

# CHALLENGES OF DESIGNING PRIMARY SCHOOL GROUNDS IN NORTH MACEDONIA

Fitore Dehari<sup>1</sup>, Fjolla Ibraimi<sup>1</sup>, Hafije Murati<sup>1</sup>

<sup>1</sup>*Department of Architecture, Faculty of Applied Sciences, University of Tetova*

<sup>\*</sup>*Corresponding author e-mail: fjolla.ibraimi@unite.edu.mk*

---

## Abstract

In recent years we have seen a significant change in the design of educational institutions, as a result of contemporary pedagogical philosophy, attempts to create an inclusive and equal environment, or due to restrictions that appeared as a result of Covid-19. While government ministries of education have consistently provided guidance and standards for the design of school buildings, relatively little information has been provided regarding the creation of school grounds as potential spaces to enhance not only the learning process but also the well-being of pupils.

The school ground landscape in educational institutions in North Macedonia, in most cases, presents desolate and unmaintained environments, with too many hard surfaces that lead to injuries and a lack of features, objects, and plants that can contribute to children's physical, mental, social, and spiritual well-being. For this reason, there has recently been a growing interest among young architects in designing and increasing the use of school ground greening.

This paper explores how we can transform existing school grounds into ideal landscapes that meet the educational, social, and health needs of students. To better understand what such landscapes can look like, this paper begins with an analysis of 3 case studies in Europe and concludes with suggestions that can be applied to the schools in North Macedonia. Specifically, it investigates the use of green school grounds, appropriate furnishings, and materials as an integral part of outdoor learning to enhance children's relationships with nature, which will be at the same time relaxing and motivating.

*Keywords:* School ground, children's health, outdoor learning, landscape architecture

---

## 1 Introduction

Due to our constantly increasing urbanized lifestyle, children are losing, even more, contact with nature which often results in negative impacts on children's health and development. Considering that children most of their daily time spend at school, school grounds are perceived as potential settings that can contribute to increasing children's interaction with natural environments. We recognize that in nowadays society, children have fewer possibilities for interaction with nature and all the opportunities and benefits that nature can give, while the lack of all those interactions can lead to social, health, and behavioral issues. Properly exposed on school grounds can promote greater learning achievements, improve behavior, and stimulate children to develop their skills. Soga and Gaston's (2016)'s review of the literature indicates that this loss of children's interaction with nature unfortunately has diminished attention, despite the importance and benefits of nature related to children's health and well-being. Insufficient outdoor experience children can lead to their reaction of "hesitancy or fears about nature, and misperceptions about safety" (Lekies et al., 2015). This limited time of children's interaction with nature, which is currently happening across the world, demands an urgent need for exploring and finding the possible opportunities that can help in increasing this contact with natural environments. (Aminpour, 2021).

### 1.1 Importance of school grounds

In general, school grounds can be designed to develop over time, enhancing teaching and learning. For years, the schoolyard has been associated with a place where children can play. During the 20th century, asphalt surfaces dominated school landscapes, being thought of as the way for kids to recreate. This opinion was justified, on days with average temperature, when children found these surfaces suitable for developing games and various sports activities, but in high temperatures, when asphalt absorbs and then emits heat throughout the day, the asphalted surfaces were turned into places unwanted by children.

Based on this, during the 90s the transformation of school grounds began, including more green spaces in their design (Uteuova, 2022).

During this period, another idea appeared regarding schoolyards, and community use. There were several debates, in relation to this issue, where some characterized the idea as positive, since not every family has a house with a yard or a park nearby, but all of them are located at a considerable distance from a school, so opening the schoolyard to everyone gives people the opportunity to have easier access to green surfaces, while others opposed this idea as controversial because it can lead to littering and more maintenance (Uteuova, 2022).

While the need for transformation of school grounds is obvious, we are always faced with the question of what character the ground should have, what needs it should meet, and what spaces it should contain. Diningrat (2019) explains that according to many authors, playful, physical activity, as well as exploration and discovery are the main features that the school grounds should contain. (Ebbeck, Yim, & Warriar, 2019) Through walking, jumping, and running, children put their whole body in motion, which keeps the body, heart, and other organs healthy, and develops a habit of daily exercise. (Perry, 2001) In fact, the role of these spaces is often related to the physical development of children, but other authors emphasize that the schoolyard can also have other functions and benefits in relation to the development of children, (Ernst, 2014), such as cognitive, social/emotional, language, and multiple intelligences (Diningrat, 2019).

Recently outdoor learning is highly expressed in schools due to the reason that children find the learning process more relaxed and easier to understand, considering that teachers are “friendlier outdoors”. Outdoor learning provides much more access to ways and opportunities that are not available in indoor learning in the classroom, and this provides a diverse style of teaching. High usage of school grounds can also make much stronger the teachers-pupils relationship, resulting in a significant enhancement in pupils’ behavior, access to learning, and in gaining higher levels of success.

Through simple and appropriate grounds projects pupils can discover new skills, accept, and collaborate in team-working, and use even more school grounds during break times. Covered or half-covered areas can play the role of outdoor classrooms and eating areas to promote the eating of healthy meals that the school offers. School grounds despite the benefits for pupils’ usage have also the potential to contribute to many other environmental and social strategies. (Foster, Percival, Chillman, Jackson, & Mountain, 2006)

Playful outdoor spaces, also help in boosting creativity, by letting children invent their games and activities, and offer a good opportunity to socialize with their peers and people of different ages or nationalities. Learning in nature can all help enrich the learning process, putting all the senses into operation, touching, smelling, various movements, and richer views, positively affect the concentration of children. History has shown that teachers have been able to develop qualitative teaching in nature even with minimal conditions, but it is obvious that it is always more appropriate to have the relevant conditions for the development of the teaching process (LTL, unknown).

## **2 Research on European examples as ideal solutions**

After dealing with the importance of schoolyards in the educational process and children's well-being, the rest of this paper focuses on the design of school grounds. The first phase of analysis begins with 3 case studies from European schools. During the analysis, it was noticed that the awareness of architects and designers about the benefits of schoolyards has increased, since the number of quality projects in the design of school grounds was quite satisfactory, which made the selection process a little difficult. Since in most cases school plots are far from ideal and during their design, various problems are encountered, during the selection of case studies was decided to choose more specific examples that dealt with different problems, whether from the aspect of urban restrictions, slope of the terrain, or narrow surfaces.

In the following part, the three selected examples are presented, explaining their design and the way the architects solved the problems they encountered.

### 2.1 Krämeracker Primary school

Name of the project: Krämeracker Primary School

Project location: Uster, Switzerland

Architecture: Boltshauser Architekten AG, Zürich

Year Built: 2017 – 2019



**Figure 1.** Krämeracker Primary School site  
Source: Landezine. (n.d.). *Krämeracker Primary School Grounds*.



**Figure 2.** Krämeracker Primary School  
Source: Landezine. (n.d.). *Krämeracker Primary School Grounds*.

Natural areas of the ground offer place, where pupils can experience and observe flora and fauna in reality, and simultaneously those areas compensate for the ecological effect of nature. Through mobile furniture, the natural environment can be converted into a cozy outdoor learning space or simply a reading area. The climbing landscape inside the playground area offers the possibility that children can have free movement and many different playing activities. The ground is enriched with a series of groups of trees which provide many protected areas giving the pupils a friendly feeling as well. (Landezine, 2019).

### 2.2 *Nightingale Primary School*

Name of the project: Nightingale Primary School  
 Project location: London, UK  
 Architecture: B|D landscape architects  
 Year Built: September, 2020

The Landscape Masterplan



**Figure 3.** Nightingale Primary School site  
 Source: Landezine. (n.d.). Nightingale Primary School & The Otto.Grounds.



**Figure 4.** Nightingale Primary School photos Source: Landezine. (n.d.). Nightingale Primary School & The Otto.Grounds.

The challenge in designing this project was to create attractive school grounds with specific areas for outdoor learning on a very constrained site, where the six outdoor spaces which are organized across many ground levels and terraces invent a contemporary and high-quality nature environment. The aim is on creating school grounds that motivate pupils to be imaginative, have the opportunity for playing time, and feel relaxed before getting back to the learning process inside the classroom.

Applying a mix of natural and diverse ways of playing through the use of appropriate equipment gives balance to the areas in terms of improving the most important motor and physical skills and supporting imagination as well. All those concepts are successfully incorporated into this project. (Landezine, 2019).



### 2.3 Bjørnsletta Primary School

Name of the project: Bjørnsletta School

Project location: Oslo, Norway

Architecture: Østengen & Bergo AS

Year Built: February, 2016



**Figure 5.** Bjørnsletta School site

Source: Landezine. (n.d.). Bjørnsletta School by Østengen & Bergo.Grounds.

**Figure 6.** Bjørnsletta School site

Source: Landezine. (n.d.). Bjørnsletta School by Østengen & Bergo.Grounds.

The main goal during designing this project has been to consider the site height of 18 meters a difference as beneficial for building and landscape design. The main characteristic of the building and the school ground as well is the usage of the roof surface for spaces to play and pupils' interaction between themselves. This height difference of the site allows the creation of two main functional ground levels.

The school supports a scientific program that will stimulate the pupil's imagination and wonder. In general, the project is considered comprehensive with a friendly environment that fits with its context. (Landezine, 2019).

### 3 Research on the current situation of primary school grounds in North Macedonia

To understand the current state of school grounds in North Macedonia, we started the research with an analysis of three schools in Tetovo. Being aware of how important it is for teachers and pupils to be fully involved in the design process, the data collection in this research includes not only a physical observation of the site but also interviews of all members of the school community on what they think about the physical aspects of the grounds and how they use them.

Through on-site observations, which represents the first stage of research, we managed to identify the existing layout and features of selected school grounds, their condition, how are they used, and whether they are used for educational purposes.

#### 3.1 Case study 1: Primary school “ISTIKBALL”



**Figure 7.** Primary School Istikball, site and photos Source: earth.google.com. (n.d.). Google Earth. Photos by the author

On-site observation provides significant information which enables access to detailed information regarding the size of the yard in this school. Through this stage, we were able to detect that in this plot dominating the hard surfaces. It can be seen an absolute lack of green surfaces and playground areas. The school ground area doesn't provide any relaxing activity in addition to the physical activities that are provided in the learning process.



### 3.2 Case study 2: Primary school “LIRIA”



**Figure 8.** Primary School Liria, site and photos Source: earth.google.com. (n.d.). Google Earth. Photos by the author

Even though the size of the plot of this school is bigger, it still doesn't have any appropriate use of it. The situation in the yard of this school is a little different in terms of greenery, where the spaces at the back of the school are reserved for greening and playground area, but with a very small expression of what it actually should be.

The front part of the ground also appears with a dominant number of hard surfaces, very unsuitable for leisure activities of pupils and non-ecological as well. From the pictures presented we can see the absence of equipment's which would enable different types of activities for pupils.



### 3.3 Case study 3: Primary School “NAIM FRASHERI”



**Figure 9.** Primary School Naim Frasheri, site and photos Source: earth.google.com. (n.d.). Google Earth. Photos by the author

In the Primary School Naim Frasheri, the situation around the schoolyard is something better but also with more deficiencies that need improvement. From the research we did, we saw that teachers realized learning in outdoor environments is a very positive element of pupils' contact with nature. On the other side, some green spaces are present but without any effect or use by the pupils. We can see a lack of playground spaces and free moving areas which would provide relaxing time and time for interaction between pupils. On the back side of the school, there are areas dedicated to sports activities which represent the only opportunity that pupils can perform while standing outdoors.

The rest of the data were collected through interviews, drawings and questionnaires addressed to students of three different nationalities: Albanian, Macedonian, and Turkish.

The second phase of the research started with semi-structured interviews about the current condition of schoolyards and possible improvements from the point of view of students, teachers, and parents. Pupils and staff were consulted on what they liked and didn't like about their current grounds, which elements they would like incorporated into the new, and were asked to vote on their favorite areas of the grounds.

During the interviews, all focus groups said that the current condition of the schoolyards is not satisfactory and was very supportive of changing and designing these spaces.

Most of the pupils claimed that they don't have activities in relation to physical features, there are no climbing stones, sufficient vegetation, trees, and playground corners. They don't feel sufficiently relaxed and motivated to get back to the classroom. The school grounds in general for the three schools are used for a very short time, about 15 min-20min the longest time. Due to the lack of almost all physical and natural ground features, pupils can have a short walk, time for interaction with other pupils, and nothing



more. On the one side, they don't need more break time because they don't have entertainment activities, and on the other side, this break time doesn't stimulate them in the learning process.

To the question of which elements of the current yards they would like to keep in the new design, in most cases, the answer was, the playground, but in a larger area and with a larger number of equipment to meet the needs of children. A favorite place among children was distinguished sports fields and playgrounds.

Children recognized school grounds as an opportunity for them to play and take a break from the classroom routine. When asked if they would like to go outside more during class time only one of the children said no, that he preferred studying in class. While in terms of missing spaces, teachers, as well as children, emphasized outdoor classrooms, green spaces, and gyms.

In the second phase of the research, we showed pupils a series of photos of different sites and asked them to rate the photos from their favorite design to the one they like the least. 50 children participated in the evaluation process, and each of them had at his disposal a total of 56 points, to evaluate with a maximum of 11 for the environment he liked the most and a minimum of 1, for the environment he liked the least.

The photos presented to the children included:

- A) An outdoor place for seating, chatting, and break-time snacks
- B) A wooden playhouse
- C) A flower bed made of car tires
- D) Green play mounds with timber ladders, stepping stones, bridges, tunnels, and slides
- E) A lighted path surrounded by wood
- F) A water playground equipment
- G) A large net swing with a frame
- H) A set of playing fields
- I) Fallen trees playground
- J) A butterfly-garden
- K) A colorful playground

Often the choices of children were different from each other, there was a difference between the preferences of girls and boys, a difference between the choices of the students from different backgrounds, especially there were differences in the choices of students with different personalities. Pupils that seemed calmer and withdrawn usually chose relaxing and quiet places as favorites, while children with more ambitious and competitive personalities preferred more challenging places. In the end, based on the votes of the children, the 5 most favorite places for them, ranking from the place that received the most votes, are:

1. D "Green play mounds with timber ladders, stepping stones, bridges, tunnels, and slides" (401/3300 points)
2. K "A colorful playground" (393/3300 points)
3. H "A set of playing fields" (367/3300 points)
4. F "A water playground equipment" (328/3300 pints)
5. B "A wooden playhouse" (320/3300 points)

The environment that received the fewest votes was C "A flower bed made of car tires" with only 190 points out of a 3300, children explained that they do not have any negative opinion about this design, only that it is something they often encounter in their school grounds, as decorations, while other designs seemed more interesting and challenging and offered more opportunities for them to socialize with each other and interact with the environment.

To have a clearer picture of rating results in general, children's votes are presented in percentages in the diagram below:

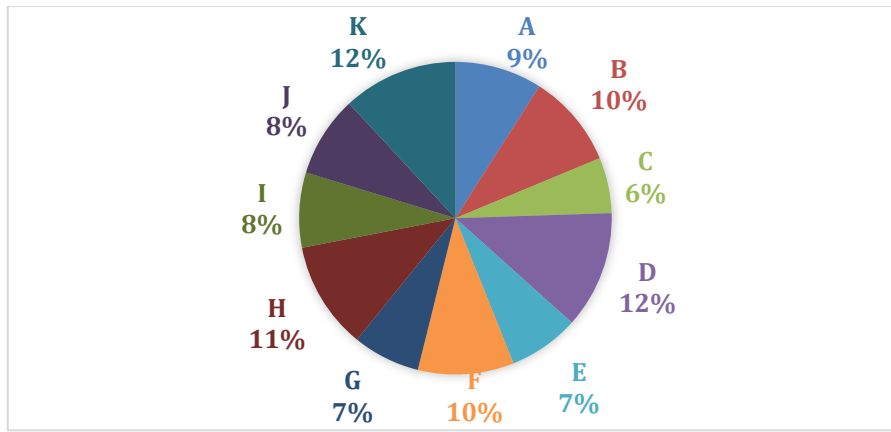


Diagram 1. Publication of author

In the third part of the research, the pupils were asked to draw their ideas as to what they wanted on their site or what they would like the schoolyard to look like. Through their drawings, we tried to understand what factors should be considered when designing spaces for them, what elements are missing in the current state of the grounds, and which elements they would like to include in the new design.

Almost all the spaces we visited lacked water as an element for recreation and play, and this can be seen very clearly even from the students' drawings.



Figure 10. Drawings by Eda (9 year-old), Amra (8), Eldi (9) and Darko (9)

Children appreciated natural habitats (butterflies, birds, amphibians, terrestrial insects) on school grounds as good educational models for understanding plant-animal interactions and their life cycles. A good part of them included pets and birds in their drawings.





Figure 11. Drawings by Angelka (9 year-old), Edona (9), Mbresa (9) and Betim (8)

Once again, we noticed how important it is to consider the fantasy and imagination of children when designing spaces for them. Mateo, 9, suggested a space that would always be under the rainbow. Ana, 10, drew a door leading to a secret yard.

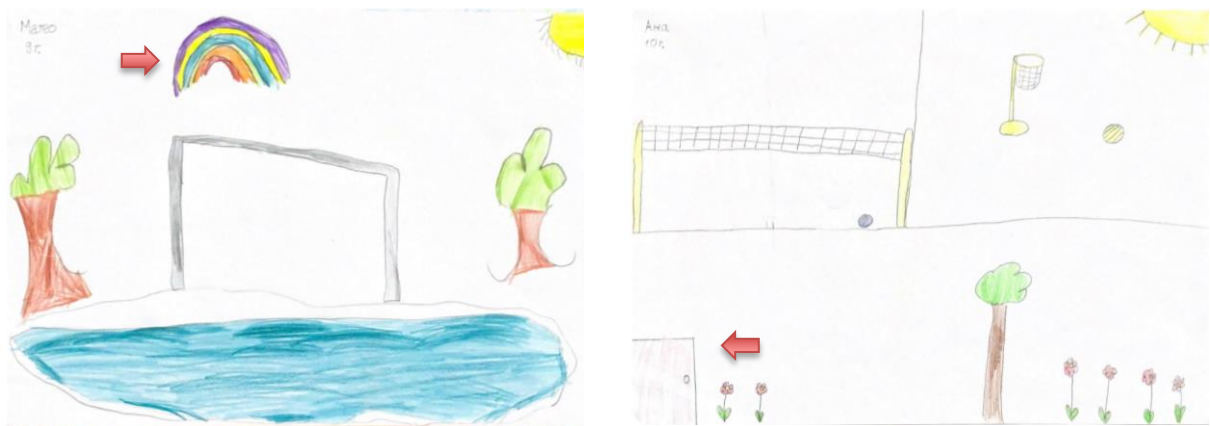


Figure 12. Drawings by Mateo (9 year-old), and Ana (8)

Designing safe places for children is a challenge for any architect, but it turns out that children are also concerned about this fact. In most of the drawings the presence of a “fence” is distinguished, as an element of defining the territory but at the same time defining a zone where they feel safe to learn and have fun.



Figure 13. Drawings by Roni (9 year-old), and Ermir (9)

We were quite impressed by the children’s awareness of environmental sustainability and recycling, through drawings they express commitment and desire to help keep the environment clean and preserve our natural resources.



Figure 14. Drawings by Jana (10 year-old), and Marija (9)

And finally, as expected, children expressed the desire and need for a place to play games and sports.

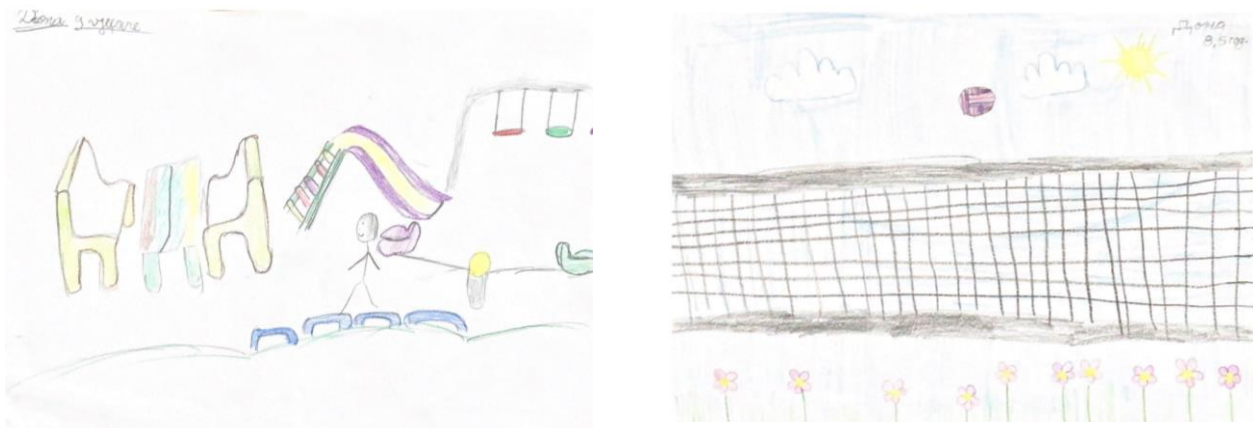






Figure 15. Drawings by Diona (9 year-old), Dona (8), Ela (9) and Martin (9)

#### 4 Designing school grounds

Since each school is unique, the design of its grounds should be treated differently, depending on the location, the area available, the number of students and their needs, and the requirements of the community. However, there are some design strategies or principles that can be generalized and applied in a broader context.

Understanding the importance that school grounds have on the well-being and education of children, many authors and architects have researched this field. Beyond different perspectives and different ways of dealing with the problem, the authors aim to reach a solution that meets all children's needs, regardless of whether it is educational needs, entertainment, or socialization.

Foster & et al. (2006) emphasize that some key points should be given importance in the design of all school grounds, such as:

- inspiration and variety
- choice and versatility
- access
- the natural environment
- management and maintenance
- security and safety (Foster, Percival, Chillman, Jackson, & Mountain, 2006)

Campbell & et al. (2011) suggest that a Child-Centered Approach should always be considered when designing spaces for children. Among the main factors that we should keep in mind the author's mention:

- flexibility
- playfulness
- scale
- diversity. Campbell & et al. (2011)

However, the purpose of this paper was not to prepare a set of rules and strategies for the design of school grounds, but through onsite observations and interviews with students to identify what kind of outdoor spaces schools need, as well as, with the help of literature to understand how these spaces can be treated and designed. Based on the research conducted in the 3 schools in Tetovo, we managed to identify some spaces that children need on their school grounds, which are as follows:

1. A place to learn and interact with nature
2. A place to relax and enjoy their breaks

3. A place to play games and sports
4. A place to be inspired and use their imagination

As a rule, each of these spaces must be child-friendly, flexible, accessible, and secure.

#### 4.1 *A place to learn and interact with nature*

School grounds contribute as a valuable resource for practical learning, because of the opportunity they offer for all the senses to be used. The use of school grounds for outdoor classrooms, enables children to try out real activities, besides learning through seeing or hearing. (Foster, Percival, Chillman, Jackson, & Mountain, 2006) Moreover, exposure to clean air, sunlight, and the experience with natural materials positively affect the development of children. (Buettner & Lang, 2021).

“School grounds are outdoor classrooms with learning opportunities everywhere.” state (Campbell, Dobrucki, MacKenzie, & Simonson, 2011), while the forms and elements that these spaces contain are read unconsciously by children and affect their perception of the values of the natural environment.

Designers also have the opportunity to create gardens with different themes to enhance children’s learning: • music gardens • fruit gardens • storybook gardens • rainbow gardens sensory gardens etc. Campbell & et al. (2011).

Children can learn a lot about biological processes, through growing and nurturing plants and animals. Natural habitats (butterflies, birds, amphibians, terrestrial insects) on school grounds offer good educational models for understanding plant-animal interactions and their life cycles. By cultivating food, they begin to understand the importance of healthy eating as well as the nutritional values that different products contain. Plots, raised beds and containers can be used to grow food or plants, but one should always try to position them, in sunny areas, sheltered from strong winds, and ensure access to water and adequate drainage. (Foster, Percival, Chillman, Jackson, & Mountain, 2006).

Many teachers deemed it necessary for the presence of outdoor teaching spaces, where a whole class can join together for discussions or activities like music, art, or drama classes. These spaces need to be near enough to the school to use easily but far enough away not to disturb other classes, may be large enough to accommodate a whole class or smaller numbers, roofed over and partially enclosed to shelter from the rain and wind, fulfilling a particular use, associated with equipment storage. There should be enough open space for teachers to display items and make presentations or enough space for children to engage in active, creative learning. Good surface materials for outdoor classrooms are limestone screening, pine needles, sand, or tub ground mulch. Often, these places can be designed as Indoor-Outdoor Transitions, where classrooms meet the outdoors. (Moore & Cosco, 2013).

#### 4.2 *A place to relax and enjoy their breaks*

As a place for social interaction, school grounds need to support a variety of activities, from large open spaces for running and active play to quiet spaces for sitting, talking with friends, reading, or enjoying your break-time snack. Creating relaxing atmospheres through the use of color, textures, and sensory gardens provides children with the opportunity to reflect, socialize and enjoy themselves. (Foster, Percival, Chillman, Jackson, & Mountain, 2006)

There should be a variety of seating arrangements, seating shapes, and sizes (on the ground, on chairs, on informal seats, and on stairs). Choose opportunities for seating from diverse materials such as stone, wood, and logs, and incorporate seating with existing built features such as container gardens, raised beds, trees, or even a cement mosaic in the shape of an animal. Consider shade locations and the needs of the students and teachers at the school when placing seating areas. Movable seating allows students to create their arrangements. Incorporate cultural and symbolic values into these areas. (Campbell, Dobrucki, MacKenzie, & Simonson, 2011).



### 4.3 *A place to play games and sports*

A well-designed outdoor environment can be achieved by providing opportunities for children to be active, learn through undertaking challenges, and find out about themselves, others, and the world around them in a variety of forms of planned and free-time activities. (Buettner & Lang, 2021)

When designing school grounds locating playing fields on a site can be particularly difficult because of their size. Although our school's physical activities are usually focused on traditional sports, such as football and basketball, recently we notice that the design of schoolyards is included many other spaces for physical activities depending on the school program and community needs. The outdoor environment designs should incorporate features to promote active play, such as traversing walls, playground markings, and fixed play equipment, all suitable for the age using it and robust enough to withstand constant use. Site features and natural materials can provide play opportunities even without being designed for this purpose. As (Foster, Percival, Chillman, Jackson, & Mountain, 2006) emphasize "loose logs, railway sleepers, tires and rocks can provide informal seating areas and valuable balancing activities, especially suitable for children with some specific learning difficulties."

Besides fixed equipment that involves gross- motor skills, portable equipment such as balls, bicycles, and Hula-Hoops are also important for physical activities. Enclosed spaces (e.g., playhouses, forts) can foster pretend play but providing visibility into these spaces is important for children's safety. We can use energizing colors and patterns to zone and define active areas and distribute equipment in more than one area to avoid accumulation at one point. Pupils may also design their informal play areas with chalk to foster creative play. (Buettner & Lang, 2021) (Foster, Percival, Chillman, Jackson, & Mountain, 2006).

### 4.4 *A place to be inspired and use their imagination*

Besides being a good location to teach in, school grounds can also become an inspiration for different activities. With a variety of elements such as a range of colors, textures, spaces, micro-climates, and topography, pupils should feel motivated to learn, while teachers should feel motivated to teach. (Foster, Percival, Chillman, Jackson, & Mountain, 2006)

Instead of providing single-purpose pieces, we need to highlight natural elements that can be used and interpreted in many ways and can foster a child's imagination through their use. Authors provide some examples of these spaces "A small hill or berm can be used for play, nature study, gatherings or surveying; musical instruments can be incorporated into a pathway or fencing design; a wall could be designed for ball games, climbing, painting or puppet theatre." (Campbell, Dobrucki, MacKenzie, & Simonson, 2011)

Comfortable, positive, welcoming, and inspiring places not only contribute to the learning process but also the health and mental well-being of pupils as they provide a sense of belonging and inclusion. (Foster, Percival, Chillman, Jackson, & Mountain, 2006)

As mentioned earlier each of these places must meet four key criteria: to be child-friendly, flexible, accessible, and secure. To design flexible and child-friendly environments designers need to cater to the different spaces and opportunities children need for social interaction and create versatile, adaptable spaces, how to create safe and accessible places we will explain in the following text.

Access: School grounds should be accessible, easy to use, and enable independence. All children – including those with special needs – should be able to access all parts of the site. Easy access to the outdoors from the classroom, is specifically important for early years, but direct access to the outside is also important for teachers as it enables them to use the outside as often as possible. There are likely to be pupils with specific access requirements, such as children with motor disabilities or pupils who are visually impaired, regardless of their disability, they need to be able to access as much of the grounds as possible. It is important to keep in mind that when making adaptations to best fit their special needs,

doesn't mean there shouldn't be an element of challenge in getting to or using places or features. We should simply provide play equipment for children with physical disabilities, including swings and roundabouts for those using wheelchairs and tactile elements for those with visual impairment. Equipment should be stored where it's easily accessible, possibly next to where it's most often used, and it must be secure. (Foster, Percival, Chillman, Jackson, & Mountain, 2006)

To provide accessible school grounds, we must pay attention to circulation. Circulation is expressed as a pathway system, which enables children to go on journeys through the schools, play with friends, interact with others, etc. Access to a constantly changing, rich natural landscape will entice children to enjoy rediscovering it day after day. The authors present a hierarchy of three types of pathways (primary, secondary, and tertiary). Primary pathways should be designed to provide easy, attractive circulation throughout the outdoor space and connect classrooms to their respective play and learning settings. To satisfy accessibility requirements, primary pathways should also be designed to serve as access routes. Secondary pathways should be considered as an independent circulation system intersecting with the primary pathway system, connecting intimate play and learning settings such as wildlife habitats, gathering places, sand-and-water-play settings, sensory mazes, storytelling corners, and flower and vegetable gardens. Tertiary pathways may be perceived by children as "secret" exploratory journeys into intimate landscape settings. They may be surfaced with the same materials as secondary pathways or designed with steppingstones or slices of timber. (Moore & Cosco, 2013)

**Safety:** When designing school grounds, it is very important to strike a balance between safe and challenging environments. Challenging places should be designed in a way that minimizes danger. Identifying potentially dangerous places such as fall zones, considering surfacing, access to shade, and the conditions of materials and equipment enable the positive design of these environments. (Campbell, Dobrucki, MacKenzie, & Simonson, 2011)

Missing or broken parts, sharp edges, rough surfaces, unstable non-anchored large play equipment (e.g., playhouses, climbers), and broken or worn electrical fixtures or cords can very often present a cause of injuries. The temperature of play surfaces should also be checked. Metal or plastic slides, benches, and poured concrete surfaces can get very hot and very cold. (Buettner & Lang, 2021)

For the provision of safety, surveillance, and supervision from staff in and out of school hours should be factored in, and well-defined routes, spaces, and entrances that provide for convenient movement assist in evacuation cases as well as in avoiding conflicts. Places of gathering need to be catered for, so as not to impede access and provoke aggression. Paths need to be wide enough to allow movement around in wide groups.

"Well-designed and challenging school grounds graduated to cater for appropriate levels of ability, can offer a safer environment than a boring, flat, unstimulating site. In a challenging environment, children will be able to test their abilities, learn from their mistakes and stretch themselves further to develop their physical and mental skills." (Foster, Percival, Chillman, Jackson, & Mountain, 2006)

## **Conclusions**

School ground design is an area that has long been neglected. However, the awareness of society about the positive effect that nature has on children, their physical and mental well-being, as well as the opportunities it offers in the development of learning processes, increased the interest in designing these spaces.

One element that should always be taken into consideration when designing spaces for children, especially green spaces, is to involve children in the design process as this is the best way to understand their needs.

Beyond the difficulties that this process has, starting from understanding the world of children, the patience and time that should be devoted to them to express their thoughts, and creating strategies to translate their desires into a design, this process is fun and educational, as it is always a pleasure to collaborate with children and there are many things we can learn when we look at the environment from their perspective.

As expected, from the field analysis we understood that school grounds in North Macedonia, more precisely in Tetovo, need transformations. Through this paper, we defined some spaces that we consider necessary on school grounds and we tried to offer suggestions on how these places can be developed.

## References

- [1]. Aminpour, F. (2021). The physical characteristics of children's preferred natural settings in Australian primary school grounds. *Urban Forestry & Urban Greening*, 1-29.
- [2]. Buettner, C., & Lang, S. (2021). *The Outdoor Environment: Designing for Learning*. Retrieved from Virtual Lab School: <https://www.virtuallabschool.org/school-age/learning-environments/lesson-3>
- [3]. Campbell, H., Dobrucki, K., MacKenzie, M., & Simonson, W. (2011). *Planning & Designing green school grounds*. Toronto: Evergreen.
- [4]. Diningrat, S. W. (2019). Design Framework for A School Playground. *Jurnal Obsesi Jurnal Pendidikan Anak Usia Dini* 3(2):327, 327-336.
- [5]. Ebbeck, Yim, & Warriar. (2019). Early Childhood Teacher's Views and Teaching Practices Outdoor Play with Young Children in Singapore. *Early Childhood Education Journal*, 47(03).
- [6]. Ernst, J. (2014). Early Childhood Educators' Preferences and Perceptions Regarding Outdoor Setting as Learning Environments. *International Journal of Early Childhood Environmental Education*, 02(01).
- [7]. Foster, A., Percival, S., Chillman, B., Jackson, M., & Mountain, J. (2006). *Designing school grounds, schools for the future*. London: Department for Education and Skills.
- [8]. Landezine. (2019). *Landscape Architecture Platform*. Retrieved from Landezine: <https://landezine.com/landscapes/landscape-architecture/year-of-completion/2019/>
- [9]. Lekies, K., Yost, G., & Rode, J. (2015). Urban youth's experiences of nature: Implications for outdoor adventure recreation. *Journal of Outdoor Recreation and Tourism*, 1-10.
- [10]. LTL, S. (unknown). *The good school playground guide*. The Scottish Government. Retrieved from Learning through landscapes: <https://www.ltl.org.uk/resources/the-good-school-playground-guide/>
- [11]. Moore, R., & Cosco, N. (2013). Greening Montessori School Grounds by Design. *NAMTA Journal*, 219-234.
- [12]. Perry, J. (2001). *Outdoor play*. New York: Teachers' College Press.
- [13]. Soga, M., & Gaston, K. (2016). Extinction of experience: the loss of human-nature interactions. *Front Ecol Environ*, 94-101.
- [14]. Uteuova, A. (2022, June 2). *Out with asphalt: US schoolyards transformed into green oases*. Retrieved from The Guardian: <https://www.theguardian.com/us-news/2022/jun/02/asphalt-schoolyards-remade-green-oases-pictures>