Designing learning Spaces with the Approach of Improving Children's Creativity and Emotional Intelligence

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Abstract:*Nowadays, the increase in the population of children has caused an increased attention to the children education and learning spaces issue. Children specific spaces are types of architecture which do not have significant historical records and the attention of developed societies have increased regarding these institutions during recent years. Unfortunately, these institutions in Iran do not have the required facilities for children. Therefore, the objective of this paper is to detect the particular components in the design of learning spaces with the approach of improving children's creativity and emotional intelligence. The research approach is a descriptive-analytical research and the data collection method is based on desk studies. The results of this paper shows that the change in the shape and size of architectural spaces, designing multi-function space as well as the relation with nature in learning spaces lead to the improvement of children's creativity and emotional intelligence.*
Keywords: *creativity, emotional intelligence, learning spaces, children.*

I.   Introduction

The beginning of development of many of human's abilities occurs in childhood. The beginning of imagination and creativity forms in the childhood as well. Freud believes that the source of creativity should be sought in one's childhood experiences [1]. Children are the most sensitive and the most impressible age group of the society and they need to experience social life in their own scale in the most sensitive and the most important years of their life, when their characteristic, mental, physical and social growth bases are being formed to the time they enter the society, and this requires the presence of a childish and friendly space in which the child has the opportunity to express their new thoughts and to grow their abilities. A space to provide a suitable area for the child's creativity [1].

Researches in recent years have examined the learning methods, emotional-cognitive aspects as well as educational aspects among different effective factor in the creativity growth of the child. But, the impact of the quality of architectural spaces are barely considered [2].

The researches show that children' creativity depends on their power of imagination and imagination is the most important factor in the improvement of creativity [3]. The research on the relationship between games and creativity in pre-school children has shown that the stimulation of creativity has a direct relationship with amount of time they spend playing games. Because, activeness in pre-school age is the first way of activity, expression, learning and growth [4,5].

Game has several functions and helps the imagination in a child besides improving their skills [6]. Various researches regarding the impact of clinical environment on the improvement of creativity shows that some of environmental factors (independently) are effective in the increase in the growth rate of creativity. These factors include natural environmental factors [7], the shape and size of the spaces and the decorations [8].

When a child is helped to understand and manage their sharp feelings such as anger, disappointment or mental confusion, they are actually being helped to increase their emotional intelligence. A child with high emotional intelligence is able to make better connections with their own emotions and calm themselves down in their emotional climaxes. It helps them to understand others better and connect with them and make it easy for them to make stronger friendly relationships. Experts emphasize on the importance of emotional intelligence and its role in helping children to increase their self-esteem level and responsibility, leading them to become adults who can skillfully connect to others in the society [9]. Two main indices of "accuracy" and "efficiency" have meaningful relationships with designing urban spaces in the theory of Salovey and Mayer which lead to increase in the emotional intelligence. In other words, accuracy includes the recognition of emotional states and effectiveness includes the adjustment, control and using emotions to achieve objectives such that these two indices are of the factors that should be considered in designing urban spaces.

Since the first experiences of a child is associated with their surrounding environment, the design of children environmental design is of great importance which in turn indicates the urgency of creating an environment consistent with mental and physical needs of the child, stimulus of learning, fostering creativity and mental health promoter. In the design of children environment, different factors exist that are in turn considerably effective and considering them from environmental factors to design regulations in the design is

necessary. But, considering the extension of the subject in this paper, only the effects of artistic procedure is studied which is less studied. In this research, the emotional intelligence improvement methods are brought in urban spaces leading to the increase of emotional intelligence in children.

II. Designing For Children

Designing for children needs understanding the features and needs of the children which are somewhat different than adults. Being child is a physical and mental state. The shape and size of organs are different for a child compared to an adult. Therefore, the needs of the child and the standard space and required tools are different. But, part of it is entirely separate from physical criteria, shape and size of the body organs and their performance it is associated with their thoughts and morale which could play a vital and effective role in the life of the individual [10].

Many of the environmental elements such as acoustic properties, flexibility of the classes and safety, size, ceiling height, being ergonomic, used materials, the adjacency of safe external areas, temperature, color and light control affect the learning space. The most important indices which are considered for the design for children include safety, visual attractiveness, stimulation of creativity and challenging mental and physical abilities of the children [10]. "Each project goes through a procedure and the design procedure for children requires delicacies, deep understanding of children's mentality, changing scales, certainty of safety and hygiene and particularly, accentuating the children creativity. Certainly, the architecture and interior design should be beyond mere practicality. In fact, there are responsibilities and tasks which should be carried out instead of a young individual until the child has the ability and understanding of doing their personal tasks and learn being away from danger" [10].

The interior architecture and designer may encourage the child to behave properly by using color, signs, and even sounds [10]. Color could play an important role in increasing child's intelligence, concentration, calmness and appetite by its influence on the moods and unconsciousness. Therefore, the designer could help making an effective connection and creating a favorable atmosphere for child's training and growth and development by knowing the colors and their characteristics, line, form and space. The color variety in learning spaces and a proper combination of light and color decreases the monotonicity and passivity and affect the performance of learners.

III. Creativity

Creativity is simply defined as the responsiveness in a new and unique manner to an issue and it is a process which turns the ordinary and banal into original and extraordinary. Creativity is the ability of the individual in creating ideas, theories, views or new objects and recreating in sciences and other fields which is considered as an innovative phenomenon and is considered scientifically, technologically, aesthetically and socially valuable.

Table1-The effective factors on creativity

Individual factors	Social factors
Intelligence	Family: Warm and intimate relations, free thinking atmosphere, encouragement, parents as role models
Mental health: love, confidence, self-esteem, self-confidence	School: management, facilities, educational methods
Internal incentives (interest)	Experience and test: facilities, free will and experience
Personal characteristics: Perseverance, independence, tolerance for ambiguity, diverse experiences	External incentives: accepting new and creative ideas

Social and environmental factors play the main role in creative work. There is a strong relationship between personal incentives and creativity. A major portion of this tendency is determined by social environment or at least specific aspects of the environment [11].

Besides the aforementioned items, the researches show that there are relationships and overlaps between creative procedure and game. Game and creativity have common characteristics. In fact, game is often a part of the creative procedure. Other researches show that open environments and spaces have a great role in the perceptions and behaviors of the child and their growth and creativity. Besides, children's creativity depends on their imagination power and the best time for the creativity and imagination development is between ages 2 to 50 [12].

Various researches regarding the effect of clinical environments on the improvement of creativity show the independent effect of environmental factors on the creativity growth rate increase. According to researches,

different factors such as natural factors on the environment, shape and size of the spaces, decorations, the stimulation of natural elements of the environment, games and participation of the child, functions flexibilities and imagination are affected more by the environment : curiosity etc. [2] and they are naturally more curious regarding their own environment. Children's creativity depends on their imagination power and imagination is the most important factor in the improvement of creativity [2]. Such that sometimes, the life of the child oscillates between imagination and reality. Developing the imagination power in the children plays an important role in mental growth and the development of creativity and artistic talents it could be effective in solving problems and issues and doing creative activities and different innovations.

IV.   Emotional Intelligence
Emotional intelligence means have the capability of recognizing the emotions of one's self and others and using this emotion properly to communicate better with one's self and others. Anger is an emotion and feeling and the individual who has higher emotional intelligence knows when, where, with whom and how they should express their anger so that it would be helpful rather than being troublesome. In other words, a person with higher EQ combines three components of emotions successfully: cognitive component, physiological component and behavioral component. By studying the research papers of some of the scientists, it turns out that those who have emotional intelligence can control their own and others' emotions distinguish between positive and negative emotions and use emotional information for guiding the thinking procedure and personal actions. Emotional intelligence is a prevalent expression which entails an extensive set of skills and personal characteristics which are usually called as intrapersonal and interpersonal skills which are beyond the certain circle of the previous knowledge such as IQ and technical or professional skills [14].

V. Child's Environment And Creativity
The creativity word is used in various fields and different meanings. For instance, as productive thinking, invention power, imagination power, elaboration power etc. Also, various theories are presented about it, but one can say that the most comprehensive theory is of the American scientist, Gilford. He found out by numerous researches that the intellectual abilities of the human could not be summarized in one dimension and called it intelligence or something like intelligence. By advanced statistical method, he found out that intellectual abilities of humans could be divided into 150 separate factors which are individually measureable. According to him, some of these characteristics are effective in the appearance of creativity.

Table2- The characteristics of child's environment

Fluidity (fluency)	The generation of a number of thoughts at once
Flexibility	The generation of different and unconventional thoughts and different solutions for a problem
Novelty (originality)	Using unique solutions
Extension	Generating details and determining implications and applications
Combination	Putting inconsistent thoughts together
Analyze	Breaking symbolic structures to composing elements
Organizing	changing the shape, functionality and applications of the designs
Complexity	The ability to face a number of different yet relevant thoughts

He assumes three effective factors on the appearance of creativity. Also, on the contrary, he points out a different type of thinking called convergent thinking which is directly related to intelligence. But, what are of great significance are the growth contexts which are briefly studied as follows [14].

Effective factors on children's creativity improvement
Natural environmental factors
One can increase the child's curiosity and motivation for imagination and games by using natural elements such as water, light, plants etc. For instance, using colorful glasses (which lead to making different colors of light spectrum) might stimulate the child's curiosity. In this case, the light which is a natural factor is the motivator of the child. Also, playing with water could improve the motivation of the child. In this case, water which is a natural factor will be the child's motivator. Hence, the aforementioned feature is called the stimulation of natural elements.

Game-child's participation

This factor is related to the child's participation (in form of games) for any change in the space such as participation in planting plants, drawing on the wall and cooperation in changing the furniture. For instance, the child could change the decoration of the class in the form of a game by the help of the teacher. In this case, the change is done in the space and the child has made that change. Therefore, game-participation does not solely mean entertainment but it means participation as well.

The flexibility of operations

The flexibility of operations means that a space could be used according to the education programs with minor changes. For instance, a big space could be used for a performance. Another day, that space could be divided into several spaces by moving light walls and prepare those space for different operations such as drawing, games, storytelling and similar activities. In fact, in different times, a space is used for different objectives and operations and it has the required flexibility.
Imagination: is related to the child's motivation for imagination is different conditions.
Curiosity: means posing questions and trying to find their answers by the children [2].

Mental health

According to the definition of the World Health Organization, health is not only the lack of diseases or organs but it encompasses the complete physical, mental and social welfare [15].
In general, mental health has two aspects: one is consistency with the environment and the other one is the consistency with internal environment [15]. Therefore, as one of the applications of art is to connect the inside and outside, it can play an effective role in mental health.

Art

Biological growth of our brain is programmed such that it completely changes with puberty. Children have less fixed topics, therefore it is natural that their brains are more flexible and it works faster. When the child's brain receptive, the art creation is a proper stage which improves the imagination power to make the connections between experience and expression. Art is the ideal scene or context in which one can experience unimaginable facts [16].

Art therapy

One of the objectives of art therapy is to encourage children and teenagers to express their feelings, participate actively in doing new tasks, activities and learning the way the creation is made. Art therapy is used in two ways of prevention and mental health and treatment. In the field of treatment it is used with the objective of emotional discharge and reaching calmness, facing self-contradictions, gaining awareness, increasing the knowledge and adjustment. In the prevention aspect, the application of art gets more extensive and it entails the education of normal and disabled children, increasing the self-esteem in teenagers and preventing aggressions against them, teaching educational, social and cultural topics for the growth of individual and social character and the formation of child's identity and training creativity.

Wall painting

The designer should be able to respond to different needs, expectations and features of the audience based on the information and tool that they have. One of the tools that the designers have is using the branches of art in designing which includes wall painting, too. These wall paintings which play an important role in the quality and characteristic of the environment could have an effective role on the growth of talents and abilities in improvement in the child's scientific and education level as well as improving the quality of the environment and its consistency with the expected characteristic of the environment [17].
Children's educational spaces in Iran e.g. kindergartens lack the appropriate design for the children. The majority of them are founded in residential spaces and even apartments and they are transformed into a children's space by drawings and painting.

The effect of architecture on children

Architecture is an art which encompasses us and people are affected by it more than they could affect it. The architecture for children has some requirements. Requirements which have direct relationship with childish perceptions. Most of children like to gather around to achieve common objective. Children increase their concentration in sports. Regarding the clinical effects of the environment on human's behavior, Barkerder believes that the clinical environment has a demanding effect. Open environments invite the children to run. If the environment cannot meet the minimum sufficiency, that environment is disregarded or changes are made in it or it is rebuilt. Winston Churchill says that we shape the structures and the structures force behavioral patterns

on us. Jean Piaget emphasizes on the child's ability in understanding the world actively and he believe that the children do not absorb the information passively, but hear and feel what they see around the, and then they choose and interpret them.

Table3-The principles of designing children's learning spaces

Using soft forms	Shapes such as circle, oval and other soft forms could be used for designing classes and learning spaces and some other space elements such as stairways, ceiling and walls.
Considering the size and scales of spaces	Bigger and broader spaces enable the child to move, play and participate in group activities to learn different things. But, the size of the space should not be too big to seem unsafe and strange to the child.
Designing multi-functional spaces	Designing spaces that have the ability of doing different activities in them should be addressed as much as possible so that the children could have the ability to use the available spaces properly. For instance, the width of the corridors could be designed to be slightly bigger than standard measures and consider spaces for exhibiting temporary arts or shelves for keeping children's books and tools in the corridors.

Based on the analyses carried out in the present research, the principles of designing children's learning spaces which lead to the increase of curiosity, imagination and their playing motivation which are effective on

The improvements of the creativity are divided as below:
Principle 1: the combination and continuity of closed and open spaces (natural space) (based on changeability feature of the space)

The separation of natural open and closed spaces

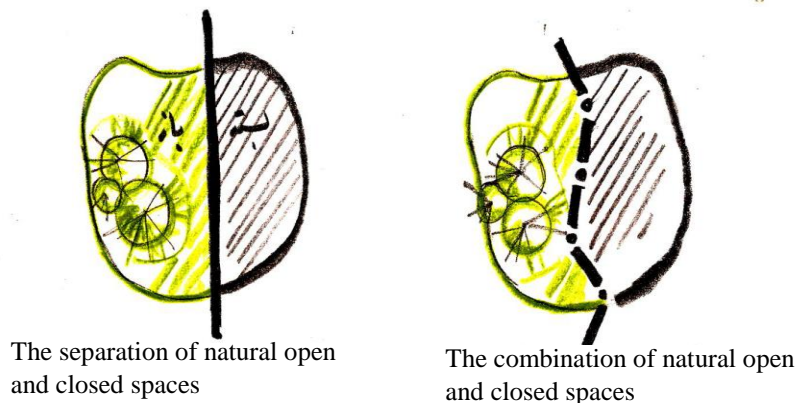The combination of natural open and closed spaces

Figure1- The combination and continuity of closed and open spaces by retractable doors
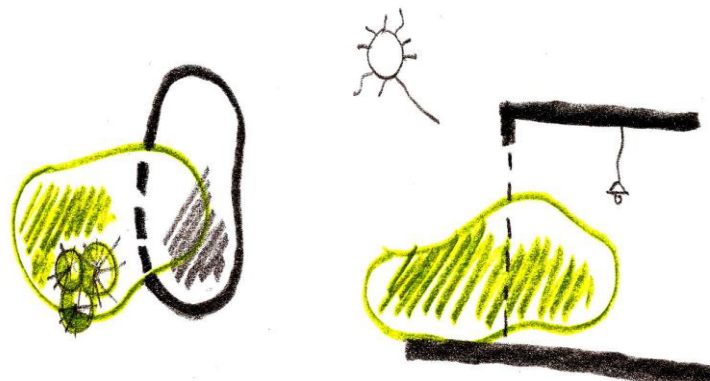

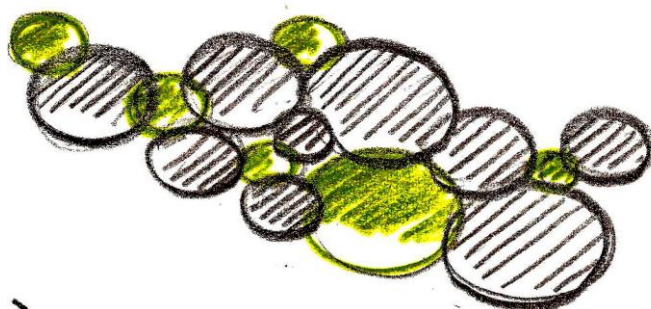**Figure 1-**The combination and continuity of open and closed spaces

Figure 2 Natural open spaces among closed spaces [17]

Principle 2: designing in the form of open plans with moving walls or separating elements, so that the children could create the needed spaces themselves with the help of their teacher (according to space changeability and its components)

Principle 3: creating diversity using natural elements (according to the changeability of natural elements)

Principle 4: creating games using natural elements (according to game-creation feature of natural elements)

So far, various researches are carried out in developed countries regarding spaces specific to children. For instance, designing the Walt Disney complex by Walt Disney with the objective of the possibility of experiencing childish dreams and creating a happy and exciting space for stimulating the creation power of the society which were met properly in designing Walt Disney [18].

In other researches, it is pointed out that children need spaces that they could change them partially by employing their creativity. A space that does not provide the change of manipulation and searching for the child, could not respond to the needs to the child. Regarding flexible spaces, it is pointed out that flexible learning spaces that are able to be changed into a range for learning entail the exploration feeling for the children. The key factor in designing this physical space is the ability of the children to create their own learning spaces and not being in a space for which everything is prescribed. In such structures, two-way communications form between the child and the environment (19).

Spatial considerations and architectural solutions according to the child's mental and physical features

Spaces which have proper and favorable conditions for children's physical, mental, emotional and social growth are possible through the design of the details of spaces considering children's behavioral patterns. The environment has a potential ability for supplying human's experiences and behaviors. A part of the qualities which improve children's learning spaces are as follows:

Safety of the environment

It is of great importance in spaces related to children, since when the child is focused on a certain issue, they might not be aware of the dangers around them. Therefore, using appropriate materials and decreasing the obstacles and possible dangers of the environment such as edges, bumps, walls or ceilings are of the most important tasks that should be carried out in the architecture of children's spaces.

Sense of belonging and attachment to the environment

-    It is necessary in this matter based on the scale and dimensions of the spaces. Children conceive the dimensions differently compared to adults.
-    Designing such that it is exciting and attractive for the child
-    Using natural energy resources are instructive and informative sources for the child to keep and maintain the environment.

Children's creativity training
Making the environment suitable for children's creativity includes the following:
First, it makes the environment valuable. Valuable environment is an environment which provides the requirements for searching and exploring.Second, it encourages the children to see the surroundings better to notice the hidden pointsthird; it organizes the daily plans and activities such that it provides the conditions of benefiting from the space and body.

I.

Green space

Increasing the comfort, mental safety and making motivations in the childcreating the context for making the child familiar with green space and specially the green color by the season changes.stimulating the child's curiosity by labyrinth paths in the environment and roads which have some type of ambiguity.

Technical features

Acoustics, light, flat surface of the floor, textured walls and warm colors are other effective factor on the attractiveness of kindergartens. Spaces with bright and happy colors and sometimes colors with unknown forms like watercolor paintings imply dreamy topics and lead to feelings such as kindness and being dreamy in the child.

II.   Conclusion

Nowadays, many of the human communications guarantee a form and limit of zeal, creation and artistic display. In everyday life, people interpret and enjoy artworks, make their lives meaningful by them and even find guidance in them for their ways of life. In designing a space, art could play the role of an auxiliary tool which is effective in the process of creativity and emotional intelligence. Considering the importance of designing spaces specific to children in recent years, the architectural body and space could be considered as a favorable context for the formation of activities in them for which different factors are effective on their quality. The literature review shows that the participation of the child in group works helps the growth of creativity and emotional intelligence in them. Also, designing multi-functional spaces such that it provides the ability of doing different activities in them, affect the improvement of children's participation. The child benefits from the facilities of the environment considering their growth limitations and their eagerness for challenges increases with encouragement. The designed space should provide the possibility of testing individual and collective capabilities of the child so that they can find their own physical skills and use the available potentials in the environment and explore them until the education is started.

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