics and social relations:
Azmond has investigated the properties of different spaces in terms of facilities or the obstacles they create in social relations. This researcher studies two types of spatial quality that are called “collector” and “scaterrer”. The “collector” is the facilitator architecture of social relations and is used for the cases that facilitate the properties of spatial architecture and social relations.

The “scaterrer” is a quality of space that prevents the continuous formation of social relations. In fact, it looks like narrow and long corridors of prison that prevents the accumulation of people. However, the property of scaterrer can be useful in some cases. For example, Zomer’s research on the properties of some places such as classroom or library shows that the quality of “scaterrer” is more suitable for library. The creation of such conditions will lead to decline in those noises and disturbances that are caused by social interactions and conversations[6].

Personal space:
Hall believes that the personal distance or normal distance between animals and social distance or the distance that its increase may disturb animals, have mutual influence. Therefore, different distances are kept
because of the forces that force a person to either keep away from others or to have relationships with them simultaneously. This is a dialectical issue that is compatible with the concepts of privacy.

**Personal space is an invisible border around a person that Somer describes it as follows:**

Personal space is a space surrounding a person’s physical body which is characterized by an invisible scope that nobody should enter it. The personal space is not necessarily circular, and it is not equally developed in all directions [7].

**Classification of different areas from Hall’s point of view:**

**Hall believes that there are four spatial areas in social interactions:**

The first area is the intimate distance. Hall says: the presence of a different person is not negligible in the intimate distance, and it may sometimes be very huge and pounding because of the abundant sensory data.

At a distance very close to this stage (from 0 to 20 cm), physical contact is very impressive. Hall believes that in this distance, the possibility of the exchange of communication symptoms reaches to a maximum level.

Although this distance in some cases seem pleasing (sympathizing), sometimes it becomes quite unpleasant and intolerable like a situation that people unwontedly have to stand next to each other in a crowded elevator, and some of them nervously look at floor or ceiling of the elevator.

The second area is personal area which encompasses 45 to 120 cm. This is the usual distance that people keep from each other. Hall believes that closer distance of this stage (45 to 75 cm) belongs to intimate individuals. In farther distance of this area (70 to 120), individuals will be able to shake hand with each other.

The third area is social distance, which encompasses 120 to 360 cm, that is the usual distance in public social and professional relations. A research on offices and the way tables and luggage are arranged show that third area is widely used. At a distance closer to this stage (120 to 210 cm), the visual relationship is not as efficient as the two mentioned stages, and audio symptoms such as long or short audio can be easily received. However, warmth and tactile lose their importance in the distance.

![Image of personal space and distances](image)

**Fig. 2: Personal space and the distances related to that source.**

The interactions with temporary colleagues and acquaintances are done in this distance, and it is widely used in public places. The farther distance of this area (210 to 360 cm) is more formal and visual details can not be observed as well.

The last stage is called public distance and its scope is around 5/3 to 8 meters that is used for formal meetings with very important people. Classroom and lecture podiums in public places usually keep at least a distance of 3 meters from the front row audience [8].

**Human needs in the environment:**

Human is a complex being that has various and diverse material, spiritual and diverse motives. Behavior acts also to satisfy the needs, so it is important to recognize human needs for environmental design.

Many models have been provided in psychology and social sciences to understand these motives and needs. These models in environmental psychology, architecture and design are widely considered. Among these models, the Mazlo’s model for urban design and architecture has been approved [1].

**Mazlo and human needs:**

Life in a diverse world, like other needs of Mazlo, appears when basic needs are met. As long as humans need food, shelter and a sense of belonging, diversity is not a matter of importance for him, but as soon as their basic needs are met, they consider the world’s diversity.
The extent of the needs:
To satisfy these needs, human motivation should be taken into consideration, and this motivation may be either material or spiritual. By changing the motivation, the shapes and functionality of the environment are defined or lose their meaning and are destroyed [1].

Environmental psychology in relation to architectural design:
The concepts that should be taken into account in environmental psychology and in relation to design are as follows: perception and understanding the environmental bases of behavior, the relation between environment and people's behavior and taking advantage of this data in constructing design theories of some concepts such as motives and human needs in coexistence with related capabilities are of great importance in creating a design theory [1].

The environment and behavior:
Psychological facts can influence a person either positively or negatively; however, some psychological facts are neutral. The interaction between positive and negative forces can drive a person forward or push him back in living space, and direct the behavior towards solving the tension among conflicting forces [2]. Human being changes the environment according to his needs, values and objectives [6].

Environmental psychology concepts in architectural design:
Designers can somehow provide privacy and local territory by using design. Public spaces can be placed in the center of the building. It is possible to design wide corridors and corners good enough to stop for either occasional or coordinated visits. Sitting and waiting room can be designed in order for people to have comfortable distance from each other and have proper time and place for social interactions.

Effect of furniture:
The layout of the furniture affect the behavior and feelings of the people inside the room. Furniture is one of the main facilitators of dialogue that determines the communication borders and appropriate interactive intervals. Joiner (1976) expresses the three main qualities that are of importance for determining the interaction styles inside a room: the place of furniture, the distance between them and the decoration used. According to Joyner's opinion, these qualities show the formality of the interactions that are held in the location, and provide the behavioral signs. The layout of the inside space of a big church is a good example of how the position, distance and symbolic decoration direct the behavior of individuals in the church [2].

Importance of space design in educational environments:
Gump concludes that each person spends an average of 14000 hours at school during his or her primary school up to high school. Those people who attend preschool or University will spend more time. In fact, younger generations spend most of their waking time in their educational environment. So, it is important that these areas are pleasant and functional to facilitate the learning experiences [2].

Communication and human beings:
Communication is the basis of human civilization. The exchange of information and ideas among human beings is one of the most urgent needs of social life, and communications connect the individual to the community as the interface loop and prepare the ground for passing down the cultural heritage from one generation to another [9].

Interaction:
Through interaction with others we can have different experiences and styles, and share our experiences and values with other people. Human beings can find out their own differences and similarities through interaction and use this to step on the way of perfection. Effective participation in a diverse social world plays a vital role in success of people in their professional lives. According to a research conducted by Newsweek magazine, 85 percent of employers believe that their subordinates and staff must be able to communicate effectively with others, but the majority of job applicants can not do so [5].

Social interaction:
Social interaction is creating a relationship between two or more people leading to a reaction among them, and this type of reaction is known for both the people, so those relationships without meaning are not included in this definition. There are other definitions as well. For example, social interaction and communication, can be a physical issue, a look, a conversation, and the relationship between people, which requires a definition of appropriate events and activities[10].
The need for interdisciplinary interaction:
If people have a need for social contacts, they prepare grounds for it in any environment. In some environment, this action is done more easier. There are many reasons why social interaction is desirable. The main reason is that the mutual social interaction in response to human’s needs for a sense of belonging is necessary [3].

Based on the models which are presented in order to define the human needs, social interaction is one of the necessary issues. Disregarding the notions, beliefs, preferences and other aspect of different personalities which are thought to be the most important human behavior controllers in behavioral science theories, physical environment also has a potential impact related to the human behavior [11].

Regarding different developments, including the growth of human technology and increased complicated problems, interdisciplinary cooperation in the present age is inevitable. On the other hand, the traditional thought about academic disciplines and specialties has prevented the higher education from the necessary capacity to cope with these developments, stay open and be faced with new challenges. Accordingly, one of the requirements of higher education at present time is growing, interdisciplinary skills in both educational and research fields [12].

Some examples:
The impact of architects’ communications and social interactions with other artists:

A few examples of artists with different orientations:
In the age of the Renaissance, an architect in most cases was a painter, sculptor or engineer. Michelangelo and Leonardo da Vinci are distinguished examples in this regard. With the advent of modern era, specialization and breakdown of fields came into existence, but it seems that architecture can not live in this isolation due to its artistic nature. The best architects of the twenty century has had to connect with other artists and have communication with them. Le Corbusier, for example, because of the association with Brock and Picasso and their high impact, in terms of both form and lifestyle, could not formulate his ideas in an effective way. He created more than 400 paintings, 800 designs and 44 sculptures [13].

Cross-fertilization:
One of the strategies of architectural creation is communication of architects with some artists like painters, sculptures and poets. This strategy has been very successful. A good example here is the school that Elina Saarinen established by himself and his goal was the improvement of creating through serious and simultaneous communications with other arts and philosophical and esthetical thoughts. Some managers were those people that their creative character were grown up in this way such as Daniel Libeskind in the fields of mathematics, architecture, painting, music, and Dan haffman in the fields of philosophy and poetry [14].

Examples of famous schools with interaction and communication abilities of their students:
There are many schools in the field of art and architecture that the impact of the relationships between students with different fields are evident, such as the school of Bozar in Paris which formed by a few faculties at the beginning of its activity, so in its educational system, the relation of architecture with other fields like painting and sculpture was deep and effective. In the Bauhaus school, diversity of fields from visual arts to building sciences and construction methodologies of industrial buildings and even behavioral sciences widely developed. The primary form of Behavioral science with its period definitions was established in this school by Hannes Meyer [15].

The impact of the environment on making interactions:
Somer and Olsen found that the change of toughness and longitudinal shape of the faculty classrooms can increase the classroom communication by using suitable cushions, light and flooring. Neill (1982) reported that the flooring a nursing school in comparison with the classes without flooring created better teacher-student communication [2]. In addition, space is important in creating effective creativity. Some physical features of the physical environment can affect the users’ creativity and innovation. These properties include: diversity in detail space; view of the natural environment; the use of natural materials; paint; light; flexible and diverse space; the existence of flowers and plant in space; visibility; proximity of individuals with each other; beautiful floors and having privacy. In fact, these features can be classified into four types of spatial feature including privacy, beauty, spatial diversity and flexibility and proximity or visibility [16].

Conclusion:
Architects, environmental designers and urban planners design the environment with the goal of providing opportunities for personal relationships. If social and official organizations support these environment, it is more likely the anticipated potentials of the environment are used effectively. In the absence of such support, the probability of the use of the existence services will be reduced significantly [3]. Regarding the environmental
psychology, the performance and efficiency of various spaces can be optimized according to their functionalities. If we be informed of territory definitions in the given space and of the availability of that space at the time of space designing, we can reflect the effect of this awareness in form, light, materials, color, etc. and ultimately make our plan more cohesive and integrated [17] which can lead to the main goal of the educational spaces which is indeed an increase in the level of learning, creativity, etc. With respect to the mentioned cases, it can be concluded that communications and social interactions have considerably influenced the works and creativity of the architects.

To achieve the maximum efficiency in the educational spaces, it is necessary to pay special attention to the parameters of physical environment. The suitable environmental conditions help satisfy the needs, and unsuitable conditions do the opposite thing. To satisfy the many needs, it is necessary to use a space with specific features [6]. Each level of official institutions, public and private, has some camps or behavioral places in which some certain patterns of behavior form their required spaces. However, it should be mentioned that the design requirements are more than these. Many institutes have “rigid or inflexible architecture”. These institutes give more importance to the managing strategies than the users’ needs [3]. Thus it is necessary to pay special attention to environmental psychology topics in designing all types of spaces.

REFERENCES