

Abstract

Play, as a practise which has a huge impact on individual human growth and social relationships, has been researched in contexts of multiple disciplinary fields. Theories of play have been developed in different realms and instructed the design of diverse play spaces. Specific architectural typologies as well as general principles of urban planning have been taking inspirations from the migrated idea of 'play'. However, few studies or practices have explored how 'play' can be applied on a neighbourhood

level as a solution to the poor development of both its residents and the community itself. This paper takes Feijenpoort area as a research subject to address the missing intermediate dimensions in the migration of 'play'. Through historical research this paper argues a correlation of the emergence of new behavioural and spatial play to the social condition. A new design program of 'play-cycle' is proposed after comparative studies of existing play space typologies to revitalise the neighbourhoods through positive participation of its young population.

1. Introduction

The idea of play is a crucial topic in both architectural and urban design. Rotterdam itself is also universally considered as a dynamic, creative and playful city. In this paper, the migration of 'play' is chosen as an approach to tackle the problematised situation of Feijenpoort area (Fig.1). The research is established on the theoretical migration of play in various disciplines. Two site-related missing intermediate dimensions are addressed to gear the project goal. Argumentation for proposing a new design program of 'play-cycle' is developed on the basis of the historical and typological studies of play spaces.

As a general review of play theories, Play and theories of play (Takhvar, 1988.) is employed to explain the importance of play regarding especially the growth of children. Proyer's researches on adult playfulness (Proyer,2012.) (Proyer, 2013.) follow as a supplement to argue that the practice of play can benefit all age groups in terms of all-round individual development. To address the socio-spatial impact of play, researches of cognitive science (Di Paolo et al, 2010.) (Klemmer et al, 2006.) (McGann, 2014.) are introduced to first explain how 'play' acts as the sense-giver to individuals and the spatial environment through an interactive relationship. This argumentation is further extended to a social scope of public spaces and elaborated with Jones' case study on the urban public space of South Bank, London (Jones, 2015.). The selected literature solidify the rationale of play as a possible design approach to address social problems spatially. Municipal reports and documentations of Rotterdam(Onderzoek010, 2020.) are studied to later narrow down the research problematisation to the missing intermediate dimensions of neighbourhood scale and juvenile group. The project goal is hereby clarified as to improve individual development of juveniles and facilitate positive social participation in Feijenpoort neighbourhoods with a migrated play mode and play space.



Fig. 1: The territory of Feijenpoort area

2. Theories of play

In this chapter, the migration of play theories is reviewed to understand how the practise of play can help with individual human development as well as shaping social environment or public spaces in a mutual-referencing manner. On this basis, the rationale of adopting the idea of play as an effective approach to address issues regarding individual growth as well as urban spatial environment is solidified.

2.1 Play for individual development

Play, as a practise to exercise or employ oneself in diversion, amusement, or recreation (Dictionary. com, 2020), is considered as a crucial behaviour for all-round individual human growth. (Fig.2.1) Theories have been developed in multiple disciplinary realms discussing the benefits of play especially at an early stage. (Takhvar, 1988.) Play was first addressed as the physical release of surplus energy in H. Spence's theory in the 1870s. Energy that exists because the young are freed from the business of self-preservation through the activities of their parents finds its release in the aimless exuberant activities of play. The intellectual functionality of human brain is exercised and developed while the physical energy is being relaxed. The process of play helps not only with the relaxation and recreation both physically and intellectually, but, according to Sigmund and Anna Freud, helps young kids resolve emotional conflicts as well. Play represents an attempt to partially satisfy drives, reduce anxiety and resolve conflicts by giving a child a sense of control over the world and an acceptable way to express forbidden impulses. It can also, in E. Claparede's research, be an expressive exercising of the ego and a practise to complete the individual personality. In behavioural realm, play serves to facilitate the mastery of skills necessary to the function of adult behaviours. It is the necessary practice for



Fig. 2.1: Play can help with the well-round development of human individuals

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behaviours that are essential to later survival. It is also an exercising that develops cognitive skills and aids in the emergence of additional skills to imitate and interact with the environment.

Apart from the kids group, the positive influence of play extends even further to the development of adults. Research shows that the playful practises to a large extent improves the health and well-being of adults. Play helps resolute and reconcile the pressure from work, family and other social relationships and activities and increase their sense of well-being physically and mentally. (Proyer, 2013.)

2.2 Play for socio-spatial sense-giving

Play serves not only for assisting individual human beings to develop and identify themselves, but also for shaping public space in an interactive way. In Gijs Huisman's lecture on embodied interaction, it is explained that all objects or the external environment in general can only be identified through the active perception and interactive engagement of human beings (McGann, 2014.). This interactive process is further clarified in Klemmer's research and play is integrated as an essential tool in his new paradigm of cognition. In this process, play serves as the sense-giver or meaning-giver of an object or a space, which activates and shapes the environment. The sense-giving process is, in Larsen's research, attributed a bi-directional trait. While the act of play is enriching a space as dyad of 'sein'(being) and 'dasein' (being elsewhere), the dyadic feature of the space in return defines and distinguishes play apart from other activities. (Larsen, 2015.) In this sense, a mutual-referencing relationship is established between the practise of play and the space that accommodates this practise. (Fig.2.2)

The mutual-referencing relationship is vividly explained in a larger socio-spatial scope by Alasdair Jones in his research on the public space of South Bank London. Through categorizing

play practises into three different modes and researching them separately on a daily-based behavioural data collection, Jones claims that play can be seen as 'the resourceful way people engage with their city', not only active, however, but also productive. He argues that public urban spaces not only provide the conditions for playful practices materially and functionally, but are also produced by them. (Jones, 2015.)

3. The missing intermediate dimensions

This chapter will be identifying the two missing intermediate dimensions in Feijenpoort area, the project site, in terms of the scale and the age group. The appeal as well as the potential of site is drawn and related to the approach of play which is further concluded to the guidelines of the design-oriented personal research of migrated play modes and spaces.

3.1 Age group

According to the municipal report, Feijenpoort has 40% of its population under 27 years old (Fig.3.1.a). With such a large young generation of various migration backgrounds, Feijenpoort is supposed to be expecting a promising future with diverse, energetic and creative young labour force. However, the juvenile group (ageing 12-27yr) is quite problematic and the lack of effective social programs to address these juvenile issues have resulted in even bigger social disorders. In Feijenpoort neighbourhoods, there is a lack of educational facilities especially in elementary education (Fig.3.1.b). More than five neighbourhoods have 15% of its young residents dropout early from school (Fig.3.1.c). With a total of 50% residents not having a basic education qualification (Fig.3.1.d), low employ rate and low income (Fig.3.1.e) can also be expected.

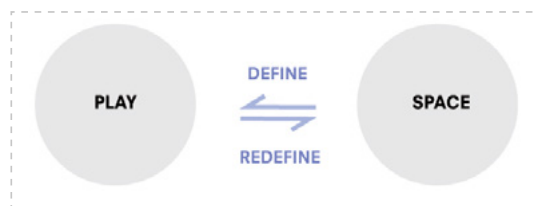


Fig. 2.2: Play as a sense-giving behaviour for individuals and socio-spaces



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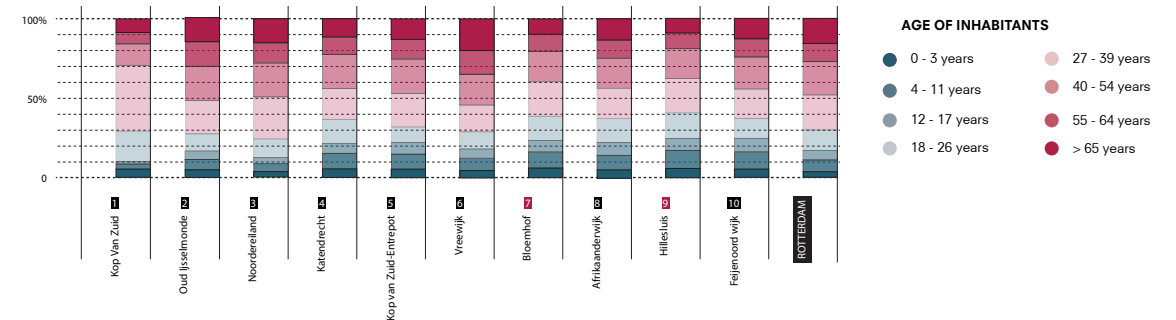


Fig. 3.1.a: Population by age group in Heijenoord district and adjacent neighbourhoods, 2018

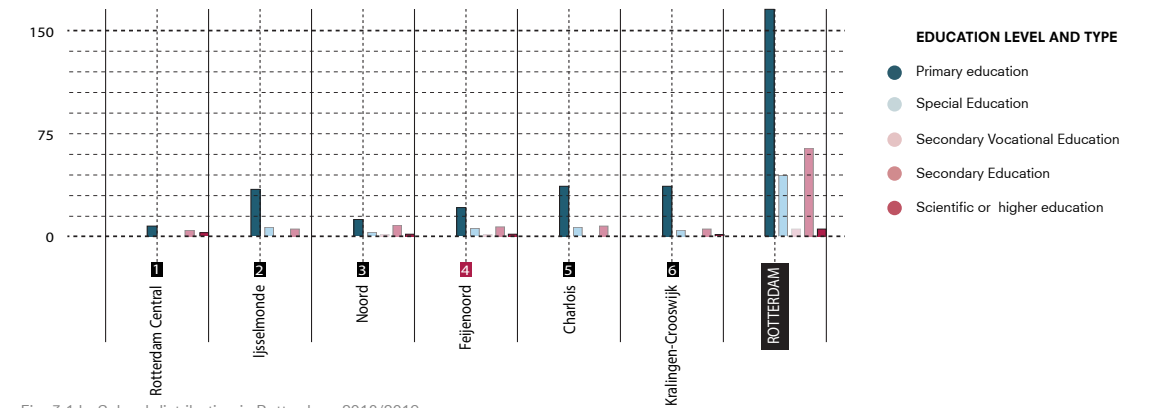


Fig. 3.1.b: School distribution in Rotterdam, 2018/2019

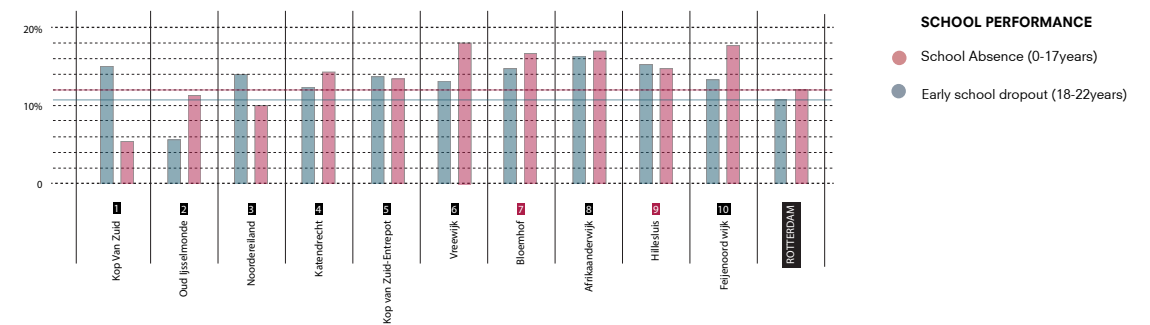


Fig. 3.1.c: Percentage of school absence and early dropout, 2016





Fig. 3.2: The split cityscape of Feijenpoort area

3.2 Scale

The Feijenpoort area locates on the connecting point of Rotterdam north and south, giving it a gateway status. The massive infrastructure of railway tracks that links north and south split the site into two entirely different cityscapes. The identities of urban environment on both the city scale and street scale are explicit and distinctive, yet the effort on an intermediate neighbourhood scale to connect or correlate the two extremes seems missing. (Fig. 3.2)

The Veranda area along River Maas accommodates the outstanding Feyenoord stadium, featuring as an important sports and leisure destination for the whole Rotterdam city. This position will be strengthened by the Feyenoord City Plan to better connect to the bold, adventurous and diverse scape that extends from city center to the coastline.

On the contrary, the hinterland area shows a representative pattern of Dutch neighbourhood development in 20th century. The 8 neighbourhoods within Feijenpoort area remain quite independent to each other. Within these neighbourhoods, the majority of urban spaces is filled with residential or housing projects, forming a homogeneous cityscape. Open spaces such as parks, canal spaces and playgrounds are scattered humbly in the neighbourhoods. Local cultural venues and recreational amenities are also sparse and hard to access (Fig. 3.2.a). Few municipal or civil programs

are organized and they are poorly engaged by Feijenpoort residents (Fig. 3.2.b).

Without a collaborative effort on a neighbourhood and inter-neighbourhood level to encourage social-cultural participation, the negative split between the residential area and the diversely developed coastline will further aggravate and impede the regional development.

3.3 Play for youngsters, play for Feijenpoort

Due to the failure in dimensions of both juvenile education and neighbourhood participatory programs, there is a lack of activity destinations for this juvenile group. Many young adolescents therefore wander aimlessly on streets to kill time. Many of these young rambblers, less-educated, poorly financially supported and with a migration background, often feel excluded by the community and are more likely to cause nuisance (Fig. 3.3.a) or commit crimes (Fig. 3.3.b) which disrupt the stability and harmony of the neighbourhoods. As a result, some Feijenpoort neighbourhoods even rank among those Rotterdam neighbourhoods of the lowest life quality index (Fig. 3.3.c).

In response to the two missing dimensions and the consequential problems in Feijenpoort area, the project aims to solve the social problems by tackling the juvenile issue on a neighbourhood scale. Play, as is elaborated in chapter 2, can be a possible approach to effectively respond to the

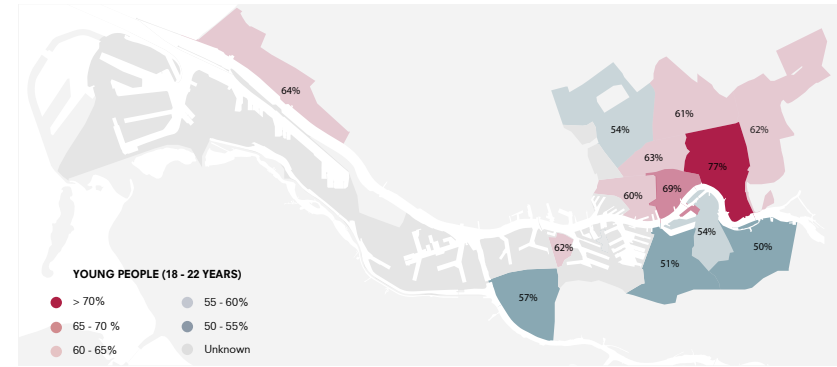


Fig. 3.1.d: Percentage of young people (18-22yr) with a basic qualification in Rotterdam, 2018/2019

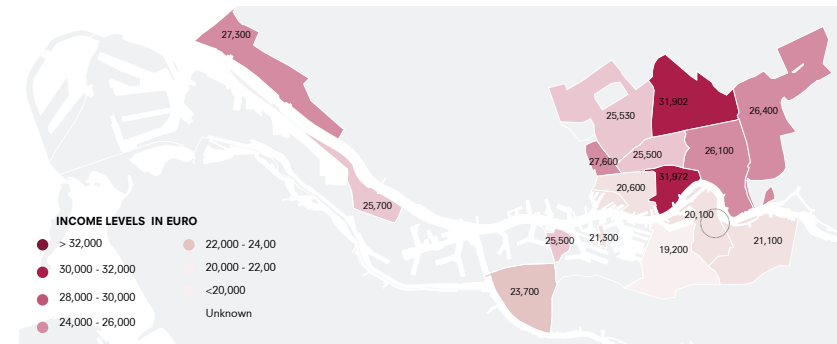


Fig. 3.1.e: Average Income per inhabitant in Euro per neighbourhood

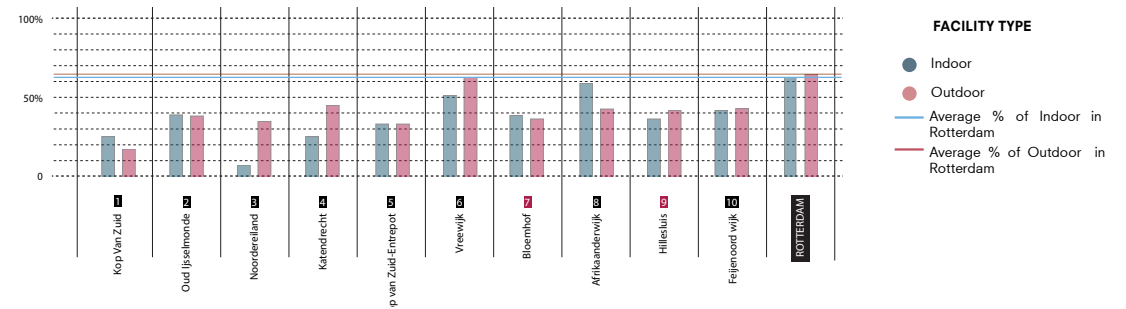


Fig. 3.2.a: Percentage of inhabitants that find public recreational facilities are sufficiently available in the neighbourhood, 2018

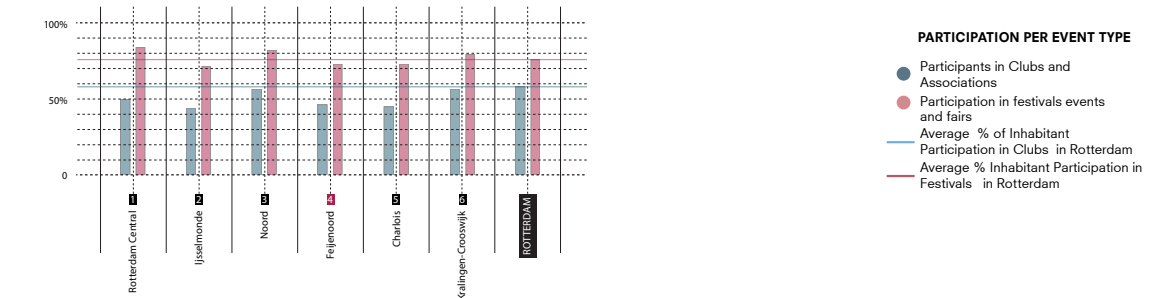


Fig. 3.2.b: Percentage of inhabitants that participate in clubs or events, 2018

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appeal of developing the juvenile individuals as well as the neighbourhood environment by introducing juvenile participation. In the next chapter, the historical and typological development of play modes and spaces are studied to argue that a new migrated design program can indeed help achieve this project goal.

4. Migration pattern of play modes and spaces

In this chapter, the migration timeline is studied to understand the migration history of play in a larger global and historical context (Fig. 4). The timeline indicates how the mode and space for playing can be deeply influenced by the development or changes in various realms including technology, economy and circularity culture.

The timeline of play spaces provides examples to tackle juvenile well-being, boost economy and improve social cohesion with play projects. It also indicates that the tension between population growth and resource shortage had led to emergence of the adventurous and recycling convention in the design of play spaces. These chain reactions will help build up the rationale for the final decision of design ambitions and programs in Chapter 6.

4.1 Play and technology

4.1.1 Play in industrialized era

After Friedrich Froebel invented the concept of modern playground, the first playground movement then took place at the end of 19th century. It was when the European and American cities were left in catastrophic conditions due to immigration and industrialization. On the one hand, child labour was by then better regulated which left many working class children completely unsupervised during spare time. On the other hand, the notion is widely acknowledged to promote public health, prevent criminality and protect children from the dangers of the industrialised cities(2018a).

The 1876 New York law was launched accordingly, aiming to guide kids to play in designed playgrounds instead of the streets which may result in nuisance and criminality. This law can be seen as the origin of the notion to adopt 'play' as an solution for social problems.

4.1.2 Play in outer-space exploring era

Ever since the liquid fuel rocket was invented in 1926 and human beings took bold leaps exploring the outer space in the first half of 20th century, fantasy and science fiction elements and landscapes featuring rockets, large tunnels of mazes have been introduced into play space design during the 1950s to the 1970s (O'Shea, 2013).

These imagination-fuelling structures and exploration-encouraging equipments were the foundation for integrated playgrounds of the modern era.

4.1.2 Play in outer-space exploring era

21st century is the era of information revolution. With the invention of internet and various digital devices, play activities are also developing to adapt this change. Nowadays, some play equipment manufacturers are partnering with technology companies to develop playground features that allow kids to use digital devices to interact with equipments (2020).

In the meantime, interactive digital or virtual interfaces are universally applied to play facilities in recreational centres or even educational institutions such as schools and museums. In this way, the notion of 'learn through play' and 'interactive play' has become more and more popular.

4.2 Play and economy growth

In late 19th century, the New York City was expanding and developing enormously. With the rapid economic growth, the middle class started to seek recreation to escape the stressful urbanization. This was when the wasteland Coney Island began to grow in to a vacation resort and the paradise of amusement parks. With in one decade, three huge amusement parks, Steeplechase Park, Luna Park and Dreamland were built and open to public. The recreational activities provided by these play facilities encouraged tourism and consumption in a surprising way and the play economy has been an important sector in the development of the New York City(Rem Koolhaas, Architect, 1994). The 2010 NY mayor report showed that merely the Luna Park and Scream Zone could create hundreds of jobs and bring in at least \$100,000 a year for the city.

The development of Coney Island indicates that in the context of city expansion and economic growth, underdeveloped areas can be vitalised

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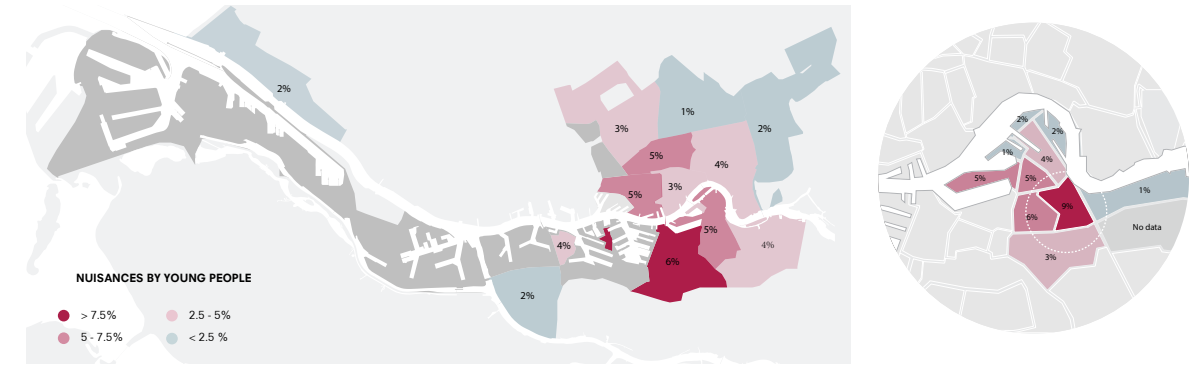


Fig. 3.3.a: Percentage of inhabitants that have experienced nuisance from young people in the neighbourhood, 2018

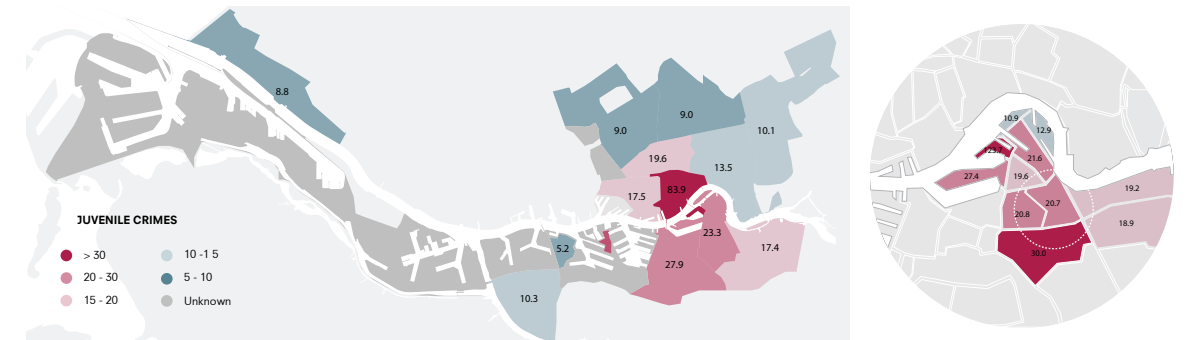


Fig. 3.3.b: Offences committed by juveniles per 1000 inhabitants, 2018

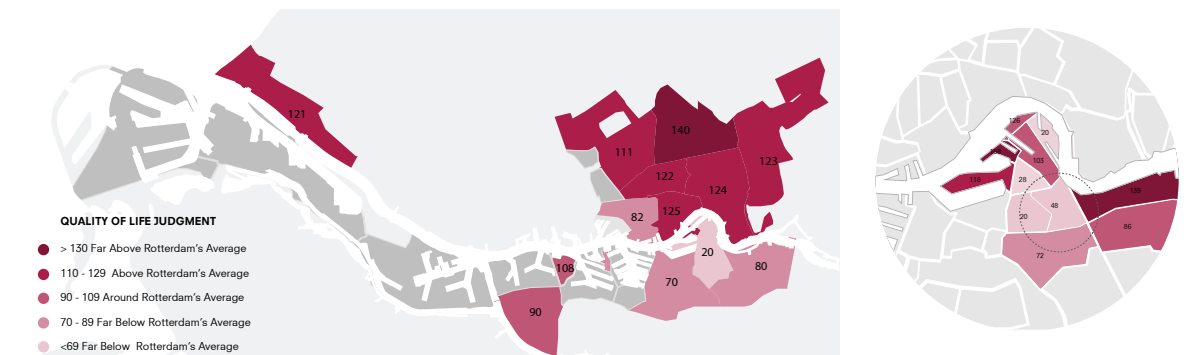


Fig. 3.3.c: Quality of life Index Rotterdam 2020

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The traditional playground typology for kids features standardized facilities such as slides, swings and sea-saws. However, these playgrounds is not attractive to older kids since all the facilities are industrialized and fixed. The new typology of adventure or junk playground has a higher appeal to other age groups as different group of kids can build the facilities or set-ups with unwanted waste that meet their own preferences.

5.2 Museum

The public programs of traditional museum typology are mainly for exhibition and education purposes. Nowadays, the modern museums have introduced more interactive programs to encourage more visitors to actively gain knowledge through play. With many of these programs are digitalized, the investment and maintenance expense become quite high. The design, installation and maintenance of this equipments such as interfaces, lighting and sound systems will also require the engagement of professionals in these aspects.

5.3 Salon

Traditional salons are places where a certain group of people gather and have themed discussions. They were usually private and only admitting selected members. The modern salons tend to open up to a larger group of citizens in order to improve social accessibility and participation. Lecture and discussion spaces together with food and beverage are programs that can usually found in salon typologies. Recent projects such as Little Architects in Nanjing suggests that more city-based activities can be held by salons. The activities may happen in various places throughout the city while the members have the opportunities to playfully explore and engage with a broader environment.

5.4 Theatre

Theatre typology has always been a significant element of public life. The open theatres, in particular, can create remarkable cultural scene while engaging a large crowd of audiences. The Shed project in New York is a representative of an upgraded open theatre. The high investment for the movable large-span structure has won the project great openness and transparency to the public. The flexible displaying future will furthermore increase the attractiveness for wider social participation into whatever playful is happening inside.

5.5 Toy shop

Traditional toy shops, like all other common store types, are places for product display and purchase. The shops today start to emphasize on the experience of customers. Lego is one of the brands which feature DIY experience and customization services. The DIY zones in these shops are highly appealing for kids and even parents, through which the brands can build a better customer stickiness and gain more profit while customers can enjoy themselves through constructive play.

In order to attract and be accessed by more people, the intended new play project should be a synergy of the ideas of creative waste reuse, interactive learning, city exploration, flexible display and constructive DIY play. In the proposed new typology of 'play-cycle', these features and experiences designed and organized in a circular manner(Fig.5):

The value of the neighbourhoods are collected together with local waste through city exploration. Creative waste recycle ideas can be realised by design and build up kids' own play facilities. The whole up-cycle and constructive play process are displayed and studied by local school kids and other residents. And the products and play facilities can once again be used and enjoyed by the neighbourhood as a playful 'payback'.

This life-cycle of play gives this behaviour a self-nurturing liveliness. It is also an effective and self-supporting way so that the project can be easily run by the Feijenpoort neighbourhoods and its people themselves.



Fig.5.1.a Afrikandersplein playground, Rotterdam



Fig.5.1.b Governor's Island, New York



Fig.5.2.a Natural History Museum, London



Fig.5.2.b NEMO, Amsterdam



Fig.5.3.a De Dependance, Rotterdam



Fig.5.3.b Little Architects, Nanjing



Fig. 5.4.a Roman theatre ruins

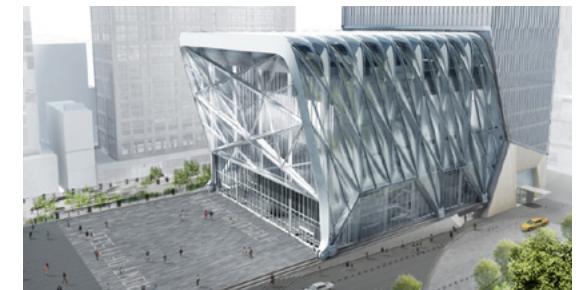


Fig. 5.4.b The Shed, New York



Fig.5.5.a A traditional toy shop



Fig.5.5.b Lego shop



Fig.5.5 The life-cycle of the new 'play-cycle' typology

**6.Conclusion:
Play-cycle, a migrated play project**

Based on the previous migration research, the Play-cycle project is proposed to cope with the inadequate school education and high crime rate in Feijenpoort's juvenile group as well as the poor cultural participation on a neighbourhood scale.

It is a play station in which play facilities will be proposed, designed, constructed and used by local youngsters out of up-cycled local waste. While the adventurous and creative play convention is in perfect line with the tendency for Rotterdam's post-war redevelopment, the recycling idea responds to the underdeveloped situation of surrounding neighbourhoods.

The project consists two parts: the base station and the satellite sites. The base station is where young kids gather, design

and construct play facilities and set-ups for renovating their own neighbourhoods. Here, innovative ideas to reuse and up-cycle local waste will also be studied and generated. The satellite sites are distributed through out Feijenpoort. They are spots where local waste are collected, ideas of interacting with waste materials are spontaneously encouraged, and newly designed play facilities are displayed and used.

With the synergy of the base station and the satellites, the whole play process to explore, recycle from, design, build and play in the community would form a full cycle. It will engage kids of all age groups to make full meaningful use of their school and spare time and help them develop knowledge and skills in the long run. The cyclical nature of the project will also revitalize the neighbourhoods with its own young creativity in a playful way.



1.Project definition

Play-cycle is a playful educational social program which consists of a play station and multiple play satellites. The play station is a base center where play facilities will be proposed, designed, constructed and used by local youngsters out of up-cycled local waste. The satellites are distributed throughout the neighbourhoods to display the up-cycled play facilities and to collect waste as well as creative ideas to interact with these waste materials.

2.Project ambition

2.1 Users / clients

A.Major user group (base station):

Young kids (mainly secondary and high school age, from 12 to 22 years old)

*Usage during different time periods:

- a.All-day accessibility for mainly for kids who dropout from school
- b.After-school and holiday workshops for middle to high school kids
- c.Creative curriculum during school time mainly for elementary or pre-school kids.

B. Other possible users (base station and satellite sites) :

- a. Local residents, especially kids and families, in Bloemhof and other Feijenpoort neighbourhoods;
- b. Visitors who come to Feijenpoort for events and matches.

2.2 Developers / operators

- a. Bloemhof neighbourhood;
- b. Gemeente Rotterdam.

2.3 Partnership

- a. Surrounding schools (particularly elementary schools): collaboration on creative curriculum and holiday projects;
- b. Institutions or companies (i.e. Superuse, Play the City, Zero Waste Lab, Metabolic): consultation on waste management and urban design experiences.

The major target user group is the young kids aged 12 to 18 years old. These are mainly kids of middle school to high school age among which early school dropout are most reported. They will be using mainly the base station to carry out daily or holiday play-cycle projects.

The project will collaborate with local schools to set up creative curriculum about their own city and the circular industry in it. Elementary and pre-school curriculum are more flexible and allow for these playful adaptations. This method ensures the station to be fully used during school time. Also, the satellite sites can be visited by all people to spontaneously interact with the facilities and even some raw waste materials there. In this way the local creativity can be collected and used into more play-cycle products in the future.

Play-cycle designed to be a low budget project so that it can be easily run and maintained by

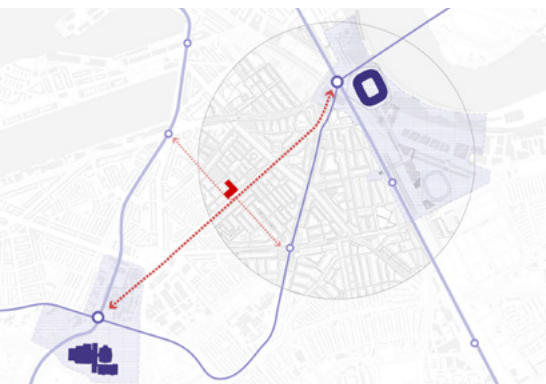


Fig.7.3.1.a Site location for play station

the neighbourhoods themselves. Gemeente Rotterdam will offer partial financial support while the station itself can earn profit from up-cycle shop and charged play programs. Job opportunities will be created for local residents such as play advisers and up-cycle managers.

The project will also work together with existing local institutions which has experience in waste management or design for consultation.

3. Project site

3.1 Site location: 3073BK

The project site (Fig.7.3.1.a) situated in the center of Bloemhof neighbourhood, which has rather high school drop out rate, high juvenile crime rate and low life quality index. It is at the middle point of the canal axis where two important streets of this neighbourhood, Lange Hilleweg and Sandalingstraat, meets one another. At this specific intersection, the project can have an impact on the whole neighbourhood while in the meantime create a local connection between two city-scale transition hub, the new Feyenoord Stadium and the redeveloped Hart van Zuid.

The project is taking up the playground area of the adjacent Public Elementary School of Bloemhof. By creatively transferring this area into an interactive play hall and compensate the school with a new integrated playground, the project aims to set an example for the whole Feijenpoort of the school-community collaboration to encourage the playful learning. Since the base site is located amongst all the major educational facilities and satellite sites right adjacent to these school buildings (Fig.7.3.1.b), it is feasible for other schools to also adopt this mode and have creative curriculum at both the base and the satellite playgrounds.

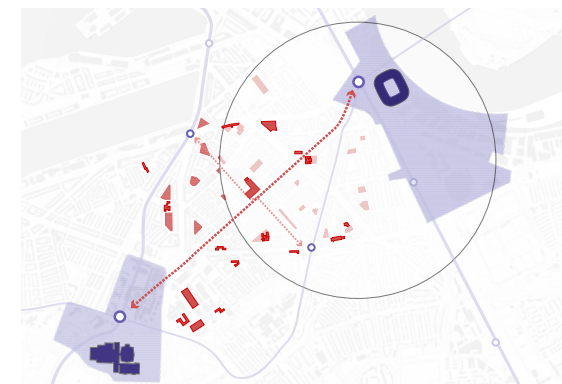


Fig.7.3.1.b Site location for satellite sites and adjacent schools

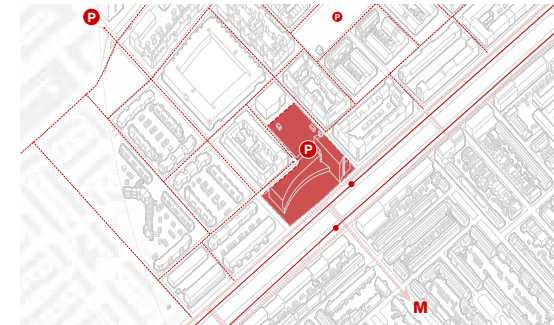


Fig.7.3.2 Site approach



Fig.7.3.3 Site specifications

3.2 Site approach

- Bus: Line 66 (Lange Hilleweg)
- Tram: Newly proposed line (Vreewijk)
- Metro: Line D/E (Zuidplein, Maashaven), Line F (Vreewijk), Line G (Feyenoord City)
- Car, bicycle, on foot

With the existing bus lines and the newly proposed metro and tram lines, the project can be easily accessed to through public transportation. The stops are all in walkable distance, which will highly encourage the cycling and walking in the neighbourhoods (Fig.7.3.2).

The front of house access will be along the pedestrianized canal axis, while the back of house access for the waste logistics is on the north of the site. The project will also has a special access for teams of school kids, which should be safe from motor traffic and independent from the main public access (Fig.7.3.2.b).

3.3 Site specifications

- Land value: Archaeology 2
- Building use: Mixed-use
- Land use: Mixed, green, water-management function
- Site area: 6,975m²
- Setback: 2.5m
- Height limit: 15m

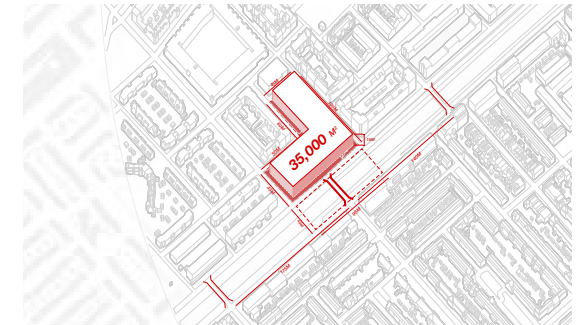


Fig.7.3.4.a Site capacity and height limit

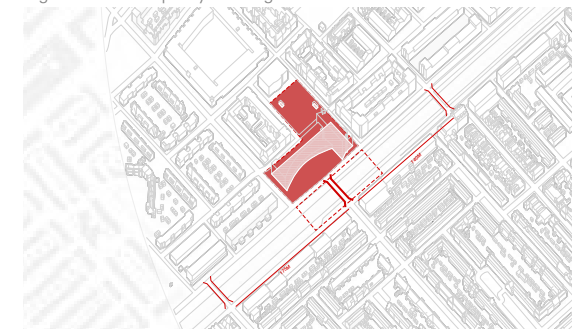


Fig.7.3.4.b The waterway and bridges

- GFA capacity: 6,100m²
- Total floor area capacity: 35,000m²

3.4 Design requirements:

- Floor area: 9,050m²
- FAR: 1.29
- Coverage: 25%-87%

After studying the references related to play and circularity, the average area for both parts can be calculated. The intended floor area is 9,050m² (Fig.7.3.3). With the total site area of 6975m², the FAR calculates as 1.29. The municipal rules set the height limit as 15m and urban setback as 2.5m (Ruimtelijkeplannen.nl, 2018), making the coverage of the project at extreme scenarios to be 25% or 87% (Fig.7.3.4.a-b).

The bridge and waterway in front of the site is an important environmental resource. The design should actively intervene with the canal-side landscape within the limit of municipal regulations (2018b). The existing bridge can be renovated or redesigned to better integrate with the whole building complex. The redesign can introduce architectural nature provided that this does not harm the importance of the main watercourse. Other playful structures, preferably of a hydraulic engineering nature such as retaining walls, revetments and culverts, can also be added to extend the play-cycle experience from inside the building to the riverside.

APPENDIX I: DESIGN BRIEF

4. Project program

4.1 Play hall: 2400m2

Hall A: 1200m2;

- with foyer and reception zone,
- for constructive play and display;
- be able to switch between indoor and outdoor;
- able to switch to temporary public auditorium or amusement park;

Hall B & C: 2*600m2.

- for trail constructions and tutorials; able to switch to temporary live studios(Fig.7.4.a)

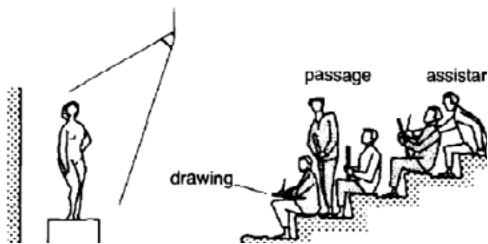


Fig.7.4.a Live studio neufert in a school

4.2 Play workshops: 1600m2

A.Design workshops: 6*50m2

- f-or play facility and neighbourhood renewal design and discussion, also can switch into creative classrooms;

B. Up-cycle workshops: 1200m2

- for creative pre-processing of waste materials

Type a: Developed workline

- Limited access;
- daily operated and maintained by play-cycle staff;
- visible for visitors to understand the workflow, reserved visits inside the working area under supervision.

Plastic and rubber workshop: 300m2

- be able to contain 4 Upp! sorting and remoulding systems (each 12m*3m*3m) (Fig.7.4.b) for different plastic and rubber products;



Fig.7.4.b Upp! re-plastic system

3-D print workshop: 50m2

- be able to contain a 3-d print machine and storage space for recycled filling material (Fig.7.4.c);

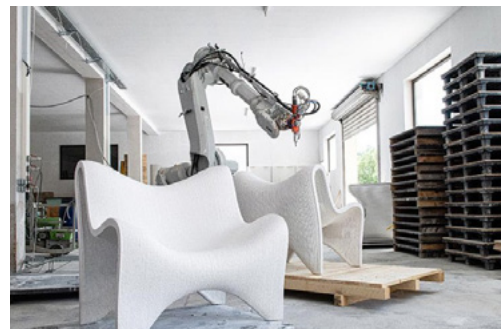


Fig.7.4.c 3-d print workshop for urban furniture

Type b: Regulated creative workline

- Limited access;
- daily used by registered play-cycle members and school teams under supervision, machine use strictly regulated but creative reproductions encouraged;
- visible for visitors to understand the workflow, reserved -visits inside the working area and trial of machines under supervision.

Metal workshop: 100m2

- mainly for simple cutting, drilling and assembly;

Wood workshop: 300m2 (Fig.7.4.d)

- Stationary machine zone: be able to contain stationary machines including a table panel saw, a scroll saw, 2 drill presses, a bench grinder, a jointer, a sander and a milling machine, 200m2;
- Hand-held tool working zone: tool storage and working table/area (Fig.7.4.e), 50m2;
- Finishing room: 20m2;

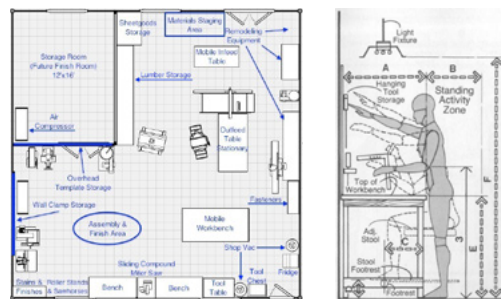


Fig.7.4.d Normal wood workshop layout
Fig.7.4.e Workbench neufert

Type c: Free creative workshop

- Open access;
- free and creative use of tools and machines with reservation;
- DIY workshops held regularly and open to all people.

Workshop for cardboard, textile and other materials: 500m2

- DIY zones: also for DIY / tutorial workshops; 300m2
- Basic cutting and sewing zones(Fig.7.4.e-f); 200m2

APPENDIX I: DESIGN BRIEF

4.5 Storage: 1600m2

A. Tool kit storage: 300m2

- For scaffolds and other hand-held tools used in play halls,
- Also for maintenance equipments for the machines in play-cycle workshops,
- Directly connected to the play halls.

B.Waste storage: 1300m2

Type a: Raw waste: 700m2

- For on-demand waste storage.
- Raw waste which have been sorted, cleaned and roughly pre-processed by the Waste Management project will be ordered and transported to the play station based on specific needs for different play-cycle projects,
- Directly connected to the unloading zone;

Type b: Processed waste: 500m2

- For waste that has been re-processed in play-cycle workshops and are ready to be used in the play halls,
- Directly connected to the play halls;

Type c: Sample waste: 100m2

- For selected raw and processed waste samples (e.g. plastic bricks etc.) as well as up-cycled products (e.g. recycled furniture etc.) to be stored to future develop up-cycle technologies or practises, and to be exhibited to the kids and public for educational purposes,
- Directly connected to the up-cycle shop.

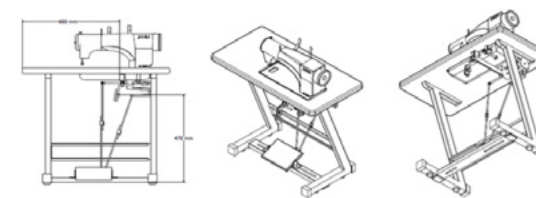
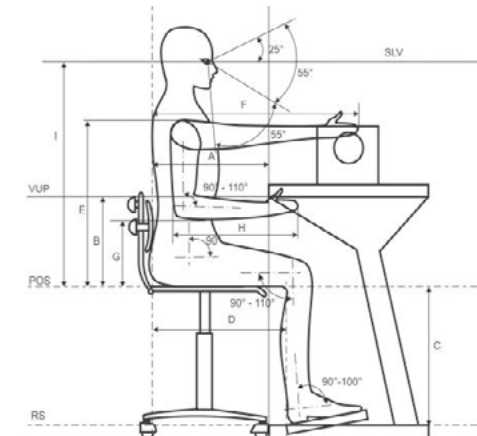


Fig.7.4.e-f Sewing workspace neufert

4.3 Meeting room: 250m2

- Mainly for consultation meetings with institutions and companies
- Meeting room for design workshops: 2*80m2 (35 person)
- Meeting room for up-cycle workshops: 80m2 (35 person)

4.4 Up-cycle shop: 600m2

- Open access,
- Exhibition and sales for by-products and products from the play-cycle workshops (Fig. 7.4.g),
- Source of profit for the management and maintenance of the Play-cycle Project.

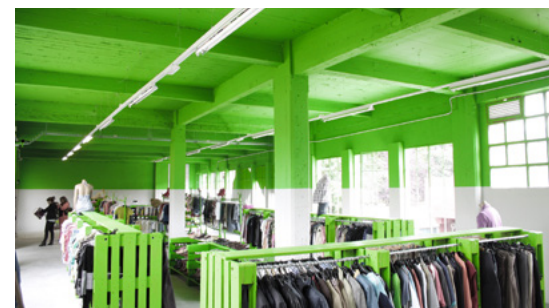


Fig.7.4.g Up-cycle shop in 'I am recycled' project

4.6 Offices: 400m2

4.7 Services: 500m2

- pantry, toilet, equipment etc)

4.8 Circulation: 500m2

4.9 Parking: 1200m2

A. Logistic parking: 200m2

- to transport waste materials, tools and equipments, proper loading and unloading space connected to waste storage(Fig. 7.4.h);

B. Public parking: 1000m2

- for play-cycle staff, school staff, visitors and surrounding residents.

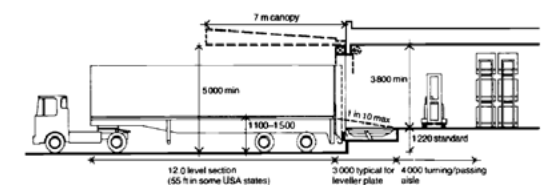


Fig.7.4.h Loading and unloading space neufert

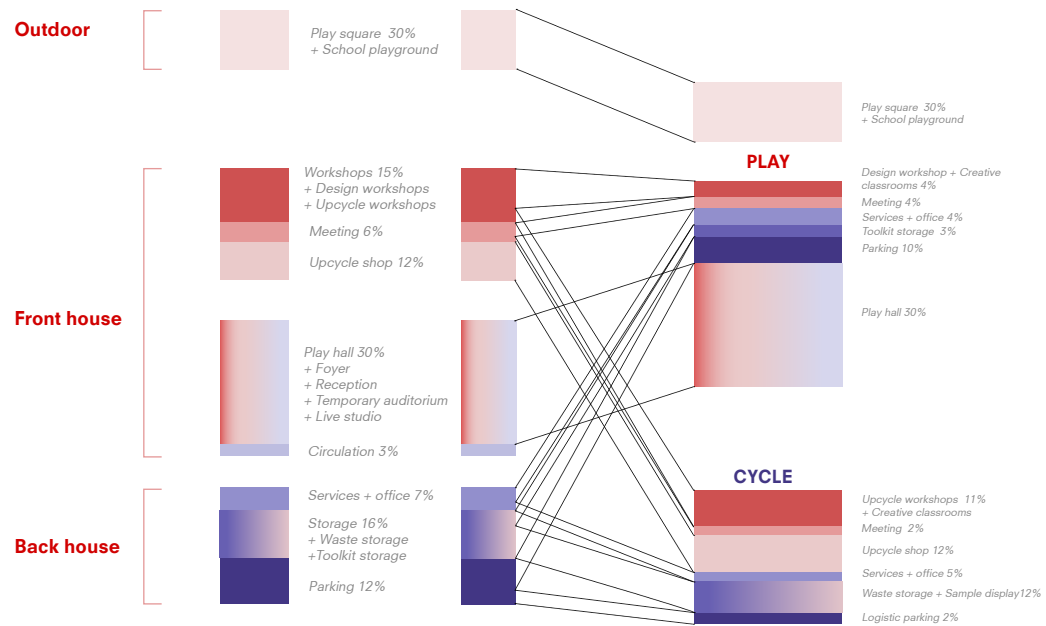


Fig.7.4.i Program benchmark

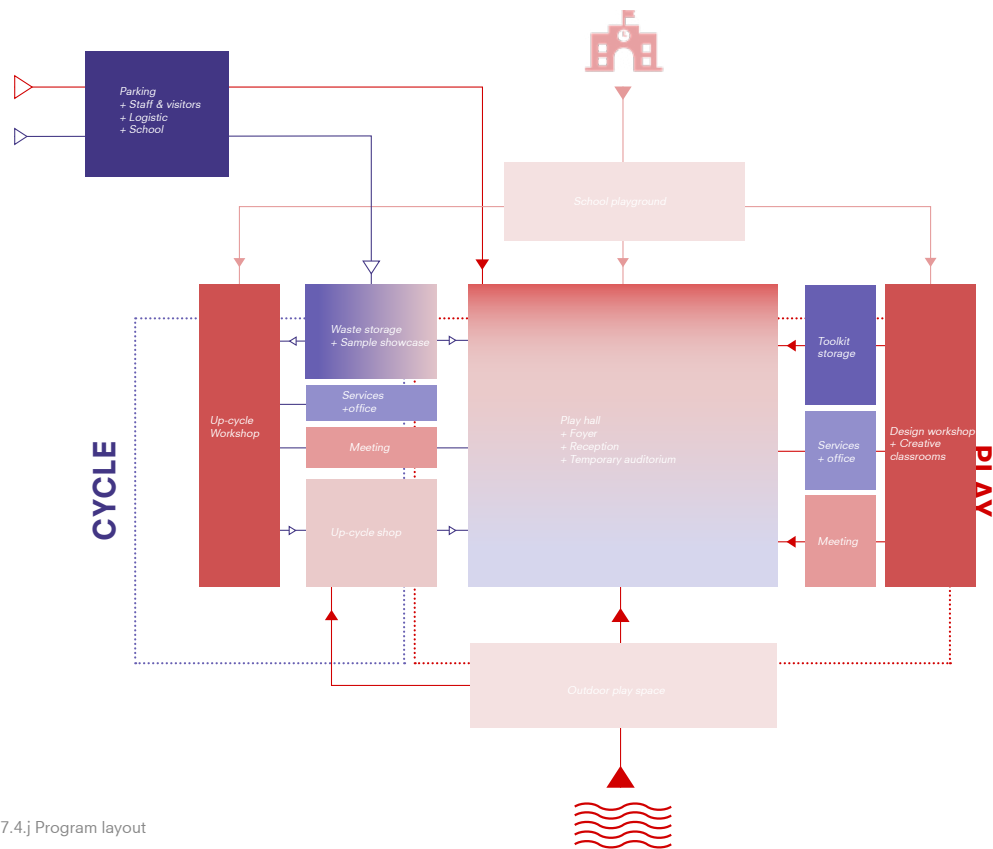


Fig.7.4.j Program layout

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