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# Studying Seven Criteria of Designing Outdoor Play Spaces in Some Kindergartens of Tehran

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## Abstract

*Outdoor play has been formally recognized as an important part of education and creativity of children in recent years. The advantage of this approach is that they learn about the consequences of their choices and it helps to build relationships with other children as a catalyst for creativity; these activities have a significant impact for learning new skills and contributing of children. The playgrounds should be connected directly to other environments in order that children can move towards them to gain an understanding of new things. So walls and fences should be eliminated in playgroundsSeven criteria (7Cs) were recommended to design outdoor play spaces for children aged two to five. The 7Cs is based on findings identified from a five-year multidisciplinary study of outdoor play spaces at child care centers in Vancouver and include character, context, connectivity, change, chance, clarity, and challenge. This study conducted to review these criteria in ten kindergartens in Tehran which were selected randomly from different areas. In our cases the most attention pay to "change" and the least serve to "context" and total attention to the 7Cs is weak.*

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## Introduction:

The ability of intellect is one of the humans' main features and their life's basic thing. Humans have never lived without thinking and they could solve problems to achieve considerable successes. So, the entire human's achievements are based on intellect and effective belief. Creative thinking is the most significant and complex human effects which the researchers and psychologists have not agreed on different theories about it. Creativity is certainly affected by surrounding environment. It is defined in two ways: some definitions focus on the personality traits and the others define creativity based on creative process. Children in care log in many hours at their centers and the outdoor play space can potentially offer valuable experiences. These spaces can provide contact with living things like plants and animals, and environmental conditions that change with the seasons. This contact can enhance physical and cognitive development, encourage imaginative play, and stimulate empathy. The outdoor environment may also provide a restorative environment for children. Outdoor spaces at child care centers are ideal locations to express the character of a place. It is an environment where children can interact with the enchanting natural elements. This environment offers curriculum opportunities for early childhood educators and is unique in its ability to provide for large group activities that prove more difficult indoors. Unfortunately, many play spaces are dominated by pre-fabricated play equipment that does not express the standard qualities of playing outdoors. [1] When play spaces start to look the same, they fail to reflect the individuality of the various programs. *7Cs* consists of some researches about this subject in Vancouver. In this paper, firstly, the seven criteria and then the existence of each one in some kindergartens of Tehran, where have been randomly chosen, are studied.

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**Seven criteria:**

Seven criteria joins physical conditions of outdoor play environments with what we know about the development of young children. It should be used to inform the design team responsible for designing the play space. The design team should not only involve professional designers, but early childhood educators, parents, and children. Seven criteria include character, context, connectivity, change, chance, clarity, and challenge.

Each C defines the key elements that should be considered by the design team. While our research primarily addresses children aged two to five years-old, we believe that many of these elements are relevant to play spaces for older children as well.

Table 1 shows the amount of attention of case studies to this important criterion and its use in designing outdoor play spaces has been determined.

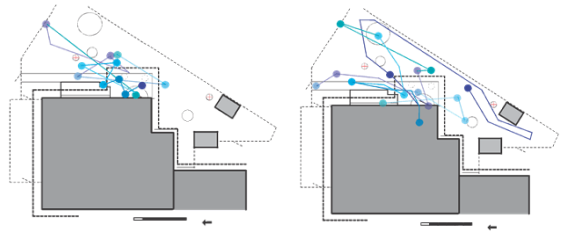



Figure (1) Children's movements tracked over a 30 minute time period.[2]

We asked in our study:

1. Size of the outdoor play spaces and where children played in these spaces.

Outdoor play spaces are used by centers for gross motor play (for example, running). Yet, recent studies have found that gross motor movement is decreasing among young children, contributing to obesity in school children. Unfortunately, in both Canada and the U.S. the amount of outdoor space allocated for each child enrolled in full time care has stayed the same since the 1980s (75 f2 / 7m2). At the same time, changes to safety regulations pertaining to play equipment have resulted in lower play structures with bigger no-encroachment zones (areas that must be kept free of objects and children not playing on the equipment). These regulations further decrease space for gross motor play.

2. Types of play observed in different play environments.

There are different ways that young children play. We studied the relationship between different outdoor play spaces and the way children played in these spaces. We observed social play: cooperative play, independent play, and aggressive play. Play direction: child-directed play versus staff directed play, a combination, and play 'themes' designed for the play space. Play types: imaginative play, volitional play (manipulating the physical environment), communicative play (use of descriptive language), object play, exploratory play, and gross motor play. We also observed children's play duration: fleeting (moves from one activity to the next without completion), moderate duration, and deep play.

3. What staff and children enjoy about their current outdoor play spaces.

Children and adult perceptions about their outdoor play spaces capture time periods and events beyond the duration of the study. It is crucial to integrate this relationship into the research. It also helps to involve people using the play spaces in our research project.

4. Presence of living things in the outdoor play environment.

Previous research inland architecture has shown that outdoor play spaces can provide contact with living things like plants that change with time. This contact can enhance physical, cognitive, and language development; encourage imaginative play; stimulate empathy; and provide restorative experiences for children.

5. Amount of manual materials in the outdoor play environment.

Incorporating manual materials like sand, dirt, gravel and water into a play space allows children to exert control over their play space and change their surroundings to suit their needs. Children want to play with responsive materials that can be carried, collected, damned, dug, floated, filled, scooped, sifted, spilled, sprinkled, and thrown.

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Figure (2) Views of four different outdoor play spaces in our study.[2]

**First criteria: character**

Moving from the indoors outside, there is more room visually and physically. You feel like you can breathe outside. There is a different set of emotions outside. It feels calming to be outside and children are able to adjust to their emotional and social needs. For example, if children need to, they can hide away from the larger group. Inside it is more difficult for children to escape from the group. Less restriction are placed on the children outside. They are able to move freely in different ways, they can scream when they are excited or make other loud noises. The outdoors is also a dynamic changing environment. The change is noticeable and enticing to the children. [3].

Character refers to the overall feel and design intent of your outdoor play space. We have identified four architectural character types currently existing in our study: modern, organic, modular, and re-use. These physical characteristics have been successfully used in European studies of child care environments and they provide an effective way to code for design type. These three images in figure 3 show how play spaces can be designed to reflect the unique character of a place contribute to the overall feeling of a play space and differentiate one play environment from another.



Figure (3) the unique character of a place. Vancouver, Canada.[2]

Together, the design team should write a brief mission statement that defines the goals of the center and how the character or "overall feel" of the outdoor play space will reflect and support these goals. Linking the mission statement to the physical character of the play space is paramount to the design process. [4].

As you see in figure 4, our case studies considered this criterion partly but the outdoor play spaces included a courtyard full of paintings and play equipment. This equipment also existed indoors and in some cases, there was even a roof over the equipment outdoors which made it similar to indoors. The outdoor play spaces have never been considered and designed as an important factor to reflect the unique character but they have just been decorated.



Figure (4) there is not a clear space between the outdoor and the indoor play spaces. [20]

**Second criteria: context**

Context refers to the small world of the play space itself, the larger landscape that surrounds the center, and how they interact with each other [5].

The design team should assess their center's context and ask - is the child care center in an old neighborhood or in the central business district, or on a farm? Is there room to provide maximum space for the children? Are there views out from the play space to its surroundings? The micro-climatic conditions should also be assessed by the design team. What is the orientation of the site - south or is it shaded by a large building?

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Thermal Delights. Micro-climatic conditions should also be considered in regards to the location of the play space relative to the ground plane, the degree of transparency between the space and its surroundings, and degrees of sun and shadow. [6], [7]
We found that centers that overlooked thermal issues (too hot, or too cold, or too damp) created conditions that early childhood educators as well as children did not want to occupy for any length of time.

Space per child ratio. It's worth the fight. The number of children the center expects to enroll is an important piece of information when designing a child care center. [8] The number of full-time enrolled children determines the amount of space allocated both inside and outside. Child to space density impacts levels of aggression, the mood, and the types of play, and the amount of gross motor activity in outdoor play spaces. [9].

The City of Vancouver recommends an outdoor space ratio of 10.6 m2-14m2 per child for ages three to five years enrolled in full time group child care. Based on our findings centers with 14m2 per child ratios or slightly higher offered more flexible space for early childhood educators to improvise different play activities, and extra space also allowed for more gross motor activities like running.



Figure (5) most of the kindergartens have been located beside wide and crowded streets. [20]

Unfortunately, in most of our case studies, the outdoor play spaces measured 2 to 4 square meters, they were much lower than standards, and they were not qualified. Also, in all of our case studies, there is no option for playing outdoors in cold seasons and unpleasant weather and the children can't play outdoors for a long time.

The design team makes any effort to demand as much space as possible for the children. This can be difficult when the child care Centre is being built as part of a larger project in a dense urban situation, but every effort must be made to claim space for children against demands of parking, loading docks, and smoking areas for adults.

The design team should consider what the surrounding context has to offer to the play space. Children enjoy observing - especially adults. Children also appreciate views - such as a dumpster being unloaded - that adults do not. What are the views afforded by the location of the play space? A number of the roof top play spaces we studied accommodated views of the city which captivated children - inciting discussion among the children and their early childhood educators.

**Third criteria: connectivity**

This category shows the physical, visual, and cognitive connectivity of the play space itself. Connectivity is physical, but it also activates cognitive development, such as the way a hierarchy of pathways can orchestrate movement in a play space and helps children understand that space. Repeated observations with able and disabled children have shown that unifying the play yard unifies the play experience and increases significantly the time spent engaged with the physical structure of the place. [10].

Indoor / Outdoor. Every effort should be made to link the outdoor play space with the inside play space. Centers that had direct physical and visual connection to their outdoor play space from inside used the outdoors more frequently than those centers that lacked this connection. For example, one center must take children in an elevator to reach their play space, making outdoor play an inconvenience. Outdoor play spaces that are visually connected to the inside also contribute to the interior atmosphere of the center. This connectivity contributes a sense of place to the interior "from weather to seasonal changes, from the time of day to the rhythms of the town- precisely because it exists in a specific place and time [11].

Pathways. The design team should determine the different pathways that will accommodate different forms of mobility. Our study and others have shown that looped paths and a hierarchy of paths with dominant paths for multi-purposes and subordinate paths extending from these main paths give children the opportunity to explore the space at different speeds and to make decisions. [4].

In figure 6 we see from the left side first, A transparent door visually connects the indoor and outdoor spaces. The second, these two play houses are a creative way of connecting two child care programs. The

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third one, his fence connects the toddler and 3-5 play spaces. The spaces in the fence allow children to interact and observe each other. And the last one, this child scaled tunnels are a unique design solution to improve the connectivity of a play environment.



Figure (6) connectivity's between spaces. Vancouver, Canada.[2]

There is no space for cycling and even running for children in our case studies. These spaces have been separated by fences and there is just a window with thick curtains to prevent visual communication. The paths have been separated by stairs which are not standard in height. Since the most kindergartens were often houses where have not been designed specifically and just by adding some details have been changed to child care centers, the connections are usually contrary to standards for children and it has been done in form of stairs. So, due to lack of play space and overcrowding and to maintain the safety of children, most of the time, they are prevented even from running. These kinds of connection between the spaces not only discourage the children to play outdoors but also prevent them from playing. There are some examples in figure 7.



Figure (7) the connections have been designed very unprofessionally.[20]

**Forth criteria: change**

Change includes a range of differently sized spaces designed in the play area and how the whole play space changes over time. The design team should ensure that a range of spaces accommodate different amounts of children and that the materials of the spaces actually change themselves overtime. [5] , [6] ,[12], [13], [14].

Differently sized sub-spaces. Many of the design guidelines for children's outdoor play spaces stress the importance of variable sized spaces to accommodate different numbers of children and different uses. [3]. Spaces that allow children to be alone are particularly important because children are often grouped together and they need spaces to get away, to be on their own, or in pairs. Anita Olds contends that private spaces are crucial to development because they allow retreat and enable children to behave according to their mood and give shy children the opportunities to explore feelings and inner turmoil they prefer not to reveal to others [13].

Zones are areas in the play space that are designed to accommodate particular uses- such as sand play [10]. Zoning is an important concept for the design team to consider, yet they should consider how the zones relate to each other space is not composed of functional zones but of the fluidization of functional zones... they must be flexible over time and manipulate, open to modification by the children's processes of self-learning and in turn, interact with these processes and modify them. [10].

Study of kindergartens in Vancouver found that many play spaces had distinct zones; however, there was little attention given to how these zones related to each other or how they could potentially overlap. [14]

This resulted in conflicts between children and their early childhood educators, particularly if children were prevented from moving loose parts between distinct zones. Physical elements that enclose zones and contribute to the fluidity among zones are objects like low walls or stumps, which can be climbed over, or plant material, which can allow children to pass through its walls [6], [13], [14].

. A study of den spaces, which are typically created with plant material and created by children, notes that these spaces contribute to children's developing sense of self and control by engaging "an intricate process

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requiring some protection from unwelcome and uncontrolled external disturbances, so that the secret aspect of the den becomes especially important [15].

Change materials. Young children are interested in how things grow and change, and they are beginning to understand the sequence of daily events [11].

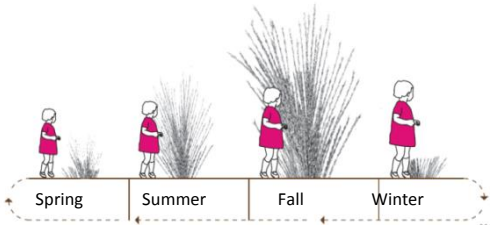



Figure (8) inexpensive and hardy plants like ornamental grasses can change over time as children grow and develop.[2]

Young children will often engage in careful watching and observing of their environment. Plants and animals index changes in the season and growth in general. [13].

We found that children who had the opportunity to interact with living organism - whether plants or worms

- described what they were experiencing to each other and to their early childhood educators. This verbal venting is one of the first steps to literacy, and should not be overlooked when considering whether plants should be part of the play space. Plants not only modify the climatic conditions and provide light shade, but the flowers, seeds, and leaves produced by this living material can provide open-ended play props for children. Vegetation supplies a wide variety of play resources that children can harvest for themselves.



Figure (9) some kindergartens considered changing outdoor play spaces according to events and coming different seasons.[20]

There is no substitute for plant generated play props. Flowers, leaves, fruits, nuts, seeds, and sticks stimulate an infinite variety of imaginative responses. While staff interviews suggested that plants in the play spaces were not an alternative due to maintenance or the perceived fragility of plants, play spaces that incorporated vigorous low maintenance plants created sensory rich play spaces with numerous play props.

**Fifth criteria: chance**

Chance includes an opportunity that allows something to be done; an occasion for the child to create, manipulate, and leave an impression on the play space. Chance has sometimes been referred to as open-endedness or flexibility. This can be a difficult dimension for professional designers to understand because they typically design for permanence. However, chance is extremely important. In Simon Nicholson's "How Not to Cheat Children: Theory of Loose Parts," written to landscape architects, he states that "children should have the opportunity to play with space forming material in order that they may invent, construct, evaluate, and modify" on their own. This is extremely important to young children who are mastering fine motor skills, have increased mobility, and are capable of inventing games, other worlds, and even people. [15].

Messy zones. The design team should consider how the play space can de designed to allow for chance. A good example of chance opportunities in outdoor play spaces are what Jim Greenman refers to as "messy zones; [12]. Places to dig, watery places and sand areas where loose parts provide tools for children's imagination and their increased ability to mold, shape, shift, press, and drizzle. [14]

These are not areas "themed" by the designer, but spaces that have enough malleable material that allow the children to design themselves.

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Mystery. Chance also involves stimulating spontaneous exploration - children exploring on their own. Spontaneous exploration links physical movement with the mind, and it is an equally important contribution of the outdoor play space to child development. Spontaneous exploration can enhance perceptual motor functioning - gross motor, fine motor, spatial awareness activities, directional awareness, balance, integration (hitting a moving ball) and expressive activities [13]. It also expands the children's cognitive understanding of their play Space

As you see in figure 10, some case studies considered these criteria partly. They have been designed Some spaces for sand play, blocks, private spaces and different imitative games and also spaces for challenging, but most of them were indoors.



Figure (10) some kindergartens create an opportunity for children but just in indoors. [20]

The design team can encourage spontaneous exploration activities in the play space by creating areas that encourage children to investigate. This can be achieved by considering the physical height of children what can they see from their height? How can a sense of mystery be created with plant material, low walls, or terrain? Stepping stones and plant material in strategic parts can also encourage movement and understanding of the play space [16]. In many cases, the poisonous plants like verbena and oleander have been used in outdoor play spaces. [17]

**Sixth criteria: clarity**

Clarity combines physical legibility and perceptual image ability. Our study found that spaces where a large play structures occupied the geographical center of the play space (a common location for these structures), children had a difficult time maintaining play involving movements like tag or imitative play because the play structure divided the play into disconnected peripheral spaces. Early childhood educators noted that this type of configuration interrupted their view of the entire play space. The design team should ensure that clear entry and exit spaces are provided to the outdoor plays space to prevent accidents. [6].The sounds cape of the outdoor play space should also be considered by the design team. [18].

As you see in figure 11, many kindergartens have been designed not regarding this important criterion especially the buildings have been located in south of the street. Children are not safe while they are exiting the kindergarten. They directly enter the street that leads to big dangers.



Figure (11) no consideration to neighbors and commuting beside kindergartens. [20]

We found that outdoor play spaces that were comprised of primarily hard surfaces and little vegetation and close proximity to a busy street were significantly louder than play spaces with soft material, plants, and distance from traffic noise. The noisier outdoor play spaces created a general atmosphere of confusion, and stress was noted in both early childhood educators and the children.

**Seventh criteria: challenge**

Challenge refers to the physical and cognitive encounters that a play space provides. The design team must determine the types of challenge that the play space provides. Our study and others found that a lack of challenging things to do in a play space has been the primary reason for increases in bullying. According to play for all Guidelines, "without taking risks, children cannot learn to their full potential". Settings must challenge them to take risks without being hazardous. The difference between "hazard" and "challenge" must be understood when creating play settings. Children will use equipment and parts of the environment in

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all possible ways, regardless of design intentions. Since the idea of play is to explore and maximize the potential of any play setting, children will test its use to the limits of their abilities." [18]

The design team should consider graduated challenges that involve the presentation of "several levels of difficulty for each activity" and "enable each child to find an optimal level of challenge." [19]

We found that challenge can be easily accommodated in an outdoor play space. An important finding of our study revealed how simple design elements served as catalysts for challenge. Varying heights of a retaining wall (ramps intended for wheelchairs) created opportunities for balance, tunnels designed to be crawled through were eventually walked upon, and a sandbox containing driftwood could be adjusted to

Varying heights by the children themselves allowing them to test a multitude of skills.

The following describes specific developmental benchmarks of children and correlates these with simple design elements.

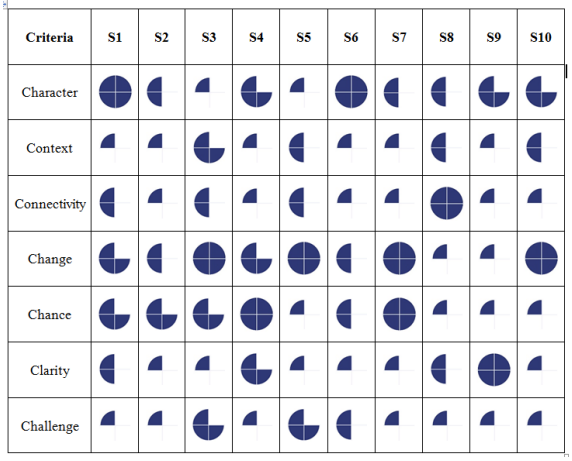
Most kindergartens have considered this criterion but some of them have improvised indoors.

**Conclusions:**

In the following table, the consideration of case studies was shown in the form of circle pieces. More consideration to the criteria indicates more colored pieces of circle and vice versa. The table shows that most kindergartens give little consideration to mentioned criteria. Although we can't judge by studying some kindergartens, most of them have not been designed uniquely for child care centers. They were houses where changed into kindergartens without following the rules and criteria.

Results of our researches indicate that the design of outdoor play spaces - their design type, size, configuration, age of equipment, and materials - contributes to children's play and development. Findings also link economic conditions with quality outdoor play spaces.

Table (1) the amount of consideration of case studies to 7Cs for designing outdoor play spaces




While safety has occupied much of the media regarding children's play equipment, we found that safety changes to equipment and no encroachment zones impact the quality of the entire play space and its use. Our findings on living elements reaffirm other studies regarding the importance of plants in children's play spaces. We were struck by the fact that the child care staff were primarily concerned with the environmental qualities of their play spaces. Given that children were only using the play structures 13% of the time also suggests that more attention should be paid to the whole environment of the play space. This finding is particularly applicable to landscape architects because they are specifically trained to design outdoor environments for people. For example, landscape architects have pioneered the application of plants on rooftops without compromising the building envelope. Rooftop play spaces are one of the fastest growing play space types in the city and in our study they tended to be some of the noisiest and hottest play spaces.

We found that children had quality outdoor play experiences and enriched developmental opportunities in environments that had the following characteristics:

- they had elements for children to manipulate and make their own;
- they contained living things;
- they were sensitive to climate;

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- they were designed to the scale of the child;
- they allowed the child's imagination to shape the play experience; and
- They provided areas for children to play alone or in groups.
- Secret environments where stimulate children's curiosity.
- Environments where children can see the consequences of their works, they can make, grow and experience.

If results of our researches accompany existing codes, safety rules and case studies, the quality of kindergartens are certainly promoted.

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