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The Planning and Development of Child-friendly Green Spaces in Urban South Africa

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Abstract: The impact that urban green spaces in urban environments have on the sustainability and quality of life of the residents is phenomenal [3,19,40]. The local reality in South Africa confirms that green spaces, specifically child-friendly green spaces, in urban environments are decreasing because of growing populations and increasing urbanization [34]. Preference is given to provide housing for a growing population, due to the impacts of urbanization, and the development and enhancement of green spaces are often neglected in this regard [30]. Although literature proofs the benefits and need for green spaces in urban areas (also in South Africa), the planning and development of these spaces do not realize in many instances, due to a lack of municipal priorities and funding, driven by the urgent need to provide housing, but also coupled with a lack of understanding of the benefits and importance of planning for green spaces or child-friendly green spaces in urban development. The planning and development of green spaces in the urban environment are investigated as part of this research, along with the benefits that such spaces can provide to communities by focusing on the aspect of child-friendliness. This study evaluated the planning and development of child-friendly spaces in the urban environment of the city of Durban, Republic of South Africa, confirming how ineffective the current child-friendly spaces are. Two international case studies are identified as best-practice cases, namely Mullerpier child-friendly public playground in Rotterdam, the Netherlands, and Kadidjiny Park in Melville, Australia. The aim was to determine how these international child-friendly spaces were planned and developed and to identify tools and planning approaches of the two international case studies that were used to accomplish the goal of providing successful child-friendly green spaces and how it can be implemented in South Africa. The policies and frameworks which influence the study area in Essenwood, Durban, were identified and analysed in order to establish whether or not the planning and development of child-friendly spaces is supported within the chosen area. This research concluded that child-friendly green spaces do however have a positive impact on the urban environment, caters for children's needs and assist in their development and interaction with the natural environment, only if these spaces are maintained.

Keywords: Child-Friendly Spaces, Green Spaces, Urban Area, Built Environment, Open Spaces

1. Introduction

The planning of child-friendly spaces is no new phenomena in the international context, but however, limited in local context. Child-friendly green spaces have a positive impact on the urban environment, caters for children's needs and assist in their development and interaction with the natural environment. The need for these spaces is of utmost importance and the proposed implementation and improvement of child-friendly green spaces should be supported by way of specific policies and legislation, in order to ensure the success and sustainability of these spaces.

A child's interaction with the world is directly affected by their natural environment [22] and therefore the importance to plan and provide sufficient open spaces for children should be emphasized as part of current spatial planning approaches. The core problem which emanated from this research is the lack of qualitative urban green spaces, and more specifically child-friendly spaces in the local South African urban environment. Qualitative urban green spaces in the context of this research implying usable, functional spaces located within the urban environment. Child-friendly spaces in context of this research imply public spaces that are planned and developed specifically for children and their needs. The local

reality currently suggests of "green" and "public" spaces that are mostly uninviting and unsafe in general, resulting that children feel uncomfortable interacting with their natural environment or being outdoors [28,37].

The need for these qualitative urban green spaces are also emphasised by statistics that children are not active enough [29,43] finding themselves to be more indoors than outdoors. Children appear to be spending their time watching endless hours of television or playing computer games [6]. One can reason that a less safe neighborhood, with no child-friendly qualitative urban green spaces, contributes to the inactiveness of children. In South Africa overweight and obesity in children, living in urban areas is an increasing problem [43], which has a major effect on their mental and physical health, leading to the risk of developing heart disease and diabetes. A further problem arise as there is no, or limited, policy and legislative frameworks initiating the planning and improvement of child-friendly spaces within local context.

2. Green Space Planning

2.1. Defining Green Spaces

Reference [36] defines green spaces as areas that have continuous vegetated areas and space. Artificially created city parks, botanical gardens, street trees that are isolated and even private gardens are all examples that can be included in defining green spaces [40]. These urban green spaces all affect urban development in a positive way by contributing to sustainable development and improving the quality of life in general.

2.2. Defining Qualitative Urban Green Spaces

Helping to define and support the identity of towns and cities, qualitative green spaces exceed to enhance a city's attractiveness for living in the urban areas, enhance social aspects and improve better neighborhood relations [3,29]. Qualitative green spaces reveres to all open, green areas in an urban or rural environment, which has a function and contributes to the quality of the surrounding area.

2.3. Benefits and Importance of Planning for Urban Green Spaces

More and more people are migrating from rural areas to urban areas resulting in an increase in urbanization. Growing urbanization can place major pressure on the urban environment. The obvious problem is that there is more people and less space. As a result of rapid urbanization, the land set aside for green spaces are rather being used to build and provide houses for the growing population, resulting in the quality of life in the urban environment not being taken into consideration. But an even bigger challenge that the urban areas are facing, is the lack of quality child-friendly spaces, spaces provided specifically for children to interact with their natural environment in an urban setting. The main problem with most of the current green spaces is the lack of facilities and maintenance by municipalities, which results in the space having an uninviting feeling [29].

The provision of green spaces for the inhabitants of urban areas has a positive impact on their health and mental well-being [3,40]. The palpable main benefit is the lowering in temperatures by reducing heat build-ups in urban areas. It has been proven that green spaces are more beneficial than paved open surfaces, for the obvious reason of heat being trapped in surfaces such as for example concrete. These spaces also contribute to improving air quality, by removing pollutants from the air [30].

While there is no doubt that a need exists for the creation of green spaces in urban areas within South African environment, the small pockets of green spaces that do occur in South African towns are unfortunately usually distributed unevenly [23] and are insufficient.

The biggest stumbling block in the provision of green space planning is the financial aspect of developing and maintaining these spaces. According to reference [29] there is an obvious need for these spaces, however the financial provision for such are usually not prioritized in budgets. This is more often than not by reason of the need for more housing to provide for a growing population. Therefore financial limitations prevent the development and maintenance of green space planning in urban environments, where it is most needed [8]. When green spaces are indeed provided for and developed in South African cities and towns, the maintenance thereof is an on-going expense for the local government and typically receives only a small vote in the budget, often insufficient.

3. Child-Friendly Green Spaces

According to reference [22] a child's living environment has an extreme influence on almost all aspects of their lives. Therefore children need open space, in order to have a relationship with their natural environment to develop their skills and natural abilities to their full potential. "The concept of child-friendly environments has been inspired by the concept of child-friendly cities" [28]. The concept refers to developing better conditions for children in the urban environment by focusing on child-friendly green spaces in the urban area. A primary concern in improving the urban environment should thus be children's health and their direct relationship with the natural environment.

3.1. Defining Child-Friendly Spaces

Child-friendly spaces can be defined as public green spaces, which are specifically designed in an urban area for children to enjoy the natural environment, and at the same time have a positive impact on their skill development [18,24,44]. Child-friendly green spaces per definition are mainly green areas, where children feel safe interacting with nature. Access to these parks should be easy, ideally within walking distance from the children's homes [10,28].

3.2. Benefits and Importance of Planning for Child-Friendly Spaces

In South Africa, overweight and obesity in children living

in urban areas is an increasing problem [44], which has a major adverse effect on their health, leading to an increasing risk of heart disease and diabetes. The problem exists when there is a lack of physical activity. This is often because they find themselves in a less safe neighborhood, with a lack of green spaces which then result to children being segregated from their society.

Child-friendly green space development should be incorporated in all influencing policy and legislation documents, supporting the development and improvement of child-friendly green spaces. The problem however in South African Policies and Legislation applicable to green space provision is keeping it sustainable.

By giving children space in their natural environment, their abilities to think and react can be practically observed [4]. It is essential for child kinetics and planning to collaborate when child-friendly green spaces for children in urban areas are planned and developed. These spaces do not only focus on providing a "play" space for children, but influences their developing stages when they interact with the specific facilities and objects provided in the space [9]. Focus should be shifted towards improving different planning approaches to provide child-friendly green spaces.

Qualitative green spaces that are found in and around cities can be utilized to improve these spaces for a specific goal. A majority of the spaces are usually to cater for everyone's needs and in general it can be identified as parks. These spaces can be developed in a more specific way to only provide to the needs of the cities children's, by developing it to be more child-friendly and incorporating child-friendly urban design tools in these spaces [29,30].

A good international example of qualitative green spaces, being developed as places with a purpose for enjoyment, is water parks [5]. Water parks are areas that provide activities and enjoyment to different age groups, attracting the inhabitants of a city (adults and children) to enjoy the outdoor space and place provided for them to their full potential [5]. In and around New York City a variety of water parks can be identified, some indoors and some outdoors, all within driving distance for a fun day in the natural environment of the urban areas.

4. Planning Approaches Focused on Child-Friendly Green Spaces

4.1. Child Orientated Planning Approach

The child orientated planning approach lays great responsibility on development and planning, to improve spaces, by becoming more child-friendly and incorporating a child orientated planning approach [29]. By implementing a child orientated planning approach, benefits can range from promoting healthier lifestyles, improving the social interaction and at the same time improve sustainability of natural spaces in the long term [22].

The key to planning for child-friendly green spaces, is incorporating child-friendly design procedures and participatory decision making [22], where the children of the specific city, town or region combine their inputs with the development and planning of theses spaces [29]. By means of incorporating the children, their wants and needs will directly be satisfied.

Safety, access, integration and green spaces are all important concepts in the child planning orientated approach. These concepts should be integrated in the planning and development of child-friendly green spaces [7,12,22].

4.2. Urban Design Approach

The development or improvement of child-friendly spaces in the urban environment contributes to improving the quality of life for the children in the cities, by providing green spaces, which positively affects sustainable development. Urban Design is a planning approach that plays a major roll when providing spaces and places for the public to enjoy [7]. Reference [20] defines Urban Design as "the art of creating possibilities for the use, management, and form of settlements of their significant parts". Urban design is for the people, adding quality to their life.

Contributing to the development of green spaces, specifically child-friendly spaces in the urban environment, urban design tools such as traffic calming elements, separation, different surfaces and sufficient benches are more examples of tools that can be included in designing and developing the ideal child-friendly spaces [7].

Items, element and physical structures that are provided in green spaces and the layout of it in the specific space, determines the attractiveness of the space for the children, the purpose of why it is there and how it would contribute to a child's life [30]. The urban design approach is thus a process concerned with the use of land and design of the urban environment, with its origins reclined in the movement for urban reform [7]. The urban planning approach can include urban renewal, by adapting urban planning methods and at the same time focus on the massive challenges associated with urban growth.

4.3. Place Making Approach

To fully understand space, its physical, social and symbolic dimensions should be taken into consideration [21]. The biggest challenges in today's cities is to provide quality green spaces for the public, where the spaces have meaning and development has taken place to provide outdoor environments for the inhabitants of the cities. But too often green spaces exist in new developments and cities where ill-planning were the cause and according to reference [38] it becomes "after-the-fact cosmetic treatment".

The place making approach is focused on the importance of lively neighborhoods and inviting public spaces. The approach is both an overarching idea and a hands-on tool for improving a neighborhood, city or region where public spaces should form the heart of every community, in every city. The approach thus inspires people to create and improve their public places, strengthening the connection

between them and public space itself [30].

Thus, the importance of planning for green spaces with a certain meaning and goal cannot be clearer, for it positively affects the city and its inhabitants on different levels to achieve sustainability and improve the quality of life for each person in the city [3].

The process of place making has a certain criteria that should be followed to ensure a well-developed and designed space providing places and spaces with meaning. The idea of place making is to develop sustainable and livable areas where people want to go, visit and enjoy.

Place making is an idea, tool and concept for improving a neighborhood, city or region. By incorporating the place making concept and using it as a tool in the developing process of cities or town, the attractiveness is enhanced and sustainability is improved. According to reference [25] place making is how public spaces are collectively shaped, to maximize shared value. Place making involves the planning, management, design and programming of public spaces. Therefore place making is how humanity's future is shaped. Project for Public Spaces (PPS) explains place making as both a process and a philosophy. Place making has grown into an international movement, where green spaces must serve the people of the community as a vital place where function is put ahead of form [25].

For the consideration of any public place or space, PPS has developed The Place Diagram (Fig. 1) as a tool to decide whether it is a successful public place [25].

Figure 1. PPS Judgement of any place.

Figure 1 captures the four different attributes of place making as identified by PPS, namely sociability, uses & activities, access & linkages and comfort & image.

There are limited approaches to green space planning and almost none approaches that focus specifically on child-friendly spaces. There is a definite need for more green spaces which are specifically designed and developed for children in these urban areas and the different planning approaches, as discussed, should be followed to ensure that these green spaces will be useable, inviting, safe and developed to its maximum potential to ensure sustainability to the environment and at the same time cater for the needs of the children.

5. Policies and Legislation Guiding the Planning of Child-Friendly Green Spaces in South Africa

5.1. Constitution of the Republic of South Africa 108 of 1996

The rights of children are entrenched in the Bill of Rights in the Constitution of the Republic of South Africa. In the Constitution of the Republic of South Africa 108 of 1996 "child" can be defined as a person under the age of 18. The constitution lays emphasis on the importance of the rights of children and that a child's best interests are number one priority in every matter concerning the child [31].

The democratic values of human dignity, equality and freedom is established in the Constitution of the Republic of South Africa 108 of 1996, where the state must respect, protect, promote and fulfil the rights in the Bill of Rights [31].

Everyone has the right to an environment that is not harmful to their health or well-being, through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation, secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development [31].

5.2. National Spatial Development Perspective: NSDP (2006)

The NSDP provides a framework for future development always focusing on sustainable development. The framework is however a far more focused intervention by the state in equitable and economic growth is a main concern. According to the NSDP (2006) a sustainable development paradigm requires that economic growth and social development are in balance with environmental priorities [35].

Furthermore the NSDP has strong views on protected areas in South Africa. There is however no provision made for the improvement or development of public green spaces, nonetheless child-friendly green spaces in the urban areas of South Africa [35].

5.3. National Urban Development Framework: NUDF (2009)

The NUDF addresses the different challenges and opportunities that the South African towns, cities and city-regions are facing. The framework is focused on environmental sustainability, where the development of greener buildings and renewable energy sources are encouraged.Secondly the framework also focuses on social equity, ensuring that urban and rural areas are not divided, but rather form part of a continues region [11].

The framework also illustrates the problem that South African cities face in terms of urbanization. According to reference [11] cities are not up to the task of managing urbanization, and are poorly equipped to deal with such urban growth. The NUDF states that a shocking 5.8% of

children living in cities in the developing world die before reaching the age of 5 [11].

There is no focus on the importance of green spaces for these urban cities. Urbanization is a reality and cannot be stopped, but the environment can be improved by providing better, greener and more sustainable environments for the children and residents of the over populated cities. The main focus should be on providing such spaces.

5.4. National Sport and Recreation Act 110 of 1998

The National Sport and Recreation Act 110 of 1998 provide opportunity to promote and develop sport and recreation and the co-ordination of the relationship between them. The Act requires that funds should be provided annually for the creation and upgrading of basic multipurpose sport and recreational facilities [33].

The National Federations must take full responsibility for the safety issues within their sport and recreational disciplines. Accessibility of such facilities should be taken into consideration and maintenance should be ensured by the beneficiary of the provision of such facilities. Sport and Recreation South Africa must organise and promote programmes aimed to mobilizing the nation to play, but all sport and recreational activities must be conducted in such a way that the environment is not harmfully affected [33].

5.5. Spatial Planning and Land Use Managing Act: SPLUMA (2012)

The Spatial Planning and Land Use Managing Act are set to provide a framework for spatial planning and land use management in the Republic of South Africa. The framework does include the provision of green or public spaces within the municipal boundaries [27].

The objects of this Act are to [27]:

(a) Provide for a uniform, effective and comprehensive system of spatial planning and land use management for the Republic;

(b) Ensure that the system of spatial planning and land use management promotes social and economic inclusion;

(c) Provide for development principles and norms and standards;

(d) Provide for the sustainable and efficient use of land;

(e) Provide for cooperative government and intergovernmental relations amongst the national, provincial and local spheres of government; and

(f) Redress the imbalances of the past and to ensure that there is equity in the application of spatial development planning and land use management systems.

5.6. UNICEF (Unite for children): South Africa Annual Report (2012)

According to reference [39] only 29% of children have access to safe play areas. Children have basic rights, which include basic education, protection, health services and safe outdoor space. Laws alone are not enough to ensure a child's rights, therefore UNICEF supports the children by fighting

for their rights [39].

Layer upon layer the right of children should be established and the rights of children should be protected, but the lack of access to basic services and the rising unemployment statistics are affecting young lives. For UNICEF prioritizing the rights of children in high level discussions on policy, law and budgetary allocations is of utmost importance [39].

5.7. Children's Act 38 of 2005

The primary purpose of the Children's Act 38 of 2005 is to define and protect the rights of children. Such rights should be respected, protected and promoted by the state [32].

Amongst the rights of children is the right to basic education. Provision for early childhood development programs should be made and implemented. Therefore the child's need for development and to engage in play appropriate to such child's age should be recognized. This includes appropriate recreational activities, since such activities play an important role in the child's developing stages [32].

The Children's Act 38 of 2005 also deals with the child's right to health and safety. Children have the right to be protected and such can be achieved by providing a safe and healthy environment for the child, which is conductive to the child's growth and development [32].

5.8. White Paper on Spatial Planning and Land Use Management (2001)

The White Paper on Spatial Planning and Land Use Management states the importance of the usage of land. Land is an asset, scarce and is fragile. When the development of land takes place, high level planning processes that is inherently integrative and strategic, is needed.

The White Paper is set out with an ultimate goal to formulate policies, plans and strategies for land-use and land development that address, confront and resolve the spatial, economic, social and environmental problems of the country.

The spatial planning, land use management and land development norms are:

• Land may only be used or developed in accordance with law;

• The primary interest in making decisions affecting land development and land use is that of national, provincial or local interest as recorded in approved policy;

• Land development and planning processes must integrate disaster prevention, management or mitigation measures;

• Land use planning and development should protect existing natural, environmental and cultural resources;

• Land which is currently in agricultural use shall only be reallocated to other uses where real need exists and prime agricultural land should remain in production.

5.9. Durban Local Agenda 21 (2002)

Durban Local Agenda 21 is aimed on improving sustainability in the urban area. To improve sustainability, the

"green" element of the city should be improved. Durban Metropolitan Open Space System (D'MOSS) is focused on the design of an open space plan, where the management of the city's natural resource base can *be protected and guided [13]*.

Although the Local Agenda does not make provision for child-friendly green spaces, the program does include the provision of open spaces for the community. By providing these open space in high-density residential areas, quality of live would be improved and jobs could be created. Unfortunately key problems facing the provision of open spaces to the communities are the lack of maintenance funds, poor project management and vandalism [13].

5.10. Spatial Development Framework (SDF) Ethekwini Municipality (2013)

The SDF of eThekwini Municipality is mainly focused on developing the city to become more sustainable. The city is focused on introducing the "green" aspect to the city and improving "green" development on different levels. The Greening Durban Program 2010, is a initiative aiming to ensure that a positive environment is achieved. By focusing on "green" development, sustainability will be improved [15].

The SDF makes provision for providing open/ public spaces, focusing on developing these spaces to be more "green". These spaces provide visual attractiveness, improve quality of live and provide space for recreational purposes. Certain areas are set aside according to the SDF, to be protected. These areas include urban open spaces. With the current open spaces or usually open space that was not planned for, fragmentation is a concern [15]. Therefore open spaces should be conserved and linked.

The SDF seeks to guide a more efficient use of the limited infrastructure, urban space and natural resources. The main goal is to create a city that is more efficient, sustainable and safe. The city should provide high quality public space for the residents, recreational opportunities should be provided and equal access to goods is eThekwini Municipality's SDF main goal and focus. More focus should be set aside for developing the public spaces to become more child-friendly [15].

5.11. Integrated Development Plan (IDP) Ethekwini Municipality (2013/2014)

The main goal set by the IDP of eThekwini Municipality, for the residents, is that all those who live, work, play and invest in eThekwini feel and are safe in private and public spaces. It is important for the eThekwini Municipality to provide a cleanandgreenenvironment,capableofdeliv*ering a range of ecosystem* goodsand services, leading to homely neighborhoods [14].

Contributing to these safe and homely neighborhoods are economically and environmentally sustainable public spaces, which is an essential components of a green and prosperous City. An increase in the use and appropriate design and maintenance of public open spaces also contributes to enhancing neighborhoods and reducing risks [14]. This exists because of people who want to take positive action to make public spaces safer.

The IDP of eThekwini Municipality supports the development of public green spaces, contributing to the environment and the residents of Durban. It addressesspatialsegregationthroughactionssuchasacomprehen siverehabilitationof neighborhoods,creatinghighqualitypublicspacesandfacilitiesi nareasthatwerepreviously underserviced [14].

6. International Case Studies of Child-Friendly Urban Green Spaces

A case study analysis was conducted to evaluate international examples of child-friendly spaces, where the best practices were identified and illustrated in terms of applicability in South Africa. These international case studies include Kadidjiny Park in Melville, Australia and Mullerpier public playground incorporated in Rotterdam, the Netherlands.

A local case study in South Africa was conducted to evaluate the approach and opportunities of planning for child-friendly spaces in local context.

6.1. Kadidjiny Park, Melville, Australia

Melville situated in Western Australia believes that an age-friendly environment benefits the entire community for current and future generations [17]. Melville strives to become an attractive city, with safety being their prime vision. Sustainability plays an important role for the city of Melville, where the consequences of their actions for future generations are taken into account [17].

The city of Melville strives to become more and more child-friendly, believing that when children have sufficient outdoor space for free play in a natural environment, there are overwhelming benefits, including a child's overall physical health and emotional well-being [17].

Melville attempts to provide more and more outdoor green child-friendly spaces for their young citizens. When the children "play" and explore in these spaces provided for them, it is only then when they learn how to cope with life, experience risk taking, face challenges, begin to understand the world around them and develop a sense of belonging [17]. Therefore the City of Melville is considering making positive changes towards providing more natural environments for the children.

Melville incorporated different guidelines such as talking to the children and involving them in the planning of child-friendly green spaces. Asking children what they like to do when they play rather than what they would like in a playground and community involvement contributes to these guidelines used by Melville for developing child-friendly green spaces [17].

The Kadidjiny Park in Melville was specifically planned

and designed for children, in order to interact with the natural environment, and increase their abilities to think, learn and listen [10]. The park can accommodate residence and specifically children of all ages, and provides a unique multi-use landscape which has a positive effect on all residents of Melville. The park opened in November 2010 [1] and promotes imaginative and active play outdoors. The open space is much focused on the green aspects, such as the conservation and expansion of natural habitat, and improving the sustainability of the town where over 40 000 indigenous plants and trees have been planted to improve the "green" aspect of the park and the sustainability of the town in general [10].

The park situated in the suburb of Melville, also known as the Dr Seuss playground because of the red and white poles (see Fig. 2) that can be identified on the open space, making the space more attractive, was developed on the former Melville Primary School site, but when the school was relocated The City of Melville purchased it from the Education Department in 2006 and decided to develop it into a constructive space, bringing meaning and function to the area and contributing to the spatial needs of children of the area in a positive way. Many of the schools children were involved in the designing and planning of the park, resulting in comprehensive public participation processeswere the children were included in the developing process, and articulating their ideas of how a child-friendly park should look or feel like [10]. The execution of the proposed plan of the child-friendly park was successful, because of the participatory planning process and the principle of not planning for children, but with children.

Figure 2. Kadidjiny Park in Melville, Australia.

The children of Melville have had a purpose in the development of the park, by being included in the planning process of this specific green space. Through this process, the children have witnessed the change it has brought and the positive influence it has on the town in terms of providing open green space for children and adults. But the main goal of providing a space that is appealing and where children can explore the environment with a feeling of safety and improve their natural abilities and the way they think and interact with people, has been achieved in this case. [1,10]. Fig. 2 illustrates Kadidjiny Park situated in Melville, Australia.

In terms of specific design guidelines, the Kadidjiny Park is fenced which improves the safety element for all children, distancing the children from the roads and other objects that can be a threat. The park is almost four hectares in size, which is quite large but the size contributes to the fact that it caters for all age groups to enjoy the outdoor space in Melville, with sufficient benches provided in the open space. The space promoted the idea of children to be creative in the space, where the name Kadidjiny comes from the Aboriginal Noongar word meaning "learning. thinking, listening" [10].

6.2. Mullerpier Public Playground, Rotterdam, Netherlands

Rotterdam situated in the Dutch province of South Holland, the Netherland, forms part of the Randstad capital, making it the second largest city in the Netherlands. The Port of Rotterdam is however one of the world's largest and busiest harbours [41]. With many immigrants, Rotterdam strives to be a clean, safe and healthy living environment for their residence living and working there [41].

Rotterdam has strived to become more child-friendly for the young citizens of this city [42,44]. It is believed that children form an intrinsic part of the city and therefore they should feel like they belong and fit in with the city. The child-friendly Rotterdam program started in 2007 with the goal of improving or incorporating child-friendly open spaces within the city for children to be able to enjoy the spaces developed for them. The program was developed to strengthen the economy of the city and improve the quality of life for the children of Rotterdam [44].

A method of "Building Blocks for a child-friendly Rotterdam" was developed [44] to identify areas where there is room for improvement in certain neighborhoods in Rotterdam. This method was used to improve the sustainability of the city, focusing on children and for them to be able to grow and learn how to interact with the environment and people, impacting their development skills [44]. These urban development tools of incorporating building blocks to improve child-friendliness in the Rotterdam city have succeeded to draw families back to the neighborhoods of the city [44]. Many families tended to leave the city and move out of the neighborhoods after the post-war era. This trend needed to be reversed, because a neighborhood that is not attractive for people, to live and work there, is destined to struggle [42] and the city of Rotterdam tried to achieve this through the development of the building blocks and was successful in doing so.

By attracting these families back to the neighborhoods of Rotterdam, the method of "Building Blocks for a child-friendly Rotterdam" promoted the idea of combining

smaller apartments together to develop larger apartments with the end result of families having more living space and this idea is more striking to families to relocate themselves back in the neighborhoods of Rotterdam [42,44].

Rotterdam has made child-friendliness a key strategic goal. There are purposes and focus points on what has to be done or can be done to improve child-friendly spaces, because the City of Rotterdam believes a successful city for children is a successful city for all people [44]. This statement stresses the importance once again on how important it really is to have child-friendly open spaces in an urban setting that are welcoming for children to interact with the environment, feel safe and develop themselves.

For Rotterdam it was important to develop a city for children and adults that are lively and sustainable for one main reason, to keeps families in the city. The urban planning tool of "child-friendliness" that Rotterdam has developed, by focused on children and building a healthier city for them will lead to sustainability of the city and strengthen the economy. Different policies take children's needs and wants in consideration and these spaces are not only about developing playgrounds or providing an open space for children to run around in, it is rather a holistic way of thinking about urban planning, making the city more sustainable and attractive and specifically designed open green spaces for children to think, interact and learn on different levels with the end result of having a positive effect on their development and the way they react in different situations.

The city of Rotterdam believes that children form an intrinsic part of the city. By improving the city to become more child-friendly, resulting in children to become an asset to the city, there are physical and socio-economic requirements that Rotterdam should meet in order to cater for the needs of the children [44]. Rotterdam strives to ensure a child-friendly city, by incorporating the needs of children in their development frameworks.

Rotterdam developed an urban planning method, Building Blocks for a child-friendly Rotterdam [44]. This method consists of four building blocks, where the building blocks not only identify problems, but also opportunity for improvements [44].

Table 1. Rotterdam Building Blocks for a child-friendly Rotterdam.

building blocks	description
child-friendlyhousing	Single-family houses with a garden.
public space	Gear public space to the specific needs of children. Play areas, outdoor space, use of space between front door and street level (luminal space).
facilities	Providing opportunities for socializing.
safe traffic routes	Routes are made more child-friendly to encourage children to explore the city (sidewalks and no-through traffic zones).

Mullerpier public playground, situated on the Mullerpier in Rotterdam, was developed by Bekkering Adams Architects in 2007 [2]. This interesting squire was developed to serve as a playground for the nearby primary school, but currently also meets the needs of the children in the surrounding area by serving as a public playground for each one. The square challenges children to play in different ways, interacting with one another and exploring their natural environment [2]. With sufficient activities provided in the space (Fig. 3), opportunities are provided for children to interact with strangers and improve their skills [2].

Figure 3. Mullerpier Public playground in Rotterdam,Netherlands.

Rotterdam truly seeks to develop a child-friendly city, including the children of the city when development takes place. Their needs and want are first priority with the child-friendly monitor developed by Rotterdam, to measure the results of efforts to make urban neighborhoods more child-friendly [44].

7. Local Evaluation of Child-Friendly Urban Green Spaces: Durban Case Study Area

Essenwood, Durban, South Africa

Durban is a large, growing city situated in the province of KwaZulu-Natal (KZN), on the east coast of South Africa, where the majority of the population is aged 15-34 years. The Child-Friendly City Campaign of Durban strives to develop the urban area to become more child-friendly by incorporating child-friendly green spaces [16].

The Child-Friendly City Campaign of Durban strives to develop the urban area to become more child-friendly by incorporating child-friendly green spaces [16]. Bulwer Park, situated in the suburb of Glenwood, in Durban is a pilot project of the eThekwini Municipality's Sustainable Public Spaces Programme and forms part of the IDP's Quality Living Environment Plan [16]. The aim for Bulwer Park was to serve as a valuable green space, offering opportunities for recreation and conservation and at the same time provide a creative space for the community (children and adults) [30].

What make Durban as a city liveable are its green spaces. As the population grows, the city itself expands, resulting in the importance of green spaces to increase [30]. Green spaces are nevertheless vital for the well being of the residents of the city. Durban has around 187 m² of green space per person [29], where Hawaan Forest and Burman Bush plays an important role when contributing to the environment.

The eThekwini Municipality of Durban has launched its very own Green Map, an interactive tool, displaying sustainable features in communities and is used all over the world [15,30]. Green Map provides opportunity for sustainable development within the city and different communities. Working with Durban's informal workers from the city's public spaces, AsiyeeTafuleni (AeT) an NGO promotes inclusive urban planning and design [15].

The Durban Metropolitan Open Space System (D'MOSS) is also an important system included in the Spatial Development Framework (SDF) of the eThekwini Municipality. D'MOSS was previously known as the eThekwini Environmental Services Management Plan (EESMP) and is a system of open spaces [15]. This includes high biodiversity open spaces, linked together in a viable network. D'MOSS covers a great deal of land, including nature reserves, large rural landscapes, coastal corridors and some privately owned land. Apart from contributing to the attainment of these areas, D'MOSS also provides recreational opportunities for the residents of Durban [15].

Durban has identified different project objectives, including creating an identity for the park with a catalyst and implement a strategy that should be managed. A high quality sustainable public space ought to be created when developing child-friendly/ open green spaces in the urban area [16].

The city of Durban further aims to implement specific planning elements such as footpaths, benches, bins and park lights to improve the current open spaces to become safe, inviting and child-friendly [16,29].

Figure 5. Current use of identified space in local case study.

Essenwood is a suburb of Durban, a few blocks to the Northwest of the city centre, located central, within reach of some of the main attractions in Durban. Currently green spaces situated in this area, play space, is neglected, with an uninviting and unsafe feeling, as identified in Fig. 5. With public inputs, these spaces have been described as unsafe and unappealing for children. The majority of the residents in the

Essenwood area live in apartment block, having no backyard space or access to open green space. Certain residents who do however live in houses have undersized backyards [30].

Based on evaluations of the concept that enhanced child-friendly green spaces, the Essenwood case study was found to be successful in terms of integration, traffic calming elements and access and linkages. Gaps were however identified in terms of safety, green space, access, separation, different surfaces, sufficient benches in space, comfort and image, uses and activities and sociability.

8. Results and Discussions

In comparison to international cases, it can be concluded that there is minimal provision made for green space planning in South Africa, and even less for the provision of child-friendly spaces in urban areas. International approaches and examples could guide and influence the local approach to planning in South Africa and aim to provide guidelines for the development and implementation of green spaces, more specifically child-friendly spaces. As identified in the international case studies, the key to success is to include public participation methods, ensuring that the public's needs are met. Neighborhoods should be developed to become more child-friendly, traffic calming elements, safety, open green spaces, and such can only be achieved by observing individual neighborhoods and identifying where there is room for improvement of development of child-friendly green spaces.

Improvements can be made on macro (surrounding area) and micro (specific green space) levels to ensure specific planning for child-friendly spaces.

8.1. Macro Environmental Recommendations

On a macro scale recommendations should be made to improve the safety around the identified space. These safety elements will contribute to improve the child-friendly component in and around the space.

Different planning tools, such as stop streets, separation elements and traffic calming elements (speed bumps) should be developed around the space to ensure optimal safety.

8.2. Micro Environmental Recommendations

The micro environment recommendations are made in terms of the different functions that will be provided in the open space identified. It is important that the space has an inviting feeling, provides different activities for children of different ages and where interaction can take place, improving sociability.

Important elements that can be developed in child-friendly green spaces. These elements ensure a safe environment for children where they interact with other children and improve their skill development:

(1)   Entrance to the child-friendly public park
(2)   Incorporation of benches
(3)   Introducing playing courts

(4)   Providing skipping ropes

(5)   Introducing a balancing pole

(6)   Providing a jungle gym

Different policies and legislations could be adapted to support child-friendly green spaces in urban areas. The majority of the policies and legislations do support open/ public green spaces and strive to improve sustainability by improving the green element in urban areas. Unfortunately child-friendly green space development is not supported as much as it is necessary in specific policies and legislations.

The recommendations made on a macro and micro environment scale in are to improve the current open space and to enhance the planning and development of a child-friendly urban green space. These recommendations can be used for planning similar public spaces in all regions of South Africa. The main priority is to improve the safety element of the open space and secondly to improve the child-friendly element. The recommendations are set to provide an inviting, green and safe child-friendly public park for the community to enjoy, but specifically for the children to improve their physical and skill development as they enjoy and use the space.

9. Conclusion

Planning in urban areas in South Africa does address the provision and development of green spaces. Unfortunately there are not enough provision made for the development of child-friendly green spaces in urban areas, which contribute to their skill development and natural abilities. Policies and legislations should be amended to support open green spaces that are specifically designed for children. By incorporating child-friendly spaces, the quality of life of the children in the cities are improved, as they will have access to unpolluted environments and enjoy the outdoor natural environment in the area of their homes. The activities provided, through these child-friendly green spaces, improve children's social interactive skills and ultimately result in them being active outdoors and enjoying the natural environments.

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