

# THE ASSESSMENT OF THE MANAGEMENT AND ATTRACTIVENESS OF MODERN PLAYGROUNDS FROM THE POINTS OF VIEW OF CHILDREN AND DESIGNERS

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Received: 17.05.2024; Revised: 6.11.2024; Accepted: 14.12.2024

## Abstract

A playground area dedicated to children is a place, whose attractiveness should encourage various forms of fun that manifests in physical, exploratory or cognitive activities. Based on the research conducted on one of the residential estates in Wrocław, the authors attempted to evaluate the attractiveness of modern playgrounds for two groups of audiences: children, who are the direct users of these facilities, and designers of green areas. The playgrounds were assessed based on the functionality and aesthetics criteria. The preferences of both groups were analysed with the use of the SBE method, and the perception-based evaluation. The results revealed that for children, the most important factor is the functionality of the playground equipment, but they do not pay much attention to their appearance. As opposed to children, aesthetic attractiveness and functional appeal are equally important for designers. The obtained results allow us to better understand the needs of playground users, while, at the same time, they provide important guidelines for designers. Understanding the perception and the preferences of the youngest users in terms of the development of playground areas is essential for the education process of those, who design them.

Keywords: Recreational areas for children; Playgrounds; External playground areas.

## 1. INTRODUCTION

Sustainable development of a country should include economic growth, while, at the same time, satisfying the social needs and maintaining balance with environmental components. The number and quality of green areas in a city is an indicator of the level of the quality of life of its inhabitants [1]. This refers, first of all, to the youngest, most sensitive and thus most important [2] users. The green areas dedicated to

them are mainly playgrounds, which foster direct interactions with nature and comprehensive development, including physical and social development [3, 4, 5]. Well-designed play areas for children have a positive influence on their development and health at the early stages of education [6]. The World Health Organisation recommends that children should spend at least 60 minutes each day on moderate or intensive physical activity [7]. According to the research by

Janssen and Leblanc [8] conducted on a group of children aged 5–17, even such amount of time spent on physical activity has a positive influence on health. Unfortunately, more than half of teenagers do not follow this principle, which, in a long-term perspective, affects their health in a negative way [9]. According to Frost [10], the main function of playground equipment is to support the physical development of children. However, though certain design activities in the landscape, children may also be encouraged to develop their social, emotional, and cognitive skills [11].

Childhood is a period that has a strong influence on adult life. Bird [12] stated that games that children play in the open air influence the later attitude of the adult to the environment. Majdecka-Strzeżek [13] noted that, although humans have been shaping the surrounding world for a very long time, it was only recently that we became interested in garden areas that are dedicated specially to children. A pioneer of garden spaces for children was Henryk Jordan. On his initiative, starting from the end of the 19th century, people started to design spaces designated for children, which, apart from special equipment, were also rich in plants [14]. These gardens were established with the aim to create the appropriate conditions for children to play freely and joyfully [13]. Śliwowska and Wędrowski [15] pointed to the essence of purposeful and aesthetic design of the garden interior and structures. According to these authors, “it strongly contributes to forming a sense of aesthetics in children; accustoms them with objects that are purposeful and aesthetic, and, by enabling direct contact with nature (...) teaches them to actively love nature and its beauty” [15]. Sadly, modern playgrounds have moved away from Jordan’s idea of shaping playground areas for children. The greenery that has always accompanied children during play is being strongly reduced; it even happens sometimes that it is completely neglected in designing play areas for the youngest users. The problem of the disappearing contact with natural elements in playground spaces was noticed, among others, by Herrington and Studmann [11].

Children, especially the youngest ones, perceive the world with all senses: they value smells, colours, shapes, and textures alike. Outdoor playgrounds provide children with a wide range of stimuli. They develop visual perception, they may hear different sounds, touch various surfaces, and inhale various smells. Xu et al. [16] noted that experiencing sensory diversity while playing outside enriches both the internal and external world of children.

Literature of human psychology provides plenty of evidence of the importance of colours and their influence on children’s preferences [17, 18, 19]. Considering the research results that prove the side effects of the absence of colours in human spaces [20] or confirm the role of colour in children’s orientation skills both in closed and open spaces [21], it seems necessary to conduct further research in order to understand the importance of colours in the perception of playgrounds by children. According to Şensoy and İnceoğlu [22], a correctly designed playground requires involving adequately educated specialists, who know the recreational needs of specific age groups and who will design a play area that will be focused on the young users. Unfortunately, in designing spaces for children, designers often follow their own preferences, i.e. those of people who do not use the playgrounds themselves and are only trying to guess what might attract children to the given recreational area. Apart from that, subject literature provides little research on the spatial composition and the use of colours, materials, and textures [23]. One of the reasons for such low interest in these issues may be the difficulty in collecting information from young users. Another reason is the fact that children usually cannot represent their interests [24]. Due to that, there is an increasing need to analyse and compare two points of view on the subject. Lambert et al. [25] emphasised the need to conduct consultations and to engage children in the process of designing spaces that are designated for their use. When children participate in the process of designing a playground, and their preferences are taken into account, it becomes easier for them to adapt to the space [26]. Demir-Öztürk, Atmaca and Kuru [27] pointed out that the best environment for children is a space that is arranged in accordance with their interests, needs, and expectations. Due to that, the aim of this study was to analyse the children’s preferences concerning play areas, and to assess the attractiveness of the playground arrangements in one of the residential estates in Wrocław. Apart from that, professionals, i.e. students of landscape architecture, who will in the future design playgrounds for children, were also asked to evaluate the same facilities. The research took into consideration both the visual appeal (satisfaction with the aesthetics of the place) and functional attractiveness (the level of satisfaction with the development) of the analysed facilities. In order to learn about the opinions of two different types of space users, the following research questions were set:

- Are the children's preferences consistent with the arrangement of modern playgrounds?
- Does popular equipment in playgrounds enable children to engage in their favourite activities?
- Is the children's assessment the same as the designers'? Or do these two groups have completely different opinions on the attractiveness of the design of spaces dedicated to children?

## 2. METHODS

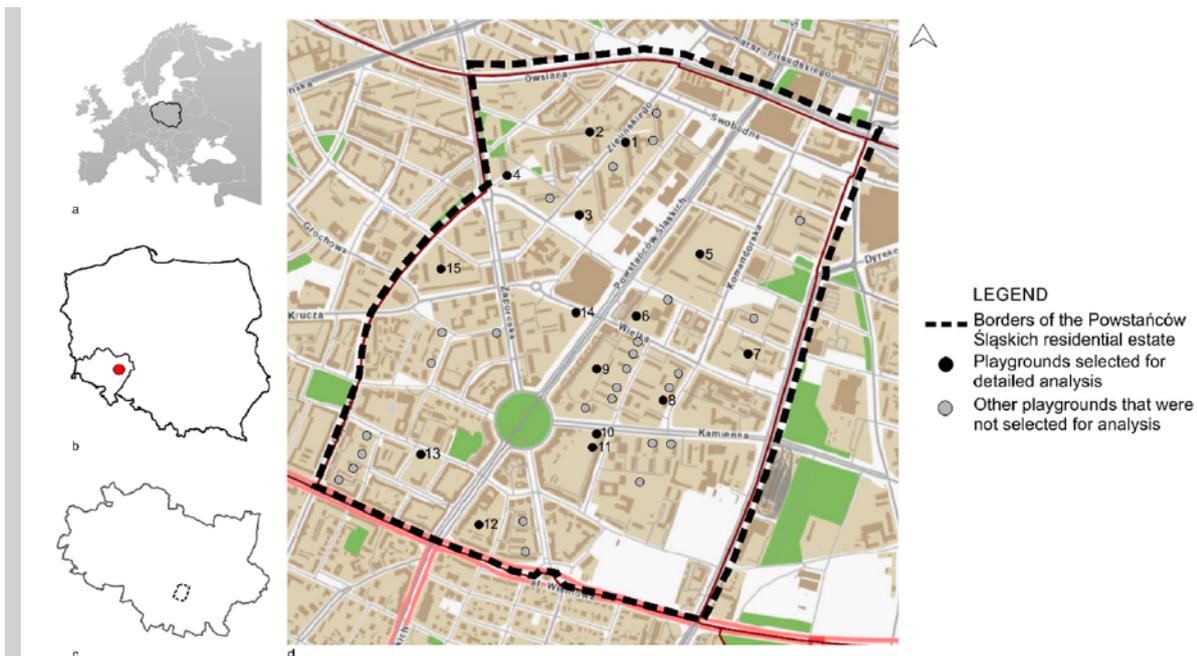
### 2.1. Test area, field studies

Field research was divided into two parts. The first one involved acquiring general knowledge about the specificity of the Powstańców Śląskich residential estate in Wrocław, determining the types of children's playgrounds, dividing them into categories based on whether they were generally accessible or were situated at educational facilities, and getting to know the users of the given playground.

A field inspection was carried out and photographic documentation of all 43 playgrounds situated in the district was prepared (Fig. 1). based on the collected information on all playgrounds, they were categorised as follows: playgrounds built before 2001 (8 facilities) playgrounds situated at educational facilities that may be accessed by other users (2 facilities) and those that cannot be accessed from outside

(12 facilities), playgrounds with only one piece of equipment (8 facilities) and, finally, generally accessible playgrounds built after 2001 (13 facilities).

Then, representative objects were selected for detailed studies. These were publicly accessible playgrounds that were constructed after 2001 (as this was when Poland has implemented the European standards concerning outdoor playgrounds) and playgrounds located at educational facilities, but with the possibility of access for users from outside. In total, 15 playgrounds were analysed (Table 1). Inventory was taken of each of these facilities in order to obtain knowledge about the functional, spatial, and aesthetic solutions. The location, environment, colour scheme of the equipment, and its environmental compatibility was assessed. The type of surface was also evaluated, along with its state of preservation and the street furniture elements that were present in the area and their number. Greenery was also analysed, in terms of its function, the selection of species that are safe for children, and the forms of play that the greenery enables. Moreover, during the field studies, the authors noted the types and number of elements of playground equipment in the given facility, their condition, the materials from which they are made and whether the surface below and around the given piece of equipment was appropriately safe.



**Figure 1.** Location: a – in Europe, b – in Poland, c – in Wrocław, d – of the objects in the Powstańców Śląskich estate (own study)

**Table 1.**  
**List of facilities selected for further analyses (own study)**

Item	Address	Surface [m <sup>2</sup> ]	Number of pieces of equipment	Type of accessibility	Surroundings
1	Tadeusza Zielińskiego Street, no. 38-54	2111	5	Generally accessible area	Tall multi-family housing
2	Between Stysia Street and Tadeusza Zielińskiego Street	730	9	Generally accessible area	Tall multi-family housing and square
3	On the corner of Szczęśliwa Street and Gwiaździsta Street	1652	8	Generally accessible area	Tall multi-family housing and square
4	On the corner of Zaporowska Street and Gwiaździsta Street	272	6	Educational facility	Educational facility
5	Radosna Street, no. 24-36	321	8	Generally accessible area	Tall multi-family housing and square
6	Powstańców Śląskich Street, no. 94	427	2	Generally accessible area	Tall multi-family housing and educational facility
7	Wielka Street, no.15-26	2037	11	Generally accessible area	Tall multi-family housing and educational facility
8	Between Komandorska Street and Drukarska Street	1368	4	Generally accessible area	Tall multi-family housing and educational facility
9	Powstańców Śląskich Street, no. 114	1853	9	Generally accessible area	Tall multi-family housing and square
10	Drukarska Street, no. 33	478	3	Generally accessible area	Tall multi-family housing and Allotment gardens
11	Drukarska Street, no. 33	478	5	Generally accessible area	Tall multi-family housing and allotment gardens
12	Wiśniowa Street, no. 8	1116	5	Generally accessible area	Tall multi-family housing and square
13	On the corner of Podchorążych Street and Sztabowa Street	516	5	Educational facility	low-rise multi-family housing and educational facility
14	On the corner of Powstańców Śląskich Street and Wielka Street	479	6	Generally accessible area	low-rise and tall multi-family housing and square
15	Krucza Street, no. 21	1086	6	Generally accessible area	Tall multi-family housing

## 2.2. Preference analysis

For the purposes of the present study, two points of view were adopted: the point of view of a child, as the end user of the closest recreational space dedicated to them, and the point of view of a playground designer. The respondents from each group were selected randomly. The preferences of both groups were analysed with the use of the SBE (Scenic Beauty Estimation) method, which is a concept based on the perception and evaluation of natural scenery [28]. Children's preferences were surveyed with the use of the approach based on the perception and assessment of landscape beauty, by means of semi-structured interviews [29, 30] conducted in field conditions, i.e. directly on the analysed facility. On the other hand, the preferences of designers were analysed with the use of questionnaires based on photos that depict real life situations in the evaluated landscape [31, 32]. 40 competent judges took part in the survey [33, 34]. The experiment was conducted in a study setting. All participants of the study experiment and children aged 7–12 assessed the objects on a five-point scale from 1 to 5, where 1 was the lowest score and 5 – the highest. This scale is commonly used in the evaluation of social attitudes, as the

answer selected by the respondents most accurately represents their assessment or emotions.

In order to analyse the preferences of children, the respondents were divided into two age groups: children under 6 years old and children aged 7–12. Six randomly selected persons from each of the 15 playground and from all age groups were asked to take part in the survey. A total of 90 people from each age group, i.e. 180 children, took part of the survey. As far as the youngest users (children aged 3–6) were concerned, the survey contained very simple questions, concerning: their favourite form of play, favourite piece of equipment, and colour. The surveys for older children contained questions concerning such elements as: the aesthetics of the equipment, its diversity, favourite pieces of equipment, favourite form of spending free time, and preferred colours.

The point of view of the designers was analysed by conducting a survey on 40 competent judges, who were students of Landscape Architecture at the Wrocław University of Environmental and Life Sciences (20 women and 20 men). The competent judges assessed the playgrounds that were selected for detailed analysis in form of questions and photos displayed on a

screen. The following elements were assessed: visual attractiveness, including colour scheme, consistency of style and form, environmental compatibility, functional attractiveness for various age groups, starting from children aged 0-3 through older children to adults and senior citizens. The judges were also asked to identify the elements that have the strongest influence on the aesthetics of playgrounds: an appropriate colour scheme, cleanliness of the playground, material from which the equipment is made, greenery as play equipment, the application of plants that surround and complement the playground, division into sectors for different age groups, the presence of street furniture, and the position of pieces of equipment.

### 3. RESULTS

#### 3.1. Results of field studies

15 playgrounds were subjected to detailed studies and inventory works. These areas are situated in the northern, southern, and central parts of the Powstańców Śląskich residential estate in Wrocław. As far as surface area is concerned, there is a noticeable difference between the playgrounds that are located in the northern and southern parts and in the centre of the estate. The surface area of playgrounds stated in the northern and southern part ranges, on the average, from 200 to 1400 m<sup>2</sup>, while the ones located in the centre of the estate usually occupy areas up to 2400 m<sup>2</sup>. The analysed objects are usually surrounded by tall multi-family housing, with a small share of green squares, small parks, and educational facilities. The colour schemes of playgrounds are highly diversified (Table 2).

The dominant colours in the analysed objects are various shades of blue and their combinations. Blue is supplemented by yellow and red, which have the same percentage share of 86%. Another colour coordinated with those three in playgrounds is green. The other colours used are brown, orange, and grey, which are present mainly on street furniture, in form of metal elements.

Taking into consideration the proper functioning of playgrounds, their spatial arrangements were also analysed. The playgrounds were studied in terms of the presence of functional spatial zones, including: toddler areas, zones for children aged 3–6, for children aged 7–12, for teenagers, and adults. 73.3% of the analysed objects had an area for toddlers, while children aged 3–6 may use 66.6% of the playgrounds. 80% of the playgrounds are suitable for children from the 7–12-year-old group. Only 20% of the playground contain attractions for teenagers. Adults may only sit on traditional benches, while watching their children play, in 66% of the playgrounds located in the Powstańców Śląskich estate in Wrocław.

The types of surfacing were counted, taking into account the state of preservation, security, and thickness of the surface layer. Grass is the most common type of surface. In 70% of the cases, its condition was assessed as average, and in 30% as good or even very good. The assessment of the condition was based mainly on: the density of blades, the appearance, aesthetics (length of blades that shows how often the grass is mowed). Another frequently used type of surfacing on playgrounds is sand. It is present first of all in the vicinity of such equipment, as: sandbox, “horse” type spring-rocker and climbing structures in

**Table 2.**  
Colour schemes in playgrounds (own study)

Playground No.	Types of plants that exist in playgrounds							
	Tall trees	Low trees	Perimeter plants	Barrier bushes	Perennials	Toxic species	Species with thorns	Allergens
1	+	+	+	+	+			
2								
3		+	+	+				
4								
5								
6	+			+				+
7	+		+	+				
8	+							
9	+		+					
10	+							
11								
12								
13	+							
14								
15		+						

The playgrounds that are devoid of any vegetation are marked in grey

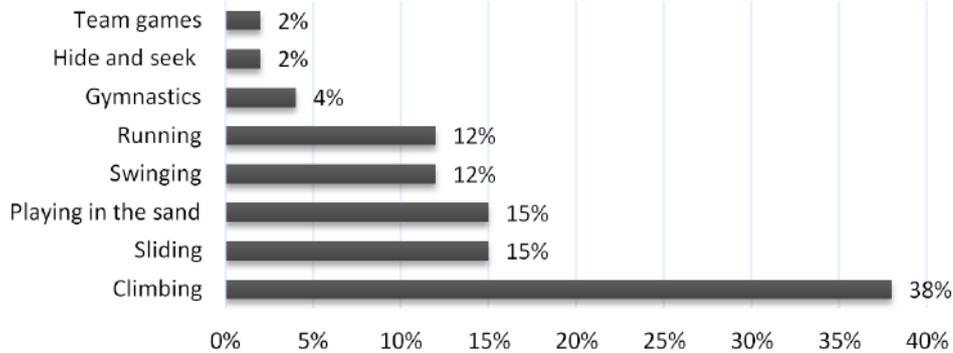


Figure 2. Percentage distribution of the activities offered by the playgrounds in the Powstańców Śląskich residential estate (own study)

form of houses with slides, ladders, and bridges. Rubber surface covers are another type of commonly used playground surfacing, which is present in 40% of the objects. Other types of surfacing are cobblestone and gravel used as materials to create paths.

Street furniture was designed not only to provide rest and relaxation possibilities for adults, but also to meet the sanitary needs. It includes waste bins and lighting. The most common elements of street furniture include:

- traditional benches that exist in all playgrounds, with the largest number being 13 benches.
- waste bins – present in 12 playgrounds, with the highest number of 3 in one playground,
- boards with the rules of using the playground that inform the users about the rules. Such boards were present in 9 playgrounds,
- benches for young people, which are still scarce and were found only in 2 playgrounds.

Only 13% of the analysed playgrounds complied with the regulations that require to install benches and waste bins at 1m distance from the fence. All of them, however, enable users to see the whole playground.

Sadly, greenery as an integral element of the playground that is designed for playing, and of its surroundings, is unfortunately non-existent in 40% of the analysed objects. These were mainly playgrounds that are located in the northern part of the analysed area. The applied greenery is safe for children, as the species are not toxic and they do not have thorns or prickles. 3).

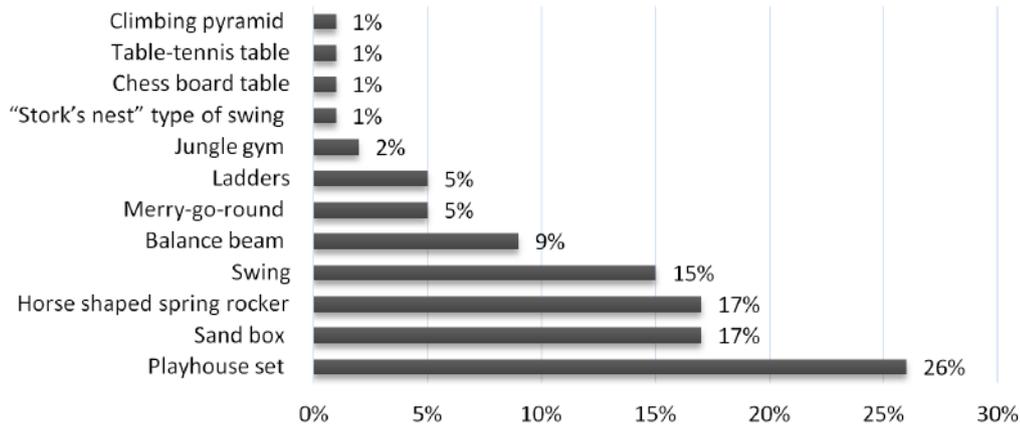
Silver birch (*Betula pendula*), which is a strongly allergising species, was used only in playground No. 6. Tall trees are present in 77% of the analysed objects that had any greenery. They include the following species: Norway maple (*Acer platanoides*), silver birch (*Betula*

Table 3. Types of greenery growing on playgrounds (own study)

Playground No.	Colour scheme for playgrounds						
	yellow	green	red	brown	blue	orange	grey
1	+	+					+
2	+	+		+	+		
3	+	+	+	+	+	+	
4	+	+	+	+	+	+	
5	+		+	+	+		
6	+	+	+	+	+		
7	+	+	+	+	+		+
8		+	+	+	+		
9	+		+	+	+	+	
10		+	+		+		
11	+	+	+		+		
12	+		+	+	+		
13	+		+		+		
14	+	+	+		+		
15	+	+	+		+	+	

*pendula*), horse chestnut (*Aesculus hippocastanum*), pedunculate oak (*Quercus robur*), and small-leaved lime (*Tilia cordata*). No trees in poor condition, which would pose a danger for the playing children, were found. The trees are complemented by bushes, mainly deciduous, in forms of hedges, which were classified as perimeter and barrier plants. The smallest group were perennials, which were found only in playground No. 1. Plants that would play the role of “playground equipment” were not found in any of the objects. However, in 55.5% of the analysed playgrounds, the greenery, due to its composition, height, and form, as well as morphological elements, offers some possibilities to play (e.g. hiding places for playing hide and seek or thematic games with the use of plant elements). Six of the analysed objects were completely deprived of any greenery.

The main elements that give shadow in the analysed areas are residential houses and greenery. Shadowy zones can be found in all playgrounds. The equipment that is installed in the analysed objects offers possibilities to engage in various types of games and activities.



**Figure 3.**  
Percentage distribution of the most commonly used types of playground equipment (own study)

The analysis of the available forms of activity revealed that the studied playgrounds usually offer equipment that focuses mainly on physical activities and games: climbing, sliding, swinging, running, as well as more static activities, such as playing in the sand (Fig. 2). There is significantly less focus on the forms of activities that teach children how to interact with others, in form of team games. Such possibilities of recreation are available only on 4 playgrounds. It is provided by the presence of such equipment as: a table-tennis table, a chess board table, or basketball courts. However, observations revealed that these types of equipment do not attract many users.

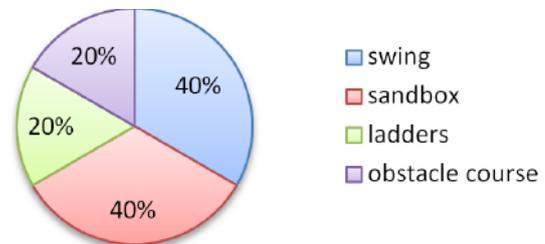
Activity structures in form of houses equipped with slides, ladders, bridges, etc., sandboxes, horse-shaped spring rockers and swings are the most popular types of equipment in all playgrounds (Fig. 3).

Equipment that is considered to be innovative is used least frequently. This refers to climbing pyramids, jungle gyms, and "stork's nest" type of swings.

A vast majority of the playgrounds are fenced. Only 13% do not have fences, while in 20% of playgrounds only the sandbox is fenced. 65% of the fences are made from metal, 30% are made from wood, while 5% have wire mesh fencing. As far as metal fences are concerned, most of them are grey, while 40% are green, and one playground has a blue metal fence. All the fences have safe tops and 60% of the fences are equipped with self-closing mechanisms.

### 3.2. Preferences of the youngest children

The survey of the youngest children revealed that their favourite pieces of playground equipment are sandboxes and swings (Fig. 4).



**Figure 4.**  
Favourite pieces of equipment according to the youngest respondents (3-6 years old) (own study)

The results of our research revealed that as far as favourite forms of play are concerned (Fig. 5), approximately 20% of the respondents in the 3–6-year-old age group mentioned hide-and-seek, tag, playing in the sandbox, and swinging. This demonstrates that a significant majority of the children in this age group preferred to play freely in the open space, with a large amount of greenery that enabled them to play tag or hide and seek with their peers. The main form of play in this age group of users are games that involve various types of physical activity, and competition between children of a similar age, which is usually arranged outside typical elements of playground equipment.

The analysis of the children's colour preferences revealed that 70% of the surveyed children 3–6-year-old preferred green colour (Fig. 6), as they associate it with the grass and trees, of which they would like to see more in playgrounds. Other shades from the colour palette were also mentioned as important for the perceived attractiveness of the playground area, by approx. 10% of the respondents. The children showed a need to contemplate nature.

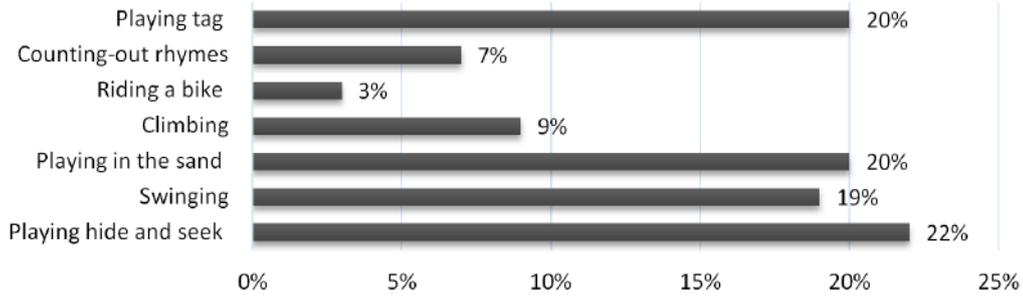


Figure 5. Favourite forms of play according to the youngest users (3-6 years old) (own study)

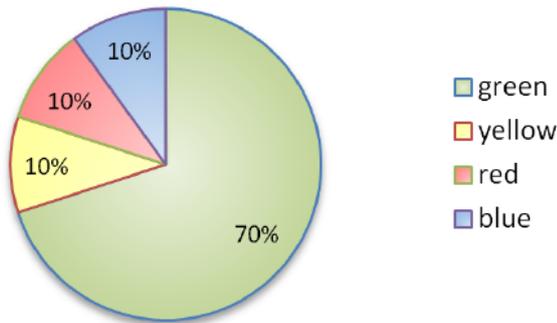


Figure 6. Preferred colours according to the youngest users (3-6 years old) (own study)

### 3.3. Preferences of older children

The results of the analysis of preferences in the 7–12-year-old age group revealed that as many as 80% of the respondents pointed to the absence of greenery as a factor that reduces the attractiveness of the area. Children in this age group love activities in the open air, games connected with running, jumping, and climbing. Their main focus is physical development, and, at the same time, playing with their peers. The favourite forms of play in this age group are swinging, which was mentioned by 22% of the respondents,

while jumping from the swing proved to be attractive for 20% of the respondents, as well as playing table tennis (20%) and football (19% of the respondents). The forms of play that were the least appealing to the older children were riding a bicycle (3%) and running (7%), which may prove that the need to interact with their peers is high in this age group (Fig. 7).

The analysis of colour preferences showed that, similarly as it was in the case of younger children, the most frequently named colour that was preferred in playground areas was green, followed by yellow and red. They are associated with such elements as grass, greenery, and red and yellow flowers.

In the surveyed age group, the assessment of the aesthetics (visual attractiveness) of playgrounds was relatively low (Fig. 8). On the 5-point scale, the lowest score was given to playgrounds No. 6 and 10, which received an average score below 2. The highest results were achieved by playgrounds No. 4, 5, 13, 14, and 15, which had an average score closest to 5 (Fig. 9). The value of the functional attractiveness score (Fig. 10) was on a similar level. The results shown in Figure 9 demonstrate that the highest and lowest scores in terms of functionality were given to the same facilities, as in terms of visual attractiveness.

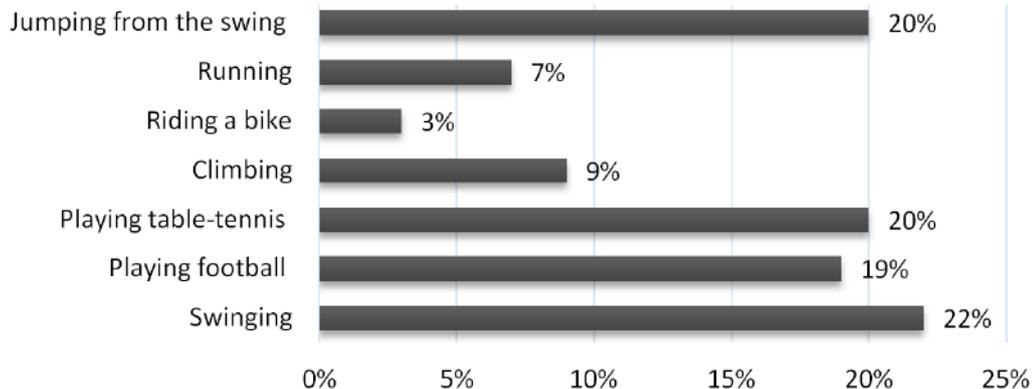
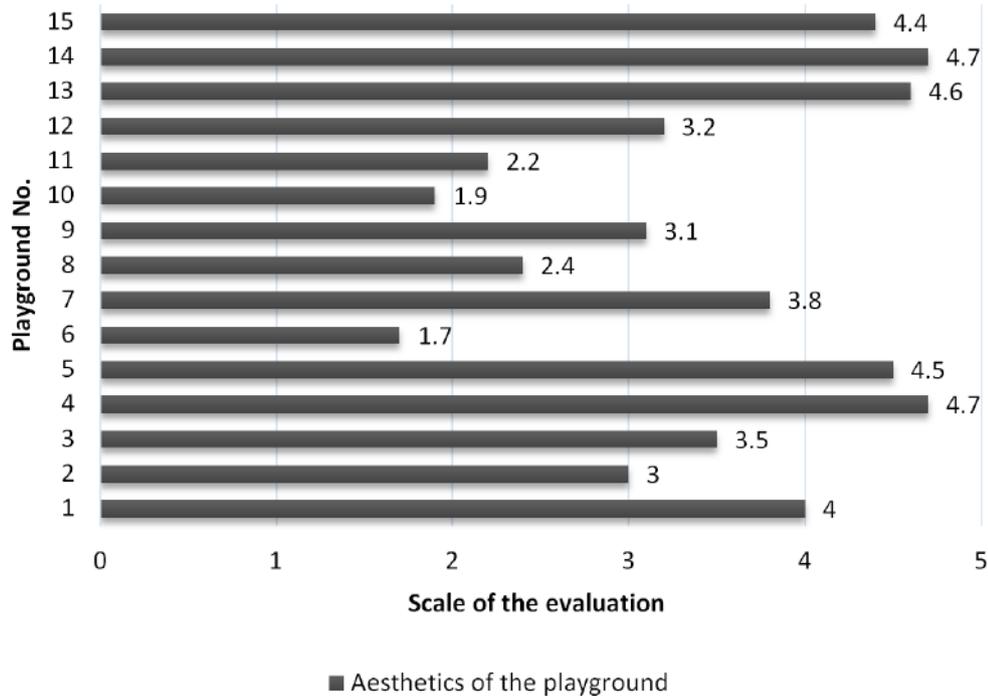


Figure 7. Percentage distribution of the preferred forms of playing in the 7–12-year-old age group (own study)



**Figure 8.**  
The aesthetics of playgrounds according to children from the 7–12-year-old age group (own study)



**Figure 9.**  
Examples of playgrounds that were awarded the lowest (a) and highest (b) scores by children (own source)

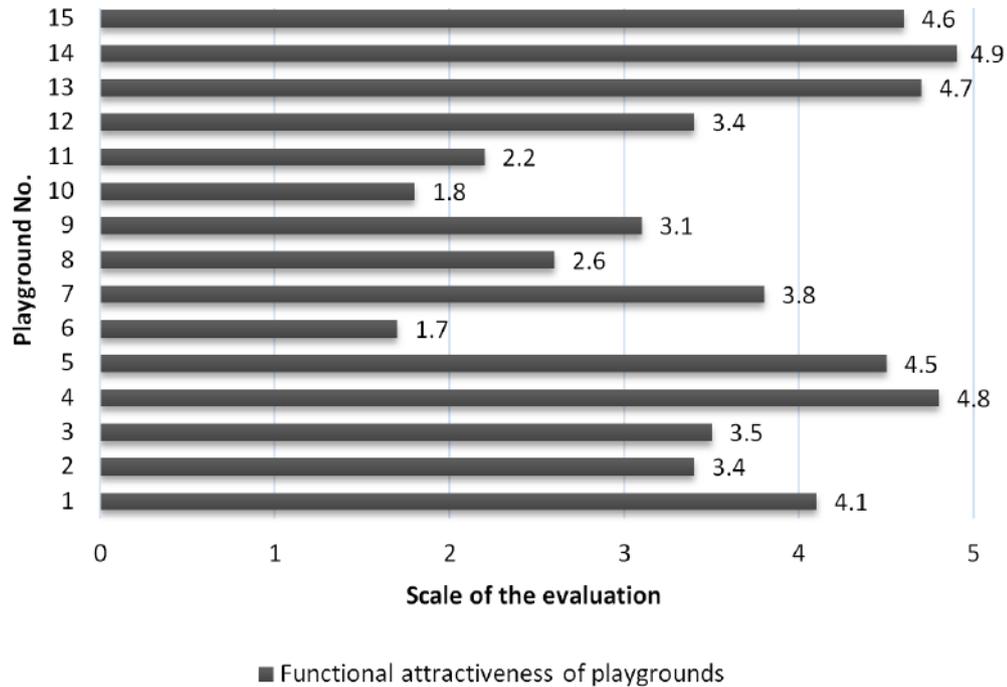
These results demonstrate that older children and adolescents may already, at their age, pay attention to the aesthetics of the space and associate it with functional attractiveness. The playgrounds that were most frequently visited by users received the highest scores in this aspect.

### 3.4. Preferences of professionals

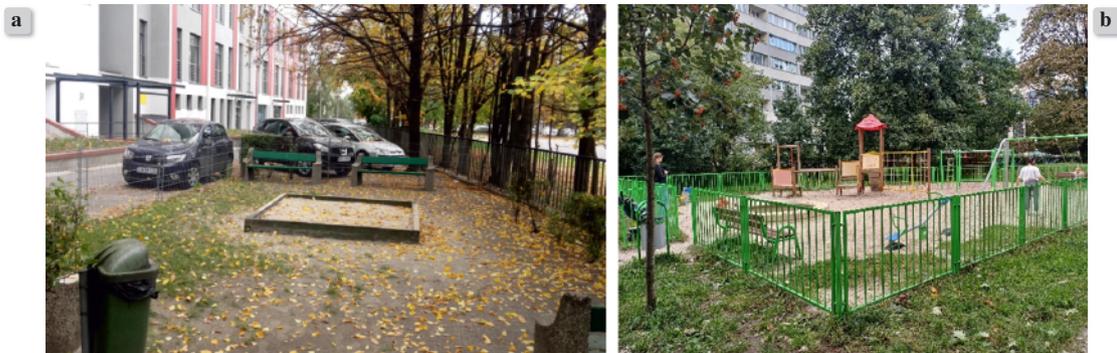
The last surveyed group were students of Landscape Architecture, who are studying to become future designers of public spaces, including those for children. The students assessed the aesthetic attractiveness in terms of the compatibility of the playground with its environment, consistency of style, and the

colour scheme of playground equipment. As far as visual attractiveness is concerned, there are no noticeable differences between genders. Both men and women (Fig. 12) stated that playgrounds No. 9, 13, 14, and 15 were the most attractive visually. The least attractive ones were playgrounds No. 6 and 10 (Fig. 11).

As for functionality, the students were asked to assess the attractiveness of playgrounds considering various age groups. Playgrounds No. 7 and 14 received the highest scores for functional attractiveness, while playgrounds 6, 8, and 10 received the poorest results (Fig. 13). Here, no differences between genders were noted, either.



**Figure 10.** Functional attractiveness of playgrounds according to children from the 7–12-year-old age group (own study)



**Figure 11.** Examples of playgrounds that were awarded the lowest (a) and highest (b) scores by professionals (own source)

## 4. DISCUSSION AND CONCLUSION

### 4.1. Discussion of the results

The assessment of the attractiveness of the playgrounds in the Powstańców Śląskich residential estate in Wrocław was rather not positive. Although most playgrounds contain diversified functional and spatial zones that enable 0–12-year-old children to play, there is a noticeable lack of diversity in terms of the opportunities of comprehensive development. Most of the pieces of equipment that are installed in the analysed playgrounds only enable physical development of the users. Therefore, it is the same trend in shaping play areas that has been pointed out by

Frost [10]. There is a noticeable lack of correctly shaped space that might foster the development of social or cognitive activities in children, which were discussed by Herrington and Studmann [11]. This applies in particular to natural elements of landscape development. The analysis of the playgrounds in Wrocław leads to the impression that some of the designers avoid including greenery in the playground designs, by only selecting the equipment and surface instead. As many as 40% of the analysed playgrounds have absolutely no greenery. As Bird [12] has noticed in his studies, this may negatively affect the future development of children, especially younger ones. On the other hand, in playgrounds where greenery is

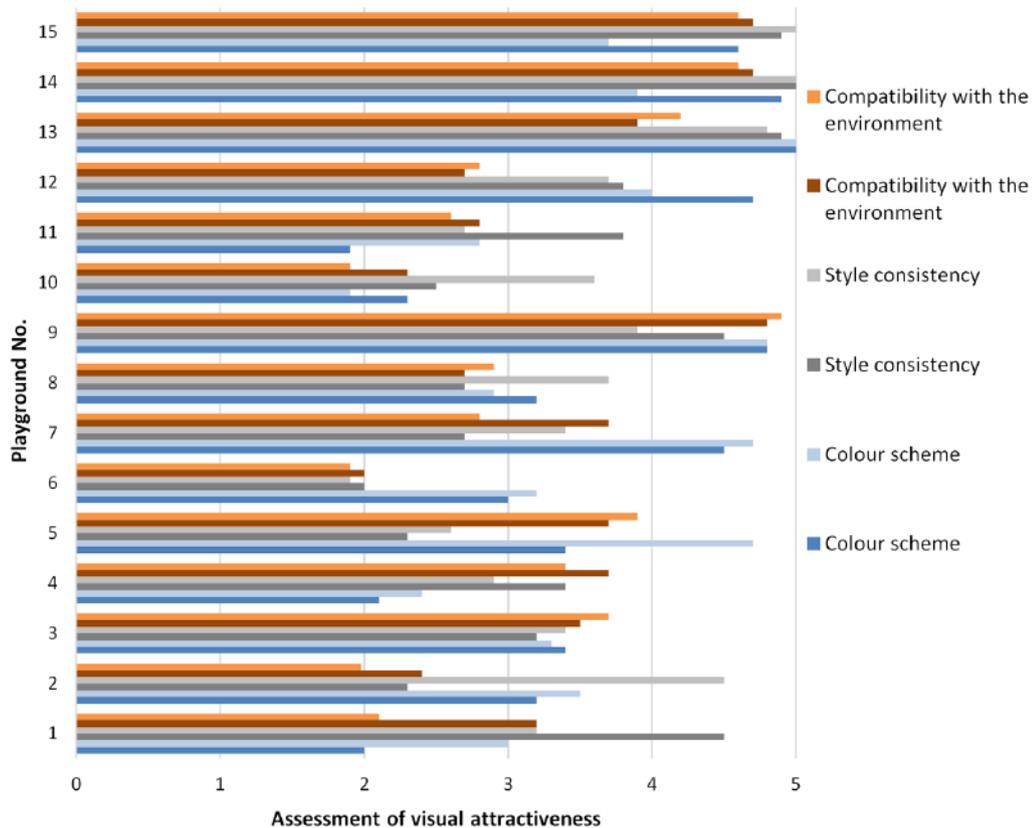


Figure 12. Visual attractiveness assessed by women (W) and men (M) based on 3 criteria (own study)

present, it is often haphazard and does not offer possibilities to use it while playing (species that are characteristic for different seasons, species that yield fruit, such as chestnuts or acorns), as recommended by Bredecamp and Copple [35]. All children, both younger and older ones, expressed their wish to have more contact with nature. Their answers are consistent with those of the preschoolers who participated in the study conducted by Zwiernik [36] in one of the kindergartens. She noticed that the youngest children have a precise internal image of existing and imaginary outdoor playground areas. Her studies revealed a need for movement, but also for exploring and discovering. Importantly, children asked about the main tools that they needed to play did not mention typical elements of playground equipment, but rather elements that are connected to the natural environment, i.e. trees, bushes, lawns, sticks, and leaves, as well as sand, dirt, and water. These elements were used by the children for various forms of play: manipulative, exploratory, or imagination games. They treated greenery as a place to play, relax, and a form of hideout. The results of the works of Zwiernik [36] clearly demonstrate that young

users need complex interactions with nature and that nature is important for them in creating their favourite places and forms of playing. These studies reveal that the aesthetics of playground equipment is not the most important for children. Whether they like a given playground results from various factors, more often those that are linked to nature. The results of the discussed research are similar: in their expectations, children omit the standard equipment, and the dominant forms of play involve the natural environment – playing tag or hide and seek. This means that the arrangement of the analysed playgrounds is rather not interesting for their users. Cognitive and social activities require appropriate conditions to emerge and develop. Children find it difficult to explore their environment if access to its natural components is limited, for example by an artificial surface that often covers almost the whole playground area. Therefore, it is important that playgrounds, as external areas used by children for daily outdoor recreation activities, should also ensure direct contact with nature. Playing and interacting with nature develop cognitive activities, foster the development of creativity and involvement, and

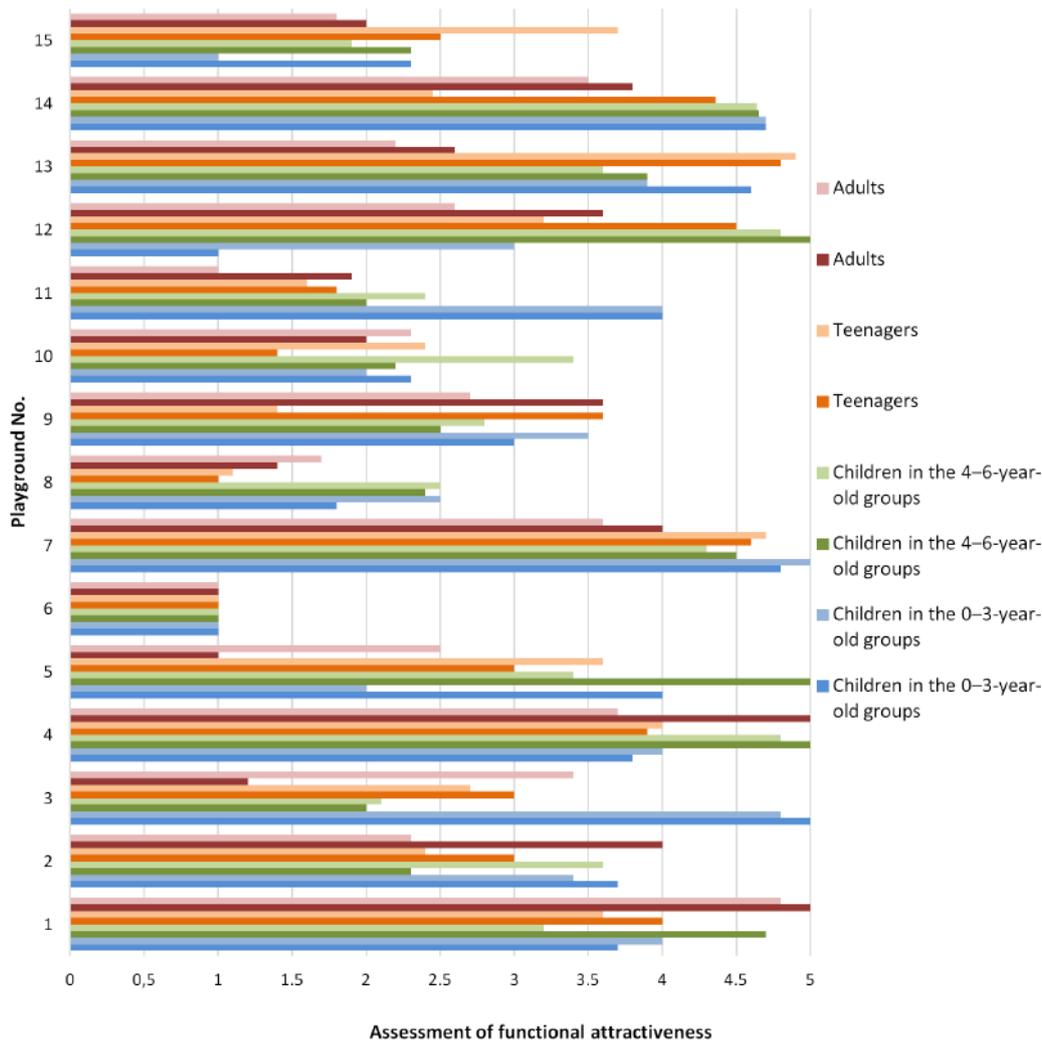


Figure 13. Functional attractiveness of playgrounds for different age groups, assessed by women (W) and men (M) (own study)

encourage young people to take risks [37], [38]. Moreover, it contributes to physical and emotional development [39]. Research conducted by Fjørtoft [40, 41] demonstrated that children, who had the opportunity to play in natural landscape (in a forest) experienced a significant growth in their motor skills, balance, and coordination in comparison to children who only played in classical playgrounds. Moreover, the natural environment provides children with the most interesting and developing forms of playing [42], where they use fragments of plants, learn and experiment directly with nature. This is why it is so important to take into consideration the voice of the children and to shape places dedicated to children with large amounts of various greenery, as research has proven that it is very important.

The analysis of the preferences of children aged 7-10 concerning the equipment of the playgrounds of their dreams, conducted by Ilhan Ildiz and Ahmetoglu [43] revealed that the most preferred equipment elements were the ones that enabled playing risky games. As a result, it was recommended to include such pieces of equipment in designing playground areas, while at the same time maintaining safety. Similar preferences were found in the respondents in the survey presented here. In the Powstańców Śląskich estate, the most popular among the standard items of playground equipment were the swings, which were also used by older children in a non-standard way (jumping from swings). This may prove the existence of the need for risky games, during which the children can feel the adrenaline rush and test themselves. Due to the lack of possibilities to modify the basic use of

playground equipment, children quickly become bored and change the form. The conducted research also revealed that children do not pay much of play. The conducted research also revealed that children do not pay much attention to the aesthetics of equipment, but they are able to say which playgrounds they like the most. Their evaluation of the aesthetics is primarily driven by the forms of games that they may play in the given area, in other words – the functionality. As opposed to the aesthetic preferences, the users' preferences concerning functionality were consistent with those of the designers. When assessing the aesthetics, children focused mainly on colours. They prefer green first of all, but they also often mentioned red and yellow, as colours that they associate with nature. Samimi and Tabatabaei [19] conducted an assessment of the influence of colour, saturation, and HSV value on the preferences of preschool children. The results demonstrated that the most preferred colours for outdoor playgrounds were warm hues. The comparative analysis of the playgrounds situated in the analysed estate demonstrated that their colour schemes are very diversified and that blue was the dominant colour. This means that the preferences of young playground users have been met only partially. These choices are more consistent with the preferences of adults, who, as it was proven by the research by Zhang et al. [44] prefer bluish-green hues and tend to dislike yellow and yellow-green colours. Al-Rasheed [45] also determined the order of colours that are preferred by adults. These are: blue, red, green, purple, orange, and yellow, which are also the dominant colours in the analysed playgrounds.

The conducted research revealed that the playgrounds in the Powstańców Śląskich estate are spaces, which only meet children's expectations to a small extent. Only 6 out of 15 playgrounds received a score above 4 on a 5-point scale, which indicates that children might like their design. The equipment that is installed in the analysed playgrounds rarely offers the opportunity to play favourite games. Although the available forms of play are varied, only a small share of the users mentioned the classical pieces of equipment as preferred ones. This was more noticeable in the youngest age group, where the existing development of playground largely matches the preferences of children, whose favourite pieces of equipment are sandboxes and swings. In the opinion of the participants, the most preferred form of play was playing freely, which was the most popular regardless of the age group. Children aged 3-6, who, in their responses, focused mainly on their preferences to

play freely, i.e. run or play tag, need larger open spaces, but also spaces overgrown with vegetation, which they may use, for example, to play hide-and-seek. Unfortunately, the research revealed that not all the analysed playgrounds offered such possibilities. Six of the 15 playgrounds were completely devoid of any vegetation, while various levels of vegetation exist in only few facilities. There is also an insufficient number of open spaces covered with grass, which enable children to freely engage in physical activity. It may be optimistic that the preferences of children are largely consistent with those of the designers, which in the future may have a positive influence on the designs of new playgrounds.

Spaces that provide the best support for the development of children are those that are designed in compliance with the children's interests, desires, and needs. In order to achieve it, children should be involved in the design process. This will improve the attractiveness of play, positively influence children's development, and help the adults learn about their thoughts and satisfy their needs. In the context of planning the spaces that are the closest to humans it is important to identify the needs, opinions, and preferences of their users, which might lead to a more effective design of such spaces, their management, and cooperation with local authorities and administrative organs. Understanding the perception and the preferences of the youngest users in terms of the development of playground areas is essential for the education process of their future designers.

#### 4.2. Limitations and prospects

This research project is an attempt to combine and compare two points of view: of the users and designers of playgrounds for children. Due to the differences in the levels of awareness of these two groups of users, various approaches and methods were used that were adapted to the level of knowledge and allowed us to collect data both from children and from designers. In order to standardise the results, the SBE method was used. Subject literature provides two generally known approaches to the use of the Scenic Beauty Estimation (SBE) method. The first one is based on direct perception on-site, and this approach was used in the analysis of children's preferences. This approach is widely used in environmental management studies [28]. The second approach was based on the assessment of photographs and a focus group [29, 30, 35]. The authors are aware that the differences that result from the applied approaches do not allow for a direct comparison between the results in

different groups of respondents. The limitations of the research and the adopted methods resulted from the age of the respondents and their knowledge. In the group of professional, a certain limitation was posed by the lack of the possibility to assess the objects in the field. However, Sharafatmandrad and Mashizi [36] proved that photographs are an effective tool for presenting the actual situation in study conditions. Although some authors claim that the SBE method is an expensive and time-consuming approach [37], it is actually simple and reliable. The obtained results demonstrate that the gender of the respondent, regardless of their age, does not influence their answers. This means that this aspect may be omitted in future research projects. Moreover, although the research area was limited, as all the analysed objects are located in one city, the project may constitute a starting point for further studies on the needs and principles of shaping play areas for the youngest children and to formulate guidelines for the designers of such facilities.

#### 4.3. Recommendations and directions of the project

The obtained results may become a starting point for formulating the principles of designing playgrounds for children that will fulfil the expectations of their youngest users.

First of all, it is recommended that greenery should be a permanent and indispensable element of any spaces designated for children. In objects that are devoid of greenery or with scarce amounts of vegetation, this amount should be increased. The vegetation should be diversified both in terms of height and of species, which would allow children to use the plants and the space more individually in playing games.

It is necessary to maintain some open spaces that will enable children to engage in free activities. In the light of Polish legislation, it might seem useful to introduce amendments to the Act (49) that introduces the obligation to include at least 30% of biologically active surfaces in the development designs of leisure areas.

The aesthetic preferences of users should be taken into account in the selection of playground equipment. The colours of the equipment do not have to be bright or contrasting, as the children's preferences have shown that their favourite shades are those that are associated with nature and refer to the natural environment. In the functional aspects, the equipment should foster common games that enable integrating with peers, but also competing with other

children and overcoming own difficulties.

The results of the presented research demonstrate that the development of contemporary playgrounds, their colour scheme, and the installed equipment significantly diverge from the preferences of their young users, to whom these facilities are dedicated. Therefore, it is recommended to involve children in the design process.

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