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THE EFFECT OF SPATIAL ENVIRONMENT OF UNIVERSITIES ON STUDENT'S LEARNING IMPROVEMENT (A CASE STUDY IN PAYAME NOOR UNIVERSITY OF RASHT BRANCH, IRAN)

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ABSTRACT

In order to study the effect of spatial environment of universities on student's learning improvement, a study was conducted in Payame Noor University of Rasht Branch in 2013. Using tables of the minimum sample size determined by researchers, the sample of the study included 50 experts and lecturers in Payame Noor University of Rasht Branch. Data were collected using a questionnaire which its validity was confirmed by experts and lecturers of the university and its reliability was estimated 87% through Cronbach's alpha. Results indicate that the most important features which affect the environment's improvement include: Learning with an appropriate visibility and natural light from windows, green spaces around learning environments, classes which are directly related to the outside, public spaces which increase the sense of community, student's access to technology and media in the learning environment, passage spaces inside and outside the learning environment, diversity in ceiling height of university buildings for comfort and sincerity, and a healthy learning environment inside.

Key Words: Social Interactions, Learning Environment, Architecture and Building, Payame Noor University

INTRODUCTION

According to the interactive learning literature, (Johnson and Johnson, 1989, 1994; Johnson and Johnson and Holubec, 1993, 1998; Johnson *et al.,* 1998) interaction in cooperative educational and learning processes leads to a better performance, success and efficiency. This learning style increases understanding of university students by expanding personal relations and consequently leads to more satisfaction and positive interdependence among individuals and hope for a positive and constructive interaction in future. Interactive learning improves the sense of mutual pride and satisfaction of group work. Cooperative learning leads to the self-respect of individuals and as a result, increases the self-esteem and self-efficacy of university students. The results of comprehensive training methodsare vice versa. The increase of social interactions can improve "interactive learning". Using the spatial aspect of environment leads to the increase of social interactions. In this regard, the environmental psychology emphasizes the influence of physical factors and conditions as well as spatial architecture of environment on the behavior. In order to search the relationship between human and environment, especially the scientific mechanisms of this relationship and the ability of translating this relationship to the language of architecture and environmental design, factors such as human cognition and characteristics of his living environment, including natural environment and manmade environment, more importantly the way of establishing a relationship between these two main factors were considered by designers and researchers (Eynifar, 9).

According to his needs, values and purposes, human transforms the environment and is mutually influenced by the transformed environment (environmental psychology). Social environment looks for the ability of learning environment to adapt itself to different needs in order to create opportunities required for cooperation and presence in the environment (891 – Grammar). Social life is an opportunity for relieving from daily stresses, spending leisure time, social interactions and meeting of different individuals and groups, and is a platform for their presence, and freedom of speech and expression in the environment. A social environment must be able to accept different individuals and groups, and particularlycover factors such as user integration, vitality, visual aesthetics, and maintenance and surveillance of space, and other factors such as spatial comfort, ability to sit and stand, appropriate access and safety, suitability and readability, diversity and universality of the space in order to influence social interactions and presence. In this context, there are different viewpoints such as viewpoints of Jane Jacobs *et al.,* (2010). Social interaction means establishing a relationship between two individuals or more that leads to a reaction between them which is known for both of them. Different individuals have a tendency towards different levels of social

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interactions. Definition of the desired interaction level subjectively results from people's gossips and objectively from normative positioning toward a good life (Lang, 2002). On the other hand, social interaction occurs at lower levels among different generations. Following issues which affect the social interaction are briefly explained and have a wide range of perceptual and conceptual components in order to include spatial and objective components.

MATERIALS AND METHODS
This study was conducted by a descriptive survey methodwhich was conducted in Payame Noor University of Rasht Branchin 2013. The statistical population of the research includes all lecturers sand staff of Payame Noor University of Rasht Branch. Using the table of minimum sample size of Bartlett *et al.,* (2001), 100 lecturers sand staff were randomly selected and studied as the statistical sample size. The instrument for data collection was a questionnaire with closed–ended questions. In this questionnaire, there are questions about building features and educational environment which affect the education improvement, and lecturers sand staff were asked to express their ideas regarding each feature proposed in terms of Likert spectrum (1= very high to 5= very low). Finally, data were statistically analyzed using SPSS16 software. Output data of this analysis included mean and standard deviation.

RESULTS AND DISCUSSION
Results
Results of the study showed that the most important issues proposed about the physical aspect, outside space, learning environments, social environments, access to media, passage spaces and paths, visual appearance and health and safety rate included: appropriate visibility and natural light from windows, green spaces around learning environments, classes which are directly related to the outside, public spaces which increase the sense of community, student's access to technology and media in the learning environment, passage spaces inside and outside the learning environment, diversity in ceiling height of university buildings for comfort and sincerity, and a healthy learning environment inside.

Table 1: Physical aspect

Physical aspect	Mean	Priority
appropriate visibility and natural light from windows	3.74	1
Visibility of the main entrance of university for students and observers	3.62	2
Appropriate building for learning	3.54	3
The connection between inside and outside space of the university	3.30	4
Controlling the sounds of inside and outside environment	3.20	5
Accessibility for disabled people	2.92	6

Table 2: Outside space

Outside space	Mean	Priority
Green spaces around learning environments	3.48	1
Campus for university students	3.44	2
Outside learning environment for social interaction	3.40	3
Outside learning environments for individual learning	3.16	4

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Table 3: Learning environments

Learning environments	Mean	Priority
Classes which are directly related to the outside	3.98	1
Light quality in the class	3.96	2
Air quality inside the class	3.56	3
Appropriate temperature in the class	3.42	4
Inside learning environments for individual learning	3.40	5
Comfortable and non-stress classes	3.38	6
Motivational learning atmosphere in classes	3.38	7
Spaces for scientific activities	3.24	8
Lecturer's work spaces	3.20	9
The number of learning groups in the class	3.20	10
Adaptability of classes to changes (changing the decoration)	3.08	11
Spaces for artworks	2.94	12

Table 4: Social spaces

Social spaces	Mean	Priority
Public spaces lead to the increase of the sense of community	3.42	1
Quiet spaces for university students inside and outside the building	3.28	2
University students determine their spaces	3.08	3
Quiet outside spaces for eating	2.96	4
Spaces where university students can perform noisy physical activities	2.86	5
Quiet inside spaces for eating	2.80	6

Table 5: Access to media

Access to media	Mean	Priority
University student's access to technology and media in the learning environment	3.44	1
Access to social communications (such as telephone) in the learning environment	3.04	2

Table 6: Passage spaces and paths

Passage spaces and paths	Mean	Priority
Passage spaces inside and outside the learning environment	3.54	1
Obvious signs for inside passage spaces	3.40	2
Hallways as passageways in the university	3.38	3
Indoor passageways between buildings of the university	3.22	4
Passageways inside and among learning environments	2.96	5

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Table 7: Visual appearance

Visual appearance	Mean	Priority
Diversity in the ceiling height of university buildings for comfort and sincerity	3.5	1
Visual appearance of the university building's entrance	3.4	2
Visual appearance of the university building's exit	3.32	3
Visual stimulation of the university building	3.28	4
Harmony of the university building with adjacent buildings	2.86	5

Table 8: Safety and healthy rate

Safety and healthy rate	Mean	Priority
Healthy inside learning environment	3.60	1
Healthy and quiet learning environment	3.40	2
Healthy outside learning environment	3.38	3
Spaces designed for personal items of each university student	2.92	4
Safe personallockers for university students	2.90	5

Discussion

Identification of individuals and their needs, and its relationship with social interaction patterns: Identification of individuals helps an architect to design a project based on needs, interests and demands. This identification makes plans more logical and reasonable and the design process becomes easier for the architect. Individuals are different, so they have different tastes, trends, individual differences, special mentalities and capacities, etc. which make the architect to initially identify them, and develop his idea and design by having identified individuals.

The role of human perception: Perception is not like feeling, but is the process of obtaining information from the environment around the human being. This process is active and purposeful. Perception is a point that identification and reality connect to each other (Neisser, 1977; Itelson, 1976).

Human mental schemas: Clare Marcus believes that environmental memories influence our lives differently. These memories lead to the sense of connection to the past, sense of control, self-confidence and sense of identity. These schemas are partially innate and partially learned, and connect perception to the identification (Irvani, 2001). Mental schemas accept information and change it under the influence of obtained information. Dynamic and exploratory activities which make information accessible and are modified by obtained information will direct mental schemas. People's perception of the environment around is a kind of mental schema. These schemas can be iconic images as Kevin A. Lynch mentioned in his book, "The Image of the City (1960)", or can be reminding images (symbolic meanings) as Anselm Strauss mentioned in his book, "Images of the American City (1961)" {107}. A mental schema is inside a perceiver and he experiences its quality; it is especially something which is perceived.

Effective factors in learning environments (environmental stimuli): Mental health of university students is at least as much important as their physical health. In psychology, mental health is an ability to establish a relationship, coordinate with others, modify individual and social environment, and resolve conflicts and personal desires logically, justly and appropriately. Heterogeneous environments attract people more than homogenous ones and are enjoyable for them. By having brain and mind, human feels depressed about the homogeneity of the environment (Behzadfar, 2003).

Any physical or mental need attracts human more than a time when he does not need anything. An attitude which is the mental preparation of individuals uses the combination of beliefs, trends and favorable and unfavorable feelings to show individual's reaction and generally, it is an acquired and learned power.

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Expectations, motivations and experiences: Expectations, motivations and past experiences of individuals which result from their culture and social norms of the living environment determine which factors they pay attention more (Gholamalizadeh, 2006). People change their living environment in order to meet their needs based on meaningful purposes and patterns. These changes reflect special beliefs, attitudes and time possibilities, and provide patterns for future. Sometimes all people take advantages of changes, sometimes short-term benefits result in long-term disadvantages and sometimes these changes lead to the loss of all people.

Basic needs: Maslow's theory of "Hierarchy of Human Needs" is usually drawn in terms of a pyramid which consists of 5 categories. This hierarchy of basic needs starts from the lowest category and upper categories introduce the more complex human needs which respectively include:

1-Biological needs (food, clothing and housing); 2- safety and security needs; 3- emotional needs (sense of belonging and love); 4- need for respect (social prestige); 5- need for actualizing all hidden potentials of humans.

Privacy, territory and personal space: Privacy, personal space and territory behavior will affect the quality of environment and perception of comfort. The need for privacy, personal space and territory is common among human beings and is related to the meeting of other needs such as safety, self-actualization and self-esteem (Goffman, 1959; HallAltman, 1969; Sommer, 1974; Skaburskis, 1967; Lyman and Scott, 1963, 1975; Gholamalizadeh, 2006). Over privacy results in the feeling of social isolation and low privacy results in the subjective feeling of congestion (together with the feeling of the lack of control over the environment) (Altman, 1975; Rapipirt, 1977). Personal space is an invisible area around individuals without being disturbed. Personalization is the process of marking or integration and homology of objects in a place which results in the sense of ownership of that place (Becker, 1978). The personalization process can be self-conscious, but in most cases it is an unconscious process. Territory behavior is a mechanism for regulating the privacy between oneself and others which is expressed in terms of personalization or marking a place or thing, and is an attachment to a person or group. Functional distance between units (buildings in the countryside, building's room) and functional centralization of joint services (building's entrance, passageways and waiting spaces in office buildings) will influence social interaction patterns of residents in residential spaces and employed persons in organizations and commercial institutions. Centralization of entrance points, waiting spaces for elevators and effective passage spaces as well as spatial quality of the environment are effective in improving the social interaction among effective staff. In public buildings, passageways are places which make it possible for individuals to quickly meet each other (Moleski, 1974) and perform commercial transactions (Perin, 1970). Passageways provide required openness in front of working offices, because privacy creates sincerity in social interactions and temporarily controls spatial territory.

Spatial homogeneity and social interaction patterns: It seems that residents in spatial environments have more social relation with the size, architectural style and residential units bearing the same validity because individuals selecting such places for living have more interaction with each other due to the homogeneity values.

Creatingpsychological security using spatial spaces (color, light, sound, etc.): Color as an integral element has a great effect on the spirit and behavior of users of spaces and buildings and their mental and emotional modes. Color of spaces and educational facilities has a special sensitivity because it can increase vitality, exhilaration, mental relaxation, mobility and user's attempts and improve the learning process. Also, it can have an adverse result (Aminzadeh, 2010). Light is the first condition in any type of visual perception. In the complete darkness, we cannot see form and color. Light is a quality which offers the possibility of personalization, enlivening daily activities, and representation of life in imaginations and variable mental modes. Providing the appropriate light in educational environments will improve the learning power and educational outcomes. Dim light leads to individual's tiredness. Natural light is better in learning environments because it is uniformly scattered. Sound is one of the important and effective factors in learning. Sound penetration rate from outside to inside of class must prevent university students from losing their attention and concentration (Iran Ark Consulting Engineers, 1999). Other factors which affect the learning include appropriate condition of heat and cold production. According to the report of Iran Organization for Standardization, temperature of 16 - 18°C is appropriate for the classroom and having an appropriate airstream is necessary.

Conclusion

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Generally, the most important features which affect the improvement of space and natural light from windows, green spaces around learning environments, classes which are directly related to the outside, public spaces which increase the sense of community, student's access to technology and media in the learning environment, passage spaces inside and outside the learning environment, diversity in ceiling height of university buildings for comfort and sincerity, and a healthy learning environment inside. In this regard, the following points are suggested:

-   Using net volumes for the readability and understanding of individuals.
-   Designing for different spaces and groups.
-   Creating a social field.
-   Creating the privacy and territory according to the field of study.
-   Constructing wide passageways and different communication paths for social interactions.
-   Constructing places for social activities such as amphitheater, sports ground, library, prayer room, etc.
-   Using signs of architecture of Iran ancient schools such as using a central courtyard, sunken garden, systematic geometry, walls textures, etc. for the integration and connection of the complex with past and current architecture patterns.
-   Using south and north light for classrooms by creating stretched and linear forms.
-   Creating full and empty spaces in order to adjust with the geographical environment conditions.
-   Creating a hierarchy for the university entrance by determining spatial territories.
-    Constructing cozy and intimate spaces for meeting attachment needs and as a result, gathering of different social groups.
-   Complete separation between sidewalk and roadway, and other transportation systems.
-   Designing spaces for holding temporary and permanent exhibitions for both groups.
-   Diversity in the edges of passages with convex and concave masses and walls.
-   Easiness of moving in spaces through communication paths.
-   Placing rooms in the heart of the complex in order to create more and closer interaction and communication between university students and lecturers during educational hours.

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