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ARTICLE

FROM THE NATURAL CREATIVITY TO THE INFLUENCE OF EDUCATIONAL SPACES ON TRAINING CREATIVE CHILDREN

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ABSTRACT

There is a certain extent of creativity in all human beings at their birth. Children have the utmost ability in acquiring creativity and that's why it is significant to maintain and increase creativity in them; a subject that must be adverted and provided with the proper grounds and areas. Between the ages 2 and 5, children have the highest level of creativity. One way to maintain this level of creativity is designing the educational areas by the attitude of promoting their creativity. That is why the architecture of the educational spaces, kindergartens, day care centers, and elementary schools in particular,has a key role in growing the children's creativity. In the present essay, we study the architectural ideas and offer some appropriate solutions to design the spaces in order to promote children's creativity in the educational places. The found results demonstrate that designing the educational spaces matching children's mentality, open and flexible spaces for their playing, using festive stimulant colors, and an architecture corresponding to their age have an undeniable influence in increasing the creativity in children. We used a descriptive-analytic method in the present research and followed the library method in gathering the data through the valid sources and essays.

KEY WORDS
natural creativity, children, creative spaces, training, architectural ideas

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INTRODUCTION

Childhood is the beginning of training most of man's abilities. Training of imagination power and creativity also starts in childhood. All humans possess some creative talents in their childhood. However, not being in the proper atmosphere, ignoring these abilities, and not strengthening them hinder their development and appearance [1]. From Freud's point of view, the creativity sources must be found in the childhood experiences [2]. In the recent years, numerous researches have been done and among the various influential factors in growing children's creativity, educational methods; children's emotional-cognitive aspects; and training issues have been examined, but the effect of the architectural quality in growing creativity has not been sufficiently attended. The studies indicate that the creative potentials are founded in childhood and the best time to develop imagination and creativity is between the ages 2 and 10 [3]. No doubt that one the biggest obsessions of parents today is to raise clever and creative kids; talented children who can obtain the higher education levels as well as possible. In this regard, Clifford brought up some serious discussions and pointed that creativity has four ultra-cognitive elements that can be promoted through training and education. The following studies indicated that creativity as a combination of its elements (fluidity, flexibility, and innovation) can change and improve through training especially innovation that proved to have a significant mutation (cited from Glifford, 1967). "Children's creativity depends on their imagination power" and imagination is the most significant factor in the growth of creativity. Researches on the relation between playing and motivating the creativity in children have demonstrated that "There is a direct relation between the amount of their playing and promoting creativity in them" [4]. Playing dose not rather need to be learned; however, it makes children to learn a lot of concepts and interactions. Children's power of imagination can be perfectly trained while playing games. Playing can also remarkably affect the growth of intelligence in children [5]. Moreover, it can provide opportunities to cooperate in team works. Another research indicates that curiosity is affective in the process of creativity and the creative people are usually curious [4]. As a result, the educational space that we design for children must provoke their imagination; increase their tendency to play; motivate their curiosity; and consequently promote their creativity.

Background of the Study

Vast and various researches have been carried out on the topic of educational spaces and influential factors in growing creativity. For instance, the book "A Reflection on the ABCs of Designing in Educational Spaces" written by NargesKhasrogerdi and Habibeh Mokaram can be referred. In this book,

they examine the influential elements in designing an educational space and their influence on the students' imagination, motivation, and learning. Also we can mention the essay "The Architectural Solutions in Designing the Children's Space Based on a Creativity-promoting Approach" written by NargesForoushi that is a comprehensive example on the subject of the present essay.

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Methodology

The method applied in the present research is descriptive-analytic and we followed the library method to gather the data through the valid sources, essays, documents, and recorded works. It is a practical essay with the purpose of designing a creative educational environment for children and students and through examining sample schools in the world, it undertakes to offer solutions to design creative schools.

Questions of the Study

In order to reach the goal of educational space effectiveness in training creative children, it seems necessary to answer the following questions:
1. Is creativity inherent or acquisitive?
2. What is the best age to train creativity?
3. Are the architecture, furniture and appliance of educational spaces effective in training creative children?

Hypotheses of the study

It seems that creativity, in the first place, is inherent and inborn and all humans possess this divine gift. However, it does not mean that all humans would be intelligent and creative individuals in their adulthood. It seems that the best age to grow and maintain creativity in human is the childhood. It seems that one of the solutions to maintain the childhood creativity is through the architecturally designed spaces for educating children.

Significance of the Study

Regarding the fact that the educational spaces in Iran lack a proper design and environment and places with a quite different function like residential utility are used for education, it is absolutely necessary to do such researches and achieve the essentials and principles of architecture and designing the educational spaces especially for children in order to fortify their creativity.

Statement of the Problem

Learning is a part of a human being's life and school plays a major role in process of learning. In a school, not only the classrooms are significant as the learning and teaching spaces, but also the school spaces as a whole including the corridors, the entrances, the group spaces, the campus, etc. and moreover the details such as color, light, the texture and the building materials are very important in learning process. The proper environmental conditions can be effective in proper learning (5).

Findings of the study

Definition of Creativity

Taking a look at the valid sources on creativity, innovation, and creative thinking indicates that the term originates from the human's type and method of thinking. In fact, a creative individual is someone who has a searching and creative mind. About the concept "creativity" various and even sometimes opposite definitions have been offered, but there has been a common consensus on the following definition: "Creativity is the individual's ability to produce ideas, hypotheses, insights, the new and innovative things or to reconstruct the sciences and other grounds in way that it is considered, by the experts, to be original and valuable scientifically, aesthetically technologically, and sociologically (Warton, 1989). Creative individual is usually known as a person who can figure out various innovative and logical solutions for each problem. Examples of creativity can be found in all parts of life especially in the children's drawings [6].

Is creativity inherent or acquisitive?

The learning patterns of the brain begin from the fetal period and at birth based on the life viewpoints. The individual's way of reacting to and compatibility with the environment specifies the lifestyle and the learning style of the brain. Many people believe that inheritance shapes the learning scope, but this is a misleading belief. It is obvious that the environment more than any other factor affects the growth of the brain. School is one of the major centers that can alter the students' learning patterns. Recently, most of the scientists studying the influence of the environment and inheritance in brain growth have acknowledged that the contribution of the inheritance and that of the environment are equally 50 percent [5]. In William James's viewpoint, all of us possess the creative talent, but unfortunately during our lives and in the course of education and training we learn to be uncreative. In other words, the learning environments in general including home, school, and the society accustoms us to the convergent thinking. Through education and training, we can teach our children to think in some unusual ways and to examine the problems and reach to proper solutions via divergent thinking [1]. According to Plato, the key task of the education system and schools is to turn the humans ' "limited beings" into "unlimited becoming". Socrates considers the education aim to be creating needs to know, not offering the knowledge. Due to these ideas, it can be said that all children potentially possess the creative talent at their birth. This potential talent can continuously bloom in case it receives appropriate training. Otherwise, withheld and replaced by the other talents, the rhythm of creativity growth, thus, slows down at the age of 6 and stops by the age of 9. School's comparative programs are the most important factor in causing creativity backwardness. At schools, classic and methodical abilities like mathematics, dictation, and logical thinking are taught, but non-classical and non-methodical abilities like creativity are ignored [6]. Therefore, we can say that creativity is donated to all humans inherently, but maintaining this inborn talent is acquisitive and man's responsibility.

The influence of the educational environment on training creative children

Children are the most sensitive and the most influential age group. In the most sensitive and the most important years of their lifetime, when the basis of their personality, mental, physical, and social life is being shaped, the children need to experience the social life in their own specific scale. It requires a juvenile and intimate space; a space far from the hubbub of the adult world, a world full of joy, with beautiful colors where the child is given the opportunity to express new ideas and to show their talents; a space that provides the suitable ground for children's creativity [5]. And that is why the educational environment and its designing matters [Table 1]. A classroom must have capabilities such as compatibility with the needed changes; making room; increasing the students' creativity and their co-operating level; and external access [7].

Table 1: The needed spaces for designing an environment for children

	The designed environment for children must have the following spaces:
1	Natural spaces: like trees, water, and living creatures that form the most essential and the most important space for children.
2	Open spaces: Vast spaces where children can run as much as they like to discharge their internal energy. Playing causes to increase the feelings of co-operation, attachment, power-display, skillfulness, and self-confidence. Playing causes relation and interaction between the child and their internal and external world.
3	Communicative spaces: the paths and roads used to be the main playgrounds of children before the appearance of the cars and vehicles. Paths are the spaces where children meet each other and are a network to join the various spaces.
4	Spaces for adventure: These are spaces full of challenges and complications to provoke the imagination and visualization power in children.
5	♁Secret spaces: They grow the sense of independence in children.
6	Playing structures: These spaces are designed in places where playing games is important. They are known as playing spaces.

Source (5)

The emphasis is added

How to design a creative environment

In general, in order to grow the creativity beside the process of learning it is necessary to apply active and exploratory teaching methods which are student's activity-based. In fact, each of the existing

classrooms can be arranged in a way that they can provide a space needed for the appearance of students' creativity.
The chairs and the tables can be arranged according to the subject of each class. For example, they can be set in a circular form for class discussions or in a way to fit team works or group works containing 2 or 3 individuals [5]. The key point is having flexibility in utilizing the educational spaces. Findings of the studies carried out by Hersej demonstrate that when the classrooms are designed based on the idea of being flexible to meet the course needs, the students' understanding power will increase and it flourishes innovation and creativity in them. Besides, changing the educational methods and goals has to be accompanied by appropriate changes in educational spaces [8].

The common educational system

Iranian Schools usually lack a proper space and designing and it hinders the growth of creativity in children. Iranian schools are whether inside buildings built with a quite different functionality like residential function or if they are built as a school, they have very simple and boring plans lacking any design appropriate for children. The plans of Iranian schools consist of separate classrooms set at both sides of a corridor.

In such a system, the classrooms are, in fact, a rectangular space inside which the rows of chairs and the platform of the teacher in front of them produce a kind of unidirectional space arrangement [5]. The furniture is set in a linear way and there is no proportion between the back and front furniture. The possibility to move the furniture for group activities is very limited and space diversity cannot be made by rearranging or moving the furniture. The class atmosphere is so formal that prevents the students to be active and dynamic which is, in its own turn, a necessity for manifestation and development of creativity [8]. Playing games, exercise, practical experiences, and challenging activities are the main resources of learning; however, the Iranian schools are still being designed against the students' learning patterns. For instance, although the swimming pools are among the stimulant and challenging spaces for primary and middle school children, they are hardly ever available for primary and middle schools. In Iranian schools, it is not even possible for the students to grow a plant in a vase [5].

Theory

Creativity has gone under essential changes in the course of history. In this regard, the 1950s is a turning point in researches on creativity. In this decade, Glifford[1967], stressing on the limitations of IQ tests to measure and assess human talents and bringing up the divergent thinking, made a new area for researches on creativity. Earlier, it was assumed that creativity was limited only to a few specific people and it could not be trained either. This theory confined most of the studies on creativity. But, today based on Glifford and many other theorists' ideas, creativity is believed to be capable of training and education and possessed by any individual according to their abilities and capacities.

Examining random samples from all over the world

The design of most of the European schools is nothing like the fixed and formal framework of Iranian schools and it is mainly based on maintaining the peace and safety and increasing the power of discussion, co-operation, and imagination in pupils.

The kindergarten interior designs in Serbia

The architect: IDEST DOO In the interior design of this kindergarten, especially in corridors, communicative spaces, and bathrooms, happy bright and vivid colors are used to create peace, joy, and vivacity in children and consequently to increase their learning power. Moreover, it can be obviously seen that the architect has done his best to observe one of the primary principles of architecture that is using the transparent natural light of external area in order to enhance the efficiency. There are many elements that contribute to activation and growth of kid's imagination power such as an open vast space with round light and easily moved furniture; arrangements suitable for team works that motivates co-operation; appropriate shelves in the classroom; beautiful and creative shapes; and much more elements that provoke activity and creativity in children [The Fig. 1-6].






Fig. 1-6: the interior design of a kindergarten in Serbia, source: writer

The Ordrup School

Design concept: peace and reception, discussion and co-operation, safety and presence Based on these three main elements of learning, in this school the training spaces are designed as colorful centers where students can have group discussions; they can easily and naturally move and displace their desks to fit team work and creative games; they can make some private learning room for themselves where they think and review their tasks; and finally they can study or concentrate in the entertaining tubes. While researching, the designing team found that each individual has a unique way of learning different from those of the others. Therefore, they designed theOrdrup School based on this finding. It can be said that the form of Ordrup School follows operation although it is entertaining and beautiful [Fig. 7-12].

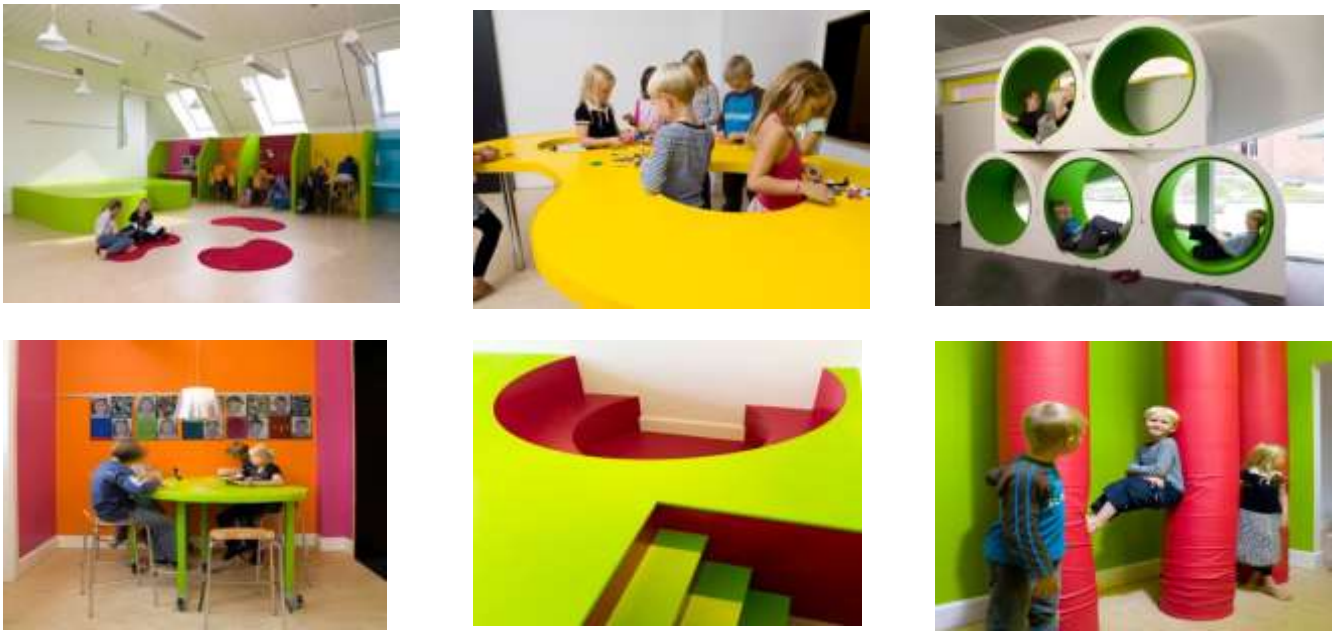

Fig. 7-12: the interior design of Ordrup School, source: writer

The impact of color and light on educational environments and on learning

The buildings assigned to the education and training of children must have the primary architectural principle of congruity between the color and light and the educational functionality of the building. Since it is not likely and possible to drastically redesign and rebuild the schools, the best starting point to improve the educational spaces is to revise some false beliefs about color and light in schools [5].

Color ology in educational spaces

Color, as an indispensable element in architecture, has a remarkable influence on the spirit and behavior of the users of a building and severely affects their mental and emotional states. Due to the children and teenagers' physical and spiritual conditions, the color of their educational spaces and equipment is of utmost importance because, from one hand, it can cause vivacity, exhilaration, mental peace, motivation, and effort in students and, thus, lead to an increase in the process of learning. And from the other hand, it can also pay the ground for the students' boredom, inactivation, nervousness, stress, and depression. The diversity of applied colors and their brightness and vivacity can amplify the children's learning power. Thus, it is recommended that in spaces designed for children education, bright colors such as yellow, purple, and orange be applied in the background of warm colors. We must notice that the influence of colors on the children's minds is not limited to the books, but they are highly impressed by the color of equipment and furniture in educational places (the color of walls and ceilings, corridors, school yard, windows, and all the learning assisting tools). That's why, today, in standard schools colors like yellow, red, and blue are remarkably used. Another point is the appropriateness of applied colors and the education level [5].

Light in educational spaces

Providing light in the training spaces increases students' learning power and their efficiency. Low light makes the students bored, weary, upset, careless and even depressed. Applying the natural sunlight is of utmost importance in the learning areas. The natural light can be provided through windows, doors, and skylights.

In the end, we can enumerate the advantages of sufficient and proper lighting in the training areas as follows:
1. Increasing the individual's accuracy and concentration (both teacher and student).

2. Increasing the tendency to work and to learn.
3. Protecting the eye health and decreasing the nerve tiredness.
4. Accomplishing the tasks more easily and accurately.
5. Causing variety, vivacity and liveliness in the training places besides space emphasis [5].

CONCLUSION

As it is already said b, in order to have a creative society in future, we need to train creative children now and it requires some necessary facilities. Having examined some schools from abroad and compared their design, arrangement, equipment, and furniture to those of Iranian contemporary schools and also studied library sources, we achieved some solutions to improve the Iranian schools' design. Our findings are summarized in the following table. We hope that through applying the present essay's findings, we can provide an attractive creative environment for Iranian students especially the young children [Table 2].

Table 2: Architectural Solutions to make a creative space, source: writer

Architectural Solutions to make a creative space	
Vertical training surfaces: By these surfaces we mean the writing and display surfaces.	Hanging up students' works and crafts on the walls Assigning some places on the walls for students' drawings Installing some suitable book shelves in the classrooms
Horizontal training surfaces	Flexibility of the desks, chairs, etc. Existence of a platform in the classroom for doing various individual or group activities Light chair that can be easily moved around
Setting visual stimuli in classroom	According to any subject, there must be training assisting tools such as compasses, atlases, maps, audio cassettes, dictionaries, encyclopedias, and toys available to the students
Variability of the space and its components	Defining the space by moving walls: Walls with metal panels covered by acoustic boards Using doors that fold to the sides or upward to combine or separate the inside and outside spaces and to integrate the open and closed spaces Providing small walls or separating elements that can be easily moved by children so that they can make the needed rooms themselves
	Defining the space by movable components (furniture): Movable light furniture, modular furniture, or the like Using the kind of furniture that can be used both for team works and as an individual desk suitable for one person only by doing some trivial changes: puzzle-like furniture
Group arrangement	An arrangement of chairs and desks that leaves enough room for students' activities Round tables for group activities
Mobility and dynamism in the yard	Using the natural elements such as water in the yard Using flower boxes that can be moved to specify the areas whenever needed Assigning some spaces for children's playing: playing sand, growing flowers and plants… Producing spaces for free classes (without walls) outdoors
Mobility and dynamism in the corridors	Making fractures or transformation in the corridors Making the corridor a space belonging to everybody Applying ceiling skylights Making notches in the corridor walls to encourage formation of friend circles

Space functionalism	The shape and size of the spaces has to be communication and team-work friendly Assigning one fixed classroom to the children and flexibility and multi-functionality of its space
Color ology	Applying bright and warm colors in the communicative spaces, salons, … Paying attention to the color of desks, benches, walls and ceilings, corridors, school yard, windows, all the learning assisting tools, etc. based on the psychology of colors Appropriateness of colors and the education level of the students Using furniture with warm colors

CONFLICT OF INTEREST
There is no conflict of interest

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