

## **Strategies for optimal designing of centers for Children's creativity and development**

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### **Abstract**

*"Childhood" is considered as the early years of human life until 15. At these ages, children are eager to "learn" and "discover". Among all the things that must be learnt and discovered, children need a qualified space to promote their recognition of life. Children are the most sensitive and the most influenced age group in the society that mental, physical, personal and social development and life experience must be considered as important as possible. Today's children have on one hand experienced huge changes related to their predecessors and on the other hand, most of the spaces needed by them is occupied by adults, and that little space specified to the children is not suitable enough for them to promote their quantitative and qualitative needs. Different factors are involved in designing architecture spaces specialized for children which must be investigated based on their type and function.*

*Motivational senses that children get from their environment, play important roles in children's creativity development and this is the task of architects and urban designers to consider children's needs in every urban facility. As a result, it is aimed to analyze the role of children's education in their creativity development and then effects of the designing suitable educational spaces will be described based on the physical aspects and conditions of the environments.*

**Keywords:** architecture principles, educational space, children creativity.

**Introduction**

These days' apartment life is like a jail for children and has limited their communicational relationships. They are worth being provided spaces suitable for their play and creativity development. Most urban experts believe that cities must be human-centered. Children are one of the components of urban life and paying attention to their needs is one of the principles of urban life. But unfortunately, children needs are left behind and they are not taken seriously in our urban architecture and management.

Most today's residential buildings especially apartments and complexes, lack playgrounds and places for children to gather and enjoy the nature which is a necessity for their healthy development. Children find their identity and personality in time and place sequence. If it is impossible to eliminate these shortages in houses, at least it is essential to design public places according to children's needs of open spaces and entertainment areas in every local to fix this defect because playing and interacting with other children are among the most important requirements of children's' creativity development.

In every society regardless of its dominant value system, children in every age stage must have access to proper educations in suitable environment in order for them to be able to pass that stage correctly and healthy, entering the next stage, required ability to communicate and cope creatively and have compatibility with environment and the society. If the physical environment and physical space does not suit the child and the teenage nature, it is unlikely for them to learn passionately so it is important to design a child-friendly environment in order to give required chance of being self-motivated for learning and acquiring the necessary skills for coping with society in a creative way. If the physical space and environment are not fitted for children's nature, it is impossible to encourage them to learn. As a result, it is essential to design environments suitable and specific for children in order to make them motivated participate in learning and obtaining different skills of life.

Day by day, the importance of creativity education is becoming more obvious while the view of the community and our educational system toward creativity is remained only as a decorative element. In most localities, even in bigger cities, lack of spaces suitable for children gathering and teaching them to be creative, is completely obvious.

The aim of the present study is to find strategies based on which we can modify the educational spaces into flexible places suitable for children's creativity development.

Generally, this review highlights the ways for promoting children's creativity by playing and entertaining educational creative tasks and enabling them to show innovative thoughts in different areas. For this reason, it is important to consider the role of educational spaces and environments (Zinalfam, 2011).

**Problems statement: the effect of the environment on learning and development of children**

Since the most characteristics of human are formed in childhood and regarding the influence of the environment on human's internal and external behavior, children's environment design and plan must be performed according to the theoretical bases of children's' features and needs, for instance, how they perceive the perspectives and environment or the effect of the environment on complete development of children.

In recent years, numerous studies performed on the innumerable factors involved in creativity development in children, educational methods, and emotional-recognition aspects of children and also on educational issues however, few of them paid attention to the effect of architecture in creativity development in children. Studies suggest that most capacities and

abilities of people are rooted in their childhood, and the best age for imagination and creativity development is between 2 to 11 years old in which children are influenced by the environment the most and is eager to discover naturally. Yet, educational spaces (such as kindergartens) in Iran lack the suitable and standard properties proper for children (Madahaian et al, 2013).

If the designed environment is so that fit the mental anticipations of children, sense of belonging to the environment will be increased as a result and the space will become or change into a favorite "place" in their minds.

Acquiring mental health of children requires making a place that fit their childhood requirements.

Children spend most of their time in educational spaces. Therefore, these places should own the capacity for accepting and children's development. Basic necessities of development are as follows: the need to perceive the environment, health needs, physical safety and development of physical skills, the need to satisfy the emotions, Link with environment and development incentives. These essentials put the stress on the influence of environment and the available facilities on children's development and their independent and free movement, plus developing physical skills in addition to creating emotional and spiritual ties with it (Mozaffar et al., 2007).

Today's world is similar to a fighting field in which creativity and innovation are considered as the factors to win. Creativity is the key to form a new, beautiful and favorable architecture work of art. The aim of architecture is to create spaces based on human's dignity while meeting the numerous needs of people (Mosayebzadeh, 2012).

Psychology experts consider different factors such as family, teacher, teaching method, educational books, educational management, etc and their influences on educational process, but at the same time, they regard architecture or physical environment as the influential and dynamic factors in the quality of educational activities (Lotfata, 2008).

Hence, according to the performed studies, in order to succeed in physical and mental effective development of children, it is essential to emphasize on creating comfortable, safe, easily-accessible, responsible, attractive, creative and effectively-underlying places by designers and architects. Environment is a mental and strategic factor that can convey a good or bad feeling to the human. Environment as an element, contains closed internal space, open internal space, or play area that can be an effective factor for children's education (Nadiri, 2011).

Factors that are effective on the satisfaction rate of children from the environment, and facilitate their creativity development are: architecture principles and processes for obtaining favorable educational spaces and the concept of utility space; physical facilities specialized for educational spaces, idealistic classes, multi-purpose spaces utilizing environmental and psychological factors of children's creativity development; comfortability of the class; appropriate equipment; practical density; and environmental factors such as light, color, furniture, green area, building form, etc. in which children can think, play and experience safely.

The following purposes can be considered as important in designing proper environments for creativity development of children:

- 1- Creating the appropriate bed for changing attitudes toward education
- 2- Institutionalizing the love of learning in children and teenagers by encouraging them to discover, creatively imagination, research and study.

- 3- Representing scientific and practical educations in line with children's creativity development in the least time and with the least difficulty.
- 4- Creating a sense of safety in children
- 5- Increasing sociability of children accompanying a better education
- 6- Strengthening the independence and confidence senses in children
- 7- Increasing the flexibility of educational environment
- 8- Help making children educations as satisfactory as possible and fertilizing innovative thoughts together with fondness of nature and life.

**Findings of the research: Investigation, analysis and evaluation of the viewpoints of children and their parents regarding the perceived and objective perspective of environmental space**

Since the research community was chosen from children 8 to 14 years old, the aim of the study was to find out the insights of children about their environments. A huge amount of data were collected using field study and dealing directly with children especially by means of interview and gathering their paintings, illustrations and handicrafts.

Findings of the study (via questionnaires and interviewing parents and their children) include the following parts:

**Interviewing parents**

Following questions and answers were gathered in asking about the practical environments for children:

**Question 1: How do you define a "practical space for children"?**

- 1-1- a safe place for children
- 1-2- a space with children's needs consideration
- 1-3- a space in which children feel comfortable
- 1-4- a space with necessary and sufficient play area for children
- 1-5- a space without any possibility of harassment for children
- 1-6- a space that satisfies children's welfare
- 1-7- a space in which children are accepted as users such as adults
- 1.8 a space in which children's health is significantly considered

**Question 2: What matters are the most stressful problems while your children are present at urban spaces?**

- 2-1- Cars in the street and not caring for children's priority right
- 2-2- Thief's and kidnappers
- 2-3- Problems of the addicts and panhandlers
- 2-4- Problems relate to inappropriate design of streets and sidewalks
- 2-5- Environmental problems such as air pollution, water pollution, ...
- 2-6- Being lost in obscure spaces of the neighborhoods
- 2-7- Violence against children
- 2-8- Dangerous behaviors such as explosives and hazardous plays ...

**Question 3: How do you think an appropriate urban space for children should be?**

- 3-1- to have safety
- 3-2- to be without any possibility of dangers related to inappropriate design of the environment
- 3-3- to be comfortable
- to have enough sanitary

**Question 4: What spaces do you prefer for your children's leisure time?**

- 4-1- indoor spaces
- 4-2- local parks
- 4-3- urban parks
- 4-4- neighborhood spaces
- 4-5- outdoor fields for sports (football court, volleyball court)
- 4-6- amusement park

Question 5: Are the special spaces for children in your city distinctively designed according to the standards of children's physical and mental features?

- 5-1- Urban spaces are mostly adapted with adults' needs and children also use these spaces.
- 5-2- There are only a few indoor spaces special for children and teenagers of which some are specified to video games. Equipment in the rare spaces for children are not standardized.

### Interviewing children

Since in this study, children are chosen as the target community, their ideas and viewpoints are significant in designing proper spaces for them. The following questions are among the materials asked from children:

- Name the features of the place in which you live now?
- What do you think can be the features of a favorable space?
- What entertainment space do you utilize in your leisure time?

What are your anticipations of a favorable educational space?

### Design guidelines for children

Extending the current values in architecture and urbanization for children's needs can be one of the strategies for creating effective environments on children's creativity development. Distinctive features of children spaces are colors, diversity, form, and volume, sense of belonging and safety of these places. Child-friendly spaces are combined with nature or at least benefit from the existence of plants and trees.

The plan of child-friendly environments is a new and comprehensive response for interaction between children and architecture in which active presence of children and their dynamic participation are considered as essentials. As a result, landscape approach as a subjective and objective phenomena, can be helpful in this way. Child-friendly spaces are not only related to physical characteristics, but also they are considered as meaningful significant aspects for children. Here, are eight design strategies for helping children development:

#### 1) Attractiveness and diversity

Because of their childhood features, children are more demanding for attractiveness and diversity. Utilizing different colors and textures increase the plans' beauty. In fact, a place's energetic spirit depends on its cheerfulness and diversity.

The other issue in designing an attractive place for children is using visual arts. Making a memorable picture, visual arts make a space unforgettable. Additionally, visual arts are not only able to make a place more pleasant but also they are a very good channel of entering the art into children spaces. This causes children become more familiar with arts and aesthetics. Some solutions of this kind can be filling the play grounds with soft materials such as sands or sawdust. Making small artificial hills and planting suitable herbs can be a solution for removing the pollution, designing the running water channels and natural playgrounds, can all be helpful in developing creativity in children. Considering sunny and shady places is also important.



Installation of aquariums and fountains is another factor for making the internal educational place more attractive and more helpful for children to positively communicate with nature (Poorzal, 2007).

Richness and diversity in the environment accompany with amplifying different senses of children such as visibility, audio and touching skills, which is very important in designing child-specific spaces. Children must feel comfortable and safe when encounter such buildings and facilities. Darkness and inappropriate forms are repellers more frightening than any other thing.

Colors are effectively significant in human personality especially in childhood and cause emotional experiences such as happiness, laughing, sadness, comfortness, excitability, silence and emotion. This is stronger in children, and because of their pure and happy inside they prefer bright colors combined properly. Spaces with cheerful and bright colors with vague forms (such as paintings of watercolor) will convey imaginative dreamy atmosphere to children and stimulate emotional, kind and inspirational sensed in them.

As children grow up, colors should become less bright and softer with specified borders, more details in buildings and soft curves. Space perception is a hard work. Child must recognize the environmental spaces, and at the same time, analyze it. This is performed by recognizing and defining the environmental objects. Generally, using colors that are unconsciously recognized and have no special rule will help making a cheerful and lively atmosphere.

Children like voices and normally, background soft voices will help their imagination and help interact with the outdoor life. Traffic and industrial noises are unwelcome in children's spaces. These spaces should not be acoustically dead inside.

## 2) Efficiency

Efficiency is defined as "functioning rapidly, less expensively, better and more responsible as possible that can be very important in architectural designing places for children. Architecture's role in this area is to prepare the environmental base for optimal functioning.

Multi-purpose spaces are certainly among the most important and primary needs of designing an educational class. Multi-purpose spaces were first paid attention during 1950s and at the present, it is one of the indexes of school buildings.

Costs of building and emphasis on flexibility aspect and the schools limitation of utilizing less space with more efficiency have resulted in popularity of highly efficient multi-purpose buildings (Butin, 2000).

Another evidence for spaces' efficiency is their ergonomics compliance. Space design based on the conditions is strongly dependent on recognition of children's needs for development recognition. Children are reluctant to stay in spaces of which scales are not properly designed in their favor. They need not only making, but destruction too. Child-friendly spaces must be equipped with objects such as boxes, barrels, tires, bridges, ropes, driving wheels, etc. in order to satisfy child's curiosity. Spatial scales of the child-friendly spaces must suit children's ergonomics in order to draw their attention and make an attractive and diverse space, unless, child will never feel belonging to that space. Human's physical and mental features need different space planning during growth. If space and its elements are matched with size and scales of the users, they will easily use their specific-age tools and spaces and they don't have to lift to get the tools (tools such as furniture parts, sofas, tables and chairs, racks, toy boxes, educational tools such as board, educational boards, proper installing door knobs, bathrooms, faucets, etc).

### 3) Safety and security

Part of the sense of security of people are formed during childhood which influences adulthood. This sense of security is built via communication with space and environment. Space safety is one of the basic features of child-friendly spaces. This is not only composed of safety in transportation or coping with inappropriate people, but it is a lot wider, for instance it considers audio, air and environmental pollutions, non-violent actions. Children must be secure and safe from physical and mental traumas. One of the tasks of architects and urban planners in designing child-specific centers is to consider their mental and physical features in order to build suitable spaces for them.

One of the aspects must be considered in regard to children safety in educational spaces, is to pay attention to undesirable environmental sounds which include 3 categories:

- 1- Air and land traffic sounds
- 2- Industrial and commercial centers' sound pollution
- 3- Other children's annoying sounds in other classes and in playgrounds.

Resources of the sounds can be close to educational centers only if the frequency of the sound they produce is less than 80 decibel (Lotfata, 2008).

Light is one of the architectural principles in visual comfortness of the spaces of which mental effects are different among people.

Studies suggested that natural bright light is positively influential in children. Enough light and good lighting of the space makes children more willing to stay in that space. Unless in cases in which lighting is a special tool for spatial emphasis, it is better to utilize a smooth light for children-specific spaces to make the environment look safe for them.

On the other hand, mismatch of desks and chairs will cause children fatigue and spinal problems. Educational equipment must be compatible for children's physical characteristics. A high ceiling plus proper air conditioner will increase body intelligence activities. Using furniture for different sexes appropriately will also influence their creativity development (Bastanfar, 1382).

### 4) Readability

Clarity and readability of the environment is essential for child's psychological security. This means that child must be able to recognize and understand the environment easily. They also have important roles in creating and maintaining the link between child and environment. In designing space for children it is essential to avoid any vagueness or lack of expressiveness that may frighten the child.

"A good image of the environment gives a sense of safety to people", believes Kevin Lynch. He also defines "good image" as "a person's easily recognition of the environment and relating the components in mind as a continuous form to have a systematically mental safety which makes it pleasant to stay in the mentioned space".

One of the factors that make the space more readable and clear, is light and its amount in the educational centers. Light is also one of the important principles in designing spaces and providing more comfort. Inside lighting factors include: the intensity of the light and the rate of surface reflex. Using natural light properly in the space promotes learning quality. Type and amount of the light influences children behavior. Proper lighting will increase concentration, reduces noise, raises children's efficiency in educational spaces, maintains eye health and decreases the exhaustion. It is better to install florescent lamps with semi-direct light distribution (lattice planes) or uniform or different. Rows of the lights must be perpendicular to the board and sofas, plus prediction of local lighting on teaching board must

be prepared. If a UV light is added to the florescent lamp, it will be more similar to the sun spectrum and children who are exposed to such light, will be higher and weightier (Bastanfar, 2003).

Also, signs, tabloids, and colored lines will be more recognizable for children and will add to readability of the space. Class size, corridors, walls colors, and the materials used in building the class floor, desks, chairs, enough natural light from staircase window, fitted wardrobe (in class and in corridors), bulletin boards, and making shelves to put children's handicrafts in corridors, are all effective in promoting mental activity of children in educational spaces (Lotfata, 2008).

### **5) Connectedness to nature**

Nature is a bed necessary in every creature's life. We must let children learn from nature like a teacher. Interacting with plants and animals, will speed up children development process and encourage them to play imaginatively and passionately and learn deeper with their sensory experiences. (Ghaemi, 2010)

A good space will respect the nature and its elements and utilizes them properly. Children must connect to all natural creatures such as water, plants, trees, animals, birds and even insects in order to learn and love the nature.

As a results, children like to play within water as a result, water must be available in the space with respectfully. Aquatic ecosystems are valuable resources for children to learn how to respect the nature.

Additionally, vegetation is another effective factor in designing of the space. Vegetation can promote the quality of the air, combined with pergolas or alone can have some protective roles and cause reduction of audio pollution. Plants and trees are able to make the landscape ordered and disciplined in children's view. Plants are also home to many birds, insects and small animals that can be very informative for children. For instance they can make small castles around the botanical environments or make structures digging soil. Research suggest that in natural spaces, children have less stress and tension. Those children spend more time in nature will have less signs of illness. Green areas in schools also improves children's scientific efficiency (Mozafar et al, 2009).

As a result, vegetation must not be neglected in any educational site. Children can learn seasons and life cycle from the nature. The general status of the natural spaces, equipment and furniture of the educational spaces must be able to provide three categories of children's needs including: educational needs, growth needs (social and physical development), and spiritual and sensational needs. Meeting these needs, will transform the physical environment of the schools into effective ones suitable for educational and developmental purposes (Memarian et al. 2013).

### **6) Flexibility**

Flexibility in architecture of children environment, will add to the environmental convertibility, its components and diversity of children's imagination. The space that is available for children to customize and control, is very important and valuable for children because their behavior is not predictive and may change in one moment. Children might feel comfortable in a wide space and play there but their mood may in seconds change and go to a lonely corner to play.

One of the problems of designing classes, is that they must consider public and at the same time individual properties of children in order for the teacher to control the class properly.



Educational classes must be flexible and for instance use some movable partitions to change the spaces into favorite ones (Dudek, 2000).

James Dick in an article entitled "L-shaped classes" mentioned that in the past, the aim of educating children was to prepare them to work in a factory, so classes were designed like factories. But nowadays, it has been changed and classes must be flexible enough to change into any favorite shape. We must focus on this issue that the value of functional essentials with life style changes with industrial and social needs developments. Flexibility in architecture is an issue responsible for many converting needs in indoor spaces. Providing comfort related to age, moods and functions of human is an important matter in architecture.

### **7) Availability**

Comfortable, easy and safe access to child-friendly spaces is an important issue in today's architecture design. It is preferable to provide accessibility of children in a way that they can do this without direct observation of the adults. They must be able to access the facilities with their peers, for instance with bicycle or on foot.

On the other hand, today, it is not usual to limit educational spaces to indoor rooms. They must be combination of indoor and outdoor spaces with elements necessary for both of them. One of the best methods of designing such spaces is to provide a yard in the educational space. Yard is generally an outdoor area in which a large amount of activities of children are taken place there. In best conditions, yards can be good places for developing discovering and practicing skills. Yards are children's urban fields for playing, talking, and interacting with other children which makes it very important in learning and enabling children. (Feyzi, et al, 2007).

Also, combination and continuity of the open and closed spaces (natural space based on the convertibility feature of the space) is required via using global retractable doors and link indoor and outdoor spaces. Installation of numerous open spaces such as yard or patio in a sporadically way among some closed spaces can be helpful in continuation of open and closed space. (Mozafar et al, 2007).

### **8) Participation**

One of the main principles of child-friendly environments is their participation in designing childish spaces.

Participation means asking children's ideas and considering their opinions in designing spaces. For instance, it is essential to investigate the physical and mental features and abilities of children considering their movement and behavior templates in a participatory program and use them in designing architectural spaces.

Children are sometimes unable to express themselves and their needs effectively so designing an adjusted place for children is dependent on recognizing their needs. The size of desks, chairs, toy boxes, height of door knobs and water faucets, are very important issues in designing. The proper size and height of the objects will help them fit and communicate more appropriately with their environment. They love furniture that are suitable for their size and use them in a more creative way (Shaterian, 2010). As a result, it is essential to use special strategies to recognize their needs. For instance, using a childish language, analysis of their paintings of urban spaces or observing their behavior in the space are useful in recognizing their ideas about the environment.

### **Conclusion**

Results of this study can be used as an optimal template for architectural designing children educational spaces. These strategies are based on the information obtained from children, parents and educational staff of schools in Iran who are the most effective and influenced people in creativity educational process.

On one side, correction and verification of the templates by education ministry and considering educational space designing and architecture must be done by in order to promote the quality of education.

On the other hand, better infrastructures for increasing creativity and promote the educational quality will lead to encourage the recognition of space quality designing which is one of the outcomes of the present study. In fact, it is essential to consider the designing of the environment as an important issue for promoting attractiveness, diversity, efficiency, safety, security, readability, nature connectedness, flexibility, availability and participation in educational environments.

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