

Studying the Design of the Primary School with the Approach of Environmental Factors

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ABSTRACT

The purpose of this research is to study the design of the primary school with the perception of environmental factors affecting student's education and behavior. Since architecture derives from phonemes that make building, we have tried to use this art (architecture) and its connection with human nature and the architectural impact of increasing learning and quality of instruction. Undoubtedly, the presentation of an architecture-based idea could have a positive impact on learning. Every effort was made to make real sense of the school as a place for children to grow, learn and teach them realistically using architectural elements. Each child, in terms of family lifestyle and interests, has a set of behaviors that directly influence his learning, so it is not possible to taught in a unique way. In this research, it has been tried to use environmental factors, such as: Integration of outdoor classrooms, Learn in spaces outside the classroom, creating architectural spaces to enhance environmental experiences, Increase focus and learn more considered. Therefore, the result of this study can be a learning space suite that responds to all the needs of the child.

KEYWORDS

Primary school, Effective environmental factors, Education, Behavior, Student

INTRODUCTION

If we compare the present world with the 100 years ago, we will face the dramatic advances in science, commerce, medical and communications services, and that alignment with these advances requires skilled graduates who must be educated in an innovative and educational environment and system. Today it is stated that the educational environment is potentially able to engage the child's mental, emotional and creative forces, and deepen their development and actively participate in his education. This important matter is

not observed in the architecture, space and body of Iranian schools, buildings are not proportionate to the needs of children and adolescents, and even no slightest difference has been made in the environment of schools in the past and present.

The buildings that are used as elementary schools are generally not architecturally appropriate to the needs of children and do not provide a refreshing atmosphere for a school as the second home of the child where he spends a significant amount of time. These spaces discourage the child and deprive him of dynamism and movement, thus discouraging him from learning rather than encouraging him to do research.

School spaces such as corridors, courtyards, classes etc. seem to be incapable of providing an effective and constructive atmosphere in the education of the child. The origin of this kind of attitude to such spaces is the lack of attention to the mental requirements of the child and his active role in the future of society. (In fact, in most cases, our view of the school is a quantitative rather than qualitative); however, as previously stated, the environment and the educational space can be very effective in encouraging the child to do research and learning can become a sweet experience by creating an intimate environment.

The need for a new attitude in the field of education is fully felt and one of the main requirements for achieving this is to create a new container for the new educational world.

This paper aims at studying the design of elementary school by looking at environmental factors affecting student's education and behavior.

LITERATURE REVIEW

Of all the architectural projects that should be designed, none of them can be as attractive as the school designing, because it leads to many important human activities and the education and development of our children [1-3]. Psychologists such as Hansen believed that what seems to

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be a function of natural-innate program could be influenced by environmental events. McGraw, Denis, Gross, and Thompson believed that learning and experience do not play any role in developmental differences; however, recent research suggests that more stimulation and exercise can accelerate some degree of motor behavior [4].

Not any learning leads to performance, as people learn a lot of things, but they cannot put these lessons into action.

A study performed by researchers from the University of Salford in England shows that, in addition to school location, school physical and classroom space plays an important role in student learning. In this research, 751 students were studied in 34 classrooms. Students were evaluated before and after the start of the academic year to compare the two assessments of the impact of the educational environment on the learning process of mathematics, reading skills and writing skills.

Classroom indices that were considered as variables in this study included classroom decoration, natural light, environment sound control, ambient temperature, air quality and color. Having examined the assessment results before and after the academic year, the researchers concluded that the classroom architecture and design had a significant effect on the educational performance of the students, with these environmental factors affecting 73% of the grades of the students' grades. Other research results also found those students' motivations for studying increase in clean and equipped classes. The effect of the educational environment

is not limited solely to the learning of students, but it also affects the teachers' performance.

David Syaira, Executive Director of the Legal Center for Education in New Jersey, USA, pointed out the impact of the educational environment on the work quality of teachers: "Working in a busy and unorganized environment where standard educational equipment is inadequate, makes teachers tired, thus reducing their teaching quality [5]. Choosing the right place and standard for school construction and considering features such as good light, color matching the age of students, and favorite temperature can make a dramatic change in student learning. In many papers, the important role of water is expressed in great detail. These include topics such as Drought [6], Meteorology and Climate Change [7-10], Forecasting and Predicting [11-15], Water quality [16, 17], systematic and integrated approach in water resources [18], Environmental Impact [19] operational process [20-26] or even Flood [27-31].

MATERIALS AND METHODS

At the beginning of the design, considering the mentioned ideas and points, the main volume of the building was examined and the design was formed by taking into account the association and the creation of a sense of unity while keeping independence so that these very volumes could also be a suitable pattern for the child's learning.

Tab.1. Spatial Needs of Elementary School grounds

School Type	Rural					Urban				
	1	2	3	4	5	5	10	15	20	25
Count of Classes	1	2	3	4	5	5	10	15	20	25
Count of Students	24	48	72	96	120	180	360	540	720	900
Ground for Gathering and Entertainment	126	126	136	136	136	288	576	846	1152	1440
Sport Ground										
Green Spaces, Gardens and Tree plantation	12	24	36	48	60	60	108	162	216	270
Parking Space for Vehicles	25	30	35	40	45	45	70	95	120	145
Connection routes, Waste Space and Predictions for Future Development	17	19	21	22.5	24	39	75	111	149	185.5
Total Area of Ground Surface	190	209	228	246.4	265	432	829	1214	1627	2040
Per Capita	7.91	4.35	3.16	2.55	2.20	2.4	2.3	2.25	2.27	2.27

Using a combination of volumes as a given building instead of a large solid one not only gives each volume a separate usage, but also allows the users to feel psychologically relaxed, which this has been intensified by full and empty (green) volumes laying side by side.

RESULTS & DISCUSSION

In designing of the complex the effort was made to consider the gradient of the site and, as far as possible, avoid excavating or pouring excess soil. For this purpose, the botanical garden and planting garden are located in the western part of the site. One of important points in designing

these types of collections are the main entrances of the school. A friendly atmosphere that connects the outside world and the inside world. In fact, the first place the user is facing. The entrance with a specific portal should be a place to show the arts of students and can be expressive of space type or even the age group of students.

In school architecture, main entrance is an important element. Primarily, the entrance should have a friendly and pleasant atmosphere. It should also have a receptive and friendly state, rather than an administrative, a dry and repelling one. In this design, the parking space is provided in order to protect the safety of students when riding and

dismounting the school bus, as well as creating an appropriate space for car parks, and the pedestrian pathway is a green and intimate route so that the student along with their parents attend the school ground.



Fig .1.Positioning of portal and car parking

Next, we reach to classes as the main elements in a school, which function as a flexible workshop.

To achieve the ideal learning objectives, it should definitely have functional and proportionate spaces. Many activities and demands are traditionally taking place in the classroom, so it is necessary to pay attention to the classroom and its functional features.

Since many learning stages take place in closed spaces, it is necessary to open up the horizon of the children by providing visual lines outside the room as much as possible. The fact is that many people are opposed to the inner perspective because they are perceived as distracting elements for students. However, few studies have been conducted on students' concentration, suggesting that in reality, students' distraction is more due to the tediousness of space inside the classroom and lack of attractiveness than that happening outside. More importantly, if what is going on in the classroom is boring and frustrating, students are automatically drowned in their mental world and become distracted.

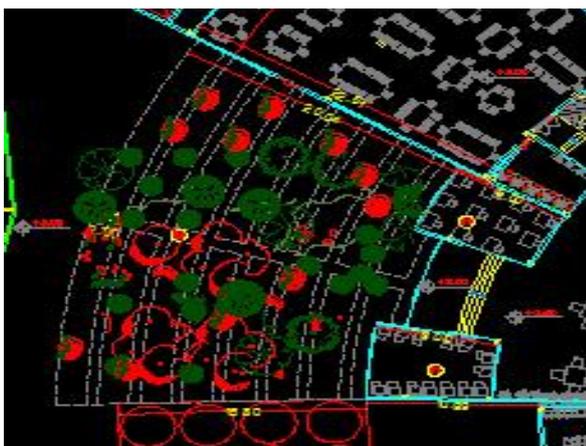


Fig. 2. Interior--exterior landscape

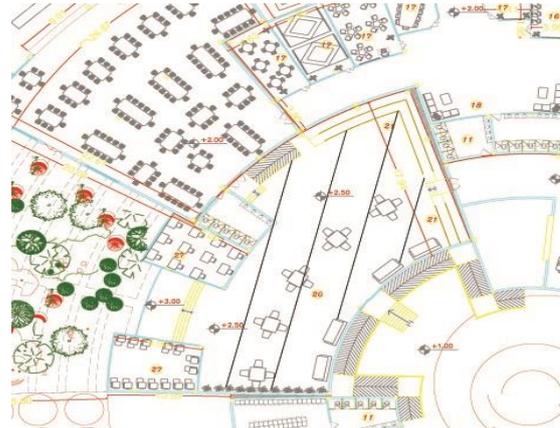


Fig .3.Forums

In addition to scientific-artistic workshops, there are spaces for teaching the skills needed in life for kids. Skills in cooking, first aid, etc.

In parts of the complex some classes are defined as life-skill classes; classes that make students familiar with their own skills from childhood and keep up with these skills for the rest of their lives and grow; Skills such as cooking, housekeeping, sewing or even working with wood and etc.

Alongside these spaces, we see a space that the child has to do with anything that is around him or herself and discusses it with his classmates: i.e. forum. (Figure 3)

In other part of the site there are defined some planting gardens that students may individually and collectively own a plot of it and do planting and maintain their favorite plants along with trainings provided by their teachers.

The planting garden is intended to engage students in efforts in the fields of biology, botany, horticulture and environmental sciences. This space can be designed in such a way that it can create a smart biological environment and teach students important lessons on the survival of ecology and the discovery of life sciences.

On the first floor is a collection of spaces such as auditoriums and amphitheater.

Playing is the most important activity of a child in his life. All children anywhere in the world play irrespective of their color, skin and hair, or belonging to a particular race and ethnicity. The playing activity is in fact the child's attempt to cope with the environment through which he finds himself and understands the world.

On the ground floor, after entering the building and passing through the courtyard, we encounter office space, such as the school headroom, deputy, staff and teachers room. In this section, the space for teachers to meet with the parent is also defined, and this administrative zone has access to the thinking garden, grass field and laboratory.

The school office is the place where the largest volume of school administration work is done and is the linking location between the school and the neighborhood.

CONCLUSION

Since the architecture itself derives from the phonemes that mean "to build", we, in this project, tried to use this art

(i.e. architecture) and its relationship with human nature and the architectural impact on increasing the learning quality and the quality of education. Undoubtedly, presenting an idea that increase the value and the positive functional impact of architecture on education can be one of the highest goals of architectural art. All efforts has been done to realize the actual meaning of school as a means for children's growth, learning and teaching, by using the architectural elements.

Physical and psychological conditions of children and their satisfaction are very important features that should be considered in school designing. Having access to free air and natural ventilation, good natural light, appropriate lighting for each class with respect to its function, the use of inspirational and energizing colors, innovation in the design of spaces, free plan and free layout in classes, etc are among the arrangements shown in the studied examples. It is better to create an appropriate space that brings about an interest in children for attending school, than multiple harsh laws and penalties to compel them to be present at school.

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