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Role of public open spaces around schools

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1. Abstract

When we say school environment, we usually mean the territory within the fences of the institute – but what happens around the facility? In the last decades, due to the dominance of cars, the usage of the public spaces around schools have been dramatically changed. Not to mention the pandemic that is raising new requirements for public spaces inside and out – for school environments as well. Because of these changing aspects, it is important to review and redefine the role of the urban open spaces around schools. After a brief historical review, authors define the public open spaces around schools and give an overview of international trends and inventions with highlighting the key elements of development approaches that can support the current needs and role of the public open spaces around schools. Through examples, authors review the landscape architectural tools that are relevant around schools while also analysing how can a child-friendly network correlate with greenways and the green network of the city. As school environments can have a very different environmental quality based on the social, cultural, and landscape context, authors have chosen to take a closer look on the Hungarian context.

Keywords: public open spaces around schools, school environments, informal educational environments, urban interfaces, child-friendly network

2. Introduction

In ancient times, going to school was a privilege and mostly was tied to royal, religious, or military backgrounds. The idea of *compulsory education* is spreading around the World since the 16th century. It certainly was a very important step that affected the life of the community in general but especially the lives of children. Today, schools are second homes for young pupils, a primary territory for children, a dominant environment that can significantly shape the behaviour and personality of the school students (Dúll 2009). Based on American studies, nowadays children - out of home - spend 42% of their time in open spaces and only 9% of this happens on the schoolyard (Dúll, 2009) which means that most of their outdoor activities happen in public open spaces (Balogh et. al. 2020). Schools became important cultural and social hubs in the city: due to the different cultural contexts, school environments can be very diverse around the World but their importance in the urban fabric is doubtless everywhere. The public urban open spaces around schools provide space for arrival and departure for the inner functions – sometimes even can play as an extensional platform of the school. On the other hand, these open spaces are part of the urban fabric and so have to blend into a system. Paper reviews recent trends to understand the role of these complex sites. Through Hungarian case studies, paper collects the landscape architectural approaches and tools that can support fulfilling the previously defined role of these public urban open spaces.

3. Background and Literature Review

Historical overview

Schoolyards were the first open-air facilities where the landscape was specially designed for children and play. From the end of the 18th century physical education and botanical knowledge became important in schools in general, and schoolyards started to play a role in education (Winkel 1993). The turn of the century is considered to be the beginning of the conscious creation and development of school open spaces (Klagyivik 2018). A progressive era was in the 1930s and 1940s, when standardization and outdoor learning appeared as new requirements with the *open-air school movement* (Baker 2012). Standardization led to a significant increase in the size as well as a change in the quality of schoolyards (Baker 2012; Klagyivik 2018), however, it is a major problem today in dense urban environments that schoolyards cannot offer the proper amount of green and open space for children. From the 1990s, the green building movement started, which influenced the school constructions as well. In recent years, the concept of sustainability brought a new concept to the design of school buildings and school environments as well (Baker 2012).

It is doubtless that the birth of the *playground movement* back in the 19th century has been a great step towards designing child-centred environments, but it is also a reason today why we don't consider children as an important user group when designing urban open spaces in general. Playgrounds were originally supervised and assisted by adults. Due to urbanization and the automobile culture playing outside on the streets was not safe anymore so playgrounds were essential to establish in cities. By the 1990s, safety regulations, guidelines and standards became the central question when designing playgrounds. Reduced risk certainly resulted in more boring playgrounds (Danenberg et. al. 2018). During the last two decades, full-blown play for all ages and abilities has become a priority (Aquillano-Hawkins 2017). The concept of *playscapes* started to spread where playing activities are not limited and are more informal. In contrast with formal child-friendly open spaces like schoolyards and playgrounds, playscapes have no boundaries, integrated into the surroundings and offer spontaneous, unlimited activities and free play. There is no supervision organized and general safety requirements don't apply here. These urban open spaces are child-friendly, but designed for all ages (Balogh et. al. 2020).

Urbanization and motorization together made *children's safety* critical in the urban open spaces and that they are less and less welcomed in the urban open spaces. Today, the number one cause of death for children between 5 and 14 is road accidents (Our World in Data 2022). A case study following one UK family has shown how children's ability to roam has been evolved. While in 1919 the great grandfather's generation at age 8 could go out up to 6 miles (9656 metres), in 2007 the son of the family was only allowed to go 300 yards (274 metres) away from home unsupervised (Aquillano-Hawkins 2017). Another research shows that the children's independent mobility has dropped drastically: compared to the 1970s, it has shrunk to a ninth of what it was before (Hillman 1990). In the hope of safer routes for children on their way to school, to play, and to cross the street, a massive population has moved out from cities to the suburban areas from the 1990s. Unfortunately, this movement not only did not solve the issue but also created more traffic as in these suburban areas often necessary facilities - like schools - are not accessible within walking distance. As schools are organized separately from the new residential areas, families travel more and by car to reach school (Bobic 2004). Not only the unequal infrastructure of schools but also the accessibility of fast mobility results in more traffic today as parents are more likely to bring their kids into schools that are further away from home in order to get better quality education. Car

dominance around schools became a constant and urgent problem in many cities. With the pandemic, safety has expanded with a new aspect: healthy security.

Complexity of the public urban open spaces around schools

Public open spaces around schools are complex urban settings where different user groups and different functions meet. These public open spaces are not only used by the school community - children, teachers, school staff, and parents - but it is a place in which various citizens groups can appear. The different user groups have different spatial preferences which needs to be harmonized. Adults and children have not only different body sizes, but also different perceptual and cognitive processes, environmental and social competencies, and control processes. However, admittedly children are important user groups of these environments, it can be said, that usually only adults are making decisions in the environment for children based on their perceptions of how children interact within the space. As school environments are the products of adults, they are *not child-friendly* - neither in scale nor in usability (Dúll 2009).

These public open spaces are *transitional zones or interfaces* between the *inside* and *outside* where the school facility meets the city. Transition zones between buildings and public space should be strongly defined spaces with physical barriers (real and symbolic) to influence and improve public surveillance (Newman 1972). It is also important to understand the quality and meaning of these public space and how these transition zones are viewed from the public as it has an impact on the private properties' image (Bobic 2004). For example, using only warning signs, security cameras, and protective railing bars can give an unfriendly, even unsafe message. Although, graffiti are considered mostly the product of deviant behaviour, in the case of an interface a design graffiti can increase the identity significantly. In transitional zones, conflict of interest emerges between the public and private domain, psychological stress is present (Bobic 2004). To dissolve this stress, an interface should always have a volume and spatial identity. Creating interfaces that are vibrant and characteristic can not only help the spatial understanding and the urban coherence but can also support the social and cultural aspect of the city with having more varied, rich, and complex townscapes (Bobic 2004).

To fully understand the meaning and role of the urban open spaces around schools, we have to consider the cultural and educational aspect of these open spaces. Amos Rapoport's definition of streets also highlights the educational aspect of these linear open spaces lined by buildings. He says that the streets and the open spaces of the city create a complex system that not only supply routes and necessary access to buildings but is a spatial framework where actors play so a platform where different groups interact (Bobic 2004). Public urban open spaces around schools have great a potential to become *informal educational environments* where learning occurs through the contact with the environment and therefore is non-structured, non-systematic, spontaneous, sometimes even involuntary. Informal educational environments are considered to be more attractive for children, and the experience of travelling to school should also be treated as part of environmental learning (Dúll 2009).

4. Method and Data

In this paper, after reviewing the existing literature about school environments and children's environments, authors highlighted the key approaches that the urban open spaces around schools should follow in order to fulfil their complex role.

Beside detecting problems and needs that are related and relevant for the urban open spaces around schools, authors also overviewed the current trends that aim to influence the quality of these places. After analysing many initiatives it became clear that there are two main characteristics. There are many projects that are focusing on the immediate surroundings of the school so the public urban open spaces around the schools and where a new design or regulation is approaching to change these sites. On the other hand, several other initiatives are focusing on the experience of travelling to the school and the arrival. In the first part of the *Results*, an overview is given of these progressive initiatives around the World. To fully understand the role of these public spaces, authors took a closer look on some case studies. In the second part of the *Results*, more attention is paid for how to shaping the immediate school surroundings – especially the entrance zone. With a field observation, authors carried out a deeper analysis of the existing solution in Hungary. Authors selected case studies that were complex enough but also modeled the many other examples. Possible opportunities that could elevate the quality of the place were also highlighted in this section. After the practical review of exact examples, in the last part of the *Results* a more general overview is given to conclude the findings of the previous chapter. In this section, it is also discussed what landscape architectural tools and approaches are necessary when dealing with urban open spaces around schools.

5. Results

Recent trends for creating safer environments around schools

Creating healthier safer environments around schools is not a completely new idea. From the second half of the last century many initiatives have been established and introduced around the World to support healthy and safe public urban open spaces around schools. There are two main characteristics of these initiatives: one is provide safe and more sustainable routes to schools with biking and walking; and the other one is to close streets from motorised traffic to provide healthier and safer environment near schools. Both these approaches are aligned with general global intentions for city improvement – sustainable mobility, healthy and green environments, increasing walkability and conquering back the public open spaces from car to the people. Just think about the Superblocks in Barcelona which is a complex initiative that aims to transform mobility patterns by reducing private vehicle journey to increase walking and biking while offering greener, healthier, and more liveable neighbourhoods.

It is important to highlight that the Covid-19 pandemic has arisen new requirements which are mostly aligned with the above-mentioned phenomenon: creating greener, healthier public open spaces to provide recreational possibilities for all with following the requirements of social distancing. From the analysis of the recent trends, it can be seen that the pandemic has fastened and urged solutions also for school environments. It is important to mention that there might be many other individual projects that are dealing with children or school environments. Initiatives were selected into this table based on their influence and effect. All of these programs have a strong afterlife and that is why they are selected as great examples and initiatives.

Table 1. Recent initiatives and programs that are focusing on the safety issues around schools.

PROJECT NAME	LOCATION / EXAMPLE	YEAR	BRIEF DESCRIPTION	TYPE AND LEVEL OF INTERVENTIONS	PROJECT WEBSITE OR VIDEO
School Street	Bolzano (Italy)	1989	The Italian city of Bolzano has introduced the concept of School Streets: streets around schools are temporarily closed for motorised traffic for 15 minutes during start and ending of schoolday.	Moveable signs are used to communicate the traffic change and local police is supporting the closure. Guards are helping at the pedestrian crossing near the schools. Pedibus (pedestrian bus) is also introduced later to escort kids to school. Today 9 school streets are operating in the city.	https://www.youtube.com/watch?v=J8xKUjzK8c&ab_channel=EftrisMobilityPortal
Safe Routes to School Programs	United States of America	Since 2005	U.S. Department of Transportation created a federal program for the country to promote walking and bicycling to school through infrastructure improvements, enforcement, tools, safety education, and incentives to encourage walking and bicycling to school.	Levels of implementation: state, community, local school district. Resources created for all levels: strategies & guidelines, parent survey, student tallies, walking school bus program, training and assistance. Example projects: Alpine Elementary School, Utah, Roosevelt Middle School, Eugene, Oregon.	https://www.transportation.gov/mission/health/Safe-Routes-to-School-Programs
Bike to School with the Bike Train	Budapest (Hungary)	2013 –	After the Cycling to work program, the Hungarian Cycling Club initiated a program for primary school kids to promote cycling to the school.	Pilot project in the 16 th District of Budapest. The routes are organised by the parents and school teachers and are closed for the time of cycling.	https://kerékparosklub.hu/e-semester/cik/bringazz-a-suliba
BiciBus Eixample	Barcelona (Spain)	2014, 2019, 2021	Private initiatives started by individual schools and families. The last initiative during Covid-19 was the most successful: in one month from 5 families already hundreds of students are using it.	Kids with parents bike to school regularly. Police officers provide the prefixed route. Stations are set where kids can join.	https://twitter.com/bicibuseixample
School Streets	United Kingdom	Since 2015	School Streets were introduced to support walking and cycling and to improve air quality at the school gates by banning motor traffic outside schools at opening and closing times. With the pandemics, new aspects – like social distancing and protecting people from increased traffic in lockdown – urged to create central regulations for Healthier School Streets.	School Streets were introduced to the UK in Scotland first in 2015. Camden was the first in London in 2017. The borough of Hackney was also a forerunner with 7 pilot areas, today almost every primary school of Hackney is included in the program (48 schools). Motor traffic is banned from outside schools at opening and closing times. May resources are available like full reports, pilot evaluations, reviews, or toolkits and tips.	http://schoolstreets.org.uk/

Temporary Play Streets	Berlin (Germany)	Since 2020	Due to Covid-19 pandemics an urgent need increased for playing outside with keeping the social distancing measures. Play Streets are selected to be close to playgrounds, schools, and day care centres.	19 temporary play streets were set up on the 1 st Sunday of May in the borough of Friedrichshain-Kreutzberg in Berlin. The car-free street movement now is permanent in 7 locations for one afternoon a week. Supervision is organized by local volunteers.	https://fixmymyberlin.de/friedrichshain-kreuzberg/spielstrasse
Open Streets Program	New York City (USA)	Since 2020	After the 1 st big wave of the Covid-19, NYC has decided to open up 75 miles of streets to the people by closing for cars. In the same time, the Departments of Transportation and Education have joined forces to start an outdoor-learning program. The aim was to improve physical and mental health and to mitigate Covid effects with outdoor school spaces.	Now, 156 open streets are available in five boroughs for biking, walking, skating and playing. Today 38 schools are joining the program and having full closure in front of public, private, and charter schools to support drop off/pick up operations, recess, and outdoor learning.	https://www1.nyc.gov/html/dor/html/pedestrians/opensstreets.shtml#locations

Critical review of Hungarian case studies



Photo 1-2: Primary school on Bajza Street and the Merse Pál Szinyei High School (Photo credit: www.googlemaps.com and Krisztina Szabó)

In Budapest, inner city schools usually have minimal courtyards and their street frontage is not ideal. The primary school on Bajza Street opens with a miniature front garden enclosed by a fence, providing a little "breathing space" in the bustling urban jungle (*Photo 1*). This is helped by planters along the pavement, planted with a variety of woody and herbaceous species. The planting is almost purely indicative and does not provide a serious link to the greenway network. Benches have been placed for waiting parents, but there is no barrier behind them to protect against the traffic of cars and trolleybuses on the street. This could be remedied by a thoughtful planting concept and the installation of additional planters right up to the pedestrian crossings. In the other example, the Merse Pál Szinyei High School (*Photo 2*), both the school and the street name bear the name of the painter who spent his life admiring the landscape and plants in his garden and captured them in his paintings (Szinyei, 1990). His landscape impressions are not visible either at the entrance to the school or in the schoolyard. In its present state, the school does not keep pace with the painter's

currents, lack of identity. The narrowness of the street means that a serious green street cannot be expected, but the creation of a green environment could begin in character, even with planting, as the initiatives at the entrance to the primary school on Bajza Street show. Planting pots could not only create a more natural environment, but also a more sheltered situation, which would be an important incentive for young people attending school. In addition, after analysing the site, innovative planting concepts could be developed to create a green environment.



Photo 3-4: Entrance zone of the Csaba Kesjár Primary School in Budaörs (Photo credit: Judit Doma-Tarcsányi)



Photo 5-6: Entrance zone and public spaces around the Budaörs No.1. Primary School (Photo credit: Judit Doma-Tarcsányi)

In the case of schools in suburban and agglomeration settlements in Hungary, we typically encounter larger courtyards and green spaces. Entrance positions are also more sheltered, connecting with streets with less traffic and making it easier to create green spaces. In the case of the Csaba Kesjár Primary School in Budaörs (*Photo 3-4*), a small space is created directly in front of the entrance, but it is not suitable for longer stays due to the lack of seating. The green strip between the building and the sidewalk consists of low hedges, lawns, and a loose, mixed row of trees. Budaörs No.1. Primary School (*Photo 5-6*), less than 500 meters away, is of a later design and its relationship with the public space is similar in many respects. There is a sidewalk and a green lane between the moderately busy street and the building. To the north of the entrance, there is a lawn strip with hedges and a row of trees, but to the south of the entrance, adjacent to the

widening paved lane, there are shaded seating areas surrounded by more diverse planting, which provide a space for community life in front of the school.

General overview of possible tools and key approaches

It is important to highlight that many different spatial situations – based on the lot size and shape, the position of the building within the lot, the street profile, etc. – can and should be distinguished when talking about the entrance zones and public open spaces around schools. In case of the entrance zone of the school, we can define two main characters: one that *opens to a street* and another one that *opens to a public square* (Reith-Balogh. 2020). When the entrance of the school opens to the street, we have limited space to work with. As there is not enough space for placing furniture of larger material elements, *immaterial elements or sensational signs* play a critical role in enhancing the child-friendliness and smooth transition between the public and the private domains. Change in the pavement, little height difference in front of the doorway, a roof, and some decoration like flags, mural, graffiti, statue, plaque, etc. can support the feeling of transition and build identity. For safety reasons, a physical barrier between the street traffic and the entrance zone might be useful but there are other *traffic calming tools* that can regulate the cars more and the children's movements less. If the utility system and the space allow natural elements like trees, small hedges, planters, or balcony plants can be used to substitute built elements and give a more comfortable and welcoming feeling to the entrance. An entrance opening to a public square on the other hand offers a lot more possibilities for fulfilling the role of a hub. Here we have space for playing with many *material elements* - not only to serve the needs of such institutions (accessible ramps, bike racks, benches, etc.), but also to create an environment that is favourable for children. We also have more options in this case to use natural elements. All the different type of vegetation (trees, shrubs, flower beds, raised bed, grass, etc.) might be available here to use.

When designing the urban public open spaces around schools, designers not only have to create *unique identity* but also have to *blend in to the neighbourhood context* and maintain continuation in the greenway and open space system of the urban fabric. It is a great challenge as these two approaches need sometimes complete opposite tools. While solitary, intermittent elements (flower beds, raised beds, solitary trees) can successfully highlight an entrance zone, homogeneous, repetitive, continual elements (tree lines, shrub lines, linear green strip) support connections with the network. While entrance zones need more paved surfaces, more furniture, and shade to stay, wait, interact, other parts of the interface are usually for passing through and to support movements. While in the entrance zone more decorative, complex plantation can be maintained, for the other parts of the interface low-maintenance is a requirement.

In order to support a green network with these public open spaces, we have to understand what their role is in the system. It was mentioned before, that the public open spaces around schools have a great potential to become informal educational environments. *Figure 1* shows a potential child-friendly network in a schematic way. It can be seen that these environments can play an important role in the interconnectedness of the individual elements, and can take the role of a distributor and collector space serving and strengthening the school as a local hub. Informal educational environments can provide the basis for a child-friendly network. Thinking in a green network, it is great potential to link the child-friendly and the green together with creating playful, green, healthy, and safe environments that are also inviting young citizens because *'a city good for children, is a city good for all'* (Danenberget al. 2018).

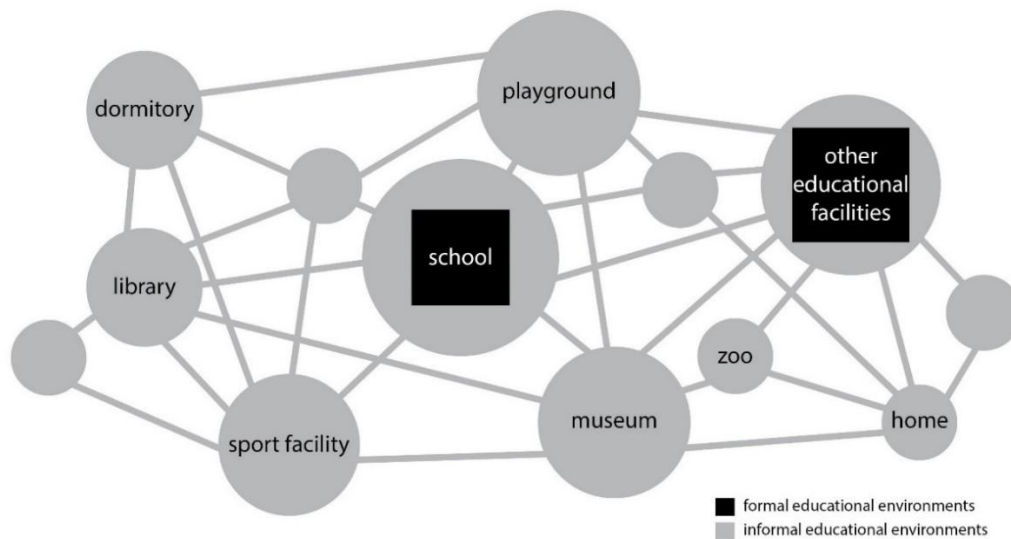


Figure 1: Network of the formal and informal educational environments

6. Discussion and Conclusion

In the case of any environments that are used by children it is the number one challenge to find harmony between risk and enjoyment. This especially applies for the public urban open spaces around children due to the car-dominancy in our cities. This contrast will never disappear but with smart design it can be balanced. The conflict between the inside and outside is similar: safety versus openness is always a question on the edges of a school facility as well. The entrance zone is special area within the edges where challenges and expectations are concentrated and increased, however, the possibilities might be the same as in other parts of the edges. Although, the public and the private domain will always have different aims, they are both dependent on the other and therefore collaboration and communication are essential in order to create a harmonized, well-functioning urban life (Bobic 2004). It would be important to establish better relationships and meaningful cooperation between schools and the city. The public spaces around schools have a great potential to become important hubs in a child-friendly open space system. Because their role is quite complex and not only have to serve the needs of children but also adult citizens, the greenway network of the city can easily overlap here with the child-friendly open space system. Informal education environments have a great power to learn from and we should take advantage of that children are already here, without any further effort they visit these open spaces regularly. William H. Whyte uses the principle of *'The Power of Ten'* as a criteria for *'good places'* (Whyte 1980). Why don't we apply this principle here and offer ten reasons for the students (and for adults) to stay in these public spaces a little longer? Why don't we create *good places* where it is pleasant to arrive? Children are learning from these environments anyway. The question is what do we teach to them.

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