

Responsive Open Spaces for Children in Residential Communities in Cairo: A Child Participatory Approach

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Abstract

Following the current trend of global urbanization and the growing attraction of cities with families, urban environments have become major contexts in which a new generation of children are growing. Due to the lack of community investment in this area, and the lack of interest in taking the opinion of the child in designing open spaces by participating in the knowledge base for the design, the ability of civil society to link children with outdoor spaces and the nature surrounding them have decreased. This problem has dramatically reduced proper daily contact of children with urban spaces and nature. This analytical study focuses on the most important needs of the child within the open spaces in the new residential neighborhoods of Egypt by applying child participation methods to achieve child-friendly spaces. A series of workshops held in Cairo tracked the way children participate. The results reflect the needs of children in their outdoor spaces and how could the designer accommodate them.

Keywords: Outdoor spaces, Child-Friendly spaces, Children participation, Design aspects, Children's workshops.

1. INTRODUCTION

There is a worldwide trend to urban design for childhood as a child-friendly approach to urban planning, helping to build successful cities that work for all [1]. The context and current challenges of such an approach define the benefits, best practices and basic principles for child-friendly urban design area. A coherent and systematic approach to planning and designing cities that improve children's growth and health opportunities, that go beyond just providing playgrounds are the aims. It recognizes the fundamental importance, not only of independence and play, but of the built environment that helps shape a child's development and, consequently, their adult life. This study is important and relevant after one finds out that 60% of the urban population will be under 18 in 2030 [2].

Accordingly, the research objectives are to inform the design of child-friendly spaces by highlighting the importance of child participation in the design process in Egypt, and to study the effect of this participation on different design aspects under different children's circumstances and categories. On the other hand, the problem is about less studies concerned with developing outdoor spaces to become child-friendly spaces through children participation and demonstrating their needs in these spaces as a participant guided and customized process, or either reflecting the effect of their participation on different design aspects. 'Play' is a concept that is extremely important for the development of child's personality and character [3], therefore the study concentrates on open spaces in residential neighborhoods, which are mainly required for play, and their accommodation of children's activity. The research starts with a background part that provides a literature review about outdoor spaces in residential neighborhoods, and children needs, followed by an empirical study where guided workshops were held with different groups of children. Quantitative data was extracted and analyzed to find children perceptions of their needs in outdoor spaces. Qualitative workshops as a research methodology, enable researchers to explore the elements required by children, within different health and social backgrounds, in outdoor spaces in order to distinguish the importance of these spaces and their needs to design elements. Moreover, the research extracted recommendations on different scales to highlight each stakeholders' duties and challenges. Results were analyzed using correlation and statistical graphs. Lastly, implications and conclusions derived, and further research proposal are addressed.

2. BACKGROUND

2.1. Child-Friendly spaces

In child-friendly urban spaces, children of all ages are treated as healthy, active and participatory citizens and are allowed freely to play, explore and socialize in their neighborhoods. In such spaces, parents feel comfortable because children are free to walk outside without fear for them being injured or the safety

being jeopardized. This would occur if streets and spaces welcome people of all backgrounds and ages to participate and communicate through a range of activities and functions [3]. Following this vision, urban space provides a mix of uses within squares, urban spaces, easily accessible places, neighborhoods where children can gradually gain independence and enjoy what the city offers them as they grow and mature. A child-friendly urban design should involve children, parents, caregivers and the broader community in the early phases of the design process. Participation should also be through an appropriate age and be creative and fun for children [4]. There are examples of some international projects aimed at improving children's ability to live in the city through the impetus of urban planning and design. Project examples are taken from different contexts and vary in shape and size, Such as the United States: Playful City initiative project, India: Child Friendly Smart Cities, Vancouver (CA): Child friendly strategies [5]. The outdoor urban spaces are very important for city inhabitants to connect to the human and to carry out activities that cannot be carried out within the residential unit [6]. Many studies prove how open spaces provide a positive response to humans and provide a valuable relation between the stakeholders and the surrounding urban environment [7]. The outdoor urban space consists of a set of physical elements that are coordinated by urban designers to achieve a specific function and goals that suit the nature of the urban spaces' users. Each component of the outdoor spaces such as floors and borders, has its own rules that are responsive to economic, social and geographic dimensions of society and users. Moreover, design aspects such as light, color shading systems and visual scene differ according to each project's variables [8]. Image of the space, Buildings and Space, and User's environment according to the Hong Kong planning standards in 2015 are considered as urban design [9].

2.2. A Children's Right: Quality of Children's Life through Children's Participation.

In recent years, the concept of quality of life and well-being of children has become an important part of many academic, government and public sectors in countries around the world. All children should have their rights whoever they are, wherever they live, whoever their parents are, whatever their language is, whatever their religion is, whether they are a boy or a girl, whatever their culture is, whether they have a disability or not, or even whether they are rich or poor, they must be treated equally. No child should be treated unfairly because of any differences. A study made by Sevasti-Melissa Nolas recommended the opportunity of child's participation in the design in order to fulfill his/her needs [10].

Another study "Article 12" of the UNCRC (The United Nations Convention on the Rights of the Child) in 1991 states that; each child can form views and has the right to express those views freely in all matters affecting them. It recognizes that, although for children, unlike adults, there is no automatic presumption in favor of autonomy or independent decision-making. They

are, nevertheless, entitled to respect as human beings, with rights to be involved in decisions that affect them [11]. There are several different approaches that the researchers have prepared to suit the children and their opinions in their buildings and spaces [12] such as noting the children and their actions, Personal interviews with children, children capturing pictures of places, children drawings and questionnaires are methods used to integrate children into the scientific research process as means of expressing meanings in children's minds.

2.3. Urbanity in Children's Life

Outdoor urban spaces can play an important role in children's educational process, by designing a space supporting educational objectives and strategies [13]. Children's needs within public open spaces are functional, psychological, and social [14].

Functional needs are mainly concerned with children's activity, while psychological needs are mainly concerned with personal factors and climatological comfort, and Social needs mainly concerned with children's behavioral expressions and interactions with others. Therefore, urban designers should take care of the child being one of the stakeholders and use his participation in different design processes to fulfill children's needs in urban spaces [15]. In Table (1), a relationship matrix will be formed as a method of visualizing relationships quickly and definitively. Where the X axis represents main children's needs in open spaces, and the Y axis represents main design aspects in urban spaces, and relations are defined as strong, medium, or weak relationships.

2.4. Children's Needs

Parents can determine their children's physical needs such as: nutritious food and warm clothing, but the child's mental and emotional needs may not be clear such as mental health of good thinking, social development and learning new skills. Thus, a child's physical and mental health are both important, mental needs are the need for research and curiosity were child acquires his knowledge through his senses such as sight, hearing, taste, smell and touch. Children need to acquire their language skills by interacting with adults and communicating with them. Another need is to develop the ability to think, through careful observation and gaining experience from the environment surrounding them [16]. The psychological equilibrium of the child occurs when satisfying his needs including functional requirements and helping the child to recognize the elements around him. In addition, psychological and aesthetic needs include the achievement of feelings such as a sense of vitality, personality, and identity [17]. Another essential need is the social need, represented in the child's interaction with the surroundings and persons and places and his relationship with the surrounding environment. Therefore, we must provide the physical environment with opportunities for children to reflect and provide aesthetic values depending on each cultural background [18].

Table 1. A relationship matrix between children’s needs and main design aspects in child-friendly spaces

Urban design attributes		Main children’s needs in open spaces (N)															
		Functional needs (N1)						Psychological, and social needs (N2)									
		Near Services	Seating areas to rest	Visibility	protection		Food places	Perception	feeling safe	Feeling fun	Play	Clean air	Learn skills	Exploration	Interaction		
					Sun	Wind									Natural	occupants	
Image of space (E3)	Natural setting																
	Infrastructure																
	Conservation																
	District character																
	Urban pattern and form																
	Gateways																
	Functional districts																
	Land use and activities																
Buildings and Spaces (E2)	Composition																
	Design and architecture																
	Connectivity and integration																
	Massing and heights																
	Sidewalks and pedestrian linkages																
	View corridors																
	Landmarks																
User Environment (E1)	Human scale																
	Transition																
	Materials																
	Color																
	Textures																
	Advertisements																
	Signage																
	Landscape																
	Furnishing	Lighting															
		Seating															
		Fencing															
		Shaded															
		Food area															
Playing area																	
Parking																	

From the table (1) a strong relationship between feeling safe and having safety gates for space exists, as well between district character and child's perception for the surroundings. However, there is a medium relationship between urban pattern and form/exploration, and weak relationship between land use and activities and learn skills. Therefore, these relations should be taken into consideration through the design process in order to achieve an effective outdoor urban space for children.

The following section reports on the empirical study, through which more elements and aspects will be derived through children's participation in workshops. These elements will be added to the previous relationships (shown in table 1) to demonstrate an overall set of children's needs.

3. EMPIRICAL STUDY

The methodology of the applied part is as follows:

First, the physical variables: The focus is on the elements and principles of the design of the architectural spaces, the components and the determinants of the design of the architectural spaces.

Second, the human variables: represented by the needs of the child and the extent of his feeling of comfort within the urban spaces. The focus is on the most important needs of the child reached through the theoretical study, and the participation of the child and listening to him. The purpose was to observe the actions of children. Workshops were held during 2018 and children were asked to create their own models of urban outdoor spaces built from their imagination and as a result of their perception of requirements. From the outputs, the researchers work on analyzing children needs and their priorities based on children's backgrounds. Consequently, analytical charts will define each element percentage based upon priorities in creating their models (Fig. 1).

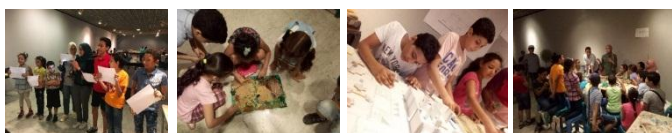


Fig. 1 Children created their own models

Source: Researchers.

In order to deliver desired results, it was necessary to involve children in different workshops to demonstrate children's physical and psychological needs which would vary according

to each child's social and cultural references. Thus, it was necessary to make several workshops for multiple children's classification to allow results' fulfillment for various needs. The workshops went through sequential steps to find a scientifically based answer for the question: Does the participation of the child in the design process ensures his needs' fulfillment? Another purpose was to figure out the needs' priorities in outdoor spaces. The workshops were held in Egypt in several places under the supervision of academic staff who are interested in children studies in urban spaces. The workshops targeted children from five to fourteen years old divided into two categories, children from (5-8) years old and from (9-14) years old.

Workshops were managed to guarantee knowledge receipt from the children, through controlling limited number of children. Around one hundred children participated in the workshops. They worked in groups, where each group having between 8-12 children. Each group contains a mix of boys and girls (e.g. children from (5-8) years old were 50 children where 20 of them were boys and 30 were girls, the children from (9-14) years old members were 50 children where 23 of them were boys and 27 were girls).

The outputs were presented in the form of physical models, as it is the easiest tool for children to express their designs through tangible means while making interested, excited and not bored (Fig.2).

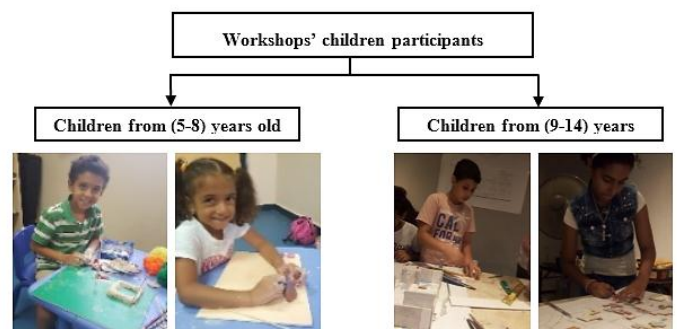






Fig.2. Examples for Workshops classification.

Source: Researchers.

The work in the workshop was divided into two stages. First stage of the workshop:

After explaining for the children the differences between different environments, their architecture, climate, etc. the researchers asked the children to choose the environment they dream of living in (Table 2).

Table 2. Different environments



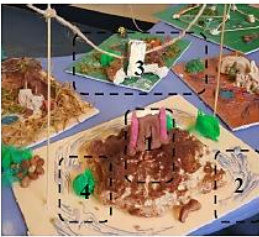



	A wild environment	A coastal environment	A desert environment	A polar environment
Children from 5-8 years old.				
Children from 9-14 years old.	<i>Source: researchers, 2017.</i>			
				

Source: Researchers.

This indicates that the child can identify and understand different surrounding environments.

Second stage of the workshop: The researchers asked children from (5-8) years old to create his/her dream house, as shown in table (3).

Table 3. Examples of children from (5-8) years old dream house

Children from 5-8 years old.		<ol style="list-style-type: none"> 1- Pool (water feature) 2- Green feature 3- Natural mountain 		<ol style="list-style-type: none"> 1- Pool (water feature) 2- Path 3- Green feature 4- Natural mountain
		<ol style="list-style-type: none"> 1- Disney house 2- Sea (water feature) 3- Chairlifts (Transportation) 4- Green feature 		<ol style="list-style-type: none"> 1- Animals 2- Lake (water feature) 3- Straw 4- Green feature 5- Colorful house
		<ol style="list-style-type: none"> 1- Pool (water feature) 2- Shaded elements 3- Floor 4- Green feature 		<ol style="list-style-type: none"> 1- Fencing 2- Paths 3- Green feature 4- Sea (water feature) 5- Home as a landmark 6- Sidewalks

Source: Researchers.

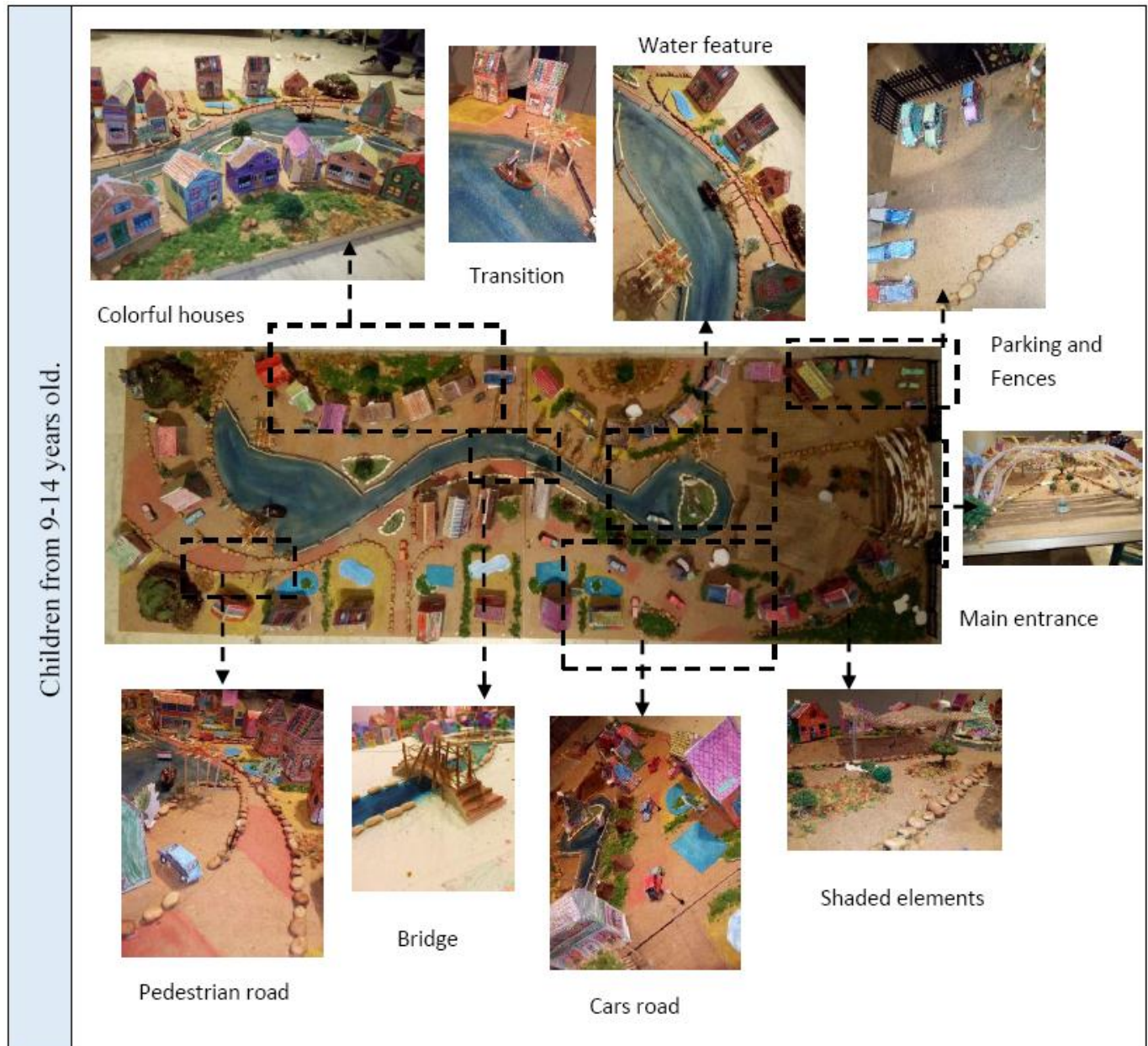
From previous table (2), the study demonstrates a set of the most basic needs of children within the urban spaces, through their participation, such as water features, green features, paths, fencing, and sidewalks.

Through the workshops, it was found that all children with different backgrounds were interested in creating the outdoor

environment which surrounds their dream house more than the composition of the house itself. This indicates the need for the outdoor spaces with its nature and its impact on the children's activity on daily basis.

The researchers asked children from (9-14) years old to create their dream city, as shown in table (4).

Table 4. Example of children from (9-14) years old dream city.



Source: Researchers.

4. RESULTS

Although results reflected each individual child, his aspirations, dreams, education, social background, and needs. Children from the age of (5-8) years, the largest percentage of the polar environment was 40%, while 30% chose the coastal

environment, and 25% chose the wild environment, while the lowest rate is the desert environment where 5%. Children from the age of (9) the largest proportion of the arctic and coastal environments was 35% and 20% for the wild, while the lowest was 10% for the desert (Fig 3).

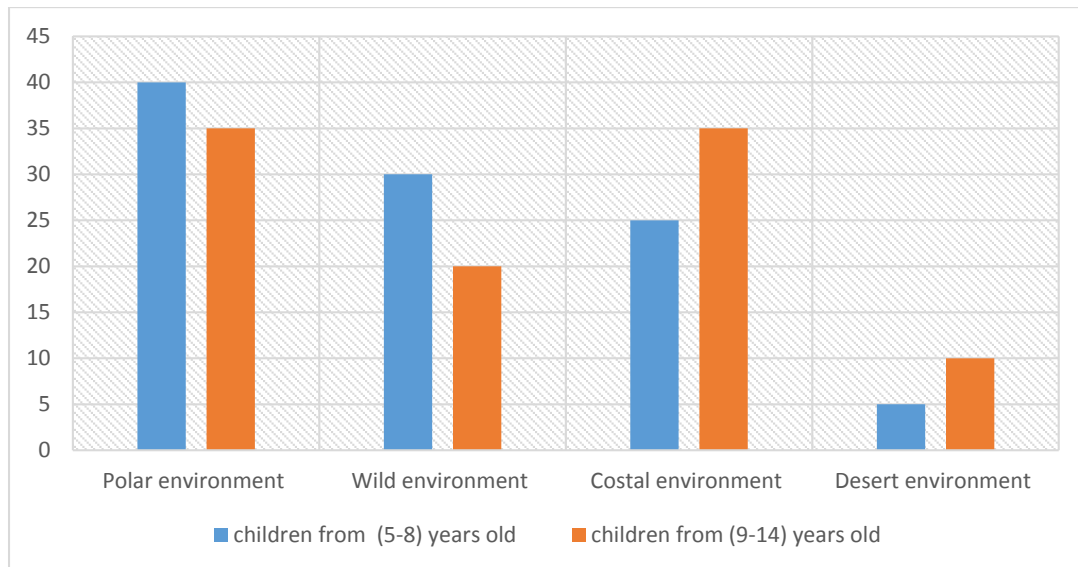


Fig. 3 Percentage of each Environment

Source: researchers.

This indicates that the Egyptian child needs to interact freely with nature, such as sand, sea, or trees, were most of children miss the interaction with these elements in their daily life. On the other hand, they were quite curious to create and deal with the polar environment and the snow inside it.

Results as expressed as a percent of design aspects based upon workshops' output analysis, are shown in fig. (4).

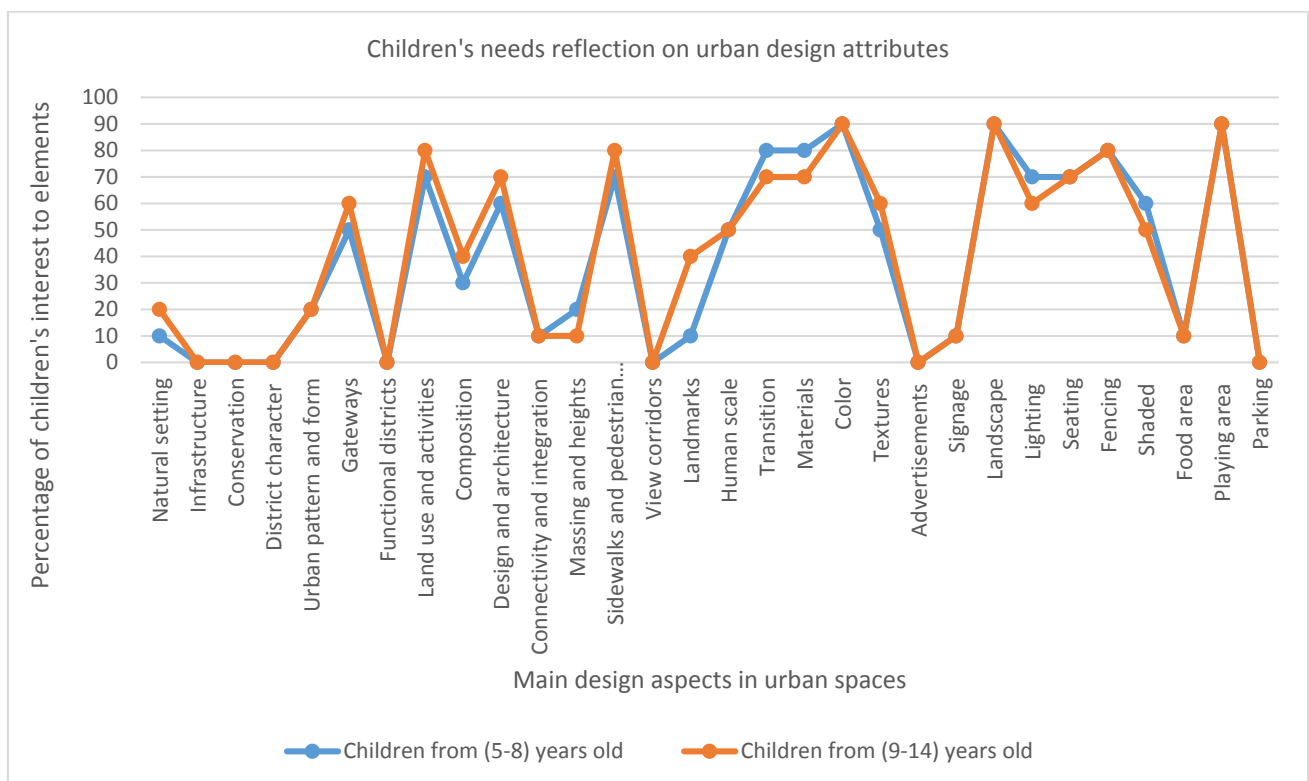


Fig. 4. Design aspects percentages.

Source: Researchers.

Children cared much about 'visual aspects' affecting the image of the space such as gateways and urban pattern and form, more than utilities such as infrastructure and functional districts affecting the space's image, as shown in fig. (5).

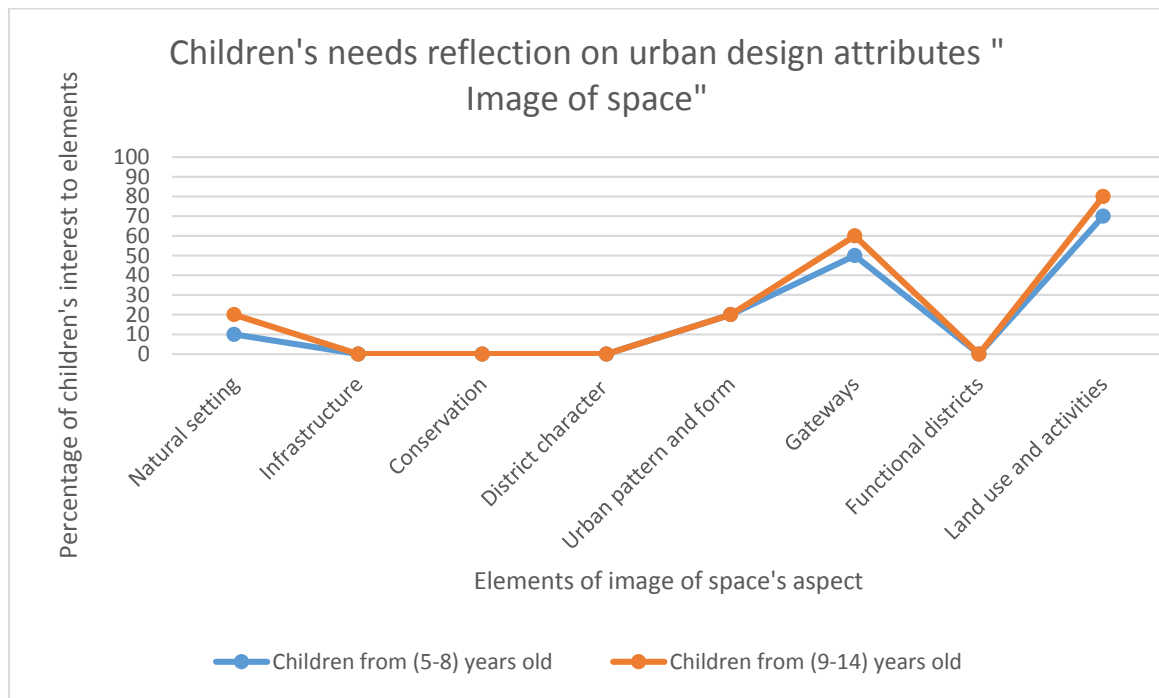


Fig. 5. Design aspects percentages, Image of space (E3).

Source: Researchers.

The children with different ages, social and cultural backgrounds are interested in the house surroundings more than the form and the composition of the house itself. However, this

was presented with different ratios according to children's classification, as shown in fig. (6).

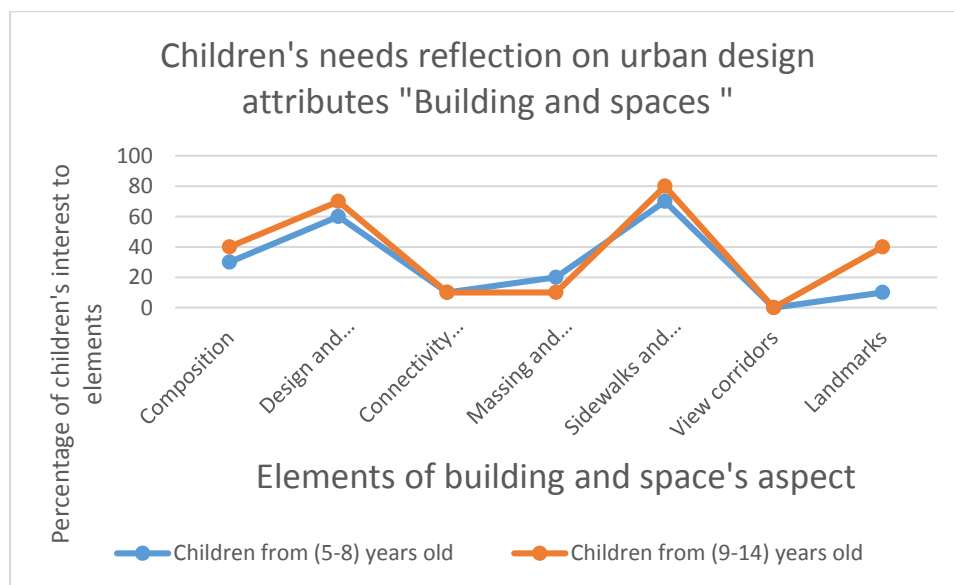


Fig. 6. Design aspects percentages, Building and spaces (E2).

Source: Researchers.

Analysis of the physical models show priorities of participated children needs. Researchers found that children at different ages have agreed on some needs with the same percentage as water features 90% and green features by 80%, but also they

differed in some proportion of some elements such as sidewalks high social level 10% and low social level 60 %, paths high social level 50%, and low social levels 70% (Fig. 7).

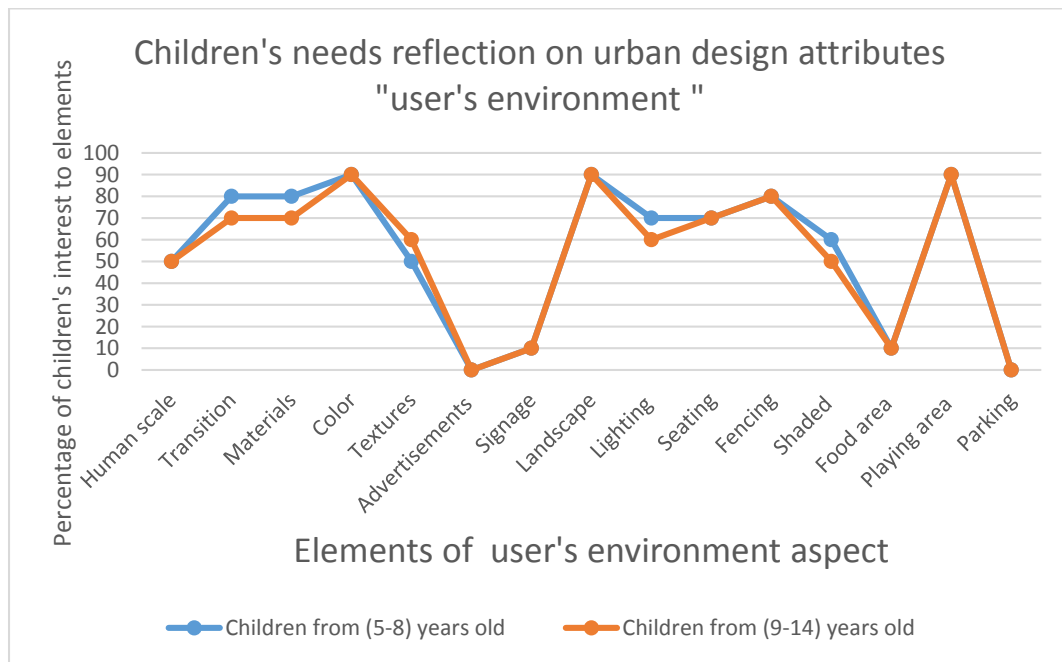


Fig. 7. Design aspects percentages, User Environment (E1).

Source: Researchers.

5. CONCLUSION

This research reveals that there has been inadequate attention paid to the needs for child friendly public space in some urban communities in Egypt. This does not contradict other studies, which have also shown that children's participations are poorly represented in outdoor space designs. Children in this research had suggestions about how outdoor spaces would fulfill their needs. Finding out the design aspects required to accommodate Egyptian children needs in outdoor spaces through participation, and fulfillment child friendly spaces in Egypt has been achieved. Results show that children can identify and understand the surrounding environment, so it is necessary to consider children's participation when implementing children's out-door spaces' design. The study findings contribute to the importance of children participation in different design process, focusing on the importance of creating a healthy fulfilling environment for the children as they are the stakeholders of many of our daily used places.

From all previous theoretical and empirical study, the following broad points, should be summarized. The outdoor space's design affects children's perceptions. Landscaping is very important for children as: trees, paths, water features, and lighting. Natural elements should be preserved in our environments, especially in the areas which children deal with. The importance of Egyptian children's participation in creating their own urban space to Fulfilling child friendly open spaces. The child can absorb the surrounding environment.

6. RECOMMENDATION

The study recommends that architects and urban designers pay respectful attention to stakeholders during the design process and pay much attention to human needs in designs of outdoor spaces. They should reply more on child participatory approaches in designing public space used by children by fulfilling their needs and putting into consideration the accessibility and safety issues in children spaces. This intent would be responsible for positive impacts on children be it psychological, health and social.

The government should provide more spaces in Egypt for open spaces to be used by children, give more care for maintaining the natural elements in the city, and support up-coming projects that encourages urban life with spaces such as recreational spaces with green elements, and proper infrastructure and utilities.

Society as a whole has an obligation to increase child awareness, It is necessary to listen to the child and take his opinion in everything he is involved in, respect the needs of the child, no matter its degree of simplicity.

Finally," surrounding environment" is very important for children, thus tips should be given to children to increase their awareness of how to preserve it.

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