

# Design Trends of Children's Playgrounds in Modern Urban Environment

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**Abstract.** This paper overviews latest trends in design of children's playgrounds and creating a children-friendly environment in rapidly growing urban areas. The authors analyse potential capacity of playgrounds to enhance children's physical and mental development, encourage an intensive learning about the world from experience of playing. The paper contains examples of the use of non-standard components and innovative structures and materials in playgrounds located in Russia and abroad. The authors make conclusions on the need to apply state-of-the-art technologies and creative approach balanced with fulfilment of safety norms and construction standards to build playgrounds which would be interesting and attractive for kids and useful for their all-round development. By the example of Saint-Petersburg, the authors compare designing for historic districts of the city and its peripheral districts, and mention specific requirements to designing of playgrounds set forth in corresponding codes and regulations. This paper also describes cooperation framework between project customers, designers and residents of neighbourhoods (end users of playgrounds) as in the case of Saint-Petersburg. Another task is to analyse a playground accessibility for people with limited mobility. The authors introduce selection process of proper land plots, communication process with target audience (residents) as well as typical challenges to be handled by designers.

## 1. Introduction

Nowadays in view of fast urban development and, in particular, vast construction of multi-storey residential areas, organization of safe and comfortable living environment for kids and teenagers is a very topical issue. From one point of view life in big cities gives children many opportunities for development, from another - restrict freedom of movement and access to the natural environment. Comparing to the older generation modern children and adolescents tend to have fewer possibilities for playing outdoors [1]. Access to inner-bloc public playgrounds is being restricted along of numerous factors: raise of cars and use of yards as parking space [2, 3, 4]; limit access to courtyards for the purpose of safety; lack of public spaces arrangement during new residential quarters construction; social factors such as parents safety considerations when they prefer to leave children at home or at private commercial organization under constant control [2] and other factors. However presence of proper public playgrounds in urban building estate is extremely important for proper children's development. According to the definition of the UNICEF, one of the characteristics of a child-friendly city is the availability to meet friends and have places to play and enjoy themselves [5].



Properly designed and equipped children playgrounds in urban neighborhoods secure necessary conditions for healthy time in fresh air, physical growth and development of kids and leisure activities with same-age peers.

## 2. Principles for designing successful play spaces

Playing is a need for children - it is mandatory for their dynamic growth, physical, mental and emotional development, ability to communicate and socialize [6, 7, 8, 12]. Playing activity establish favorable conditions for intellectual development, for visual, verbal and logical thinking. While playing a kid complies with the rules, gets acquainted with the behavior and relationships of adults, obtain communication and self-awareness experience. Thus a game generates feelings and emotions, encourages volitional regulation of behavior, form competitive motivation. Playing at public playgrounds can be viewed as a model of society where children are encouraged to overcome fears and take risks in order to cope with difficulties in real life [11, 12, 13, 20].

Playground must meet children's needs:

*The need for active play.* Children prefer playgrounds that offer a wide range of physical activity. Spaces should encourage active play and vary in topography, incorporate changes in height and physical fitness elements. These spaces feel energetic; they promote fitness and health and support physical and social development needs. Physical challenge, anticipation, and mystery foster a sense of adventure. It takes into consideration the importance of a risk in the landscape. As a child grows, learning to negotiate risk contributes to a child's ability to make sound decisions. Risk can be a catalyst for growth - it helps children develop good judgement, persistence, courage, resiliency, and self-confidence [15].

*Imagination and fantasy encouragement.* Children naturally engage in creative play. A designer should support this innate behaviour by providing props and making spaces that allow children to act out their imaginary worlds [15]. Entire visual image of playground is also important. Rational layout, bright color scheme, original theme – these aspects help to make playground more attractive and memorable for kids.

*Need for research and invention of routes.* Children have an inborn desire to explore. They love to search out new places and find different ways to get to places [15].

*Need for individual places to hide or relax.* The outdoors should offer a place for a quiet moment, a chance to take a breath and regroup before rejoining the larger group of kids [14].

*Need for searching, finding, hunting, gathering and collecting natural elements.* In child's imagination search process is comparable to treasure hunting. To meet this interest, it is advisable to fill space with natural materials, different surfaces and textures, create environment in which children can collect leaves, stones, sticks and other small things [15, 21].

Summarizing the research materials devoted to study of modern design trends of children playscapes, the main design principles that provide realization of entertaining and teaching potential of open playgrounds are [1, 11, 14, 15, 16]:

- Participatory approach involving in the design process public interest group (psychologists, educators, architects, designers, parents, et al., both specialists and end users of playgrounds).
- Safety precautions.
- Accessibility provisions for all social groups.
- Design for the widest possible target audience – for all ages, and abilities.
- Taking into consideration environmental characteristics of a chosen area.
- Satisfaction of child's play needs, providing landscape diversity and multi-purpose elements, ensuring variability of game scenarios.
- Selection of universal playing elements and modules.
- Providing opportunities for research, experimentation and learning through the play.
- Appeal to children senses.

- Providing opportunities for identification of risks, controlling and diversifying of potentially dangerous situations, reasonable experience of one's own abilities.
- Design for year-round use, seasonal versatility.
- Accounting for the needs of parents accompanying.

Examples of realization principles mentioned above:



**Figure 1.** Harry Thomas Sr. Playspace, Washington, DC USA. Theme of the playground is the Fibonacci Sequence, it is expressed through geometry of playing elements. Natural lines can be seen in spirals, which remind of ferns or shells of shellfish [17]. Abstract forms are designed to stimulate imagination and encourage creative play.



**Figure 2.** Cosmos playground in the Russian theme park, VDNH. Idea of the playground is a journey through the Russian space program. Rest area for parents is situated around the playing zone. Wooden structures create a complex structure of game elements that form environment in which children can feel adventure mood and excitement. Cognitive function of design is implemented through playing and learning history of space exploration. [18].



**Figure 3.** The Frigate Playground, New Holland, Saint-Petersburg. The kids' playground has been modeled after the hull of the frigate ship The Petr and Pavel. The interior space is divided into several levels of play spaces, providing opportunities for various game scenarios. Different elements such as slides, ropes, canons, telescopes and steering wheels immerse visitors directly into the marine theme and history of the island. [19].

### 3. Special aspects of design of children's playgrounds in Saint-Petersburg

Traditionally creation of children's playgrounds is an important part of complex urban land improvement in Saint-Petersburg. Safety requirements for elements and coverage of children's playgrounds are defined in several regulatory documents. A special aspect of designing in St. Petersburg is requirement set by the regulatory framework for urban objects located within the protection zones of cultural heritage on the territory of the city. Planning of such object should not violate architectural appearance of Saint-Petersburg. One more requirement of federal and regional regulatory framework of the Russian Federation is providing an accessible environment for the low-mobility population groups.

On the one hand requirements of federal and regional regulatory documentation lead to improving quality and safety of playgrounds, on the other, enhance trend of simplification and typification of equipment and layout solutions. In current situation developers are interested in minimizing costs and often choose template solutions instead of developing and releasing expensive non-type play elements,

as well as an individual design project. In such conditions, it is difficult to talk about conformity of a playground to the principles of successful design of children's play spaces mentioned above.

However a playground is implemented primarily for residents, who are interested in creation of aesthetical and functional play space, which wouldn't become tired and boring after 4-5 years of daily visits. For this purpose complex approach is needed which means not only retrenchment but also environmental research, study of target audience interests, selection of interactive play elements, providing educational and entertaining facilities, conformity to the principles of successful design.

The program called "Creation of play and sport areas for Physically Disabled People" was created and executed by the Committee of city planning and architecture and subordinated organization SPb GKU "NIPTs of the General Plan of St. Petersburg" in 2017-2018 at St. Petersburg. The program contains 50 platforms, 30 of them are had done for children.

Each area has its own specific features of social burden, high functional and esthetic requirements.

Characteristic of this program is in active interaction with district administrations (departments of social protection of the population, education, health care, improvement), special-purpose committees and municipal units in St. Petersburg, and also with rehabilitation centers, schools and kindergartens for physically disabled people.

Special attention was for compliance of objects to requirements of standard and legal base for ensuring availability to handicapped groups of the population.



**Figure 4.** The kids' playground, Saint-Petersburg

This playground is located in zone of protection of objects of cultural heritage, near the children's city polyclinic. The problem of preservation and maintenance of architectural and art image of the historic center of the city at implementation of requirements of providing with enough places of quiet and active recreation for visitors, parking for baby carriages, preservations of recreational functions of the territory is solved



**Figure 5.** The kids' playground, Saint-Petersburg

The playground is located in the park of culture and leisure. The is shown in sea style. Planning of the playground provides several scenarios for active games and quiet rest. Selection of different saplings gives additional art expressiveness.

#### 4. Conclusion.

The analysis of our country and foreign experience of children's playgrounds design allows to draw the following conclusions:

- The playgrounds are made for needs of children, represent the effective developing game environment where unique landscape and variety of elements make creative, inventive, various and emotional games for children.
- Interactivity of the game elements and their multi-purpose interaction provide variability of game scenarios, give opportunities for research, experiments and education in the game form, enable to develop skills, to make decisions and to assess situations.
- The Difficult composite structure of the playground gives the chance to realize children's desires and requirements not only in various physical activity, but also in possibility of rest in the rather private quiet space.
- The game space includes natural elements that has allowed to create conditions for creative activity, promotes acquisition of touch experience and development of imagination.
- Specific feature of non-standard game spaces is reached by originality, figurativeness and associativity of their subject and environment.

Features of design of children's playgrounds in St. Petersburg have revealed the following aspects:

- Creation and reconstruction of children's playgrounds for the purpose of increase in their esthetic appeal, realization of the developing potential, ensuring compliance to the revealed principles of design of children's game spaces is necessary.
- Integrated environmental approach at design: climatic, social and historical features of the territory chosen for design is necessary.
- Requirement of introduction of the non-standard various interactive developing equipment and also natural elements promoting acquisition of touch experience are very important.
- It is necessary that all groups of the population could use the playground.

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