

THE EFFECT OF PHYSICAL SITUATION OF EDUCATIONAL SPACES ON LEARNING AND CONCEPTUAL PROCESS OF USERS OF THESE SPACES

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ABSTRACT

The aim of design in educational spaces is creating an improved space in learning and educational spaces is requirement for a unique model in order to research and creating a correct action and reaction for education and training.

Schools are in a position to offer specific learning opportunities to the students, so good design of educational spaces has a significant effect on learning. This research examines some of influential factors on learning, like architectural spaces, arrangement of classes, light of classes, open spaces. The method is based on library research.

Keywords: Students learning, learning environment, educational spaces, architecture of educational spaces

INTRODUCTION

School is an organization for training and education of children in different age groups. School environment is important for children growth. Theories of psychology of environment states that environment influences on characteristics and social environment of students. There is a relationship between physical environment and out of the school for students.

School as an educational organization should create a leading educational environment. Student should be able to learn university and social skills. (Shuhana Shamsuddin and his Research Group, 2012)

Research show that situation of physical environment have an important role in the presence of teachers and students, their cooperation, finding solutions and welfare of general situation. Learning environment is influential on conception of students, behavioral improvement and their learning. Learning environment include student, teacher and other learners and physical environment in which students spend their time.

Quality of physical environment to a great extent depends on students' success. Many of research findings relate improvement of students, teachers' views to improvement in learning environment and teaching. Researches in educational success and situation of building conclude that quality of physical environment to a great extent influences on success of students. There are sufficient researches that state buildings in which students spend much of their time, affects their learning. (Earthman)

Characteristics of Physical Environment on Growth and Learning of Students

Regarding learning children following trends are mentioned

1. Experiential learning trend
2. Societal trend
3. Environmental trend

4. Space-related trend
5. Learning through view
6. Learning through playground

(Feizi, M & Razaghiasl, S. 2010)

Regarding learning trends of environment and spaces in children's growth should:

- a. train individual identity
- b. help to grow the ability
- c. increase the sense of security and reliance
- d. provide an opportunity for social interactions

Physical environment of school increases self-esteem, self-control, conceptual behavior, Sexual identity, symbolic expression, intellectual thinking, creativity and ability to solve the problem and also attention and duty.

Importance of Design of Physical Spaces

In the present, era school is the most important social, educational, organizational and is the main element of education and training that needs suitable educational spaces for correct training in different dimensions of religion, educational, social exploring, the abilities and directing and improvement in mental and religious growth. So that is shows culture, customs and national, religious tradition and its design based on universal standards. (Shaterian, R. 2010)

There is sufficient confidence that we should know that the building in which students spend most of their time influences on their learning.

Technology of environment improves positive behavior and has a significant effect on students learning. (Brook. 2006)

Aesthetic characteristics and educational spaces in an important case. Attractive environment and useful views improve learning.

Educational facilities (educational environment) should be pleasing, attractive and exiting. (Nice. 2006)

Eisner talks about suitability of building and their influence on students and teachers views. Like building of a bank that influences our sense of confidence for saving, like appearance of a factory of efficiently of their employees. (Eisner. 2006)

School building should be able to meet and search needs and desires.

The most important factor is flexibility of internal environment and compatibility with space.

Spaces of Iranian schools are poor places that even in their modern principles of architecture and graphic have not been observed. Principals and teachers can't do anything except pasting some pictures and posters to the walls.

Experts of this field believe training and teaching of students is not only influenced by teacher but also there are many various elements that play the role to convey the message.

Non verbal education and non expressive behavior are other factors. Therefore, learning doesn't only take place in the classroom. But also school spaces like teachers convey messages and talk to children and teenagers. (Shaterian, R. 2010)

So, physical factors related to educational spaces and attraction of class are classified in 8 groups, that all of them are influential in students' learning.

- I. Light and other relation factors like type, amount of light (artificial or natural)
- II. Open spaces
- III. Color
- IV. Shape and dimensions of the class
- V. Arrangement
- VI. Temperature and air conditioning of the class
- VII. Private and public spaces for students
- VIII. Behavioral spaces that students prefer (spaces other than classes that students spend most of their time in there)

Above Factors Are Like This

Light

In general in learning process 83% of learning takes place by visual sense. If vision faces problem learning decrease. (Zofan.Lotfipoure.2009)

The aim of providing light at school is to build an environment in which student see without problem so they spend their energy for attracting information not to spend to solve visual problems at school.

Light in classes is provided either artificially or naturally (windows). In both cases we should pay attention to the extent of the light direction and it quality. Experience shows that windows should be at least one fifth of room surface to provide light for reading and writing. We should do everything to provide equal light for the students. Light should be desirable distributional, be spread equally in order to avoid problems of glittering the surfaces, shadows.

Direct light of fluorescent is very usual and provide suitable light for classes. In America this light is artificial is control by photo electrical cell automatically. (Molamar.2003)

Table 1. Required light in different occasion

<i>Type of Activity</i>	<i>Situation</i>	<i>Light (LUX)</i>
Teaching and lecturing	Green board	200-500
Teaching and lecturing	Black board	300-500
Teaching and lecturing	White board	100-300
Experiment	Experiment table	200-500
Study	Between book shelve	100-200
Open spaces	Study table	300-500

Reference: Standard Institution of Iran.

Open Spaces

The common image of school is only classroom; in the most complete forms have gathering saloons, laboratory, and stadium. In this image surrounding spaces like yard, garden, are

ignored and internal spaces attract the attention. Having open space in the schools means a place where society faces it. It is very important. Open spaces in the schools are related to physical and mental health of the students and should be designed to increase awareness of natural environment and the most important children's health.

Because they enjoy green spaces to gather around their friends. Successful schools not only pay attention to school building, offices and educational facilities but also consider external physical environment. (Shuhana Shamsuddin and his Research Group, 2012)

It is worth mentioning that green spaces can be flexible for children's need if the following cases are considered:

- a. Have enough space for gatherings
- b. Meet children's need and be versatile.
- c. Being attractive, various and alive to attract children.
- d. Create a sense of relaxation in open spaces to create self-confidence and having situation to invite individual creativity.
- e. Suitable movement circulation for students in space.
- f. Paying attention to symbolic aspect of space.
- g. Considering population of the students in open spaces.
- h. Choice, selection and plating various suitable plants at school environment. (PourJafar and colleagues.2010)

Color

Application of suitable colors in places and students' interest is very important because improves positive behaviors. Based on conducted researches and group interviews most of the students agree with application of light colors in corridors, green spaces at school. Color that makes the space exiting.

Application of color in main entrances, play grounds, shops, and yard makes them happy. (Shuhana Shamsuddin and his research Group, 2012)

In painting the classes relaxing and happy colors should be used. Light blue or green for walls and white for classes. It is better if the colors of walls are washable. Therefore, surface of the wall and ceiling should have light colors and floor should be dark. (Fasa Shokoh. 2005)

Appearance and Size of the Classes

We must to choose a form for class by which we answer to the following situation:

- a. A flexible environment to change education in to a dynamic activity and changing the mode of a lecture by a teacher.
- b. Specification for various learning groups in different dimensions.
- c. A sense of unity and open space to extend vision ease of movement, ability to control.
- d. Ability of recursion and operation as a layered system.
- e. Ability to reorganize to create activity limitation of center-focused or unfocused population.
- f. Making a multi dimensional class to grow inductive skills of the students.

Arrangement and Design of Classes

There are researches that show people who have less attention and success are specifically influenced by arrangement of the benches and behavior when they are sitting in row this influence increase both chairs and direction of the person on the chair is influential in the result of their activities.

One of the key factors is that organization of the class shows teacher's thinking in the more precise meaning in the absence of teacher it influences students architecture of school spaces can support or limit organizational decisions of the teacher. The decisions are influenced by financial limitations, aesthetic ideas, being clear and motivation to change.

Most of teachers' purposes and priorities change during the academic year and even for each lesson, physical environment of class should be ideally flexible. So teacher can make various ideas and intentions visible and achievable. (Talkhabi, M & Khodayari, M. 2006)

The result of conducted survey shows that traditional arrangement makes students interaction. The most important change in educational space is breaking the direction of teacher's and student and making the space for students' interaction. Therefore basically rows are in contrast with students ideas. Arrangement of chairs should be compatible with individual pair, group and class tasks. Having open space can be another important factor in teachers' learning. (Krok.1998)

Some of the Principles for Designing Suitable Class

- a. Specification for various learning groups in different dimensions.
- b. The design of classrooms should be like workshops group works and a polyvalent space.
- c. Design and implementation of unloading and separator wall should have the ability of movement and rearrangement to the class to change it based on students' needs.
- d. Design of facilities and buildings available to the students and the spaces should be available to the students and the spaces should be available to improve.
- e. Design of availability to space like stadiums, lecture rooms and library should be different from direct way of the classes and be related to main building. (1999, Ehrenkrantz, Eckstut)

Temperature and Air Conditioning

One of the influential factors on learning is suitable equipment for heat and cooling. Lack at attention can result in less learning and even health damage. If it is too hot changes the mechanism of body temperature, reduces physical and mental activities. Central heat systems are the best equipment for heat and controlling the temperature.

Because in all our school it is not possible to have these systems, it is better to use gas heaters to have suitable humidity, we can use big water dish on the heater. It should be paid attention if the activity increases the level of required air increase more than necessary air. Class air should change 3 to 5 times every hour. (Moinpour, H & Nasr Esfahani, A. 2006)

Behavioral Places That Students Prefer

Based on surveys of research group of Shuhana Shamsuddin and colleagues in some high schools of Malaysia studies of Shahrnaz Mortazavi in Tehran's school the amount of attention and influence of school environment on students in gathered in the following table:

Table 2

<i>I</i>		<i>Shop</i>	<i>Class</i>	<i>Yard</i>	<i>Corridors</i>	<i>Open Space</i>	<i>Entrance</i>
Physical Characteristics	Capitation & Dimension	Little	Very Much	Little	Much	Very much	Much
	Light	Much	Very Much	Much	Much	Much	Much
	Color	Little	Very Much	Very Much	Much	Very much	Very Much
	Arrangement	Much	Very Much	Much	Very Much	Very much	Little
	Temperature, air conditioning	Much	Very Much	Very Little	Much	Very Little	Little
Activities	Social interaction	Much	Much	Very Much	Much	Very much	Very Much
	learning	Very Little	Very Much	Little	Little	Little	Very Little
	Private district	Much	Little	Little	Much	Much	Little
	On the need	Much	Very Much	Little	Little	Much	Very Little
Person's Belonging of Meaning of Place	Identity	Much	Very Much	Much	Much	Much	Much
	Memo ability	Very much	Very Much	Very Much	Very Much	Very much	Very Much
	curiosity	Little	Little	Little	Much	Very much	Much

CONCLUSION

Based on recent studies, some factors are influential on students' academic performance include educational space like light color, arrangement, open spaces,

Therefore educational activities of the students should be in a suitable space by desirable method and facilities and based on needs and interests of the students in different fields, so students like to take part in educational activities.

If physical space of educational setting doesn't have influence on students' improvement it should be considered for health, psychological security of the students. Desirability of this space is achieved when it meets students' main need. Unfortunately educational settings of our country don't have necessary compatibility with mental characteristics. Also characteristics that could make the school ready for academic year are not desirable.

So it is necessary that designers and architectures be aware of the students and operators needs and desires and try to meet these needs by practical solutions.

REFERENCES

- [1] Abu-Obeid, M. A.-H. A. N. (2003). University outdoor spatial layout effect on perception of students' interaction and group seclusion. *Journal of architectural and planning research*, 20, 221-233.
- [2] Azizi Yahaya, et al., (2009). *Discipline problems among Secondary School Students in Johor Bahru*, Malaysia
- [3] Emily Less, D. S. & Elizabeth, S. (2008). Collaborative School Planning And Schools: A Case Study of Less County, Florida. *Journal of Health Politics, Policy and Law*
- [4] Fasashokooh, H. (2002). Educational environment, Rules and Standards. *Journal of Education*, 6.
- [5] Feyzi, M. & Razaghiasl, S. (2010). An overview of the theories and trends in landscape architecture and open patio schools.
- [6] Gislason, N. (2010). Architectural design and the learning environment: A framework for school design research. *Learning Environ Res.*, 13, 127-145.
- [7] Johnson, S. L. (2009). Improving the School Environment to Reduce School Violence: A Review of the Literature. *Journal of School Health*, 79, 451-465.
- [8] Kamelnia, H. (2009). *Grammar design learning environments (Concepts and Experiences)* (Second Edition.). Tehran: Sobhannoor Publications.
- [9] Mortazavi, S. (1997). *Educational spaces from the perspective of environmental psychology*. Tehran: Renovation of schools Iran,
- [10] Nasr esfahani, A. R. & Moinpour, H. (2001). The impact of physical environment on student achievement grade.
- [11] Shaterian, R. (2010). Architecture and design of educational facilities. Tehran.
- [12] Pour jafar, M., Ansari, M. R. & Mahmoudinejad, H. (2010). *Analytical study of how to stimulate children's creativity in designing spaces and Gary urban area*, with emphasis on the relationship between creativity and the physical design of children's play spaces.
- [13] Shamsuddin, Shuhana, Bahauddin, Hanim & Abd Aziz, N. (2012). Relationship between the Outdoor Physical Environment and Students' Social Behaviour in Urban Secondary School.
- [14] Ozdemir, A. & Yilmaz, O. (September 2008). "Assessment of outdoor school environments physical activity in Ankara primary schools". *Journal of environmental psychology*, 28(3), 287-300.