

## **Inclusive Playground for All Children with Different Abilities**

Bugu Sah<sup>1</sup>, Senem Zeybekoğlu Sadri<sup>2</sup>

<sup>1</sup> (Faculty of Architecture, Design & Fine Arts, Girne American University, Cyprus )

<sup>2</sup> (Faculty of Architecture, Design & Fine Arts, Girne American University, Cyprus )

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**Abstract:** Design of environment, structure or products which can be used by individuals with different size, gender, age and ability is defined as universal design. This design provides that all individuals should enjoy equal rights. Therefore, universal design undertaken in artificial environment does not allow the disadvantaged groups such as the people with disabilities, elderly and children to be excluded from others as they do in accessible design. It is argued by researchers that parks and playgrounds have an important role in children's development, and therefore should be designed by taking all children with different skills and abilities into consideration. This article aims at studying the accessible playground located in Dr Fazıl Kucuk Park (Cyprus) by adopting the principles of universal design and therefore proposing solutions to design an inclusive playground enabling children with different abilities to enjoy the park all together.

**Keywords:** Children with different abilities, Cyprus, Inclusive Playground, Public spaces, Universal design

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### **I. INTRODUCTION**

1. People with disabilities constitute 15% of the entire world population, which makes them the largest 'minority' group. According to the World Health Organization (WHO), around 10 percent of them are children and young people [1]). Despite this large number, the disabled people rarely participate to the public life. The public space and social life makes the disabled invisible.
2. According to Union of the physically impaired against segregation (UPIAS) " In our opinion, it is the society that prevents people with disabilities. Disability is something that is imposed on our abilities, in this way we are unnecessarily excluded from the full participation to the society and we are isolated. The disabled are therefore an oppressed group in society"
3. Children are the future of society and it is an open to development system. That is why, by improving parks, one of the most important public spaces used by children in the first place, and by helping children to socialize at a young age, we can help them to be more respectful of differences in the future.
4. For that reason, the aim is to find alternative solutions for Lefkosa (kktc) Dr. Fazıl Küçük Park to become an inclusive playground instead of two separated accessibility and classic playground

### **II. PARKS AS PUBLIC SPACES**

Public life includes very open and universal social contexts. Public places of a city; shall provide individuals the opportunity to be together with other people and learn their attitudes they show in different locations by seeing, hearing them. This natural relationship which is established by hearing and seeing, is deemed to be a part of the social activities. Public space and universal design principles are closely linked with common space and common opportunities. Parks, squares and streets are important social binders which support the establishment and sustainability of comprehensive public culture. The spaces which are the fastest and most effective locations to increase quality of living, serve as definitive city spaces, provide interaction with green and nature and also provide people the opportunity to participate in public life are parks. Although it is only in theory, because they are easily reachable by anyone, they are deemed to be the most democratic city spaces.

Although the parks vary according to the size of the cities, there are 5 simple categories.

Mini-park: It is a park that serves a population of 500-2000 people and includes Playground, Lawn, and Benches.

Neighborhood: The parks serve a population of 2000- 1000 and they include Playground, Picnic area, Shelters, Courts, Field, Restrooms, Parking area.

Community: The parks serve a population of 10.000- 50.000 and they include Playground, tennis, field, Picnic area, shelters, pools, recreation, restroom, parking area.

Regional: They are urban areas. It includes tennis and sports field, lakes, swimming, camping, path, golf, nature area, restroom and parking lots.

### **III. PLAYGROUNDS – THE IMPORTANCE OF PLAY**

It is stated that game is a part of the real life and is a learning process for the child which has a certain purpose or not, which is done regularly or irregularly, which the child, in any circumstance, takes place in voluntarily and willingly, and which is the base on his or her physical, mental emotional, linguistic and social development. Playing a game, for a child, is the best education program about social, physical and cognitive development. Using materials and establishing connections with the other children, they learn how to control their environment, the sense of competition and enjoyment. Playing a game is a way to lead the children has the basic knowledge about the world on time. This knowledge open them a way to the language, art, social science, mathematics and physics they will learn [2]).

There is the effect of the space on the play potential. The child must experience various venues for the formation of spatial awareness, the stimulation of perceptual motor development. The child must learn various concepts such as on-under, under-outside, open-close, right-left, near-far in order to have room sensation. It is important to ensure that children learn the shapes, textures, colors, designs and voices. In fact, every space and every setting has a potential for education. A playground is a place where the child is given shape, size, number, relationship between parts, etc. [3] .Playgrounds are open spaces that are used extensively and meet the active recreational needs of children (ages 1-14).

Researchers have revealed that the playgrounds are important not only for the physical power and also for the mental power. Playgrounds help the children's social, emotional and cognitive improvement. Playground is a spatial educational environment designed for supporting the activities based on the child's social, emotional, cognitive and physical improvement. Playgrounds should allow the child to play the different types of the games such as creative games, game with common elements, water-sand games, silent games, and shared outdoor games. A playground, well-designed gives the children opportunity to improve their motor senses, social development, learning, giving decision. [4] Playing in the playground improves the children's self-confidence, language, communication, high brain functions and social skills. It gives the children opportunities analyzing social roles and relationships around him/her and learning. [5] The playgrounds known well; a) Traditional (classic) playgrounds, b) Contemporary (sculptural) playgrounds, c) Adventure playgrounds, d) creative playgrounds.

1. Traditional (classic) playgrounds: The most common type of playground. It consists of standard materials. The devices in the playing field are usually a single use. The equipment is usually used alone and is intended for large muscle activity and motor development. The most used equipment in the traditional playgrounds is the swing. Traditional playgrounds are game units that play a role in muscle building especially the equipment such as the slide and the seesaw; but they do not allow for cognitive and social play. [6]
2. Contemporary (sculptural) playgrounds: Typically, it is a game that combines all the parts of a continuous building form. It is usually planned by a designer (architects or landscape architects). Land and material sculpture is used. They are static, consisting of water and fountains, climbing pads, ski places built in tunnels. Sculpture playgrounds are structures known as highly specialized or multi-functional structures with superior features and require the process of combining or linking the different parts of a continuum. There are fewer, costlier, and more structured structures that encourage children to be more useful in the game in comparison to the traditional playgrounds.
3. Adventure playgrounds: In these areas, there are hand tools in which the child can create his/her own game environment. There are "participatory games" instead of "directed games" for children in the adventure play areas. The most important element of the adventurous playground is the leader. In these areas there is a leader, who is usually a voluntary adult. This person leads the children to teach them how to use the tools and then leaves them to it. This type of playground allows children to learn to help each other.
4. Creative playgrounds: Creative parks offer modular sections where children can create their own surroundings. It varies in design and equipment. In general, they are shaped with sand. Complex units can be found for wheeled vehicle space, water and sand area, climbing, rocking and fantasy play. The creative game provides the opportunity to gain a flexible approach to solving problems; however, it is proven to be difficult for the designer to provide this. Flexible elements that can be moved provide more creative play.

#### **IV. UNIVERSAL DESIGN AND ACCESSIBILITY OF PLAYGROUNDS**

Children who develop differently live in private education schools, unaware of children of the same age and they never meet their peers. Although the most natural way for children to be able to play with other children is playgrounds, most of the playgrounds are designed in an exclusionary structure for the children with different developmental needs. On the other hand, as laws related with the rights of people who grew up differently and academicians increased their studies, they started to design playgrounds considering the children who grow up differently. One of them is the Accessible playground which was exclusively designed by considering the children who grow up differently. The other one is Inclusive playground which is inspired by the Universal design principles and aims to provide the children who grow up differently the opportunity to play with other children. [7]

Before mentioning the application of the Universal design, it is important that the Accessibility design and Universal design shall be perceived differently.

Universal Design is the design of products and spaces which can be used by everyone without needing adjustment and exclusive design, with the most comprehensive way possible. The term Universal Design was first prepared by architect Ron Mace who is the Director of Universal Design Centre of North Carolina State University. As Accessible Design is focused on the needs of disabled people, Universal Design considers the wide variety of human abilities. It aims to exceed minimum standards in order to meet the needs of the maximum number of people. [8]

1. Accessible playgrounds: Playgrounds with soft surfaces, light inclines, sounds and colors made especially for children with disabilities. These areas allow disabled children to experience normal play. It is accepted as a situation that disabled children are not to be kept in a separate environment and isolated from other children.

#### **V. INCLUSIVE PLAYGROUNDS**

These are the playgrounds which serves to the physical, social, emotional, cognitive and sensory needs of children from all abilities. It aims to provide the children for the widest range of users and their abilities, a comprehensive and sustainable game experience development which fulfills their needs. Inclusive playgrounds provide interesting games that are suitable for the many children of different development levels and it offers a sensually rich environment while using universal design. It uses a human based approach by establishing inclusive game environments, applying comprehensive game experiences and education programs to increase awareness and participation.

According to the information provided by the Municipality of Nicosia, only 7 out of 30 parks in Nicosia (TRNC) are suitable for the use of disabled children. Only 2 of these 7 parks have the feature of accessibility playground.

The aim of this text is to offer some solutions to the Dr. Fazıl Küçük Accessibility Park which is the first to be a harmonization park and evaluate it according to the Universal Design principles with the view of building a park suitable for every people with different abilities.

##### **1. Universal design principles**

Equitable Use: The design is useful and marketable to people with diverse abilities.

In other words; provide similar tools for each user without separating and stamping. For example, ramps and ladders to be used to reach the entries of the places shall be combined skillfully.



[http://www.greatbuildings.com/buildings/Robson\\_Square.html](http://www.greatbuildings.com/buildings/Robson_Square.html)

The handrails allow children and the elderly to climb more safely: Flexibility in Use: The design accommodates a wide range of individual preferences and abilities. In other words; shall provide the user to make choice

between different usage methods and combine different solutions for each user. For example, an information desk used in public areas must be in different heights to make it easier for users standing up and sitting to reach them at the same time. Free space should be left for the sitting individuals.



#### Building for Everyone: A Universal Design Approach

The low and gapped area under area of the desk is convenient for both people on wheelchairs and kids and old people who need to sit down.

**Simple and Intuitive Use:** Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

**Perceptible Information:** The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

In other words; information that can be perceived by all sense organs (Pictorial, verbal, tactile) should be used. It is necessary to take support from Assistive technology which supports the improvement of ability of disabled individuals by providing them technological devices. For example, the Call buttons of the elevators to be used in interior areas shall consist of large and touch letters and have brail alphabet and vocal information on them.



#### Building for Everyone: A Universal Design Approach

**Tolerance for Error:** The design minimizes hazards and the adverse consequences of accidental or unintended actions. In other words; we must avoid dangerous elements and we must design the one that we cannot avoid with warnings and/or design elements that minimize the risks. For example, the elements hanging on walls of crowded areas especially cause kids and visually impaired people to crash on them and hurt themselves. Because of this, we can minimize these problems by using niches in interior areas and bury fire extinguishers and shelves into the walls.



Problem

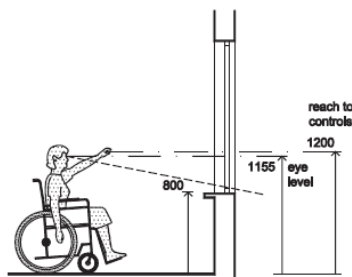
Accessible environment-towards universal design

**Low Physical Effort :** The design can be used efficiently and comfortably and with a minimum of fatigue. We use elements that will reduce the physical effort of the user. For example; doors of public areas must be sensor doors and the single doors shall have handles to make them easily operable.



Accessible environment-towards universal design

**Size and Space for Approach and Use:** Appropriate size and space is provided for approach, reach, manipulation, and use, regardless of user's body size, posture, or mobility. In other words; for any user who stands up or sits their reachability must be comforted by using appropriate width and designs that provide suitable vision must be used. For example, in crowded areas corridor widths must be in a dimension that is suitable for two wheelchair users to cross at the same time. The windows should be adjusted according to the eye position of the occupant. Thus, people or children who are permanently seated can enjoy the outdoors more easily.



4.3 Window. The figure represents average-height wheelchair user

Universal design –Selwyn Goldsmith

**Equitable Use:** The route of access to the playground must be the same for the social and physical participation of every child of different abilities. The floor of the entire circulation area in the playground should be at the same height or soft ramps should be used. Designs intended for children using ancillary equipment such as wheelchairs should not be distant from the equipment used by other children and they should not be distant from roads.



A Dream Come True – Harrisonburg, Virginia

In this playground, children of different abilities can move around the park in similar ways. The various levels of elevation that were designed to excite children on the area were resolved by ramps. Thus, every child can access the equipment from the same areas.

Flexibility in Use: Children must have multiple facilities to reach high platform equipment, and one of these facilities should be ramps with 4% slope.



Brooklyn's Playground – Pocatello, Idaho

In order to reach elevated platforms designed for children who like to go out on high platforms, ramps that can be used by more people compared to the stairs, have been chosen.

Simple and Intuitive Use: The equipment that children can play together must be suitable for every child's use. The recommended ways to reach the equipment should not be discriminating. When a child needs to reach the equipment by ramp, a system should be considered so that the other child cannot easily ascend over the other. Either the only option to reach the equipment is a fun and unobtrusively designed ramp, or the height problem must be eliminated directly.



Magical Bridge Playground-Mitchel Park

Perceptible Information: The information to be used in the children's playground must be given in a masterful manner. Although playgrounds are for entertainment purposes, it is also important that they are educational. For visually impaired children, it is necessary to use the elements that help them to recognize the surfaces and move together with their friends and socialize with them.



Rather than leaving the sand pool on the ground, which helps children to increase their imagination and to socialize among each other, it is taken to the height that a sitting child can reach and the appropriate depth is provided. Thus, both the standing child and the sitting child (wheelchair user) can benefit equally from the sand pool



Signal Centers Therapeutic Playground for the Arts – Chattanooga

**Tolerance for Error:** The materials to be used in the playgrounds are very important. At the same time, it may be appropriate to use hard rubber material that will not harm the child falling down, and will allow the child using the wheelchair to move comfortably. Children love climbing high altitudes, we should be careful about their safety especially when we are designing compelling equipment for children, such as climbing walls. We have to use elements like rope that children can hold on while climbing. If they will be climbing with a net, we have to make sure that the openings on the net are no more than 11 cm, so that the child does not fall through these openings.



Public Playground Safety Handbook

**Low Physical Effort:** The toys used for the child's physical development should not force or discourage the child too much. Choosing the right measurements for their age and ability can help in their success and gives them confidence to use other equipment. Extra handles allow the child to feel more secure.



Livvi's Place – Five Dock, New South Wales, Australia

The designed climbing equipment offers different height options for children of all ages to climb freely, so the kids can choose the appropriate rope for their size and climb comfortably. The slow increase in height creates a natural ramp towards the side, which also allows the child using wheelchair to reach the same point. Thus, the children can get together and socialize at the same point.



<https://www.playlsi.com/>

The socializing playgrounds prefer swings where more than one child can swing, instead of using the swings that children will swing alone.

Size and Space for Approach and Use: Passages for wheelchair users and especially ramp heights should have accurate measurements. Suitable depths should be used for the child standing and sitting. Passages should allow the parents to have access to their children when they are in need. Equipment that is intended for use by many children is the most effective way for the children to socialize. This equipment should have sufficient space for at least 2 children using wheelchairs.



Timbrell Park- Australia

The "Merry go round" game equipment, which allows all children to play together, is buried in the floor and is aligned with the floor height so that the children who use wheelchair can reach.

According to Henry Stack Sullivan's Theory of Relations; it is necessary to create spaces where the children can have healthy social relationships or their imagination can develop in order to help the development of their personalities. Therefore, the principle of improving the imagination was added as the 8th principle to the 7 universal design principles.

Improving the imagination: Equipment or areas designed specifically to enhance the imagination of children with visual and hearing impairment should be designed. Sensory wall for visually impaired children, and vibratory equipment for children with hearing impairment should be designed. [9]



Carter School sensory garden- Boston



The sensory garden, which allows children to develop their imagination, especially visually impaired children to recognize objects by touch, is placed at a height that can be used comfortably by wheelchair users. Thus, children of all abilities can play.



Katy Park in Chanute, Kansas

Musical instruments provide cognitive, emotional and physical game opportunities.

**VI. CASE STUDY: DR. FAZIL KUCUK PARK IN NICOSIA**

Dr. Fazıl Küçük Park gets its name from the first Vice President of the Republic of Cyprus. The park was established in 1990 in the middle of the houses, which are called council housing within the most crowded mass housing project in Nicosia, especially in order to meet the needs of the green area of the region, there were walking trails and simple, classic playgrounds in the park for many years Accessibility Park was established in the park renewed by Nicosia Folklore and Youth Center Association and Nicosia Turkish Municipality in June 2014. This park is the first park in the country for children with physical disabilities. According to the information given by the municipality, there are playgrounds in three different areas within the park, while two of them are classic playgrounds, one playground in the area has the accessible playground feature.



**FIGURE 1**

**NICOSIA TURKISH MUNICIPALITY PARKS AND ELIGIBILITY FOR USE OF PERSONS WITH SPECIAL NEEDS**

Taşkınköy	Dr. Fazıl Küçük Park	It is a regional, large park. It has walking paths, children's playgrounds, sports equipment, sports fields and a snack bar in 3 different areas.	There are ramps at the entrance of the park. One of the children's playgrounds is fully equipped with toys and sports equipment that can be used by children with disabilities.
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The suitability status of Kumsal Park, according to criteria set for Inclusive playground (universal design principles)

Equitable Use



Dr fazıl Kucuk Pak - Credit: Bugu Sah

The park area is easily accessible with ramps and moving around in the park and accessing to the equipment is easily provided. There are accessibility playgrounds in the park, which makes it possible for children of all ability to play comfortably. This can be considered positive.



Dr fazıl Kucuk Pak - Credit: Bugu Sah



Dr fazıl Kucuk Pak - Credit: Bugu Sah

The Accesibility playground is located on a different, remote side, despite the empty spaces next to the other two playgrounds, and is stigmatised as a playground for children of different development, which violates the Equitable principle entirely and is totally in contradiction to the inclusive playground logic.

Flexibility in Use



Dr fazıl Kucuk Park - Credit: Bugu Sah

Though, in order to reach elevated platforms designed for children who like to go up on high platforms, choosing ramps with %5 incline that can be used by more people compared to the stairs is in accordance with the principle of flexibility use, platform width is not suitable for a child using a wheelchair to maneuver.

Simple and Intuitive Use



Dr fazıl Kucuk Park - Credit: Bugu Sah

In accessible playground, there is Mary Go Round, which is considered as a socializing equipment and children like very much. The equipment is addressed to four wheelchair users and there are four ramps and it is a good example to use in the accessibility playground. On the other hand, there would be no need for ramp if the play equipment was buried on the floor, and the children would not feel that they need the ramp. It is important to keep the equipment in the socializing parks on the same level with the ground.

Perceptible Information

3 separate playgrounds in the park were examined and no equipment was found to inform or train children in any playground.

Tolerance for Error



Dr fazıl Kucuk Park - Credit: Bugu Sah

There is a cobble stone and grass area on the park circulation space and a rubber surface on the playground floor where children will not be harmed if they fall from equipment and the wheelchair can easily move around. Tolerance for error principle is provided on the ground.

Low Physical Effort



Dr fazıl Kucuk Park - Credit: Bugu Sah

This swing with a mounted ramp is suitable for accessibility playgrounds, but heavy Iron Gate and door handle are not suitable for a child to lower the ramp by themselves. These swings, which are likely to hit other children while swinging due to the iron and heavy structure, are recommended by the U.S. Consumer Products Safety

Commission to be moved to a separate area surrounded by iron railings. Dividing the children into separate areas will cause the children using wheelchairs to be discriminated.

#### Size and Space for Approach and Use



Dr fazıl Kucuk Park - Credit: Bugu Sah

The teeter-totter equipment in accessible playgrounds are suitable for two children with wheel-chair to go up and enjoy. The straps on the equipment prevent the wheelchair from slipping away, but even if there is not an adult around to help them wear these straps, the children can easily secure themselves by holding on to the handholds. It is fully suited to the principle of size and space for approach and use. Since the toy is suitable only for wheelchair users, it is in contradiction to inclusive playground logic.

#### Improving the imagination

The park, which spans a wide area, has nothing to offer, although it is convenient to create areas or a sensory wall that will stimulate children's imagination, or gardens which can help them learn about nature and plants.

## VII. PROPOSAL

Dr. Fazıl Küçük Park which is located just in the middle of council housing houses which are made in the scope of the biggest mass housing project of Nicosia aimed to provide public harmonization. However, after the conducted examinations, the results show that playgrounds within the park were designed in a discriminative manner for the kids. The first and biggest problem found in the park is that the Accessibility playground built in the park for the disabled children is located farther away from the other 2 playgrounds. Park width is adequate for children from all abilities to play together.



**Inclusive Playground**

Figure 2

In fact it is not difficult to design an inclusive playground to this park. Children love to play on high grounds. We can use the high platform game equipment as the linking element of the Playground. We can provide choices of climbing wall, net, ladder with railings with different heights and ramp to climb to the equipment. With this we can provide that children from all abilities can climb the equipment using different skills. We must provide adequate space for the children to easily run on the platform and for children who use supportive equipment like wheelchairs to easily maneuver. We can place educational, informational and sensory toys to the various places of the platform. These kind of toys usually provides that more than one children to play with them at the same time and share information and harmonize. Swings which are widely loved by children prevent them to interact and communicate with other children. It must be designed for each children from different abilities, and this makes the children to feel their differences. Without completely disregarding the swings which have an important role in the development of the motor skills of children, we must prefer swings that multiple child can swing at the same time. By burying game equipment like trampolines and Merry go rounds which provide the opportunity of multiple child to play at the same time to ground for the aim of being reachable for children on wheelchairs we will transform them in to a harmonizing equipment.

### **VIII. CONCLUSION**

The primary problem in disability-oriented design is the issue of consciousness.

The acceptance by society of the fact that the disabled people are "the people who are disabled by the wrong designs" is a priority condition for the disabled people to live as a socialized, independent, self-sufficient person in the society.

In order for this condition to be met, the disabled population must be able to use all urban spaces comfortably without being dependent on others and without encountering any danger.

In our country, if designers are required to produce special solutions for persons with physical disabilities, these designs are generally designed to discriminate persons with disabilities. Our work area, Dr. Fazıl Küçük Park is one of these discriminating areas. Instead of making accessible playgrounds for children of different development, we can design inclusive playgrounds by using universal design principles and we would allow more children to benefit from this playground.

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