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Designing A Children Educational Center with an Approach to Foster Creativity and Vitality

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Abstract: *This research aims to design a "baby house" in which spaces are compatible with children's physical and mental conditions, based on technical, health, social and spatial principles for development and nurture of creativity. Among many influential factors in development of child creativity, impact of quality of architectural space on fostering creativity has been neglected. Therefore, educational spaces are of the most important influential environments in child's personality, because children make up the most sensitive and impressible age group in a community. They need to experience social life on their own scale in most sensitive and important years of their life when foundations of their mental, physical and social development are formed until they enter the city, and this requires provision of a childish and sincere atmosphere. Kindergartens that have been studied in the country include Rahian Roshd Nursery and Gheseye man Nursery, and the ones studied abroad include Trenton Nursery (Wall Pasteur, Southern Tyrol, Italy), Welles-Rubio Nursery (located in Spain), Fur Fetters Haust, Vietnam's "agriculture Nursery" and Barbapapa Nursery (Vigenaura, Modena, Italy), that were studied in terms of furniture, training and furniture of classes. In this research, designed and implemented architectural samples in terms of performance and psychological aspects have been criticized, reviewed and compared, and comprehensive principles were developed for designing this important space using obtained results.*

Keywords: Designing a Training Center, Fostering Creativity, Architecture

INTRODUCTION

Researchers specialized in environmental psychology pay due attention to the effect of environmental conditions on children's games. Observations made in this regard show that the way of environment design can help create creativity and novation in users (Minoo & Akrami, 2013). Creativity is the ability to cross boundary of knowledge, which has a normal range, to reach boundary of unknowns. Creativity is complex, but doing a creative action is not simply a result of high IQ. For a creative education, it is necessary to get away from traditional methods of training and using open methods in teaching and learning (Amiri and Asadi, 2007). On the other hand, flourishing of creativity and innovation is of the important issues of today's world. Creativity is a feature that everyone has but needs fostering and strengthening to reach brink of flourishing. Researches show that the best time for advancement of creativity and imagination occurs between ages 2-10 years. The child is more impressible from environment over these years, and is naturally curious in his environment (Azamati, 2008).

Cliegen (1971) believes that there are many ways for emergence of creativity that can lead to emergence or elimination of creativity; design of space in which the child can think right freely and safely experience inexperienced things. Creativity is a process that continues over time, and novation, adaptability, and realization are of its outstanding characteristics and can be a response to problems. The creative visualization plan should be of a kind that has both originality and value.

In childhood, children's capabilities and creativity are established, and the best time for advancement of creativity and imagination is between the ages 2-10 years. Children are more influenced by the environment over these years, and are naturally curious about their environment (Azamati, 2008). Investigating about the relationship between play and vitality and motivation of creativity in children shows that creativity motivation has a direct relationship to rate of their play, because pre-primary mobility is the first way of activity, expression, learning and progress. Also, spaces designed to fit existential dimensions of child can play role of the best teacher to foster creativity. It can be said that paying attention to creativity or use of architecture in development of children can be very effective. An architect is a mentor and, after parents, is the first tutor of child; his education is transmitted through forms made by him, which form the child's environment. For this reason, relationship between the child, architecture and space is at the heart of humanization of civilization. However, children's educational spaces in Iran lack proper design for children or is in non-educational settings, as most of them are only administrative buildings. In present study, the role of designing a children's educational center on development of children's creativity and vitality has been considered.

Review of Literature

Learning environments and child's world

In all living things, according to the law of influence in environment, there is compromise with environment in which it exists, in such a way that child strives to live in and adapt to it, and according to Piaget, compromise with environment is one of two forms of intelligence in humans.

On the other hand, researches done to challenge the power of imagination of child show that "natural stimulus elements" and "flexibility of functions" increase curiosity and motivation of child to play and participate in group work, and provide a platform for his imagination. Therefore, using flexible forms and in such a way that it increases curiosity in child, can result in increase of child's creativity (Noghrehkar, 2009, p. 42).

Child first tries to compromise environment with his inner system and intelligence, but because this cannot always be possible and the child encounters issues that do not fit into his previous experiences, he/she adopts him/herself with new experience. Therefore, the child is not a mere object. A reconciliation with environment can be considered as a balance between extrapolation and internalization (Ibid., 29: 1977).

Activity as the main factor for child development and learning is a process that, along with environment and space, promotes child's overall development, and the environment affects child's behavior through creation of opportunities and stimulation and encouragement (Shariatmadari et al., 2007).

In children, kinetic intelligence that is shown through sense of touch is as important as visual intelligence, because child's mind grows through processing of interactions with external world. Hence the emphasis is on direct experience (practical) of basis of child-centered education (Fisher, 227: 2007). Silent sitting, in addition to causing problems in growth and functioning of organs, has a long-term negative impact on concentration. Minds of children, like their muscles, cannot be under constant pressure. Healthy brain of a child unconsciously shows the need for active changes through restlessness on traditional seats (Mardomi, Delshad, 2010). Maria Manstouri likens children who do

not move and ultimately only acquire citizenship, to butterflies pinned to their couches (Mortazavi, 4: 1987)

Therefore, this need of humans for physical-mental dynamics should not be prevented by passive living standards, but a dynamic and beneficial solution in this regard follows the slogan: Stay as needed, move as much as possible. This slogan is an important part of functioning of learning environment (Mardomi, Delshad, 2010).

Environment and child's creative power

According to Gilford, fluidity and flexibility are key features of creative thinking or divergent thinking skills. The value of creative thinking is that it results in flexibility of choice. On the other hand, in order for a child to concentrate on his thoughts and show his choice, he needs a stimulus, because learning is not done in a vacuum, but a stimulant and stimulation are the first steps of known mechanisms during process of creativity. Hence, we need to be in a position to transform existence of a child from a self-conservative into a self-empiricist (Fischer, 88-79: 2007). Psychologist Carl Rogers states that if a person is to be creative, he will need two features of mental health and psychological freedom. It should be noted that beauty of child's thinking is irrelevant. The world is flexible in children's viewpoint, and can be changed according to their will. The child can even overcome the senses with his imagination, and change the world in his mind in whatever form he wants (Fisher, 73: 1997).

Environment, play, creativity

The way a child encounters the play, his choice, and the importance that it has for him/her, all express his attitude and his relationship with environment and how he/she interacts with one another (Landreth, 1991). Environment affects the child and his personality in a variety of ways and increases his creativity. It is said that children learn knowledge and understanding through interactions with physical and social environment (Thai, 2006, 11).

Studies on deprivation of sensory stimuli show that alienation of individuals from sensory stimuli causes severe anxiety and mental disorders (Zubek, 57: 1969). Some theorists also suggest that environment should sometimes be complex and stimulating and recreate excitement and empower people to explore environment (Bell et al. 2001: 108), so complexity and arousal of created environments are effective characteristics on child's creativity.

The game can also be used to foster creativity. A lot of people spend some of their time on various games, some of which can be a way of fostering creativity. Mental games such as solving table, puzzle, and chess can thrive creativity. If creativity is created and completed in productive games such as baskets, modeling and other artistic and manual works by himself/herself, more creativity will be revealed (Osborn, 1996).

Researches show that game is also effective in promoting creativity of children (Shafaie and Madani, 2010). The game is said to be the main thing to teach child's external environment. This is the main mechanism through which children become familiar with their environment (Aziz & Said, 2012: 205). All people have creativity, but lack of a suitable environment and attention to this ability, prevents its emergence, so creativity nowadays has a special place in educational psychology. Aamble et.al (1988), in interviews with 120 scientists in 20 different disciplines, concluded that environmental factors play an important role in development of creativity (Hosseini, 2009).

Stimulus level that creates a space in humans is directly related to characteristics of interior spaces. These features mainly stimulate senses of human body, including sense of sight and hearing.

From the viewpoint of some environmental psychologists, different variables, including irregular spatial patterns in a space, complexity and mysteriousness of space, high density of spatial patterns, redefinition of space, amount of heat and moisture, shape and form of space, inability to navigate properly in an interior atmosphere, congestion, audiovisual properties of various elements in space,

intensity of diversity and sudden change in space are effective in increasing the amount of stimulation (Aiello, 1981, Baum & Paulus, 1987, Evans & McCoy, 1998).

Color as an integral part of architecture affects moral and behavior of space and buildings' users and affects their psychological and emotional states. Human observes and reacts to their surrounding phenomena with color. Each color has a specific message to viewers, which has long been subject of research by scientists and psychologists (Loshier, 2014).

In preschool centers, colors and educational equipment are more sensitive due to children's age and mental conditions. Because it can bring joy, vitality, mental relaxation, mobility, and effort to children and increase learning process, as it causes boredom, resentment, inertia, anger, anxiety, and depression.

On the other hand, one of the principles of architecture is to provide visual comfort for space, which psychological effects of this phenomenon is different in humans. Learning environment should have suitable light. The most appropriate light for using is natural sunlight through windows. Researches have proven that natural light has a clear effect on senses of children. In children's views, these spaces are friendly and joyful. Sufficient light and appropriate lighting in spaces will increase desire of children. Since children are less tolerant of tension and fatigue, extreme conflicts of light, either artificially or naturally, that cause fatigue and tension, should be avoided.

Another factor is attention to sound in environment. Children love sounds, and generally soft sounds help imagination of children and relate them to life outside. These spaces should not be permanently dead. Noise caused by commercial traffic and industrial workshops is an unpleasant expression of children's space. Nursery locations and their inaccurate neighborhood with noisy areas will reduce educational efficiency. Therefore, neighborhood issues should be considered in location of nurseries and schools. Another point is that smooth levels reflect sound.

On the other hand, good ventilation is essential in educational environment, especially in classroom. Proper design of site and type of openings can be made by following design elements: proper orientation of space relative to direction of wind blow, use of appropriate materials in walls, and use of plants and trees for natural ventilation of surroundings.

Table 1: Relationship between main elements in process of creativity and environmental factors affecting creativity (Tabatabaiyan et al., 2015)

main elements in process of creativity	Environmental factors affecting creativity		Description	Source
	Artificial environment and natural environment	Non-physical community, culture, and atmosphere...		
enough skill	*	-	With proper design of spaces and physical environment for training and practicing people in the field, one can create skills in any field.	Rothstein (1990) Torrance(1962)
Talent and creative thought	*	*	physical environment, if properly designed, can awaken talent and creative thought in individual and lead to its flourishing. Society, culture, and other non-physical environment factors can create creative thinking in a person and stimulate development of his inner talents.	Amabile (1988) Woodman & Shoenfeldt (1993)
Excitement and inner motivation	*	P	Physical environment, with its unique features and proper design, can create necessary motivation in person and create a thrill in it. Also, appropriate atmosphere, freedom, pressure, etc., as environmental factors of environment, create necessary inner motivation in individual.	Hennessey & Amabile (1989) Abraham Maslow (1954) Fereiderick Hezberg (1959)

Children and architecture

We need to reconcile our industrial and intellectual world with ideals of civilized man and elements that make up his living space. So environment we design for children should include following spaces:

1. Natural space: like tree, water, living organisms that make up the most basic and important space for children.
2. Open spaces: Extensive spaces where children can move as much as possible and drain their internal energy.
3. Road space: Roads and paths before car were the main playground for children. They are the roads that children meet each other, and are networks that connects various spaces.
4. Adventure space: These are spaces filled with complexity, which foster imagination of children.
5. Hide space: Independence of children grows through these secret spaces.
6. Play structure space: These are areas that form with structure of game. These spaces are known as playgrounds.

Research questions

Questions that are considered for this research include:

- What knowledge and characteristics of children can help to increase their dynamic, creativity and personality development?
- What kind of spatial quality can be effective in improving abilities of children?
- How can specific educational materials be incorporated into interaction of children with environment?
- What elements in space excite them and use their imagination?

Research Method

To collect data needed for this study and design, library and documentary research, field study, interview, observation and computer networks were used. In this research, designed and implemented architectural samples from viewpoint of performance and psychological aspects are criticized and compared, and comprehensive principles for designing this important space will be expressed based on obtained results. The basis of research process is design-oriented, and is relevant to design process to identify, define objectives, criteria and standards, and evaluate desired samples. Nurseries studied inside the country include Rahian Roshd Nursery and Gheseye man Nursery, and the ones studied abroad include Trenton Nursery (Wall Pasteur, Southern Tyrol, Italy), Welles-Rubio Nursery (located in Spain), Fur Fetters Haust, Vietnam's "agriculture Nursery", and Barbapapa Nursery (Vigenaura, Modena, Italy), which were studied in terms of furniture, training and furniture of classes.

The site is known for its location near one of the most famous universities in country, Al-Zahra University. There are also many exhibitions and galleries around the square. National Oil and Gas Company also has two headquarters next to the square. Iranian Garden is located in Sheikh Bahai Avenue in Old Town neighborhood of Tehran. This garden is an old garden, with its traditional architectural elements rebuilt, and its green space is based on pattern of gardens filled with Iranian trees and flowers.



Figure 1: Place of research site

Table 2: Required states and qualities of vitality and the provision of spatial quality equivalents

Need	Necessities		What architecture provides?	An example of architectural emphasis
	Qualities	States		
Vitality	Comfort	Coping	Paths Short stops with station	Station, meeting place, gathering
		Conquer and grasp	Intrusive levels and Volumes Responsive Levels and volumes	Comfortable places, Painting walls
		Being accepted	Familiar environment	
	Diversity and complexity	Being Surprised	High altitude	Presenting familiar signs, crushing massive scales
			Defamiliarization of familiar things	By changing color, texture and scale
			Sculptural Architecture	
			Explaining movement in different directions	
	Exploration	Launching an incentive to identify environment	Readable surfaces	
			Flagged environment and path	Recognized domains from inside and outside
Growth	Physical growth	Application of senses	Touching	Changing texture: the floor, wall
			Understanding Weight	Floating or fixed bridge or accommodation
			Understanding light	Bright shadow rhythm, in direction of shadow to light
			Sound recognition	Levels that make sounds with hitting hammer and ball.
		Discovering power and limitations	Providing a variety of access practices Impossible access (just visibility) Continuous vision	Stairs, ramps, stone steps
			Viewing and selecting route	
	social growth	Independence	Power to go along path Creating inside, in wide or open spaces	

		Group Territory	Presenting topic or common space to watch or act	
		Settling		
		Communication		

Research results

In designing "baby house", efforts were made to identify features needed to design an appropriate environment, and create motivations and incentives needed for each stage of child growth. Intelligent use of certain tools such as light, color, materials, form, texture, etc., help foster imagination and creativity of children, help illustrate these imaginations and children's intellectual flourishing, and help them in the path of individual identity.

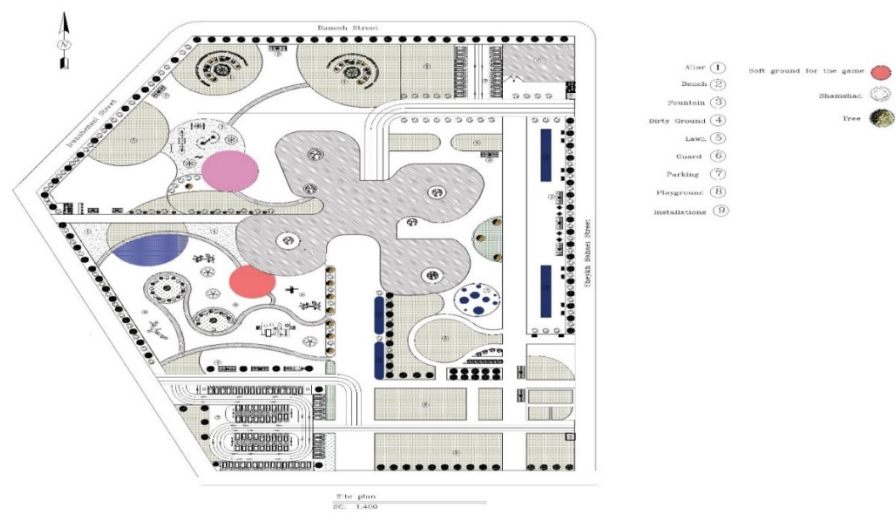


Figure 2: Plan Site

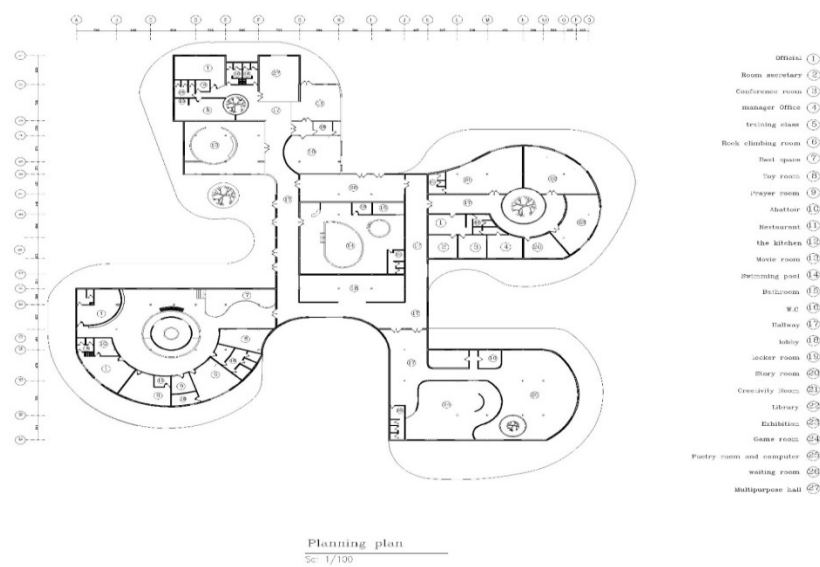


Figure 3: Pillar Plan

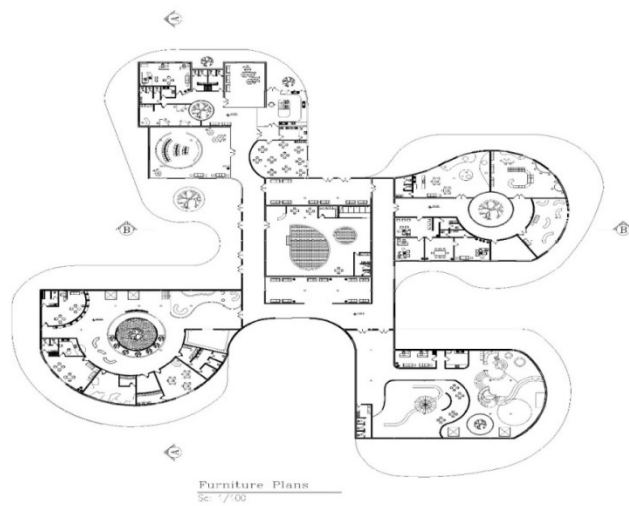


Figure 4: Furniture plan



Figure 5: External Perspective



Figure 6: External Perspective



Figure 7: Internal Perspective

Discussion and Conclusion

Stimulating creativity of children by architectural elements are among the most prominent features of nursery design, whereby spaces are designed in a way that motivates children to create more mobility and dynamism.

Nursery spaces as should be designed and built for children, must have at least some essential spatial features for this purpose, including:

1. Attention to principles of architecture and urban planning in finding nursery location
2. Building should be safe for children, so it is best to design and construct a one-floor building
3. Relations between internal and external spaces
4. Using maximum natural daylight
5. Creating visual visibility with surrounding environment.
6. Proper coloring with respect to children's spirits. Use of color for inner surfaces of classes and even exterior surfaces can increase desirability of space for kids.
7. The outdoor playing of children is one of the most important and necessary activities for children in a nursery, so one or more open spaces or yards should be considered for this activity.
8. Application of new forms of building with its elements such as doors and windows can increase attractiveness of building and distinguish it from home and other architectural spaces.
9. Children's contact with nature and its elements, such as trees, flowers and bushes, require use of garden and green space in nurseries. Examining above-mentioned examples shows that in this type of spaces, various ideas can be used such as central courtyard, side yard, as well as striped green spaces.
10. Applying fluid and dynamic forms on floors and ceilings to encourage children to move.
11. Use of soft lines and materials in interior architecture of spaces.
12. Creating forms to stimulate imagination and exploration in children.
13. Observing human dimension by taking into account child's age for ensuring psychological safety of children.
14. Paying attention to health, relaxation and sense of unity in children by creating a happy and entertaining environment using architectural elements.

15. Children in these nurseries can imagine, play, have social interaction, enhance their curiosity, and feel change in seasons of year in connection with the nature.

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