

# DESIGN TRENDS FOR CHILDREN’S PLAYGROUNDS IN THE URBAN ENVIRONMENT. CASE STUDY: THE CITY OF BISTRIȚA, ROMANIA

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*Key-words:* design, playgrounds, urban environment, Bistrița, a model for child-friendly play spaces.

**Abstract.** This work showcases the latest trends in the design and arrangement of children’s playgrounds in rapidly growing urban areas. The author analyses the potential capacity of playgrounds to enhance children’s physical and mental development, encourage their capacity to improve children’s physical and psychological growth and foster intensive learning about the world through play. The paper contains examples of using non-standard components and innovative structures and materials in playgrounds in Romania. The analysis considers the need to apply state-of-the-art technologies, and a creative approach balanced with compliance, safety rules and construction standards to build playgrounds which would be interesting and attractive for children and useful for their all-around development. The example of Bistrița compares the design for the historic districts of the city and its peripheral and districts and mentions specific requirements for designing playgrounds outlined in corresponding codes and regulations. This paper also describes the cooperation framework between project customers, designers, and neighbourhood residents (the end users of playgrounds), as in the case of Bistrița. Another task is to analyse the accessibility of a playground for people with mobility disabilities. It explores the process of selecting suitable sites, of communicating with the target audience (the residents), and the typical challenges to be addressed by planners. The research period ranges from July 2023 to March 2024.

## 1. INTRODUCTION

Nowadays, given the fast urban development and, in particular, the vast construction of multi-storey residential areas, the organization of safe and comfortable living environments for children and teenagers is a topical issue as, from one point of view, life in big cities gives children many development opportunities, while from another, it restricts freedom of movement and the access to the natural environment.

The classic definition of sustainable development refers to intergenerational responsibility. Meanwhile, paradoxically, children make up a social category often neglected and marginalised, while urban planning is rarely dedicated to them. We are responsible for ensuring a sustainable future and a good present for the next generations, so they become tomorrow’s healthy and educated adults.

The words “play” and “children” are inseparable, and children’s right to play is rightly recognised as one of the fundamental rights by the United Nations Convention on the Rights of the Child (UNCRC, 2013; Murnaghan, 2019; Morgenthaler *et al.*, 2023). According to Article 31 of the UNCRC, “Children have the right to relax and play, and to join in a wide range of cultural, artistic and other recreational activities” (UNCRC, 2013).

For children, unplanned urbanisation “means unhealthy and unsafe environments, limited options for walking and playing, and limited connectivity” (UNICEF, 2018). Playgrounds should be based on spatial planning and quality factors, including children’s needs and preferences.

Compared to the older generation, modern children and adolescents tend to have fewer possibilities for playing outdoors (Shackell *et al.*, 2018) as access to public playgrounds located between

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apartments buildings is being restricted due to numerous factors: the rise in the number of cars and the use of yards as parking spaces (Jansson Merit, 2010); a limited access to courtyards for safety; a lack of public spaces as part of the construction of new residential quarters; social factors such as parents' safety considerations when they prefer to leave children at home or at private commercial organizations under constant control, etc.

However, the presence of suitable public playgrounds in urban building estates is extremely important for proper children's development.

According to UNICEF, one of the characteristics of a child-friendly city is for children to be able to meet friends and have places to play and enjoy themselves (UNICEF, 2018).

Properly designed and equipped children's playgrounds in urban neighbourhoods secure the necessary conditions to spend a healthy amount of time outdoors, benefit from physical growth, ensure children's development and perform leisure activities with their peers.

The research of urban space to plan a landscaping project reviews the latest trends in children's playground design and the creation of a model for child-friendly play space (city recreation) in urban environments.

## 2. METHODOLOGY

In terms of procedure, there were two main directions:

- a. The bibliography reviews the speciality in which the trends and design principles used in the setting up of a playground are analysed.
- b. Observations are conducted on the ground, where the principles of design and planning of the identified space are established.

- a. Designing a playground requires following certain architectural principles to help create fun, accessible play areas for children. Landscape designers know that design principles and the architectural playground equipment are two key elements when creating a playground.

As with any building, architectural design plays a significant role in creating a playground. Eight main principles of playground architecture affect every aspect of a playground. These principles ensure that play areas are accessible for all children.

When designing a playground, it's essential to provide space for various types of play so children can choose their favourite kind. Some of the most common types of play include the following: active play, creative play, and social play.

Modern playground components use sturdy, safe materials to ensure children have a play space that will withstand the elements and last for years with proper maintenance. Common types of equipment surfaces include metal, plastic, wood and rubber.

The best design will allow for adaptive and inclusive play that shifts with children's interests and abilities.

Imagine the types of activities that may go on there: physical games, creative games, social games, games that engage the senses and areas for those children who may wish to play in peace.

- b. Principles used for the designing and planning of space:

Functionality: the space must be designed in such a way that it meets the needs of its users. Each area must have a clear destination and allow for specific activities to be carried out effectively.

Ergonomics: the space must be comfortable and accessible to all users. This includes the proper dimensions of furniture, accessibility for people with disabilities and a smooth flow.

**Aesthetics:** the design must be visually pleasing and reflect the desired style. The choice of colours, materials and textures plays a crucial role in creating a harmonious atmosphere.

**Safety:** ensuring a safe environment is essential. This implies being compliant with construction rules, preventing fire risks and ensuring good ventilation and lighting.

### 3. RESULTS AND DISCUSSIONS

The research results are divided into three segments: principles of playground design (urban recreation), trends in playground design and a model of urban space transformation.

The typology of playgrounds is influenced by their location in the urban space, their surface area, the complexity of their facilities and the degree of realization, the connection with other public functional infrastructures, and the transposition of design principles.

#### Principles of playground design

Playing is a need for children - it is essential for their dynamic growth, physical, mental, and emotional development, and their ability to communicate and socialize.

Playing activities establish favourable conditions for intellectual development, for visual, verbal, and logical thinking.

During play, a child complies with the rules, gets acquainted with the behaviour and relationships of adults, and garners communication and self-awareness experience.

Consequently, a game triggers feelings and emotions, encourages the volitional regulation of behaviour, and forms competitive motivation. Playing on public playgrounds can be viewed as a reflection of society, where children are encouraged to overcome fears and take risks to cope with difficulties in real life (Sheina, Sokolova, 2016).



Fig. 1 – The delimitation of the urban space where the current research is applied. A 3D rendering of urban space and its localization at the county level.

*Source:* Alexandru Marius Tătar, created using [https://3d-mapper.com/\\_MAP](https://3d-mapper.com/_MAP), <https://app.datawrapper.de/edit>.

The research materials devoted to the study of modern design trends in children's playscapes highlight the main design principles that provide the realization of the entertainment and teaching potential of open playgrounds (Design Guidelines, 2016):

- A participatory approach involving the design process of public interest groups (psychologists, educators, architects, designers, parents, etc., both specialists and end users of playgrounds).
- Safety precautions.
- Accessibility provisions for all social groups.
- Having a design for the widest possible target audience – for all ages and abilities.
- Taking into consideration the environmental characteristics of a chosen area.
- Satisfying a child’s play needs, providing landscape diversity and multi-purpose elements, ensuring a variety of play scenarios.
- Having a selection of universal playing elements and modules.
- Providing opportunities for research, experimentation and learning through play.
- Appealing to children’s senses.
- Providing opportunities for the identification of risks, controlling and diversifying potentially dangerous situations, and ensuring a reasonable exposure according to one’s abilities.
- Designing it for year-round use and seasonal versatility.
- Accounting for the needs of accompanying parents.

Types of playgrounds identified in urban areas:

- Outdoor playgrounds;
- Park-type playgrounds without tartan flooring;
- Neighbourhood playgrounds between apartment buildings with tartan flooring.

Examples of the realization principles mentioned above:



Fig. 2 – Park-type playground.

Park-type playground located in the promenade area of inter-war Bistrița, flanked by the defensive structure of the medieval period near the city centre, the space complies with the following conditions provides accessibility for all social groups, is designed for the widest possible target audience – for all ages and abilities, satisfies children’s play needs, provides landscape diversity and multi-purpose elements, and ensures a variety of play scenarios.

The functionality of the playground depends on it achieving the parameters of the stated principle.



Fig. 3 – Playground between apartment buildings or next to them.

Typical of Romanian cities, the playground is close to the children in the neighbourhood. When well-maintained, it is a functional and useful place for the community.

### **The principles of inclusive playground design**

The concept of “universal” or “inclusive” design means that the constitution of products and environments ought to render them usable by all people to the greatest possible extent, without the need for alterations or a specialized design. This includes people of all ages, those dealing with autism, intellectual disabilities, hearing impairments, cerebral palsy, spina bifida, and other mental or physical disabilities, as well as their caregivers. The concept also addresses the needs of other children.

The goal of designing inclusive playgrounds is to maximize each facility’s usability by individuals with a wide variety of characteristics.

Whether we are talking about learning strategies or physical space, inclusive design operates according to a distinct set of principles meant to maximize access to and everyone’s enjoyment of a space. As with many aspects of our daily lives, one size does not fit all. Well-designed outdoor play environments must include a variety of experiences and be accessible to people with varying skill sets.

Inclusive playground design examines more closely two principles governing universal playground design.

#### *Principle 1: Flexibility in use*

Flexible design in inclusive playgrounds means that the design accommodates a wide range of individual preferences and abilities, including low- to high risk-takers. A play aspect that includes adaptable features for a range of users will be the most flexible. For example, interactive elements, such as musical instruments, may be flush with the ground, to walk on or roll over, at a seated height to be touched, or overhead to be reached and to stretch towards. The output should also be varied (e.g., vibration and sound). Interactive features, such as hand bikes and balance beams, can be used in a variety of positions (sitting, standing, on the ground, or on a supporting surface). All interactive features should be mounted or securely attached to a footing so that people can use these elements to move from a sitting to a standing position and vice versa.

*Principle 2: Size and space for approach and use*

Due to the users' space needs regarding inclusive playgrounds, both in accessing and experiencing the spaces, accommodations for approach, reach and manipulation must be made. Such designs, for example, would provide ample space to park a wheelchair or walker while the child engages with water or in music play. Another example might be that users who are not very steady on their feet may need a larger standing area on the equipment than their more able-bodied peers.

**I. Playgrounds design trends**

The research analyses three trends in the design of recreational spaces for children.

- a) **Inclusive Design for All Abilities.** Inclusive design means making playgrounds fun and accessible for every child, no matter their abilities. This design helps ensure that children using wheelchairs can play just like everyone else. One example would be the sensory-rich environment, an inclusive playground that has many interesting things to see, touch, and hear, so every child can find something fun to do. These features help ensure that all children play together, making playgrounds a place where everyone feels included and can enjoy themselves;
- b) **Sustainable Materials and Eco-Friendly Design.** Sustainable playgrounds are all about using materials and designs that do not harm our planet. These playgrounds look great and teach children how to care for the environment. Here are some of the incredible ways these playgrounds are helping the Earth: recycled materials - many playgrounds are now built from previously used materials, which helps reduce waste and save valuable resources; biodegradable materials – they break down naturally over time, so they don't harm the environment. Playgrounds using these materials are leading the way in terms of eco-friendly design; water and energy efficiency: These playgrounds are designed to use less water and energy. This is good for the planet and teaches children the importance of saving resources. By focusing on these sustainable practices, playgrounds become a fun place where young people can learn about and practice taking care of the world around them.
- c) **Inclusive Technology Integration: Accessible and Educational** – there's a growing trend of incorporating technology for educational purposes into playgrounds. From interactive learning stations to QR codes that offer historical or educational information, technology is used to enhance the learning experience while ensuring accessibility for all children.

The evolution of playground design continues to push boundaries, with a focus on creating spaces that not only entertain but also nurture creativity, inclusivity, and safety. As designers and communities come together to shape these spaces, the future of playgrounds holds the promise of these environments becoming engaging, educational, and delightful arenas for children's development and enjoyment.

**II. A model of urban space transformation**

Following the analysis of playgrounds, a model was identified for the landscaping of a measured area of about 3,235 m<sup>2</sup> (0.3235 ha) encompassing the following facilities: single or double metal or wooden swings, baby swings with special safety supports, slides of different sizes and shapes (including spiral slides, slides integrated into complex play sets), single or double swings, coil spring rocking figures, climbing structures made out of metal or wood, such as climbing walls or climbing towers, fitness equipment adapted for children, such as pull-up bars and balance equipment, benches and tables for parents and children, activity boards to stimulate creativity and learning, water and sand games for sensory development, litter bins and other items of furniture to keep the area clean.

The design of the proposed model comprised the design principles established in the research.





Fig. 4 – Space before fitting out, present condition.



Fig. 5 – Delimitation of the area proposed for planning.

The space is located in the Bistrița Nord area: Suceava Street – Moldova Way – Piața Mică – Shopping Centre (Bistrița Retail Park 1). European road E58 passes through the location.

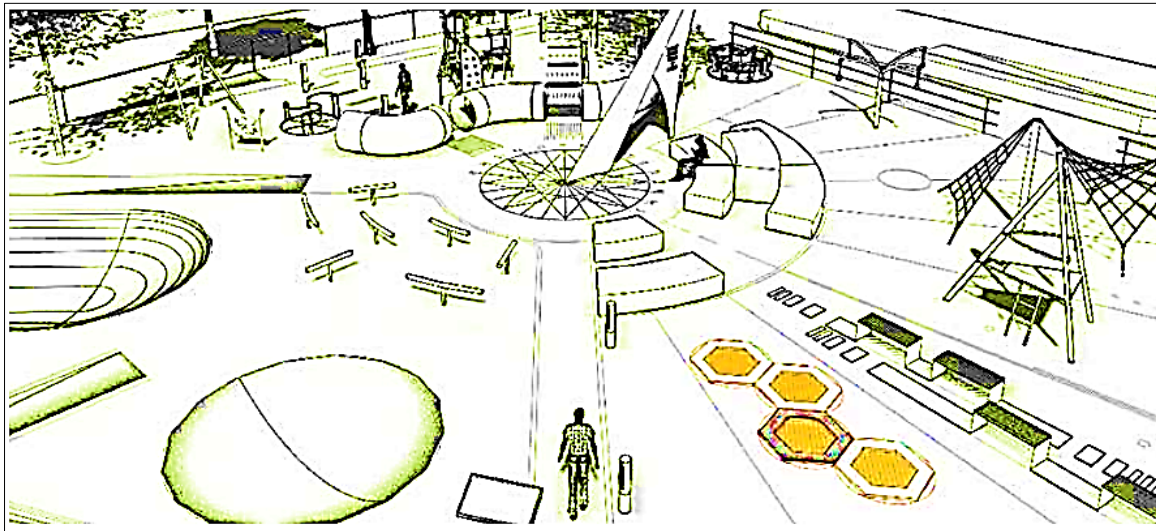


Fig. 6 – Model proposal for playground design.  
Source: Alexandru Marius Tătar.

In the area, there is a residential housing development, schools (three high schools), a wholesale market, a church, a shopping centre, bicycle parking, so a children's playground is appropriate for the sustainable development of the city.

The model sketched in Figure 6 is a concept of European, multifunctional, citizen- and community-oriented development.

The development of a playground is important in the development of the quality of life in the urban environment. Another reason why playground development is a priority is the social integration of children through play. The importance of play for development is well documented (Holst, 2017; Stone, 2017). Over the years, many researchers have attempted to define play, and these definitions vary widely. Most researchers agree that play encompasses a combination of characteristics, rather than the presence or absence of a single defining trait (Stone, 2017). Fromberg and Bergen (2006) put forward the following characteristics of play: symbolic, meaningful, active, enjoyable, voluntary, intrinsically motivated, rule-governed, and episodic.

#### 4. CONCLUSIONS

The principles of universal design address more than just usability; designers also must incorporate other considerations — such as economic, engineering, cultural, gender and environmental aspects — into their design processes. The principles described in this research offer designers guidance to better integrate features that meet the needs of as many users as possible.

The analysis of how a children's playground design is experienced allows us to draw the following points:

- Playgrounds are built to meet the needs of children and constitute the effective development of a game environment where unique landscapes and a variety of elements create creative, inventive and emotional games for children;
- The difficult composite structure of the playground enables children to make their desires and requirements a reality, not only through various physical activities but also through possibility of relaxing in the rather private quiet space.
- The creation and reconstruction of children's playgrounds to increase their aesthetic appeal, becoming aware of the development potential and ensuring compliance with the revealed principles of design of children's game spaces is a requirement.

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