

## The Analysis of Kindergarten Architectural Ideas with a Focus on Play Element

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**Abstract.** The early years of childhood are of great importance because children's growth rate is high physically and intellectually. An ambience should be provided that allows children to use the best of their childhood. Playing games has a key role in their growth and can actually be considered as their job. It has a dual function for a child: education and entertainment. Most of the places that are used as kindergartens in Iran were not actually meant to be a child care center and are originally residential places with switched usage. The architectural forms are designed according to psychological needs of children (playing games, interacting with others, language, and intellectual growth ...) and includes essential areas of a kindergarten. This fundamental research was performed using documentation and library methods. Since children are mainly interested in playing, the purpose of this research is to find some ideas to create indoor and outdoor spaces in a kindergarten, with a focus on play element to ensure the physical and mental health of children. The researcher first explains some concepts such as the importance of childhood, play, and outdoor open spaces and then concentrates on how children apply all their senses. In the end, she offers some architectural ideas and describes their effects on the child's body and mind, as well as his unconscious learning ability.

**Keywords:** Significance of Childhood, child's play, Playground for children, kindergarten

### INTRODUCTION

A child starts the childhood period immediately after the infancy. According to various definitions this period is defined as the ages between 1.5 to 12. Regardless of all physical and mental changes, childhood can be considered as another aspect of human development, intellectually and spiritually, which influences an individual's whole life.

It is observed that if children between ages of 3-7 live in a safe and creative environment, they can experience the happiest period of their lives and are better prepared to learn and progress. During the process of learning, they enjoy pleasure, happiness, and the sense of being responsible [1] Xiao and Gong Hao [2] pointed out that paying attention to emotional needs of children is really significant. Transferring children's feelings to external objects determines whether their needs can be met. Their feelings cannot be controlled. On the contrary, by using the language of the environment to communicate with children, we can meet their needs and create their favorite space [2].

According to Zuo [3] the games children play are a part of their nature. Their outdoor activities in daily life locations are the basis of their healthy growth. Playing is a way to discover the world and promotes the all - round moral, intellectual, and physical development of children Acar [4] indicated that playing is the best communication and the most natural learning environment for children. Xiao and Gong Hao [4] described the details of designing children's outdoor recreational sites including entrance, terrain, roads, dividers, pavements, etc. At the

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same time, it can also give children who live in high-rise complex buildings an opportunity to contact with nature.

Several theories connect the architecture and learning. However, a lack of evidence is observed on the connection between particular types of learning environments and student performance. Overall, there is a notion of quality learning environment and its positive impact on student performance [5]. In a case study in Malaysia, Azlina and A. S. studied the impact of playing in outdoor playgrounds on physical or motor activities of kindergarten children. Natural environments must be adapted to meet these needs in order to facilitate children's assimilation of knowledge about the complex ecological relationships in various contexts of where they live [6]. In modern society, kindergartens are known as a place for children to play, learn, and daydream. It is a place to discover and nurture their talents and entertain them, in addition to balancing and promoting their social and emotional intelligence. Furthermore, it provides them with the skills they will need later in life to choose their field of study and job. A kindergarten can vaccinate children against lots of social harm and help them learn effectively. The architecture of a kindergarten can be in a such way that has significant influence on the mind and spirit of children. Zuo [3] showed that choosing the right location for a kindergarten is very important and being close to the main road can cause lots of diseases for children. Moreover, children prefer to spend their time in a place with a view of trees and the sky rather than skyscrapers. Kraftl discusses three key points in his paper and studies the materials of construction of an ideal childhood. First, many seminal accounts of childhood do not provide a vigorous, detailed sense of how constructions of childhood are achieved, in practice. Second, there is a need to focus on more detailed studies of particular practices. Few researches have focused on merely one practice, institution or building, to explore what is truly going on there in. Third, there is little specific sense of how materials, spaces and material spaces come to matter in the construction of childhood [7]. Although several researches have been performed on kindergarten architecture and architectural ideas, the lack of research sources is almost obvious. The number of kindergartens merely designed for children is very limited. The purpose of the present study is to introduce architectural ideas, based on diversity in kindergarten spaces for children aged 3-7, with a focus on the element of play, to motivate and improve their learning. Furthermore, it discusses the importance of childhood, play, and open play spaces and investigates activities suited to children's growth. Such activities that are necessary for children's growth and are considered in architectural ideas for a kindergarten. This paper studies the psychological understanding of children, that identifies their main reason to play, and examines its impact on designing a kindergarten.

### **1. PSYCHOLOGICAL PRINCIPLES AND THE NEEDS OF A CHILD**

#### **1.1. Childhood**

The conditions and environment of childhood affect our mind more than any other life period. A little self-reflection and self-analysis can help us recognize the main causes of many of our thoughts and behavior. However, the origin of some behavior are still unknown. Many of these feelings, thoughts, and behavior are rooted in our childhood and have affected us unconsciously. They are difficult to change, and according to Adler: "A person's lifestyle is based on the inherited traits and talents that are established and consolidated in the first five or six years of life and rarely change in the rest of the life." [8]. Therefore, what we inherit from our childhood has a deep and lasting effect. During the childhood, the most important patterns of behavior are developed. It has been recognized for many centuries that skills, language habits, and knowledge about the world are acquired in this period. The emotional responses of the individual, which are important modifiers of his personality traits, are largely determined by childhood experiences [9]. Ages between 3 to 7 make the most prominent and important stage of childhood. The most important information obtained by psychology, that has a significant effect on preschool child training can be divided into three categories: 1. The child goes through a phase that is associated with intense feeling of character. 2. He gets the first impression of the

world which is cluttered. 3. Playing is his fundamental activity which is complicated and organized and is a natural way to show off [10] Maria Montessori has named this stage as the human's psychological- spiritual birth. At this stage the child's brain and mind grow and complete. He attracts the surrounding world to himself and let it become a part of his character [11] The character is not only moral traits, but the term is also used to differentiate the various aspects of the child's identity and is a combination of his physical and mental display. Personality is colored and shaped in the early years of life through interaction with others and is socialized more. Children have different characters at different ages. An important aspect of the child's personality is formed through interaction with his surrounding environment that builds a large part of his feelings and knowledge.

### **1.2 Playing and learning in outdoor space (garden)**

According to psychologists, childhood is the time for playing. At the beginning, the child plays with objects and then the people. Since the age of 3, the child gradually participates in social and group games. Playing is a part of children's nature that happens automatically and involuntarily, and improves them physically and mentally. They play intuitively only because playing is pleasant and enjoyable. Playing games recognizes and develops child's talents and creative potentials and increases linguistic, mental, social, emotional, and motor skills [4]. Children should move, exercise, run and play outdoors freely. These are all considered as a part of the healthy development of children. As Maria Montessori says, the freedom means a child can move easily and freely from one side to the other side and is free in choosing his games and entertainments [1] The fact is that children explore new things, imitate adults' behavior, test their own capacities, and therefore widen their worlds when they are free in their games [4] Children expect to have lots of play and fun with their friends in the kindergarten. They like an environment that allows them to daydream to a large extent. When children live and play in a kindergarten, they face many tall buildings just like a forest. They cannot have a view of blue sky, white clouds, flowers and trees. It is a depressing picture of life in a kindergarten [3]. Morris Debesse writes in his book, named "stages of education": Let's see where the children of this age should be educated? At home or school? The answer may be doubtful. If we were living in a dream world, I would answer that the children between 3 to 7 years old should be educated in a garden. Because a child needs enough space to run, crawl, jump, breathe deeply, exercise his senses, and achieve his dreams and tales. Isn't a garden the best environment you can imagine for these activities?" [10]. However, these imaginations should not be ignored and should come into reality. It is much better that a child grows up in a safe environment like family, if they provide all the terms. But two issues are raised here; first, the child needs to interact with other children, and second, not all families are able to provide these facilities in terms of time and place. Other favourite places for children are open areas and playgrounds [6] Outdoor spaces are the best playground environments for children. These areas offer opportunities that are not found in indoor spaces and physical environment contributes to children's learning [4]. Associating with nature is one of the important growth factors. Direct contact with outdoor nature can stimulate a child's senses effectively. Before the age of 7, children desire to learn in real objective ways and experience everything first hand. They cannot have a rational and abstract thinking. Children consider every surrounding thing as a playing object and use it for entertainment. A child even plays with his food and imagines it in various shapes as the playing dough. Therefore, the more access to the natural elements, more fun and excitement the child achieves. They are imitative in the world of sensible things. Surrounding environment shows several of occurrences, wide-ranging and comprehensive characteristics. Children could feel the physical world and promote their intelligence during interacting closely with surrounding environment. Outdoor playground is one of their first teachers that adapt to society in the future [3]. Sweet memories of childish games and the peace created by these relationships are so effective in children's soul and spirit that stay with them for years after the childhood. Being close and having a continuous contact with nature flourish their imagination

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and ingenuity, and help them remarkably discover the surrounding environment under the ideal conditions. Curious, creative, and dynamic mind of children is a mere creator of various worlds in the fantasy. The expert of children play and education, says, "believe it or not, playing is the best training activity children can always participate in freely. We should note the fact that it is impossible for a child to learn nothing from playing [12]



**Figures 1.** Children learning from the direct contact with nature (Photo by the author).

Considering the learning process in childhood, playing is the best communication and the most natural learning environment for children [4]. Children are filled with joy when they play in outdoor playgrounds. They learn directly from the environment by being in the natural outdoor areas. Trees are alive and available samples. Children learn from the surrounding areas including the trees, stones, and the land they are living on. Water-dependent ecosystems, birds, insects, and small animals living among the trees are valuable resources for education. Following such an educational approach, children recognize that they are a part of their surrounding environment, so they feel responsible towards it (figures 1 and 2). It tends to reduce children knocked against one another in outdoor playgrounds. Children can develop themselves in a relaxed and peaceful environment [3].

### 1.3 Children practicing a variety of sensory experiences

Walking in the rain, running barefoot on the beach, and touching the snow are very exciting experiences for children. Being caressed with a feather, touching an embossed book, and blowing into the soap bubbles strengthen the children's senses [11]. Although health and safety are two crucial items for a child that need detailed discussion and review according to their age, and observing each of them is restrictive. Pasteurized and semi-hospital places should be avoided, as Jane Jacob, a critic of architecture and urban development, is extremely against it. Montessori's main message was to allow children to grow up according to their own abilities, not their parents' demands and desires. She emphasized on individual independence and freedom under intangible supervision and respect for the natural growth of children in educational environments [1]. Semi-hospital situation means taking care of a child in a way that he is not allowed to take any steps without permission or to touch unusual things, in a full hygienic condition where touching the soil, flowers or plants are forbidden. If we have an obsession for children's health, we actually prevent them from the main and primary growth.

The urban children need other types of places outside of their houses for playing, hanging around, and imagining the world [13]. But some parents sacrifice their child's freedom for his security and protection and hold his hand tightly instead of allowing him to feel free. They rarely allow him to go for walking with his friends. Even the distance between the school and home should be done by bus. Too much concern stops a child's movement and excitement and leads to obesity and being out of shape. That is why the number of people who walk to school or any other training centers are reducing gradually. What does it mean to make a child leave the daily life movement of the streets for going to a park or new complex playgrounds? As a matter of fact, the vibrant streets are introducing the positive aspects of playing to these very young citizens and these games are as important as their safety and protection [14]. In the path

from home to kindergarten, the pavements are the places with excellent society protection where children can play safely [13] Researches have shown that children who spend most of their time indoors and are deprived from trips, curiosity, and strolling tend to have nervous, aggressive personality and sometimes react unwisely.

**2. METHODOLOGY**

In this fundamental research performed in cross-sectional method, the materials were collected in library method. This research first investigates preveious studies on designing kindergartens and children's demands and their importance, and then introduces a framework in conclusion section. The purpose of this study is to put together the components of a kindergarten and find functional ideas and a new framework to be used as a guideline by architects in designing a standard kindergarten.

**3. DESIGNING KINDERGARTEN AREAS**

The first priority in designing areas is child's safety and then the flexibility of the environment that gives a chance to the child to play new games and daydream, a child whose main concern is learning and curiosity. For children, the architecture starts from their mind. If we cannot understand the feelings, we have difficulties in the process of thinking [15] Takaharu Tezukathe, architect of Fuji kindergarten, believes that a kindergarten is a complex of creative games and using fewer instruments forces children to apply their own creativity in the games and discover new methods (Ehsany Moaied, 2014). Therefore, environmental factors are necessary beside the swings and slides. Strengthening the ambience experience is an essential criterion in designing [16].

**Table 1.** The relationship between child's growth needs and activities appropriate to his growth.

Growth needs of 3-7 year-old children	Activities appropriate to the child's development
High curiosity	Painting
Imagination	Visual arts
Playing games	Play, puppetry, and storytelling
Language development	Music
Aquiring different skills	Sand playing
Making friends	Lonely and cozy atmosphere
Improving creativity	Playing with water
Loving musical and rhythmic stories	Book reading
Loving pencil and paper	Outdoor activities

Studying children's abilities and growth is a broad field. Taking children needs into account, architectural style can contribute to the child's growth (table 1). The ambience should prepare the children with safety and peace and memorable atmosphere. It must be able to help them burn their energy, transfer a sense of joy and exhilaration, accept the children's dreams, stimulate their artistic taste and give them the chance to think. In general, this architecture should observe three main rules including the ability to play freely (variety of options), direct contact with nature, and expanding children's imaginations and fantasies. Designing begins from the kindergarten admission and continues to learning rooms. The plan can be divided into three basic parts of main entrance, open playground (garden), and interior design.

**3.1. Entrance**

In every building, the entrance is the first significant part whose specifications matter a lot. An entrance can be designed in the same level, outside, or retreated from the wall surface. For a kindergarten, it is better to be designed outside the wall surface, beause it signals the children that they are approaching to the kindergarten and excite them.

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We can fade the severe difference between the atmosphere in a kindergarten and the one outside, and generalize it to the community. The children can be entertained on their way out by placing some playing instruments and sands on the ground in the protruding part of the building. There are two reasons to do so. First, the kindergarten can be expanded to the society, meaning that children can always find a place to burn their energy when they are out in the streets. According to Jacob, if the pavements are wide enough in a lively street, play and other talents flourish [13]. Second, the child does not suddenly separate from the kindergarten atmosphere and get the chance to leave it little by little.

In total, the entrance of a kindergarten should look inviting for children. From outside, it should look obviously like a place for playing and fun. Children's favorite elements such as short walls to balance the sunlight or their favorite cartoon characters can be used.

### 3.2. Outdoor playground (garden and open natural area)

The importance of an open playground was formerly mentioned, so the combination of components is explained here. Basically, all the vegetation of the site should be maintained and the building should be designed around it. Old trees and green areas should be preserved (figure 3). The vegetation increases the quality of air and in combination with alcoves, play a protective role against the wind or rain and reduces the sound pollution. Changeable height of landform could provide children with a rich environment to play. It develops children's imagination and is a way to encourage innovations and practice their ability [3]. If the site is too flat, it is best to make digging to form slopes, hills, or a gentle undulating slope that is 5%~15% and is good for surface drainage and is consistent with the requirements of natural beauty. Variations of terrain height can prepare the chance for many activities. Children should be allowed to observe the surrounding environment from different high or low perspectives. They should be able to roll over or run on the slopes that separate the site from the environment [2].



**Figure 3.** Children play on the slope (Photo by the author).

Lots of trees can be planted on the slopes and around them. The desired area is a place shaded by big trees where the surface is a green turf. There are also a few benches under the trees and single logs lying across the benches that provides them with an exploratory play habitat as well as social play in the kindergarten area [6]. Solely or in combination with boulders, the vegetation plays a protective role against wind and rain and also reduces sound pollution. Children can build a house, castle or wall indoors, climb up the trees or even plant some shrubs that are all very enjoyable for them. One of the parts of an open playground is a place where they can play with water and sand.



### 3.2. Water play area

Allow children to play in the water. Any type of water available in the kindergarten should maintain its natural form as much as possible. Natural river bed can be an environment of training hands-on abilities for children of all ages. Of course, security is of great importance in designing this part. The water environment provides the children with a very good activity area [2]. Motion and dynamics are created in the site by making different kinds of artificial pools which help children burn their energy and make them happy (all needed for their growth), and provide them with a chance to connect with nature (figure 4). Water play helps children develop their creative ideas. Parents and teachers can train children's creative mind by various games and questions like, "how the rain is formed in the sky?", "what objects float on the water and what objects sink?," and so on. Children learn how to communicate with others while playing with water [17] Water play area is usually located in front of the main building of the kindergarten to allow teachers to supervise it carefully.



Figure 4. Children playing water (Photo by the author).

#### 3.2.2. Sandbox

The sandbox always evokes a playground. Nowadays, variety of games can be played in a sandbox. It is a pile of sand in an open area inside the kindergarten that can give the children an opportunity to have a great time with their playmates. Since these piles are soft and flexible, children like to hide or roll over in them.



Figure 5-6. Children's activities in sandbox.

The child digs and makes corridors in the sandbox and is busy with imaginative games. He understands the geometric and spatial issues and flourishes his creativity. The sandbox is useful to strengthen the focusing power, sense of touch, and hand muscles. The tools like buckets, shovels, and basins are included. There is at least 50cm deep sand in a sandbox. There should be some shade to maintain sufficient humidity and to ensure good drainage. The sandbox should be covered when it is unused to prevent animals contaminating the sand [2] Using some dividers

like short walls and tires, this area is completely separated. Due to the possible damage to trees, it also should be away from garden (fig. 5 and 6).

### **3.3. Interior design of a kindergarten**

The locations of facilities and places such as toilets, taps, flash tanks, dining room tables, etc should be designed appropriate to children's age and body. The followings should be considered in interior designing:

1. It is better to divide the internal spaces by short shelves, so children can see what is happening around.
2. The bookshelves should be appropriate to the height of children (almost 60 cm).
3. Sliding doors are better options for closets.
4. The space should fit the number of children. A small and busy space suppresses their enthusiasm and creativity.
5. Geometric shapes can be used in the walls and windows both for fun and educational purposes.
6. The appropriate light of classes include natural light and shadow along with lighting.
7. Plugs and switches should be out of the reach of children.
8. A special place should be considered to keep children's food and nourishment.
9. The class should be a place to store playing tools, so that the children can take them easily and put them away at the end of the day.

By designing a suitable environment and using necessary equipments, children can enjoy painting, movies, theatre, music, visual arts, storytelling, and reading. In addition, some specific spaces should be designed, like a place to be alone for a while.

#### **3.3.1. Solidarity room**

Children like the silence because of their nature. Silence improves internal perspective and meditation. Young children need to feel this inner part of their life because they are basically introvert [1]Children require a quiet place to be able to overwhelm in their imaginations and think well. They like cozy, peaceful places because they do not have any chance to think and imagine in crowded and too bright places. They feel safe in such places, can focus, think about their favorite subjects, carry on a monologue, paint, and whisper in their friend's ear. In architecture, some attractive corners should be considered for children's privacy. Effective use of spaces that seem to be useless such as under the stairs and malformed corners of the building, along with creating new temporary space with canvas tents can be used for this purpose. However, it can meet the children's need to play a variety of games freely.

## **RESULTS**

According to this study that was performed in library method, kindergarten is not merely an educational environment. It is also an environment for play, entertainment and happiness. Learning takes place unconsciously during playing games, but when the child starts to enjoy the process, the unconscious learning turns into conscious learning gradually. Architects consider children's psychological and cognitive needs when designing a kindergarten and care a lot about the playing spaces which have an important role in children's personality formation. Objective, organic, and tangible learning becomes possible by designing open playgrounds and creating natural spaces.



**Table 2.** Playgrounds and the type of education suited to these areas.

Playgrounds and entertainment areas	The type of education suited to these areas
Open spaces and gardens	Learning from nature: learning directly from trees, birds, insects, and animals
Sandboxes	Understanding geometrical concepts, developing imagination ability, and improving the concentration and sense of touch
Waterplay area	This collective space helps children unload their excitement and energy, in addition to learning friendship and interaction. Water play develops children's creativity and innovation
Solidarity room	Boosting children's imagination and thinking

## CONCLUSION

It seems that most kindergartens in Iran are not standard and appropriately designed for children. They are mostly located in residential areas and apartment buildings that are painted to suit children. Recently, the Ministry of Education has focused on educational progress of children in kindergartens and pre-elementary schools. We hope that running the functional ideas of this study and considering the conditions, climate, and environment lead to a guideline for designing a standard kindergarten where children can learn, play, and grow up. This research can be generalized to other educational spaces such as elementary schools, training centers, and centers for Intellectual Development of Children and Adolescents. More studies in larger research fields are recommended for designing kindergarten environment, with a focus on two elements of play and outdoor open areas, to improve children's learning.

## REFERENCES

- [1] Samady,S.A Maria Montessori- Children's Educational and Training System. Danjeh Publications. pp.82-115. (2008).
- [2] Xiao ,Z. Gong ,W. Hao ,L. Study on Children's Outdoor Recreational Site Design in Urban Residential Areas. *Advanced Materials Research journal*, Vols. 450-451, pp 995-998. (2012).
- [3] Zuo, Y. Study on Humanistic Factors in Design of Kindergarten, *Applied Mechanics and Materials journal*, Vols. 357-360, pp 285-288. (2013).
- [4] Acar, H. Learning Environments for Children in Outdoor Spaces. *Social and Behavioral Sciences Journal*, No.141, pp. 846\_848. (2014).
- [5] Shmis,T. Kotnik,J. Ustinova, M. Creating New Learning Environments: Challenges for Early Childhood Development Architecture and Pedagogy in Russia. *Social and Behavioral Sciences Journal*, No.146, p.40\_46. (2014).
- [6] Azlina, W. A. S, Z. A Pilot Study: The Impact of Outdoor Play Spaces on Kindergarten Children. *Social and Behavioral Sciences Journal*, No.38, pp.277\_278. (2012).
- [7] Kraftl,P. Building an Idea: The Material Construction of an Ideal Childhood. Published by: Wiley on behalf of The Royal Geographical Society (with the Institute of BritishGeographers). Vol. 31, No. 4 (Dec.,2006), pp. 488-504.
- [8] Siasi,A-A. Ideas about Personality. Date of publication: fourth. Tehran University Publications. p.87. (1999).
- [9] Brooks, Fowler D; Shaffer, Laurance F Problems and Methods of Child Psychology. Boston, MA, Us. pp.1\_18. (1937).
- [10] Debesse,M. Training process, Translation. Kardan,A, Tehran University Publications, pp.37\_47. (1969).
- [11] Machu,K Let me learn by my self, only guide me. Translation: Lafzy,L, Date of publication: First. zekr Publications. pp.4\_30. (2001).
- [12] Askary zadeh, Gh Psychology of Games. Amirkabir Publications. Tehran. P.58. (2011).

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- [13] Jacobs, J. The Death and Life of Great American Cities. Translations. Parsi, H\_ Aflatouni, A. Tehran University Publications. pp.78\_92. (2013).
- [14] Choay, F. L' Urbanisme Utopies etrealites, Translation: Habiby.M, Published. Fifth, Tehran University Publications, p. 372. (2010).
- [15] Ehsani, M , F. Fuji Kindergarten. Journal of Arts and Architecture. No.32, P.104. (2014).
- [16] Dyck, J,A. The Built Enveronment`s Effect on Learning: Applying Current Research. Montessori Life. Winer(2002).
- [17] Motahary, M. persa, N. Peyame Zan Magazine, Water play and it's magic attraction for children, Vols.164, P:117. (2006).