THE DESIGN OF A LEARNING RESOURCE CENTRE IN NEW BRIGHTON, PORT ELIZABETH
COMMUNITY AS CLASSROOM

The design of a Learning Resource Centre that is concerned with the preoccupation of place based education in a newly established educational hub in New Brighton, Port Elizabeth.
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Lauren Henderson
s211072850
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ABSTRACT:

Streets and sidewalks should be seen as public spaces within themselves (Flositz, 2010,iii) this thought triggered an interest in public spaces and what they offer the users and community in which they are placed.

This research will examine not only the impacts of the colonialist regime’s planning on Port Elizabeth, but more specifically the segregation and planning of public spaces affecting New Brighton, a predominantly “Black” suburb along the periphery of the city that came to be as a result of forced removals from the city centre (Pettman, 1913: 298).

The main argument being carried through this treatise is the significant role that public spaces play in the lives of the urban poor (Dewar & Uytenbogaardt, 1995: 10) especially looking at South Africa and the impact apartheid had on public spaces. It looks at the potential and the ability of the design of public architecture to develop community spaces for all that contributes to a sense of place and pride for the community of New Brighton, Port Elizabeth.

This treatise uses the understandings and information gathered throughout the research conducted to develop a suitable design response that generated a significant educational community hub inclusive of a Learning Resource Centre. It will strengthen not only the connection between the various users (races, religions, genders or ages) but also the current segregated and isolated schools within New Brighton’s community.

The intention was to bridge not only street and building together but also school and community as a cohesive environment that works together to create a unique experience, exclusive to that area impacted by the context and community in which it sits. Ideas of public space, the in-between and Montessori’s schooling together with the notions of place-making is what ultimately influenced many of the design decisions and the authors theoretical stance. Looking at streets as more than just movement routes or thoroughfares from point A to point B, we can see them as places within a space, where one can experience the world that moves around them.

Ultimately the design developed as a response to the identified issues and challenges and created a facility that not only meets the need of the under-resourced secondary schools in New Brighton but also contributes to the development of the public realm of those schools.
### CONTENTS PAGE

<table>
<thead>
<tr>
<th>ACKNOWLEDGMENTS</th>
<th>7</th>
<th>0</th>
<th>Chosen site</th>
<th>48</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>9</td>
<td>0</td>
<td>Natural vs Built environment</td>
<td>50</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>12-14</td>
<td>0</td>
<td>Site investigation</td>
<td>51</td>
</tr>
<tr>
<td>o Introduction to document and structure</td>
<td>12-14</td>
<td>0</td>
<td>Aerial investigation</td>
<td>52</td>
</tr>
<tr>
<td>o Aims and objectives</td>
<td>15</td>
<td>0</td>
<td>Photo study</td>
<td>53</td>
</tr>
<tr>
<td>o Methodology</td>
<td>16-17</td>
<td>0</td>
<td>Township Informants</td>
<td>54-57</td>
</tr>
</tbody>
</table>

### PART 1: RESEARCH

1. A DISCUSSION OF THE THEORETICAL UNDERPINNINGS OF PLACE-MAKING (19-22)
   - Introduction (19)
   - Theoretical underpinnings (19-22)
   - Summary (22)

2. SOUTH AFRICAN TOWNSHIP CONTEXT (25-35)
   2.1 Introduction (25)
   - South African township context (26)
   - Characteristics of South African townships (26)
   - Public spaces in South African townships (28)
   - Issues relating to the urban context of South African townships (29)
   - Issues relating to civic facilities in South African townships (31)
   - Issues relating to the schools of South African townships (33)
   - Needs (35)
   - Proposal (35)

3. THE NATURE OF NEW BRIGHTON’S PHYSICAL CONTEXT (37-61)
   - Introduction (37)
   - Brief History of New Brighton (38)
   - Metro scale (39)
   - Character of New Brighton (40)
   - Connectivity framework (41)
   - Built form (42)
   - New Brighton urban fabric (43)
   - Activities (44)
   - Schools (45)
   - Supported schools (46)
   - Composite Analysis (47)

4. THE NATURE OF EDUCATION AND LEARNING TYPOLOGY (63-89)
   - Introduction (63)
   - School as an institution (64)
   - Developing school typology (65)
   - School planning typologies (67)
   - Cluster schools and shared facilities (69)
   - Advantages and disadvantages of cluster facilities (70)
   - Spatial locations of clusters (71)
   - What is a learning resource centre? (72)
   - Brief history of New Brighton schools (73)
   - Learning spaces (74-76)
   - Social spaces (77-78)
   - Sustainable design (79-85)
   - Precedent Study (86-88)
   - Summary (89)

5. CREATING VIBRANT PUBLIC SPACE (91-98)
   - Introduction (91)
   - Evolution of public squares (92)
   - Public square typology (92-93)
   - Integration of public squares into context (94)
   - Importance of public space in townships (94-95)
   - Principles of good quality public space (95-96)
   - Precedent (97-98)
PART2: DESIGN

6. DESIGN DEVELOPMENT 101-137
   o Introduction 101
   o Urban framework- Existing 102
   o Urban framework Strategy 103-106
   o Urban Intervention 107
   o Urban intervention concentration area 108-111
   o Resource audit 112-113
   o Brief 114
   o Activities 114
   o Developing programme 115
   o Nature of space 115-118
   o Accommodation schedule 119-120
   o Spatial diagram 121
   o Design generators 122-124
   o Structuring of design development 125-126
   o Design development 127-129
   o Concept models 131
   o Materiality 132-133
   o Further Design development 134-137

7. FINAL DESIGN 101-137
   o Render 140
   o Site plan 141
   o Ground floor plan 142
   o First floor plan 143
   o Mezzanine level 143
   o Elevations 144-145
   o Section a-a 146-147
   o Section b-b 148-149
   o Details 150-151
   o Renders 152-161
   o Model photos 162-167

LIST OF FIGURES
REFERENCES

168-176
177-180
INTRODUCTION

Port Elizabeth during the apartheid rule underwent a negative urban structuring system known as the forced removals under the then government’s Group Areas Act (1950). This law saw the closure of all PE locations and the resettlement of those non-white residents to the outskirts of the city (fig.2), where little to no planning of these suburbs took place, never mind any consideration at all to public spaces (South African History Online, 2011).

Civic buildings, public spaces and other related facilities/resources in the city’s core were restricted to or limited to use by only certain races. This planning system was most negatively felt by the non-white population of the city where they would have to utilise their own entrances if access was granted and would often not experience the full potential of the space, for example being designated seats in a stadium that the general person would consider undesirable.

With this said this treatise investigates these issues of segregation, lack of public space and poor physical infrastructure particular to the New Brighton community. New Brighton is Port Elizabeth’s oldest existing township and came to be established in 1902 (South African History Online, 2011). as a result of these forced removals. A closer look into the physical structure New Brighton shows a suburb that is highly segregated from the city surrounded by barriers of industrial buffer zones and main transport routes. New Brighton as a suburb is also segregated within itself with many small housing clusters not directly accessible to main routes. There has been no consideration or provision of public spaces or contributions towards the public realm until recently with the design of the Red Location Museum complex and the Embizweni Square.

This treatise concentrates specifically on the schools in New Brighton and the scattered and isolated manner in which they sit in their context, they lack any presence or contribution to their public realm and lastly there is an absence of connection or relationship between the existing schools.

A prevalent issue in poorer or rural areas, that the government is currently addressing, is that during the colonial rule schools were not a priority in these areas and received little funding or infrastructure. After South Africa was declared democratic in 1995, the new government mass-built schools to try and make up for the past and the then shortage (van Rensburg 2018, pers. comm., 17 March).

These schools were built to meet the population demands but did so at the expense of quality and resource provision. The government now sits with many schools throughout the country that do not meet the needs or standards of the Department of Public Works and the Department of Education and so many schools are currently under audit to determine which schools should remain open and those to undergo foreclosure.

New Brighton contains 21 schools, 14 primary schools and 7 high schools, however, 4 of these schools are currently undergoing closure. A major problem in poorer schools is the lack of resources which can clearly be seen from Stats SA where only 9.5% of the Ibhayi households have access to computers while 73.4 % don’t have any access to Internet. The lack of resources at these schools is of great concern as many simply do not have the funding for more than the absolute basics (StatsSA, 2018).

This is where the design of the Learning Resource Centre comes into play, as this facility aims to advance the learning experience of students and teachers in New Brighton. Its purpose is to support the existing secondary schools in the community that lack the necessary specialist facilities and aren’t meeting the current educational needs of the users. These specialist facilities needed by the schools will become apparent in the research section of the document where a resource audit of the schools is conducted by the author to determine the needs.

This treatise sees the opportunity for architecture to respond to the issues New Brighton faces in terms of the isolated nature of schools and the lack of contribution they make to the public realm by designing a centre with the intention to bridge not only school and street together but also school and community as a cohesive environment that work together to create a unique experience, exclusive to that area impacted by the context and community in which it sits.
Figure 2 - Relocating townships
This document comprises of 3 main parts namely Introduction (introducing the problem), Research (the nature of the problem) and Design (solving the problem).

The research component consists of 4 chapters, the first presents a discussion of the theoretical underpinnings based on the identified issues of public space in the South African township context together with the theoretical stance of the author. The second chapter will present interrogation and engagement of New Brighton’s physical context through layers of scales from metro, to sub-metro, to precinct all the way down to site and building. The third chapter will investigate and seek to understand the nature of education and teaching typology. The fourth chapter will analyse the concept of vibrant public spaces and the importance of good quality public spaces within the township context presenting insight to an appropriate response.

The design component will consist of 3 chapters, the first will be the design development that will present a series of urban and design responses through the scales from metro down to site. The second chapter will be the final design response and architectural intervention that will be the summation of the document and lastly the third chapter will be the technical resolution of the building design.
AIMS AND OBJECTIVES

AIMS
The aim of this treatise is to develop a suitable design response for the design of a Learning Resource Centre in New Brighton.

The primary aim of this treatise is to design a Learning Resource Centre that will centrally and sufficiently provide much needed learning resources and facilities to the existing under resourced secondary schools in New Brighton.

Secondly it aims to address the isolated nature of the dispersed schools in New Brighton with limited contact between the existing schools in an already fragmented city and suburb by creating one main activity point where scholars from the various corners of the community can come together and interact and socialise with others in a conducive environment.

Lastly, it aims to strengthen a sense of community and unity with a central hierarchical civic building and square that counters the featureless monotony of New Brighton’s landscape giving them a landmark that will assist them in positioning themselves within the community.

RESEARCH OBJECTIVES
- To investigate the nature of South African townships and the importance of civic facilities within them
- To understand the spatial and physical nature in the urban context of New Brighton township.
- To investigate the building typology that is school/resource centre.
- To understand the spatial and physical requirements and characteristics of civic positioned buildings.
- To understand the relevant theories of place making and good quality public spaces, cluster school’s shared facilities and critical regionalism an architecture specific to that context for the design.
- To understand the principle concerns of creating a positive urban environment.
- To investigate traditional classroom typologies vs modernist classroom environments with the potential to use public spaces as learning spaces.

DESIGN OBJECTIVES
- To design a building that enhances the community and its spaces and successfully brings the community together through relationships and interactions between the building users and passers-by.
- To achieve the desired quality of public realm with a hierarchical urban centre to help relieve the current monotony found in township landscapes and assist the community with positioning themselves in the New Brighton context.
- This treatise will use the understandings and information gathered throughout the research component to develop a suitable design response of a Learning Resource Centre.
- To design a building that will act as a catalyst for further enhancements in the area and create awareness around the importance of knowledge/education.
METHODOLOGY

The methodology will set up the framework in which the research for this treatise will be undertaken, guiding it towards an appropriate result without deviating from the main objective. The key starting position and shaping mechanism for the framework will be based on the interrogation of the three fundamental foundations of site, programme and theory.

The methodology framework of the treatise aims to illustrate the authors understanding of the research paradigm through clearly unpacking the argument that will be carried through in a logical sequence to allow the reader to easily understand the authors logic for arriving at the final solution.

This treatise is explorative in paradigm allowing for one to identify circumstances of interest that may have value or be of relevance to the research being undertaken. It explores the potential of the field of research where little is known about the subject matter at hand to determine a viable architectural intervention.

The positioning for this architectural treatise lies in solely that of qualitative research as it is explorative, and data is collected through observation and interrogation in order to understand human activity and behaviour. The research obtained here, will drive the understandings for making clear design decisions to appropriately address the issues of site, programme and context.

Although this treatise is envisioned and undertaken as a real-life project with real issues and concerns, it remains a hypothetical intention as an academic project and will not come to be built and therefore lies in pure research that if it were to continue would become fundamental research which will be applied.

Both primary and secondary data collection methods will be employed as well as personal insight; understanding and deductions of the author, which when interpreted will lead to the most suitable design proposal for both topic and site. Reasoning is the action of constructing thoughts into a valid argument and can be categorised into two either inductive reasoning (bottom-up approach) or deductive reasoning (top down approach) (Study.com, n.d.).
METHODS OF QUALITATIVE RESEARCH

The research methods can be described as the manner in which information is collected and analysed in order to conduct the research defined by the methodology framework. All research and information obtained throughout this treatise will be summarised and compiled in such a way as to aid in the design development and final proposal.

These sources of information can either be primary or secondary sources, where primary sources can be defined as information obtained through direct observation and secondary sources being information obtained through literature review methods (Umass Boston, n.d.).

This treatise makes use of both primary and secondary research methods.

The **Primary data** collection (direct observation) methods:
This is any information collected from physical engagement with the New Brighton community and its local schools, information obtained through discussions and critiques with lecturers and professional architects around the topic, as well as information and findings from site visits conducted by the author.

The **Secondary data** collection (literature review) methods:
This is any information collected from reading physical sources such as books, articles and previous treatises but also extends to digital reading material that can be found Online.

**ITERATIVE PROCESS**

Setting out what needs to be achieved and how the author is going to go about it. The process of deriving research questions and repeating the sequence of methods until it yields results successively closer to a desired outcome is itemised below.

1. Framing the research problem to be undertaken
2. Extensive literature review (theoretical, literature and precedent studies)
3. Defining the aims and objectives of the treatise
4. Research of relevant themes and relevant subjects (contextual: nature of New Brighton’s physical context) and (a-contextual: the investigation of education typology)
5. Collecting, preparing and analysing of the research and other information
6. Generalisation and interpretation
7. Identifying the main architectural issues and challenges regarding both contextual and a-contextual concerns
8. Defining an approach towards the identified challenges
9. Producing a resolution through the successful design of a Learning Resource Centre
10. Preparation of the Report (document) and Presentation (portfolio) of results as the conclusions reached.
PART 1

01

A DISCUSSION OF THE THEORETICAL UNDERPINNINGS OF PLACE-MAKING

- Introduction
- Creating vibrant urban places
- Summary
A DISCUSSION OF THE THEORETICAL UNDERPINNINGS OF PLACE-MAKING:

“CREATING VIBRANT URBAN PLACES TO LIVE” (Dewar & Uytenboogaardt, 1995).

In the busy fast-moving world in which we currently live, streets are nothing more than movement routes from one destination to another without allowing people to experience the thresholds of their built environment through which they move. This chapter aims to articulate the development of the authors theoretical position and is one rooted in place-making. The treatise will utilize the design of a Learning Resource Centre as a public building that will enhance not only the sense of place in the current placeless environment but also improve the public realm and create identity within the New Brighton community.

These theories are as follows:
• Creating vibrant urban places to live
• Place-making
• The in-between
• Critical Regionalism

Through the balancing of private and public space, the implementation of good quality public space characteristics and playing with theories of thresholds and the in-between, one is able to increase the connections and interactions between users and in turn add value and meaning to that space.

VIBRANT URBAN SPACES

Port Elizabeth a segregated and failing city in its urban planning resulted from two main issues. The first one being the modernist urban settlement principles where rapid urban growth was not being controlled appropriately. The second being the imprints of the apartheid regime on the city layout (David Dewar & R.S. Uytenbogaardt, (1995: 5).

Modern town planning’s response to the unexpected urban growth rates failed as it promoted standardisation and fragmented components (David Dewar & R.S. Uytenbogaardt, 1995). Apartheid and its Group Areas Act (1950) forced the racial segregation of people within cities. This segregation resulted in non-whites being pushed to the periphery of the cities where little to no planning of these suburbs took place.

This racial segregation also resulted in the unequal right to access public spaces with the denied and restricted access and use by non-whites of the city’s public spaces and their facilities (SaferSpaces, n.d.).

The failure of modernist urban planning is seen and experienced by the residents in the harsh environment created by this urban response. It can be described as hostile and sterile, a flat landscape where the houses covering the context are monotonous, isolated and show no spatial cohesion at all and give little back to defining street or space (Dewar & Uytenbogaardt, 1995: 4).

One of the main ideas running through this chapter is the concern for the people living in these harsh environments created in townships through poor physical and spatial planning and for the disregard of the public realm and the provision of public spaces. In harsh segregated environments the need for these well-designed spaces is even more important when it comes to the betterment of community daily life.

For one to improve the urban environment quality, focus should be placed on space, place, choice, convenience and opportunity. Dewar and Uytenbogaardt also state that necessary changes need to be made from the current settlement making mindset. These changes can be achieved through compaction rather than low-density sprawl, the mixing of urban land uses and its activities rather than separating them and fabric continuity rather than fragmentation. They also place importance on taking preference of pedestrians over cars, the public environment is important and lastly that only partial planning is done to prevent sterility and allow for the people living in these areas to add energy and character through meeting their needs (Dewar & Uytenbogaardt, 1995:8-11).

These ideas will be at the centre of aiming to improve and create vibrant urban spaces within New Brighton. The design will place importance on the pedestrians and the way in which they experience the public realm by improving street edge conditions, the provision of amenities such as seating, lighting and shade and the relationship between buildings and street with layers of transparency. The design will also make use of clustering various facilities to promote compaction and community integration and socialization rather than the current scattered and isolated nature of facilities and more specifically schools.

It is important to understand the significant role that public spaces play in the lives of the urban poor and that there is freedom of use of these public spaces in the new democratic South Africa (Dewar & Uytenbogaardt, 1995:10).
With the country’s history of segregation there is a need for these physical spaces where people of various genders, races and cultures can interact and socialise with each other. For public spaces to not remain empty or unused and instead succeed it is vital that they are easily accessible to the public and meet the requirements of good quality space.

PLACE-MAKING

Gary Toth notes some valuable principles for place-making and creating successful performing places and shows the importance of the place-making concept in order to re-establish the richness and value of public spaces and the capturing of the culture and identity of the community. The principles are namely Attractions and destinations, Identity and image, Active & connected edge uses, Amenities, Management of space and its activities, Diverse user group, blending of uses and modes, Traffic transit and pedestrians and Neighbourhood preservation (Toth, 2016: 28).

Like with Dewar and Uytenbogaardt, Gelh too argues that successful cities are not a result of developed plans but through the processes, adjustments and adaptations of the environment to the needs of the people. Gelh described it further “the city was not a goal in itself, but a tool formed by use” (Gelh, 1987: 41).

The absence of good quality public spaces affects the number of pedestrians taking part in optional activities and in turn the resultant activities are affected, while the number of people involved in necessary activities isn’t affected the time they spend in these areas is. Social interactions occur spontaneously and are a consequence of people going about their daily lives within the same space. It is said that people go where people are. For Gehl the success of the space is not determined by the amount of people in the space at any given time but rather the amount of time they spend in that space (Gelh, 1987: 13-14).

This chapter rejects modernist planning of public space and the failure thereof in favour of the design of medieval cities, where streets and squares encouraged pedestrian activity and events and collected people, creating a rich social life. These planning methods were concerned with easy and inviting outdoor spaces with closely spaced buildings accommodating towards pedestrian traffic and maintaining good relationships between the buildings and the streets, the people moving about as well as those indoors.

It must be understood that the meaning of public space differs between cultures and each culture impacts the structure of that space to a different extent (Carr et al, 1992: 3).

Through reading Rodney Lloyd’s (2003: 105-107) personal understandings of indigenous South African cultures, we begin to realise that there is a significant difference between that of the African and European cultures notions of space. His main deduction of the difference between the two is that in African settlements all areas are public except where traditional rituals define spaces as private, while European cultures all areas are private except for specifically dedicated public areas. It can be said that there is a dynamic balance between public and private activities that occurs within these spaces. This balance is unique to their culture and shifts under the influence of cultural exchange, technology, politics, economics and social changes (Carr et al, 1992: 3).

THE IN-BETWEEN

The in-between concept will be unpacked and broken down using the ideas of Christopher Alexander, Herman Hertzberger and Aldo van Eyck, on the ability of space to mediate the transitioning from public street to private building using thresholds and moments of pause that allows the users to experience the true sense of the place they are moving through.

Alexander looks at the relationship between private and public realms and how the users experience these spaces. In his book Community and Privacy, he and Serge Chermayeff developed the model that distinguished the public and the private as two completely separated entities that function as individual units. These two realms are separated from each other by a barrier but at the same time are connected through transitions of semi-public and semi-private domains. This model argued that the different privacy units could be linked without compromising the integrity of the other. They look at the impact that vehicles have on the quality of spaces and the privacy balance of spaces, where quite alleys and squares were replaced by busy roads and plazas and how transition points can create moments of pause where life and interaction amongst users could occur (Alexander & Chermayeff, 1966).

Hertzberger is interested with the way in which buildings can be used to enhance the interaction between people themselves and between people and their environment.
Hertzberger like Eyck are similar in their belief of creating moments of pause between two opposing spaces, however, Hertzberger focuses on the space between public and private, street and building. He aims to understand the nature of the space for the users and how two worlds are able to overlap in a single space using thresholds that allow the user the security of one space but at the same time the confidence to take on the other (Hertzberger, 2008).

van Eyck moved away from the concept of spatial continuity in favour of transition of spaces to the concept of the in-between; here the user is aware of what is on either side of the transition space. He developed his theory of the in-between further into three ideas. First is the coming together of contradictory spaces where he looks at relating two contradicting things, old vs new, public vs private, natural vs man made, inside and outside or where two opposites present themselves and an overlap of the two is needed this is called the “in-between”. Second is the coming together of hierarchical spaces where the “in-between” is where the separate parts become a whole. Third is the coming together of similar spaces. Here the relationship is between similar spaces. The “in-between” is where the user has a greater sense of their surroundings.

The “in-between” is where the separate parts become a whole. Third is the coming together of similar spaces. Here the relationship is between interior spaces where the “in-between” takes priority. Different hierarchies are used to distinguish between the similar spaces, each having its own identity. The “in-between” transition between spaces allows for pause where the user has a greater sense of their surroundings.

When relating the in-between concept to the design, Hertzberger’s theory takes the lead where his ideas of dealing with thresholds by creating moments of pause between two opposing spaces will be taken into the design. The building will design each space with importance and not only place emphasis on the main spaces as destinations but also treat the in-between with equal importance. This is where the opportunity for modernist learning environments comes in. This design will look at Hertzberger’s Montessori schools typology where no space is left unused and learning is not limited to classroom but pours out into the corridors and stairwells too.

CRITICAL REGIONALISM

As the treatise deals with the theories of cultural identity and place-making it is only fitting to carry this concept all the way down the design of the building itself. Critical regionalism is an architectural movement that stands for an architecture style unique only to the context in which it is placed “region” and aims to counter the sense of placeless-ness. Kenneth Frampton believed that emphasis be placed on topography, climate, light, tectonic form and that tactile sense be chosen rather than visual (artefacts, n.d.).

The proposed design will create a sense of place and will therefore consider Critical Regionalism’s principles by responding to its context through the choice of materials and tectonics specific to New Brighton's direct environment, its positioning on site to exploit natural lighting as well as designing in terms of scale and proportion to the existing buildings on site and the greater urban fabric.

In summary the main concepts drawn from these theorists is the focus on creating vibrant public spaces, the balancing of private and public space, the implementation of Gehl and Toths’ good quality public space characteristics and playing with theories of thresholds and the in-between, on is able to increase the connections and interactions between users and in turn add value and meaning to that space. The design will make use of courtyard spaces that will enhance the quality of space between the buildings and also create an opportunity for inside outside learning inspired by Hertzberger’s Montessori to take place in a sheltered environment. The design will seek to use Critical Regionalism theories to add to the sense of place by responding to its immediate context. The Learning Resource Centre will contribute to the creation of a positive urban environment and a betterment of the community’s public realm and identity.
This section will attempt to discuss and understand the nature of the South African townships context spatially and physically. It will look at influential models that impact on the community realm including schools and unpack the associated issues from the implemented planning models. This section will be the start of establishing the challenges and a means to meet the challenges through a proposal that will be carried through based on the needs identified from the contextual issues.
When examining how well South Africa’s rapid urban growth was managed in terms of enriching and improving quality of the peoples lives Dewar and Uytenbogaardt state “the outcomes are almost ubiquitously appalling” (1995: 3).

This rapid growth was felt mainly by the poorest in the low-income areas resulting in increased levels of poverty within them. Port Elizabeth failed in its urban planning as a result of two main issues. The first one being the modernist urban settlement principles where rapid urban growth was not being controlled appropriately. The second being the imprints of the apartheid regime on the city layout (David Dewar & R.S. Uytenbogaardt, 1995: 5).

Firstly, the modern town planning response developed as a way to deal with unexpected urban growth rates and with the help from technical advancements and emphasising on parts rather than the whole, however, it resulted in 3 main consequences: (David Dewar & R.S. Uytenbogaardt, 1995: 5).

1- “fragmented decision making: different components making their own decisions in isolation
2- promotes standardisation: settlements looking and feeling the same
3- promotes programmatic thinking: static and standardised approach to planning”

The Second, South Africa went through a negative structuring system during Apartheid, where the Group Areas Act (1950) forced the racial segregation of people. Blacks, Coloureds, Indians, Asians and any other non-white racial group were pushed to the periphery of the cities where little to no planning of these suburbs took place. This racial segregation also resulted in the unequal right to access public spaces with the denied and restricted access and use by non-whites of the city’s public spaces and their facilities (SaferSpaces, n.d.).

Townships were planned with the minimum standard of living and most basic infrastructure, services and resources.(Marsh, 2012). These environments did little to assist in the socio-economic growth of the communities and are often associated with poor living conditions, poverty and crime. These areas were designed around the fact that the residents would stay in their communities and only leave when commuting to work and back as little job opportunities existed within the community (Findley & Ogbu, 2011).

Using Port Elizabeth as an example the city’s core would be connected to the townships via railway and main vehicular routes that would run from the city’s transport interchange hub, in Govern Mbeki, outwards towards the periphery and then along the edge or through the middle of the township. These routes would make traveling into the city and home again possible for workers. These main movement arteries would then have a series of narrow residential roads branching off the main artery towards small enclave housing schemes. This layout emphasized the existing segregation of the township from the city with the segregation of the parts of the area to the whole.

The existing built environment consists of majority small scale residential housing with civic buildings scattered and placed as isolated entities with no sign of planning, structure or cohesion. The small scale single storey houses with a few double storey homesteads placed few and far between, on the already predominately flat landscape only makes the context more monotonous. With no hierarchical elements, other than the out of scale electrical
pylons that tower over the community, it makes it difficult for one to position
themselves within this context.

The houses are similar in scale and style with little variation at all together with
the standardised R.D.P. houses that sit mass produced and densely packed.
The same can be said for the churches and schools that are all based off of the
same model. Most civic buildings, though sitting along main arteries for easy
accessibility, lack any form of presence in the community, they sit back from the
street edge, and those that don’t, offer no connection or significant public space
to the community in which they are placed.

As stated earlier little to no planning of public spaces has been of importance
and it is often found that many public buildings are fenced off as a result of
crime and security further distancing them from their users.
PUBLIC SPACES IN SOUTH AFRICAN TOWNSHIPS

The urban structuring system that South Africa went through during Apartheid, where the Group Areas Act (1950) forced the racial segregation of people by forcing Blacks, Coloureds, Indians, Asians and other non-white racial groups to the periphery of the cities had a major impact on the public spaces.

This racial segregation also resulted in the unequal right to access public spaces with the denied and restricted access and use by non-whites of the city’s public spaces and their facilities (fig 8-11). These restricted facilities included sporting events, theatres, malls and libraries to mention a few. (SaferSpaces, n.d.).

During this restructuring little to no planning of public spaces in the non-white suburbs took place and any open spaces in townships became harsh unpleasant environments with no infrastructure or design, they became strewn with garbage and unsafe. (SaferSpaces, n.d.). This general perception of public spaces being unsafe has led to the further neglect and disorder of these spaces. It is important to understand the significant role that public spaces play in the lives of the urban poor (Dewar & Uytenbogaardt, 1995: 10). and that there is freedom of use of these public spaces in the new democratic South Africa. With the country’s history of segregation there is a need for these physical spaces where people of various genders, races and cultures can interact and socialise with each other. Although there is still a general lack of the provision of these spaces in the lower income areas there have been a number of interventions that have slowly begun to show themselves (fig.12-14).

Public spaces should be promoted and seen as platforms for building a sense of community and for social inclusion. For a public space to be successful it is vital for community participation and involvement to take place in these spaces and to make these spaces easily accessible to the public, especially pedestrians. (SaferSpaces, n.d.).
ISSUES

1. Issues relating to the urban context of South African townships:

GROWTH OF THE CITY
Many of South Africa’s urban areas show similar structure and growth patterns as they were influenced by the same urban planning principles such as the Forced Removals Act (1950), however, they do differ in growth rates and size. (Dewar & Uytenbogaardt, 1995).

SEGREGATED CITY: The urban planning crisis can be attributed to the major influences of the imported “garden city” and “neighbourhood planning” models that were trending in that day. (Smit & Hennessy, 1995: 30). These urban planning models together with apartheid planning, shared their ideas of separate communities and the then government used this to enhance its control over the nation.

1.1. Apartheid’s Group Areas Act
The Group Area Act was established in South Africa under the apartheid government. The act was responsible for the racial segregation of people and limiting contact between the races (fig.15). This in turn resulted in the negative urban structuring system known as the forced removals (1950), where all non-whites were forced against their will to the periphery of towns, and suburbs where separated by barriers including greenbelts or main transport arteries. (Pettman, 1913: 298).

1.2. The Garden City Model
The Garden City Model was developed by Ebenezer Howard in 1898 as a response to the UK’s poor living environments in the larger cities. This concept is similar to the neighbourhood model in that it too proposed and favoured the self-contained communities of balanced rural, urban and primeval ratio which were surrounded by greenbelts and contained fixed population groups (fig.16), as he believed the issue of overcrowding was of main concern. (Dewar et al, 1991). The principles of this model can be seen in the separation of the city into self-contained suburbs originally based on races through the use of greenbelts, industrial zones or main transport routes as barriers.
1.3. The Neighbourhood Unit Model

The Neighbourhood Unit Model is a concept by Clarence Perry from the early 1900’s that developed as a plan for self-contained community centred lifestyles that contained all facilities necessary for the community to function successfully without leaving the suburb (fig.17), unless it was for work purposes. It was believed that for the community to function best it needed balance as certain facilities have limited capabilities and therefore a population limit is needed for these facilities to operate to their optimum potential. (Perry, C. 1998).

The core principles of the Neighbourhood Unit Model are: (Perry, C. 1998).

- Centre the schools: safe walking area for children
- Place arterial routes along the perimeter: defining the community
- Design internal streets: distinguished from hierarchical arterial routes
- Restrict civic space and shopping to the perimeter: limiting outsiders access into the community
- Dedicate 10% of neighbourhood to parks open space: allowing for community interaction

In fig.17.2 the principles of the Neighbourhood Planning Model can clearly be seen in the planning of New Brighton. This analysis lends itself to the understanding of the physical make up of the area and more specifically the placement of its schools as this is the main concern.
2. Issues relating to civic facilities in South African townships

2.1. Physical
Generally civic facilities are placed on prominent sites within the community and intended to be focal points or places of importance. Civic buildings offer important services to the community as well as ideally provide a public realm where social gatherings, interaction and encounters can occur. They are known for being the pride of the community and fostering a strong cultural identity and for their positive impacts and presence in the neighbourhood. (SaferSpaces, n.d.).

Unfortunately this isn’t the fact in townships where these civic facilities have been inserted into the urban fabric without any concern for the context and its issues. The buildings get scattered across the community, sitting isolated and disconnected from each other and lack any type of civic conglomeration. These facilities are often fenced in, creating a stronger divide between the building and its users with no potential for community interaction. They don’t contribute to the betterment of the public realm and they show poor relation between the buildings. (Bursey, 2016). It can easily be said that these public buildings devoid of public space are contrary to the ideals of what these can and should be. This issue of public buildings sets a premise for an opportunity for these public spaces and what they can be to the community.

Figure 18- Public building makes no contribution to the public realm

Figure 19- Poor relationship between buildings

Figure 20- No attempt to create public space

Figure 21- Wasted potential
2.2. Spatial location of civic facilities
Many South African cities experienced urban sprawl resulting from rapid population growth and as cities grow, so too the urban fabric adapts and changes and pushes beyond the existing borders. This growth usually impacts the historical cores that are then repositioned through the decentralisation of these activity nodes to better suit the needs of the ever developing city. The growth also impacts the townships that were once placed on the peripheries as disconnected from the cities, they become absorbed into the greater urban context. The current density of townships exceeds the anticipated model on which their planning was based and their public facilities are stretched in terms of distance and resources (Bursey, 2016).

The spatial location of civic facilities is greatly dependent on the urban fabric in which it has been placed, they can either be separated or integrated (Marsh, 2012).

**Separated**
A civic facility with a separated spatial location leaves the building isolated and disconnected, having minimal interaction with the built environment. The users are left with spaces that show no connection to their public realm and lack any obvious planning. This separated spatial planning is a common characteristic in township communities with their public facilities (Marsh, 2012).

**Integrated**
Civic facilities with an integrated spatial location show a better sense of community understanding and cohesion between the users and their public realm. It provides spaces that offer greater interaction of its users. A centralised and integrated spatial location provides a more vibrant approach to the urban public space and increases the use and quality of these spaces (Marsh, 2012).
3. **Issues relating to the schools of South African townships**

The current education crisis in South Africa is apparent and can be narrowed down to two main reasons namely spatial (segregated schools) and a-spatial (lack of finances and funding). (Smit & Hennessy, 1995).

3.1. **The spatial nature of schools in South African townships**

The existing positioning of schools in their urban context has been greatly influenced by their spatial layout systems, the neighbourhood unit model, and the Department of Education’s guidelines that state that schools should be placed as evenly as possible throughout residential areas. The idea of community and neighbourhood formed the basis for most modern planning systems. The neighbourhood unit model placed importance on schools as an integral feature and therefore impacted the provision and placement of schools within these unit models. The model can be described as an introverted community system contained inside of a harsh barrier of main routes with dispersed schools within. (Smit & Hennessy, 1995).

The dispersal of schools throughout the community often means that there is limited number of specialist educational resources, due to budget restraints and lack of funding, getting thinly spread amongst the schools resulting in large numbers of under resourced schools of poor quality. These schools are often designed without the provision of school halls, libraries, computer laboratories, sports facilities and other specialist classrooms.
3.2. The physical nature of schools in South African townships

Many of the public schools in South African township areas are based around a generic and standardized design model controlled by the Department of Public Works which allows for mass standardisation, ease of production and are non-site specific to their context other than being north orientated. These designs are highly inflexible and inappropriate to meeting the current school needs. (Smit & Hennessy, 1995).

When looking at schools in the township and those in New Brighton in particular there is a lack of presence of the schools in the community and a sense of isolation between them and the community with no concern for the public realm at all. They are often set far back from the street further reducing any opportunity for interaction between users and the public. They are shaped as a series of buildings facing inwards into a sheltered courtyard turning their back on the community. The schools also lack a sense of place with no street presence or concern for responding to their immediate context with their generic shapes and designs.

Rethinking schools and their learning environments has been identified as a main concern and the opportunity to reconnect them to their community through the redesigning of their urban realm has the potential to not only meet the school needs but the larger community too.
THE NEED

New Brighton with its lack of thought to planning presents many challenges to the community and its users. Its physical challenges include the segregation and its disjointedness from the city C.B.D., the monotony and featureless urban landscape, the lack of hierarchy in the built environment together with the uncoordinated and fragmented developments that arrange themselves around the masses of low-cost housing. New Brighton faces spatial challenges as a community with high volumes of pedestrian movement and activity and its vibrant culture. It lacks in suitable public gathering spaces and squares. Social challenges include extreme poverty, high unemployment rates, high crime levels and lack of necessary resources, education and training.

It is clear that the existing education system needs major rethinking in order to be appropriate for the future needs of South African schools. A News24 article (Dladla, 2017), sums up the dismal state of the Secondary School Matric pass rate showing Nelson Mandela Bay township schools achieving a pass rate of less than 20% and Thubelihle Secondary School in New Brighton achieving a mere 3% in 2016. Education and resources in underprivileged areas like this will always be prone to meeting the bare minimum requirements with thinly spread, poorer quality facilities as funding isn’t easily accessible.

It can confidently be said that New Brighton’s scholars are in dire need of well-equipped high quality educational resource centres if any changes will be made to the current state of their education.

THE PROPOSAL

In response to the identified problems of the fragmented nature of the New Brighton township, the isolated nature of schools and the lack of and desperate need for quality public services and facilities, planning and infrastructure, the proposal for a Learning Resource Centre in New Brighton, Port Elizabeth’s oldest township came about.

The idea of a centrally located hub of shared specialised facilities between schools and also within access of the larger community aims to address the issues of inadequate thinly spread resources. These hubs should be centrally located and easily accessible to all users and seen as an educational community centre.

It is envisioned that all “secondary schools should be grouped to allow the sharing of a ‘scarce resource centre’ of specialised staff and equipment, conceived not as a separate school, but as a facility associated with the schools concerned” (Smit & Hennessy, 1995: 11).

The Learning Resource Centre’s design will integrate useful public spaces through the shaping of the building by providing gathering and social spaces to the community that currently do not exist. These spaces will include a courtyard off of the existing community hall, school courtyard spaces as well as responding to street through provision of formalised tradition and street amenities. These well designed spaces will contribute to the social cohesion of the community.

In conclusion the centralising of a specialist resource hub in accessible locations to existing schools is a way in which to achieve a greater integration and interaction of users in the community and to achieve optimal use of a scarce educational resource. The hub will be used as a means to reconnect the isolated and scattered schools with each other and with the community to increase their exposure to what is around them. It will create a sense of place, community and hierarchy in a monotonous standardised context.
NATURE OF NEW BRIGHTON’S PHYSICAL CONTEXT

Introduction
Brief History of New Brighton
Metro scale
Character of New Brighton
Connectivity framework
Built form
New Brighton urban fabric
Activities
Schools
Supported schools
Composite Analysis
Chosen site
Site selection
Natural vs Built environment
Site investigation
Aerial investigation
Photo study
Township Informants
Precedent studies
Summary

INTRODUCTION
South Africa’s township context planning and the implications from the neighbourhood unit model and apartheid planning principles have been discussed and examined in the previous chapter of this document. This chapter seeks to discuss and interrogate the issues and particularities of New Brighton in Port Elizabeth as a township that shows the clear impacts from South Africa’s planning in its segregation. An informed and appropriate site choice will be made for the proposed Learning Resource Centre based on the relevant findings of this contextual analysis through the scales.
BRIEF HISTORY OF NEW BRIGHTON

The early Port Elizabeth municipality under the colonial government rule would build a city based on segregation. It encouraged the setting aside of land for distinct “native locations” some distance from the city centres to ensure the separation of non-whites and guarantee a control over the indigenous inhabitants (Msila, 2014: 29). The government’s idea behind this city planning was that the native people were to only be a temporary part of the city’s urban context in the greater scheme of things (Msila, 2014: 29).

New Brighton is a predominantly black residential township that was established around 1902-1903 along the outskirts of Port Elizabeth (New Brighton Location, n.d.). This racially segregated suburb came to exist as a result of the growing number of black residents in the existing designated locations namely Coopers, Strangers and Gubbs location expanding too close to the inner city’s white suburbs. The Native Reserve Locations Act of 1903 therefore assisted the government in the evacuating of these townships to a per-agreed upon single location that was to be Red Location on the outskirts of the city in New Brighton (fig.33). (Msila, 2014: 44). The racial segregation of Port Elizabeth’s suburbs and the closure and forced removals of non-whites to the cities periphery can be seen in fig.32.

The New Brighton township grew around the railway station built in 1877 and comprises of Red Location, White Location, McNamee, Boastville, Elundini and KwaFord. These smaller locations came about as New Brighton grew in size. New Brighton originally started with Red Location, a zone where the black people from Bubba’s location were relocated, these houses were mostly of tin shanties. White Location, which was the next zone, was the first economic housing scheme and it was here where the previous Stranger’s Location, Russell Road and Coopers Kloof people were rehoused. (New Brighton Location, n.d.).
Figure 32 - Port Elizabeth with its imprints of a racially segregated city. Barries of main vehicle routes and green belts separate the various suburbs.

Figure 33 - The closure of existing townships and relocation of their residents to the newly established New Brighton in 1903.

Figure 34 - New Brighton’s placement in relation to Port Elizabeth’s CBD and its disconnected nature.

Nature of New Brighton’s Physical Context
CHARACTER OF NEW BRIGHTON

The failure of planning of the urban realm can be seen and experienced by the residents of this harsh environment, noticeable by its lack of urban response. This harshness is emphasised by the lack of parks and green spaces that instead lie as dusty bare spots that don’t attract activity, but instead become illegal dumping zones. New Brighton’s physical character can be described as monotonous with its uniformity in shape, scale and character of its buildings. There is no sense of hierarchy which makes it difficult for one to position themselves within this community.

The houses covering the context are repetitive single storey buildings that give little back to defining street, public space or nodes. It has scattered civic and public buildings throughout the built fabric with no connection to each other and act in isolation. This observation motivated the interrogation into the preoccupation for the consideration of the realm of public space and its contribution to the township environment.

With all this said, much is changing with all the current development that has already begun in the area. This community is full of culture and vibrancy that make it unique and with good design planning of nodes where a variety of facilities can be housed and grouped together this can be expressed.
CONNECTIVITY FRAMEWORK

New Brighton can be described as a relatively enclosed suburb encircled by a type of "ring road" of main transport routes around it. There are four main access points into the suburb. The first access point into the suburb is via a double carriageway road in the south west corner as well as another three main entries, one in the south and the other two in the north-west corner.

The suburb is noticeably split into two parts by A-Avenue running through the middle, acting as a divider with only three direct links across it connecting the two parts. Each side contains its own important public square. Note the left is home to Embizweni Square which sits centralized in the system and is fully integrated and connected into the connectivity framework of New Brighton allowing for easy access to all parts of the suburb. While on the right, The Red Location is isolated and disconnected from the greater scheme of things.

Figure 43

Nature of New Brighton’s Physical Context
The residential plots consist of small single storey houses densely packed on small compact sites, while the churches, schools and other civic buildings are on sites with larger footprints and more open space around them on their plots. The inner suburb can be described as having a fine grain urban fabric while the industrial buffer zone on its border can be described as coarse grain with their larger more spaced-out facilities.

The suburbs can be separated into 5 highly noticeable spatial layout patterns (fig.45) which could be a result of the growth of the different locations in New Brighton (Red Location, White Location, Mc Namee Village, Lundini and Boastville)
Figure 45
Nature of New Brighton’s Physical Context
Nature of New Brighton’s Physical Context
SITE SELECTION

Site criteria

• Most centralised site in terms of existing secondary schools and public transport
• Easily accessible to pedestrians and vehicles now and in the future.
• Must fall within the radius of maximum walking distance of 2.25km from any secondary school.
• The site should be relatively large enough to accommodate all of the required facilities.
• Ideally the site should provide reasoning for and potential to create positive public space.
• The site should be located in a part of the community where it can be visibly seen to many to enforce the idea of hierarchy and place-making.
TOWNSHIP INFORMANTS

In order to successfully respond to the township and its conditions, special consideration must be given to the following headings:

Security
In communities prone to crime and vandalism consideration should be given to security. These facilities should remain open and welcoming to the users, having a connection to the community, while at the same time they need to have a defensive layer against crime and theft. If the community accepts the building and is involved in the functions and activities within the building, it is more likely to be a success and will not easily succumb to vandalism as they have pride and respect for the building. It is important to note that a well integrated building in its community and the more active and vibrant, the more successful the building will be (Gunnar, 2009).

Consideration will be given to the manner in which the security of the design in this context is handled. The design will create a safe sheltered courtyard space by using the building itself as the wall rather than building a fortressed compound behind high walls or barbwire fences. This allows the building to be more approachable to the community and its users. The incorporation of more than one activity in a mixed use space also contributes to safety as there will also be movement of different people in the space.

Hierarchy
One of the main characteristics of township contexts is that of the flat monotonous landscapes that lack hierarchy and elements that allow community members to position themselves within their environment. Townships are generally made up of dense single storey low-cost housing with little variation in size and form. Townships also lack public spaces and civic buildings and the ones they do have are scattered across the community creating no civic square presence.

The design will respond to this by implementing hierarchical elements into the building and its immediate context by making use of scale and height and the provision of a forecourt public space giving importance to the building.
Integration
As a result of the urban planning in South Africa and the impact of the apartheid’s forced removal planning it has created many isolated suburbs that lack a sense of city integration. Like many other townships in South Africa, New Brighton was segregated from the city and placed on the periphery, further isolated through the use of industrial buffer zones. (South African History Online, 2011). Much of the important facilities remained in the city centres and therefore people in these areas travel great distances to access these amenities (Gunnar, 2009).

With this treatise lying greatly in the concern for integration, it is important that the design will provide them with quality urban spaces and facilities that enable the community members ease of access to necessary resources and that these contribute to community upliftment. The design of a single resource hub that all the secondary schools will utilize will contribute to the integration and connection of the currently isolated schools in the community. Not only does it allow the schools to interact with each other but it also provides them with exposure to the greater community.

Scale
As stated earlier, townships are characterised by their highly dense single storey, low-cost housing on flat monotonous landscapes. Township are generally lacking in public spaces and civic buildings and when civic buildings are developed, there can often be an over-powering sense to them.

The design will respectful respond to its urban context through trying to successfully mimic its surroundings in scale and by stepping down to meet street edges. At the same time of responding subtly to the context they need to be set apart and have a presence about themselves.
**Pedestrians**

Poorer communities are more dependent on public transport and pedestrian movement as much of the population in these areas cannot afford private transport and this won’t change soon (Dewar & Uyttenbogaardt, 1995). A higher degree of concentration should be towards creating safer and more pleasant pedestrian friendly environments. Public buildings should therefore be located along main pedestrian and public transport routes to allow for greater accessibility to these by pedestrian users.

This treatise’s design will consider interaction between the building and the street for an improved pedestrian experience and a more humanised scale will be used. The quality of the pedestrians public space will be improved by increasing the transparency and the degree to which people can perceive what lies beyond the street edge. It will also make use of the implementation of public amenities like benches, dustbins and lamp posts that make these spaces comfortable to pedestrians.

**Inside-outside space**

It is important for the buildings to make use of layering of spaces to mediate between inside and outside spaces to give the users a better experience. The in-between rather than being a drastic threshold between two spaces, should subtly transition the users between different spaces and makes use of these spaces as important elements within themselves. This concept is important since many of the public buildings in New Brighton are introverted and lack public connection. This issue can be noticeably seen in the schools and public library as examples.

Street life is an important part of township living and is one of the major contributors to the communities vibrancy and culture. It is often found that in townships, where no thought to the design of public spaces, that the community turns the street edges and sidewalks into their public spaces with things like vendors trading their goods or places to cut hair. These informal activities are what creates the unique identity of New Brighton and many other townships. The design response will utilize these activities that form the everyday street life of townships by providing spaces that better cater towards these activities such a formalised trading spots and creating opportunity for flexible activities to take place.
Cost effective
A major challenge in poorer areas is how to create great architecture with limited resources and funding. With this said there are many examples of South African architecture that have successfully dealt with budgetary constraints to create architecture that thrives and captures the essence of that community. These designs maximize natural lighting, water retention, make use of local materials with low-maintenance costs and sustainable technological innovations (Gunnar, 2009). The Learning Resource Centre will show environmental concern in its design decisions by making use of these previously mentioned sustainable initiatives to reduce costs and wastage.

Culture
New Brighton, like many other township areas is rich in culture and has a sense of vibrancy to it. This is often expressed through colour, pattern and decorations (Gunnar, 2009). It is important that any development expresses this and responds accordingly to the needs and attributes unique to that community.

Vegetation
As stated earlier the township landscapes are baron and lack greenery and vegetation (Gunnar, 2009). There is an opportunity to improve and create good quality environments with the introduction of trees and plants.

The design will implement the introduction of greenery that does not rely on much watering, into the community that will contribute to the quality of street edge and provide shading for pedestrians and scholars in the Centre’s courtyard.
PRECEDENT STUDIES
The following precedents will be examined according to their response to the previously mentioned township informants, namely security, hierarchy, integration, scale, inside/outside spaces and sustainability.

DELFIT DAYCARE CENTRE
Architect: Neoro Wolff Architects
Location: Delft, Cape Town
Completion date: Built, 2016

This building plays with layering of spaces and thresholds of public and private space. It softens the users experience as they move through the building and its spaces. It seeks to integrate and connect to the community while still creating a sheltered internal courtyard where the children are protected and can play safely inside. The building itself creates the enclosure by turning its back to the community as opposed to using fences to enclose the site. The building, though sheltered from the outside, still aims to connect to the community with a forecourt space where children can be seen playing as well as providing seating and partially sheltered spaces that line the building. (neoroarchitects,n.d.).

The building responds subtly to its context, which is a relatively flat monotonous landscape filled with single storey R.D.P. housing and shacks, in scale with a single storey building too. The building is well articulated yet simple design gives a clear civic presence.

The use of a forecourt space emphasizes the importance of the building and also provides hierarchy. The centre’s design also makes use of a “pylon” structure to create hierarchy and again state its presence, while the entrance is pronounced with its roof type structure that protrudes outwards from the building. (neoroarchitects,n.d.). This roof structure again enforces the buildings layering of spaces and the transition from outside to inside space.

This precedent’s relevance to the design proposal is based on its consideration to the following:
• This design has given consideration to its connection to the community, though the building doesn’t achieve it in terms of how the proposal aims to, as it still feels very shut off for obvious security reasons. It does however give ideas on how to respond to pedestrians through the provision of seating and shaded areas around the building creating some kind of connection between the two.
• Consideration has been given to the layering of thresholds with the use of an overhead structure that transitions the user between outside and inside.
• The main relevance behind this precedent is how the school creates a sheltered and protected interior space where children can play safely while utilising a forecourt space to bring importance to the building but also provides a play space. This will be one of the design aims of the design proposal.
The Ubuntu Centre is placed in a similar flat monotonous residential context as the previous example except here the building sits like a monument in the community. It successfully creates hierarchy with its large scale concrete masses.

A main concern in these areas is safety and security and how to achieve this without designing a compound with high walls lined with barbwire. This building too uses itself to form the “boundary wall” while creating sheltered and protected inside spaces. The large concrete masses of the individual parts sit together as though they are leaning on each other for support enforcing the concept of “Ubuntu” which means “I am because you are.” (archdaily, 2011).

The large windows that cover the facade allows lots of natural light to penetrate into the building and as another safety measure the design uses an aesthetic take on burglar bars using wooden poles as security from vandalism.

The building is placed as a continuation of the township, allowing pedestrian pathways to continue through the building uninterrupted. (archdaily, 2011). This creates a critical sense of community ownership which allows this building to survive in the township context.

This centre also introduces vegetation, that can survive with little upkeep, along the exterior pedestrian movement routes together with a roof top garden that aids in feeding the community.

This precedent's relevance to the design proposal is based on its consideration to the following:

- Its design response to a similar context and they way in which it has responded to the community as a continuation of the township with maintaining the existing movement through the site.
- The way that the design has dealt with security in a creative an aesthetic manner rather than the typical burglar bars.
- The concept of roof top garden that can function towards community feeding schemes and its possibility to be utilized towards the home economics learning environment in the proposed design.
- This design unlike many other township designs has used its sheer scale to create hierarchy while others often make use of additions like security watch towers or the generic sculpture tower.
USASAZO SECONDARY SCHOOL  
Architect: Neoro Wolff Architects  
Location: Khayelitsha, Cape Town  
Completion date: 2004

Usasazo School is relevant to the design through its response to its context and its program. The school responds to the flat landscape covered in single storey houses in scale with the design of a single storey building along the street edge and scales up to double story towards the centre, it uses the changes in heights to create hierarchy and a civic presence.

The building itself acts as a wall that provides security to a protected internal courtyard that house the school’s activities, rather than by making use of high walls or fences. These classrooms that create the wall along the street edge reinforce the street condition by limiting the spill out from the courtyard onto the street. This courtyard space created is filled with vegetation (trees) within pots that also serve as seating in an attempt at improving the quality of this public space. It does however lack in a connection between the courtyard itself and activities in the spaces that frame the courtyard with limited openings allowing these activities inside the building to pour out onto the open space. (wolff, n.d.).

The design makes use of canopies (wolff, n.d.), to mediate the transitioning between the inside and outside spaces, softening the users experience between the two opposing thresholds. The way this in-between space has been dealt with in this precedent is important to consider since this treatise concentrates on this theory. The way this transition has been handled with its softening of edge has and strengthened the connection between not only the building and street but also the buildings integration to the community. These canopies not only assist in transitioning between spaces but also contribute to the users experience by providing shaded and sheltered walkways that line the courtyard.

Where it differs to the previous designs is that it doesn’t completely turn its back onto the community, as it places a number of classrooms and shops opening out onto the street edge. (wolff, n.d.). These are positioned to interact with the passers-by and become more community orientated features of the building. The program, just like that of the proposed design, offers public spaces such as library and computer labs that will be open to the public after hours when the school will be closed.

By offering different activities that will operate at different hours this ensures that the building will always have activity and the building indirectly improves on security.

This precedent’s relevance to the design proposal is based on its consideration to the following:

- The manner in which the design responds to street edge conditions but also allows for interaction between building and street to occur. This is important as this is one of the ideas leading the proposal to create a protected interior that still responds to the community.
- The designs consideration to the in-between as this too is another important idea running through to the proposal, how one can deal with the transitions between spaces. Though not achieved to the extent the proposal wishes to, it does offer some insight into possible options.
- The proposal wishes to create a protected courtyard space wherein learning activities can occur freely and uses the same idea that the building itself will create the security wall that frames the space.
SUMMARY

Through the research and contextual analysis in this chapter a thorough understanding of the influences and issues both spatially and physically from macro scale down to precinct scale have been identified. These findings together with specific site criteria developed by the author have influenced and guided the decision for choosing the existing Nangoza Jebe Community Hall site as the most appropriate site for the proposed Learning Resource Centre. It looks to precedents to attempt to understand and respond to the identified township design informants.
INVESTIGATION OF EDUCATION AND LEARNING TYPOLOGY

Introduction
School as an institution
Developing school typology
School planning typologies
What is a learning resource centre?
Cluster schools and shared facilities
Advantages and disadvantages of cluster facilities
Spatial locations of clusters
Learning spaces
Brief history of New Brighton schools
Social spaces
Sustainable design
Precedent Study
Summary

INTRODUCTION
This chapter aims to introduce and investigate the nature and evolving typology that is school. The concept of learning resource centre and cluster schools with shared facilities are introduced. The benefits and importance of sustainability in school design will be touched on briefly as well as its positive impacts on the users of the building. Precedents relevent to learning based environments will be analysed to investigate the particular architectural interventions pertinent to the influence of design decisions for the proposed Learning Resource Centre.
INVESTIGATING LEARNING TYPOLOGY

SCHOOL AS AN INSTITUTION

A famous quote by Nelson Mandela (1918-2013) states that “Education is the most powerful weapon which you can use to change the world”. (Mandela, 1994).

One can therefore confidently say that education is a basic need in any society and as a result of this need schools and such infrastructure were developed. The role that schools play in communities is significant especially in poorer communities where the schools form part of the cornerstone of self improvement and even facilitate in community ties. It is therefore important that the school design responds to its context and is based on the local conditions, priorities and rationale of that specific community and possess resources that cater to the educational needs thereof.

The nature of learning and teaching has changed over time as a result of pedagogy, spaces and technology. According to Radcliffe (2009:13), the learning place, the current teaching method, and the present technologies all exist in a mutual relationship which together would constitute a “learning space theory”. In order to understand how or why the physical learning place has developed, one needs to consider the development of all three. In this pedagogy would be the teaching method, technology would be the current technological positions relevant to that moment in time while the space would refer to the place of learning.

In the beginning

The earliest form of learning existed in preliterate societies before the concept of school was developed as a building typology. Children were originally taught through “story telling” and the verbal passing down of information, knowledge, tradition and skills from generation to generation as the invention of writing had yet to be developed (Chaitin, 2003). This form of learning could occur in any space that allowed people to gather inside or outside and is most commonly known for occurring under trees.

Egypt contributed a great deal to education with advancements in education and teaching with the development of the oldest known alphabet which enabled verbal information to be written down and stored (Fisher, 2004: 34-44). This development of alphabets and writing would result in the teaching pedagogy to develop with this technological advancement.

The church as a school

During the early Middle Ages churches and monasteries were the spaces of education and learning since during this time no school building or typology existed yet (Riche, 1978: 127). The teaching in this time would be done in a single room of the church that catered to all children of various ages (Harmse, 2016: 20). With the development of writing and the beginnings of textbook production the teaching pedagogy would now utilize this advancement to its benefit.

It was only during the Age of Enlightenment that the ideas behind the modern school started developing (Bentley & Ziegler, 2000).

The traditional school

Prior to the industrial revolution education was seen as a luxury and only available to the wealthy. During the industrial revolution education became available to even the illiterate working class. The technological advancements of this era resulted in a mass of schools being built that were standardized and similar in character with the traditional teacher as the focal point in front of the students (Bentley & Ziegler, 2000). The pedagogy at this time was teacher centered learning that had advanced to the use of textbooks and a set standardized curriculum with classrooms dedicated according to ages now (Harmse, 2016: 21).

The trade school

A shift away from the traditional school towards what is known as a specialist trade or vocational school occurred in the 1990’s. This type of educational institution aimed at developing the technical skills of the leavers by focusing on a specific syllabus with specific skills (Information Literacy in, n.d.). This education system is teacher centered learning and would take place in buildings designed with different classrooms that would cater to the various skills and levels of qualification. (Harmse, 2016: 21).

The specialist School

The specialist learning system is a 21st century pedagogy where teaching has changed from teacher orientated learning towards student orientated learning. This is where the Learning Resource Centre is placed in the evolution of learning spaces and techniques. This centre concentrates on specialist subjects and aims to improve on the student’s accessibility to the latest technology to aid in learning.
DEVELOPING SCHOOL TYPOLOGY

It has been said that few buildings typologies have evolved as poorly as that of the school typology over the past 100 years, often approached from a less than critical stance with architects merely just following their brief and showing little concern for the exterior at the expense of the spatial opportunities within the schools (Hertzberger, 2008: 11). This evolution of schools can be seen with the changing of their exterior forms and fenestration in aiming to keep up to date with style and material advancements of the time.

In the early 20th century the local Department of Public Works in Netherlands aimed to develop educational buildings as a building typology. This endeavour was the start of distinguishing school as a building type, readily identifiable, with many admirable schools being produced. However, they did not address or challenge the planning strategies of schools, but were more concerned with the aesthetic appearance (Hertzberger, 2008: 12).

In the later 20th century new ideas emerged in response to the skepticism of the appropriateness of traditional school planning strategies in favour of a greater independence among pupils. This idea of independence had some impact in the physical planning of schools with larger windows and views, but again the spatial planning didn’t get very far (Hertzberger, 2008: 12).

Open air schools became popular in the 1930’s for not only their hygienic and healthy environments but also for their views and openness to the outside environment. Despite some innovations these school buildings were still making use of the traditional classroom systems and had made no real progress in terms of spatial planning (Hertzberger, 2008: 13-14).

The first architecture to make a clear stray away from the traditional spatial arrangement of schools is the design of Montessori and Dalton schools which were a result of the implementation of their own pedagogical schooling systems with special demands and dimensions of classroom spaces (Hertzberger, 2008: 26). The Learning Resource Centre’s design will use the principles of the Montessori schools ideals and educational pedagogy where the spatial development will be based on the idea of making use of modern learning environments where they believed that learning was not only for the confinements of classroom but the entire school could facilitate learning.
large amounts of glass fenestration for light, views and fresh air

horizontal plane as extrusion pronouncing entrance

central circulation and service core

core for the spatial planning arrangement in addition to the exterior facade

void out of mass pronouncing entrance

staggering of classrooms creates many centres and opportunities more interesting interaction spaces

Figure 92
SCHOOL PLANNING TYPOLOGIES

The research focuses on educational buildings that present innovative factors in the field of spaces for learning and socializing. There are essentially five spatial organisations of schools although these five identified are individual, it is often found that schools can exhibit characteristics from more than just one of the five (Holloway, 2012). These five include spine/street, city/town, atrium/office, strawberry/cluster and courtyard spatial planning (Rigolon, 2013).

1. **Spine/ street**
This spatial planning strategy places major school functions along a central linear space known as the “street” to make way-finding easier and simplify movement routes. It reduces the need for secondary movement routes allowing the buildings costs to be less. It creates a more active and inhabitable space by providing for space for learning and socialising and spaces where interaction can occur in and between class. The linearity of the design creates strong axial arrangements to take place.

2. **Courtyard**
The courtyard planning strategy is common and is known for providing security, visual focus and for creating sheltered environments. These characteristics of central sheltered courtyards that can vary in size and shape provide flexibility for year round use. The key concept of this type is to create a condition that is mainly for socializing and is inhabited by students. The design has pros and cons. The downfall of this planning is that greater amounts of circulation are required, increasing the costs and the building’s “envelope”. While the benefits are the increased access to natural lighting, ventilation and views creating better quality internal spaces.

3. **City/town**
The city spatial planning strategy loosely arranges major school functions in an open flexible social space. The spaces of the school are based on the ideas of old town planning where the most public interaction and gathering spaces become “plazas” and are surrounded by the most important buildings to the “city hall” which in the school is the library and auditorium with a series of streets that give access to classrooms that are informally placed next to these main buildings. This layout is often used for primary schools where the traditional town layout is familiar and instills a sense of community.
4. **Atrium/ office block**
This spatial planning strategy is modeled after the office environment and is most commonly used in multi-storey high schools. In this arrangement the atrium provides a central circulation core connecting all other spaces together. The central core has many individual workspaces with a common larger space for group work. The design of a full height atrium allows for light and ventilation to penetrate into the building and reach areas that otherwise wouldn’t have access to natural lighting. These designs provide flexibility in design and use as the internal walls are independent from the building structure.

5. **Strawberry/ learning cluster**
The strawberry cluster is similar to the street spatial planning in that it too uses the concept of a linear spine circulation route that connects the different spaces, however, where it differs is in the arrangement of the connecting spaces along the spine. These are made up of clusters of similar learning subjects to create a less intimidating faculty node or “strawberry” and foster student teacher relationships.
CLUSTER SCHOOLS AND SHARED FACILITIES

The concept of clustering schools is a response to the educational crisis and the need to restructure the apartheid era education system by centrally locating facilities to ensure ease of access by all scholars (Smit & Hennessy, 1995: 45).

The concept groups schools within the same geographical location for economic and educational reasons in order to achieve quantitative and qualitative advances in education (Smit & Hennessy, 1995: 45).

When it comes to the location of public schools there are two contrasting dynamics, the first being that by dispersing these facilities in the community it allows for maximum accessibility of users to these resources. While on the other hand it sees the benefits of clustering these facilities to achieve a better rounded quality facility (Smit & Hennessy, 1995: 45).

SHARED FACILITIES

This sharing of facilities is essential in the current developing world and is often achieved through the construction of arts and science centres, libraries and laboratories shared between schools. The specialised facilities for a secondary school can make up around 50% of the total cost of the school building while general spaces only around 30% (Smit & Hennessy, 1995: 46).

There are two ways in which this concept of sharing facilities can occur. The first being that various schools could individually specialise in certain subjects or sports for example and pupils from other schools would come to participate in that specific activity at that specific school. The second (the chosen manner for this treatise) is that there is a single centralised base hub housing specialised facilities that all feeder schools can make use of on site (Smit & Hennessy, 1995: 56).

“It is also stated that these facilities should not be for exclusive use by only the schools but also be available to the public and that the more specialised, the greater the sharing between schools (Smit & Hennessy, 1995: 56).

This treatise looks at the concept of cluster schools as an opportunity to deal with the current thinly spread educational resources amongst schools in New Brighton. The design response will deal specifically with the second approach mentioned previously where a single centralised hub of specialist facility will be designed with the intention to optimise the use to its full potential. Through the carefully thought out placement of this facility within the community it will be easily accessible to all users and will be well integrated into its public realm. These ideas will develop further into what will be described as a learning resource centre.
Advantages of clustering (Smit & Hennessy, 1995, pg45,46,47).

- **Sharing of facilities**: enables the optimal use of expensive and limited resources and land that can be shared between schools and the community. Realistically not every school will be able to provide the expensive resources and those that do have them don’t always make efficient use of them. This concept also allows students access to qualified teachers’ skills that are in short supply in South Africa’s poorer areas.

  - Lower building costs
  - Lower running costs
  - Full efficient use of facilities
  - Less responsibility on the feeder schools
  - Minimum maintenance costs

- **Flexible catchment**: these centralised clusters with larger catchment areas are less likely to be majorly impacted by localised demographic changes. If these changes were to be experienced by a smaller facility the dwindling numbers of users could result in closure as the expense to keep it open wouldn’t be viable. Where if a larger facility experienced these changes it could respond to the drop in users by expanding its serving area.

- **Increased socio-economic integration**: an issue identified with schools in township areas and those planned in terms of the neighbourhood model is the lack of exposure students have to their greater urban context as they are confined in a way to their community. By clustering resources that will cater to a larger catchment area it allows for integration of users from different backgrounds increasing students exposure as well as providing an equal learning opportunity to all its users.

Disadvantages of clustering (although many fail under scrutiny) (Smit & Hennessy, 1995: 48):

- **Reduction of neighbourhood facilities**: the clustering of important facilities in poorer areas may affect the area negatively to seem like it has less infrastructure, resources and focal points.

- **Increased transportation**: the clustering of facilities is thought to increase traveling times as now facilities are jointly located in a central area rather than being dispersed.

- **Weaker neighbourhood ties**: the ill conceived notion of the neighbourhood model that clustering facilities would impact community social ties, however, this is incorrect as social networks are generally not geographically based.

- **Size difficulties**: educational authorities are wary about larger clusters especially with political unrest they are harder to main control over versus smaller which may be easier to maintain order over and may become potential targets for violence.
SPATIAL LOCATION OF CLUSTERS

Since cluster schools are all about accessibility and centralised facilities, the placement of such facilities in its urban context is highly important. The catchment area for placing a cluster school is majorly determined by maximum distance of travel and more specifically pedestrian travel is the primary mode of traveling in poorer areas such as New Brighton. Basing the facility off of pedestrian movement ensures that everyone has and will in future have access to education (Smit & Hennessy, 1995: 51).

- 750m to Pre-primary schools
- 1.5km to Primary schools
- 2.25km to Secondary schools

The most reliable way to determine a catchment area is based on pedestrian accessibility and is therefore based on the conceptual precedent of the estimated 4.5km/hr walking speed to distance ratio.

- 10min to pre-primary schools
- 20min to primary schools
- 30min to secondary schools

The second way in which these clusters can be positioned is through considering the Serviced Land Projects standard gross density ratio of 35DU/Ha. (Smit & Hennessy, 1995, pg 52). This ratio is based on the population density unit per hectare.

This information is important when determining the placement of the Learning Resource Centre within New Brighton as it sets up the parameters for its positioning. The proposal will fall within the maximum specified walking distance of the secondary feeder schools and will sit along major public transport routes (bus, rail and taxi) to aid in the ease of accessibility of users.

Three possible relationships the clusters may have to transport routes: (Smit & Hennessy, 1995: 55).

1. At an intersection of public transport routes
2. On a public transport route
3. Next to a public transport route
BRIEF HISTORY OF NEW BRIGHTON SCHOOLS

The early schooling and education of many black children in New Brighton was majorly influenced by the government and the churches at the time of the apartheid rule who both held opposite ideals. Much of the education during this time, until 1950 when the National Party put a stop to it, was as a result of the churches and the missionaries (Msila, 2014: 101).

The agenda behind the teaching of black children and adults was not admirable where the government’s aims were to educate and prepare them to be slaves for cheap labour and contribute to the country’s revenue. It was the missionary’s objectives to not only introduce the black community to the gospel but also emphasis education and moral work (Msila, 2014: 102).

The National Party was intent on an education system that kept the black people docile with the introduction of the then Bantu Education Act 1953. Many churches fought against this law but to no avail (Msila, 2014: 103).

In the 1930’s The Order of Ethiopia and Methodist Church were home to two of the first schools in the Red Location, namely Lower Primary Upper United School which catered from grade 1 to grade 4 and Higher Primary Upper United School from grade 5 to grade 8 respectively. At this time there were no high schools in New Brighton and children had to either go to Mount Road’s Paterson High School or to schools outside of Port Elizabeth which included Lovedale College in Alice or Healdton Methodist in Fort Beaufort. (Msila, 2014: 103).

The first high school named Newell High School was opened to the community in 1942 as a result of the Rev. George B. Molefe’s, of the New Brighton Presbyterian Church, “nagging” to the City Council to build more black schools. Newell originally started in the Presbyterian Church where the churches kitchen served as laboratories for experiments. (Msila, 2014: 103).

After the establishment of Newell more schools were established in New Brighton including Cowan Secondary School, Kama Lower Primary School, Molefe Higher Primary and Pendla Lower Primary. This totaled 9 schools existing in New Brighton in 1948. (Msila, 2014, pg105).

As more schools were built and schools grew they were moved from church control to school boards and it was ensured that education would become the cornerstone of the community development. (Msila, 2014: 104).
WHAT IS A LEARNING RESOURCE CENTRE

A Learning Resource Centre is a facility designed to assist and support learning, raise school standards and promote healthy lifestyles through providing specialised learning resources to students in disadvantaged communities and enabling schools to operate in an integrated manner with the wider community (Astom, 2011:4). Their purpose is to advance the learning experience of students and teachers in the educational sector and can often offer resources that are not currently readily available to scholars (Innocent, 2014: 1). These resources are often specialised facilities that include libraries, digital media, computer labs, art and music classes, science and biology laboratories and home economics classes.

This type of resource centre can also be identified as a community school where a partnership between the schools and community amalgamate in the form of a central educational hub. It will focus on the school academics, social service, youth and community development which can lead to strengthening of a community connection which is an important goal of this treatise. This building becomes a centre to the community and will cater not only to the secondary school children but also the wider community through the provision of public facilities.

It must be kept in mind that these facilities are not a one size fits all educational hub model but that they will vary between communities based on the local conditions, priorities and rationale of that specific community. (Knight, 2011).
LEARNING SPACES AND SUSTAINABLE SCHOOLS

Learning spaces

The design of learning spaces in a school can influence the outcome of the learner, it is therefore important to design these spaces to benefit the students. This section will discuss considerations pertaining to the classroom.

These issues will be discussed under the following headings.
- Classroom
- Size and shape
- Flexibility
- Classroom arrangements

Classroom

Over the years both schools and classrooms have evolved often responding to the current technology and education system of that time, though showing these changes there are still similarities that are maintained in their design. It can be said that there are two dominant classroom spatial types being the traditional teacher fronted classrooms and the modernist dynamic classrooms. (Hertzberger, 2008: 23-25).

These two main types are a result of the teaching methods and the spatial requirements needed by each to achieve their main aim.

Traditional classrooms

The traditional classroom is best described as a rectangular shaped room with high windows that is teacher fronted at the blackboard passing along their knowledge to the students. This spatial condition is aimed at serving the concentration of its students by limiting distractions and giving the teacher the best possible view-point to watch over all the students. These classrooms are found in schools designed with a series of autonomous and disconnected spaces only arrived at through circulation routes of long corridors (Hertzberger, 2008: 23). These circulation spaces are just that, circulation spaces, and all learning activities take place within the designated classrooms which often remains the student’s sole learning space as there would be no reason to leave this classroom (Hertzberger, 2008: 23).

Modernist classrooms

These classrooms are articulated and differ from the traditional rectangular classrooms using multiple focus points instead of one, taking emphasis away from the teacher towards the students. This spatial condition aimed at serving to prompt its children to work independently by offering various learning spaces. These nooks and crannies provide individual and group learning spaces and opportunities. “The more articulated or modeled a space is, the more possibilities for more differentiated learning it has to offer.” (Hertzberger, 2008: 25).

These nooks provide more spaces for learning and create thresholds within the class to prevent the students from being distracted by other students busy with different activities within the same space.

The modernist classrooms are found in schools that too differ from the traditional schools where learning does not just take place within the confinement of the classroom, but the entire school is seen as a learning space. Circulation spaces are designed to accommodate student learning activities as well. (Hertzberger, 2008: 25).
Classroom arrangements

The arrangement of classrooms is determined by the education system and ideals of the school and reflects the aims and values of the school. The arrangement is not only based on the nature of the school but is often a result of its response to the physical context of the school.

Five classroom arrangements that can be used are as follows: (Ruan, 2012).

The first layout shows how classrooms can be arranged along a main circulation route to create public spaces along the way that creates moments of interest and pause.

The second layout shows how classrooms can be arranged off of a main linear circulation route to create sheltered outside spaces where teaching could take place.

The third layout is loosely arranged classrooms that create outside central public gathering spaces between themselves with a more organic circulation movement between the classrooms.

The fourth layout is classrooms arranged along a linear circulation route and emphasis is on movement rather than gathering.

The fifth layout arranges classrooms in a staggered manner creating a series of spaces between the classrooms that can be used for gathering or teaching purposes.

The Learning Resource Centre’s will pick up on the ideals from arrangements 1, 2 and 5 where the arrangement of classrooms which create moments of interest and pause between the classrooms and use these areas as opportunities for learning spaces.
Size and shape
A classroom’s shape and size are determined by their use and the requirements of the space together with the number of students it needs to accommodate. According to the Department of Education the standard for schools is 40 students per class, this number together with the equipment required in the class will determine the size. (NMBM, 2007: 72). The shape as mentioned earlier depends on the learning method or the desired outcome that is to be achieved, an art class or less formal learning space would do better in a dynamic classroom while a traditional rectangular class would better serve more structured classes. It is important to take into account the context conditions when choosing shapes of spaces as to allow for more of less light, noise or interaction between other users. (Hertzberger, 2008: 23-25).

Flexibility
The flexibility of a space is the ease at which the space can adapt to meet various needs. The more flexible the classroom the more activities the space can cater for and in turn one maximizes the space to its full potential.

As mentioned before the educational model implemented by the school can impact on the spatial planning and classroom model. A traditional rectangular classroom that was designed to be teacher fronted with rows of desks has less flexibility than a modernist classroom with its many nooks that can cater for more activities and therefore has a greater flexibility. It can also be said that the more specialized the classrooms function the less flexible they become; for instance a science laboratory with its permanent fixtures. For a building and more importantly a building in a poorer income area to remain in use and in demand there has to be a relatively high level of flexibility to adapt to the changing needs and user ratios of that community.

A space’s flexibility can either refer to the flexibility of the physical environment or that of the furniture. (Marsh, 2012).

The flexibility of the furniture refers to the ease at which the furniture in the space can be moved around to meet the needs of various activities. This flexibility is determined by the function of the class as some subjects would need more permanent furniture while others don’t. Making use of flexible furniture is often more costly than permanent fixtures. (Marsh, 2012).
SOCIAL SPACES

Hertzberger (2008) is known for his ideas on the in-between spaces and the transitioning between two spaces with a threshold, creating moments of pause between the two. Hertzberger is interested in the way in which buildings can be used to enhance the interaction between the users themselves and between people and their environment. In many of his school designs he is known for the in-between where he blurs the lines between classrooms and corridors by using learning spaces that pour out of the classroom into corridor activity spaces that are loosely arranged along circulation routes.

The social spaces in schools exist not only in the classroom and on the playground but also in these in-between spaces.

This section will look at these spaces under the following headings
- Outside space
- Circulation

Outside space

Just as circulation and corridor spaces should be designed with equal concern to that of the classroom, they should be considered as an extension of its learning space. Outside spaces too should be considered as potential learning spaces. It is in the outside spaces where learners spend the majority of their time during break and between classes, thus these become the primary social spaces of the school that connects all the spaces together. These outside spaces have the ability to add to the buildings character and create a pleasant sense of place. They contribute to the user’s engagement and interaction with each other. Hertzberger (2008)

These outside spaces can have various uses including: (van der Walt, 2015).

Forecourt:
The design of a forecourt to the building can create interest, enhance the entrance to the building as well as create a social gathering space for the users before or after facility use. (Fig.109)

Courtyard:
These outside spaces can be shaped by the building to create a sheltered courtyard space that protects the users from climate conditions or safety risks. (Fig.110)

Outside learning:
As mentioned earlier classroom arrangements have the ability to shape and create outer public spaces where teaching could take place, these could be undercover or make use of staggered seating. (Fig.111)

Frame views:
The organisation of these outdoor spaces can be used to highlight and frame views of the surrounding context. (Fig.112)

It is important that these spaces offer a variety of amenities in order to create successful public spaces.
Circulation

Just like the arteries in a body connect all the important organs similarly the circulation routes in a building connect all the important spaces. In many buildings circulation space is limited to user movement only and is merely utilized for brief moments of time while users move from one destination to the next.

Hertzberger (2008) sees the potential of these circulation spaces to be designed to promote interaction and socializing between the users. He doesn't see them as less important than the main spaces but rather an extension of them. A well designed circulation space not only leads you from one destination to the next but creates moments of pause and engagement and has as much character and sense of place as any other space in the building.

According to Ching (2007) circulation spaces can take on one of the following natures:
- Open on one side
- Open on both sides
- Enclosed

These circulation spaces can set up the following relationships with the spaces to which they connect:
- Pass by space
- Terminate into a space
- Pass through space

Pass by a space
- The integrity of each space is maintained.
- There is a flexible path configuration.
- This offers the possibility of in-between spaces leading into main spaces.

Figure.113- Ching (2007)

Terminate in a space
- This approach places great importance on the space into which it terminates.

Figure.114- Ching (2007)

Pass through a space
- This creates opportunity for moments of pause and movement when moving through spaces.

Figure.115- Ching (2007)
SUSTAINABLE DESIGN

The concern for sustainability is the way of the future and sustainable schools are now defining the school community and reflect the values and priorities of the school community.

The benefits of sustainable schools are in the impact on the costs and physical nature of the building as well as positively impacting on the users of the building.

The benefits of sustainable schools include: (Gelfand, 2010, pg3-6).
- Higher student test scores
- Lower operating costs
- Increased student attendance
- Enhanced teacher performance and satisfaction
- Increased building life
- Lower environmental impact
- Changing attitudes

The principal characteristic of sustainable schools is the quality of the classrooms and learning spaces. Through integrated design methods and energy efficiency, improved learning environments are created. The considerations for high performing learning spaces include day-lighting, thermal comfort, acoustics and air quality. (Gelfand, 2010: 14).

The Learning Resource Centre will strive to be as sustainable as possible by increasing it’s energy and resource efficiency and reducing running costs and its environmental impact through design consideration to day-lighting, thermal comfort, acoustics, air quality and ventilation methods. These points will be looked at more closely in the section to follow, where various ways of implementing these ideas will be examined.

Day-lighting

Day-lighting forms an important part of sustainable design and should admit light but not solar heat gain or glare. There are two types of lighting natural and artificial lighting. A building’s primary source of lighting should be day-lighting with electric lights available for night time or when sufficient day-light is unavailable due to poor weather conditions. (Gelfand, 2010: 83).

Ideal day-lighting should:
- Control direct sunlight penetration
- Avoid glare
- Provide gentle uniform illumination
- Provide control of daylight
- Integrate with electric lighting design (Gelfand, 2010, pg92).

If light in the space is not handled correctly, glare can be caused, making the space uncomfortable and the learners less productive in their education.

Glare can occur as a result of the following:
- When a single source of bright light is used to light up the room it can cause a contrast resulting in glare
- Bright surfaces or lights behind computer screens can also cause glare.
- Glare from reflections off of nearby water sources or smooth finishes.
- Ceiling reflections, when the light falling on an object is greater than the intensity omitted from the object. (NOA Architects, 2005: 36).

The design will predominantly make use of natural day-lighting techniques with artificial lighting available for when the weather doesn’t permit or at night. As with any building making use of natural lighting, consideration will be given to the possibility of solar heat gain and glare and as a result the design response will deal with this. The Learning Resource Centre will take into account that lighting requirements will vary between spaces and are dependent on the function of the spaces, so the lighting in the library will be different to that in the laboratories or in the music room.
In order to create a comfortable work space for users it is important to address and prevent glare in rooms, which can be done through the following ways: (NOA Architects, 2005: 36).

• By providing light sources from more than one side day-lighting can be balanced to prevent glare.
• By painting the walls around windows a lighter colour it will reduce the amount of glare in the room by causing the light that comes through to be less contrasting.
• Walls, floors and ceiling can reflect a lot of light in a room, by treating these surfaces to absorb more than they reflect it could prevent glare.

Natural day-lighting has obvious and subliminal benefits to both students and teachers and has proven to assist with productivity and general health. “Day-lighting is one of the best investments you can make in the design of a learning environment.” (Gelfand, 2010: 85).

Benefits of day-lighting
• Better lighting quality
• Lower operational costs
• Decreased carbon footprint
• Reduced peak usage
• Connection to nature
• Improved student performance (Gelfand, 2010, pg85).
Windows and light sources

Lighting requirements will vary between spaces and are dependent on the function of the spaces. Natural lighting penetrates into a building through openings and windows and therefore the placement or size can impact the space significantly.

Height and size of windows:
The placement of the window in a wall is dependent on the windows' function, whether to permit light into the room or for viewing purposes. A window for viewing should fall within the sight-line of the viewers. If the window is for light, the higher the window is placed in the wall the deeper into the room the light will shine. (Marsh, 2012).

Lighting from two or more sides:
The placement of windows in a room can either improve or worsen the glare the user experiences in the room. By staggering the classroom's layout there is an opportunity to achieve natural light from more than one side. When light enters from two or more openings the contrast in the room is reduced and therefore lessens the chance of glare. (Marsh, 2012).

Light shelves:
They have the ability to reflect light up to eighteen metres and prove useful in larger building or rooms that need light to penetrate further into the space. (Marsh, 2012).

Roof lighting:
These are useful in spaces where typical window openings can not sufficiently light the space and can often add to the character of the building. When using these windows consideration must be given to the lighting quality created and possible temperature gain within these spaces. (Marsh, 2012).
Acoustics

Recent studies have shown how poor acoustics in schools affects the quality of learning, clarity of communication and retaining the information being taught and as a result school design standards have had to develop (Gelfand, 2010: 62).

To achieve a high performing learning environment it is important to attain an acceptable acoustic environment. This section will look at acoustics under the following headings: (Gelfand, 2010: 62).

- Acoustic design considerations
  - Background noise
  - Room acoustics
  - Sound insulation
- How green school design affects acoustics

Background noise

Extreme levels of background noise in a classroom impact both teacher and students negatively affecting their learning environment. With high levels of background noise, teachers are forced to speak louder while students have a harder time hearing and end up distracted, discouraged or fatigued with greater effort used to hear and concentrate. Classrooms with these issues often pose more of a threat to a student’s education than aiding in their knowledge growth (Gelfand, 2010: 63).

Background noise is a form of noise pollution or interference. The main sources of background noise in schools are from exterior sources and mechanical systems which include noise from traffic, alarms, people talking, ventilation systems, ablutions and power supplies. Schools in urban areas or busy neighbourhoods are more susceptible to noise pollution through exterior windows. (Gelfand, 2010: 63).

The ideal background noise level in a classroom that allows for clear audibility should be limited to 35dBA³ or less and optimally the background noise should be at least 15dBA quieter than the speech level to be heard is. (Gelfand, 2010: 63).

Room acoustics

Reverberation is another acoustic issue room’s deal with. Reverberation is the persistence of a sound in a room after the sound’s source has stopped and can be measured from the time it takes the original sound to fade away to near inaudibility (Gelfand, 2010: 64).

Reverberation in a room degrades the quality of speech and the discernment of the speech by others. The ideal reverberation level in a classroom that allows for clear audibility should be limited to 0.6 seconds in a standard room and up to 0.7 seconds in a larger space (Gelfand, 2010:64).

The way to control this problem in a room is by reducing the amount of acoustically reflective materials such a glass, stone and gypsum board or by adding absorptive materials to the interior of the room (Gelfand, 2010: 64).

Sound insulation

A learning resource centre is comprised of many different uses and therefore adequate isolation of one space from another is important to minimise distractions of people with other activities in different spaces. Not all rooms will require the same amount of sound isolation, for example a classroom or music room would need higher levels than that of a corridor or ablation area.

Special consideration of sound insulation will be given to the music rooms to prevent sound from traveling and distracting students learning in other parts of the centre. Consideration will also be given to the library other learning spaces that will be situated along the road side of the site to prevent noise pollution from vehicles and pedestrian movement entering into these spaces. Not all spaces will need the same amount of attention to sound insulation such as the art studio, home economics or general classrooms.

“Achieving acceptable sound isolation between core learning spaces also depends on the activities of the users in each room. It is important for the design team to understand how spaces will be used.” (Gelfand, 2010: 66).
How green school design affects acoustics

With the implementation of green design principles, an increase of effort is placed on the energy efficiency of the building and reducing its carbon footprint but at the expense of the acoustic quality. Projects can be highly rated in terms of a green star rating but receive low marks in the occupancy evaluation due to the poor acoustics (Gelfand, 2010: 66).

The Green Building intention is aimed towards sustainable design and striving to reduce the materials used and wasted during projects. They can also reduce the necessary material to drop costs and in turn downgrade on vital acoustic materials. The consequence of this is that if acoustic changes need to be made after construction is complete the costs will be greater than if it was considered as part of the design philosophy and initially installed (Gelfand, 2010: 67).

There is great difficulty that a designer will face when trying to respond to both energy efficiency and that of acoustics. This difficulty will present an architectural design challenge when responding to the sustainability of the Learning Resource Centre. One example of this is that one may make use of design considerations like large glass windows to utilize natural light into the building but at the same time this increases the acoustic reflectivity of the space. Another example is that by making use of windows one can improve on natural ventilation but the down side is that it creates opportunity for noise pollution to penetrate into the space.

Thermal comfort

Thermal comfort can be described as a condition of mind which expresses satisfaction with the thermal environment in which one is (Hoof, 2014, Abstract). There are four main conditions that effect the thermal comfort of a space: air temperature, the mean radiant temperature, humidity and air speed (Wolf, 2010: 5). An ideal indoor temperature is between 19°-22° and humidity of 40-60% as people operate their best when they are comfortable. (Unknown, 2017).

Various methods are available for the architect to achieve ideal thermal comfort of spaces. Three of these methods are:

- Ventilation
- Shading
- Thermal massing

The thermal comfort of a space especially in a learning environment is important as a student will struggle to concentrate and learn if they uncomfortable when they are either too hot or too cold. It is also important to ensure good air quality to promote healthy learning spaces through ventilation techniques, this introduces clean fresh air to displace air that contains germs or pollutants. Ventilation of spaces will become an important design consideration to promote healthy learning environments by reducing the spread of germs or illness between learners and providing fresh air which is important for brain functioning.

Ventilation will be especially important in the laboratories where experiments with gases and chemicals will occur.

Ventilation – air quality

Ventilation is the deliberate introduction of ambient air into a space with the intention to control the indoor thermal comfort or humidity as well as controlling the air quality by diluting and displacing indoor pollutants. (AAI, n.d.).
There are various methods of ventilation that can be used in a design but since this design considers the sustainability of the building to be of importance it will concentrate on natural ventilation techniques which will be looked at below. The Learning Resource Centre will make use of more than one of these methods which will be determined by the space.

**Natural Ventilation** “relies on natural sources such as wind and temperature difference between a building and its environment in order to flow fresh air through a building.” (Curvent, n.d.).

**Wind driven ventilation:** Natural cross ventilation is when openings are placed in walls on opposite sides of a space, air flows in the one side pushing old air out the other side. (Pereira, 2018).

**Pressure-driven flows:** this ventilation method uses the weight difference between hot and cold air to ventilate the space. In this ventilation system openings are positioned close to the ground to allow cold heavy air to enter the space and pushes the hot lighter air out through opening placed close to the ceiling or roof. (Pereira, 2018).

**Stack ventilation:** this system is used in vertical buildings where the cold air builds up pressure under the warm air pushing it up and out

**Mechanical Ventilation** “is a process of replacing air by removing internal air and supplying fresh air into a space with the use of mechanical devices such as ductwork and fans”. (Pereira, 2018).

**Mixed-mode ventilation:** this system makes use of both mechanical and natural ventilation. This system makes use of windows that allow for natural ventilation together with systems that blow cooled air in through the ceiling or wall systems in an attempt to even the room temperature. (Mixedmode, 2013).

**Displacement ventilation:** this system introduces conditioned outdoor air at a low velocity from air supply diffusers located near to floor level, the heat sources lift the air up through the space and the hot air is expelled at high levels. (Butler, 2013).
Shading

A building can experience large amounts of heat gain through direct sunlight. In order for the building to function sustainably it should utilise as much of the natural light as possible without the heat gain. The simplest way to deal with this is to consider the building’s orientation as well as the size of openings. Shading is not just to protect the building itself from the weather but should also offer welcoming outside spaces to the users of the building. There are four main ways that shading can be approached and they include horizontal shading devices, vertical shading devices, extension of the roof or trees (Schmidt, 2013: 117).

The Learning Resource Centre will create comfortable spaces both internally and externally for its users through the provision of various shading techniques which are seen in fig.122 as well as through the placement and orientation of the building on its site. The design will also take into account the change of seasons and that more heat and light should penetrate the building in winter while in summer more heat and light should be filtered.

Thermal massing

Thermal massing is a passive design technique implemented to deal with heat gain of buildings. Different materials have different heat retention qualities or thermal mass. Materials, like concrete, that take a lot of effort to change the temperature of, are said to have high thermal mass while materials that retain heat quickly are said to have low thermal mass. It is therefore important to choose the best materials for specific climate conditions. Buildings made of concrete with high thermal mass are able to withstand environments with high temperatures and reduce the fluctuations of the temperature inside the buildings keeping it cooler throughout the day. Appropriate use of thermal mass throughout a building can make a big difference to comfort and cost of the building (Schmidt, 2013: 118).

The design taking on the theoretical approach of critical regionalism will respond to its urban context with a particular materiality set. The thermal characteristics of these materials will need to be investigated to ensure that the building doesn’t lend itself to excessive heat gain or loss. The design will aim to create comfortable interior spaces for the users.
PRECEDENT STUDIES

The following precedents relate to learning based environments and will be analysed to investigate the particular architectural interventions pertinent to the influence of design decisions for the proposed Learning Resource Centre. These precedents will be examined according to their response to the previously mentioned learning spaces and sustainable design, namely flexibility, spatial arrangements, circulation, social spaces, use of lighting, use of ventilation and materiality.

**NMMU B. Ed Foundation Phase Building:**

Architect: The Matrix  
Location: Port Elizabeth, South Africa  
Completion date: 2016

The new education facility proposed a building that would respond well to its context by integrating itself through the use of a “playful” structure that connects to the community (NMMU B Ed, 2016). The NMMU B. Ed building achieves what the proposed Learning Resource Centre aims to do, it too makes use of a creation of a public square that is framed by the building.

The use of linear circulation routes within the building creates a strong pedestrian axial arrangement that connects the two main buildings and the square. Classrooms, library, lecture hall, communal area and other facilities place themselves along these main circulation routes and make use of Ching’s (2007) “pass by space” arrangement.

A major concept of the Learning Resource Centre’s proposal is how the building deals with in-between spaces and the use of these spaces beyond the classroom for learning and socialising. This design by the Matrix makes use of canopies to define the entrance and to layer the thresholds of the building, assisting in the transition from one space to another as well as being a method used in which to visually connect them (NMMU B Ed, 2016). A mix of studio and study spaces in this building extend beyond the envelope, where generous verandas, external terraces and an embanked grass amphitheatre allow for a range of personal and communal events to take place, demonstrating that a level of social responsibility informed these design decisions (NMMU B Ed, 2016).

A major consideration that many buildings take in developing a sustainable response, is the passive design of how they deal with lighting and ventilation. In order for the proposed building to be as sustainable as possible it should utilise natural means to achieve this. The placement and orientation of the NMMU Educational building on its site has maximised natural light and ventilation, creating a bright and inviting atmosphere that permeates the triple volume gallery of the building (NMMU B Ed, 2016).
The design further responds to its immediate context in materiality and tectonics making use of shutter concrete, face-brick and steel in an exposed structure. (NMMU B Ed, 2016). Though limited materials are used, the design creates interest with subtle variation of these materials with smooth versus rough concrete and solid versus perforated steel. This manner in which limited materials can be utilised in different manners to create interest and provoke will be carried through into the Learning Resource Centre’s proposal.
Ryerson University Student Learning Centre
Architect: Zeidler Partnership Architects, Snøhetta
Location: Toronto, ON, Canada
Completion date: 2015

This precedent is relevant in terms of programme as a Learning Resource Centre that offers specialised campus resources to support the learning process of students. It also takes cognisance of the interface between the building and the public realm beyond it. “With links to the existing Library building, the Student Learning Centre offers a variety of creative and inspiring learning environments and spaces.” (ArchDaily, 2015).

The Learning Centre’s public edged corner is carved out and lifted up resulting in the main entrance being set back from the street creating a forecourt area under the building canopy. This area provides opportunity for various collective activities to occur and is an example of ways in which a building can create and respond to the transitioning of spaces. This building is a great precedent on how the proposed design can respond to the transition of spaces and its thresholds, not only with its forecourt response but also with its internal spaces.

The Ryerson Centre building successfully achieves internal spaces that contribute to socialising and learning and are not limited to specified confined spaces. The use of creative and unique furniture provides an innovative flexibility to the spaces and allows the users to move things around to meet their personal needs and improve on their level of comfort. The Learning Resource Centre’s proposal considers the importance and success of spaces that are able to respond to the users’ needs with the flexibility of furniture and physical boundaries. The furniture and use of décor also cues the users, as to the function of the spaces and expected behaviour within.

The Ryerson Centre incorporates sustainable design with the use of large glass windows and thin transparent cladding that allows natural light to penetrate deep into the building that creates varying light qualities to the spaces within.

Through the use of various floor levels, the building handles privacy and noise, with the most public and louder spaces on the lower floor levels while the quieter more private study spaces are positioned on the highest levels. There are also private study booths that are enclosed to assist with noise control.
SUMMARY

This chapter briefly introduced the notion of school and its evolution of design which developed as a response to the teaching pedagogy and technological advancements of the time. It can be said that a school’s design reflects the values and priorities of that school, it is therefore important that the design shows a concern for sustainability. Sustainability is the way of the future and sustainable schools are now redefining the school community as a whole. This design strategy is important in that it not only impacts on the costs and physical nature of the building but also impacts positively on the users and learning environment of the building.

The Ryerson University Student Learning Centre together with the NMMU B. Ed Foundation Phase Building were analysed as precedents for their relevance as learning-based environments. The intention was to identify their particular architectural interventions pertinent to the influence of design decisions for the proposed Learning Resource Centre.

These precedents were examined according to their response to the sustainable design in terms of flexibility, spatial arrangements, circulation, social spaces, use of lighting, use of ventilation and materiality with the aim of offering insight into how these sustainable principals can be dealt with in the Learning Resource Centre’s design.
INTRODUCTION
This chapter will discuss public spaces and their functions in the community as well as the importance of these spaces in township communities. Most importantly it will look at the opportunity to create vibrant public spaces that will add value to the New Brighton community through implementing characteristics of good quality public spaces.
EVOLUTION OF PUBLIC SQUARES

Different cultures place different emphasis on public space. In European cultures wealth, civic and religious powers were portrayed in their public spaces through the archetypes of churches, city halls and palaces that were the main focal points edging the squares. In North African cultures' public spaces were used as markets and shopping streets, while the wealth was instead placed on mosques and schools. (Carr et al, 1992: 3).

One of the first forms of a public square in western culture was the Agora in ancient Greece known as a “place for speech”. The Agora was seen as the political, religious, social and judicial centre of the ancient cities. Years later the Agora was replaced by many smaller squares that were scattered around the city (Webb, 1990: 28).

In Rome the forum was established as a market and meeting space, where all the important public buildings such as the bath houses and law courts were placed alongside (Webb, 1990: 28).

The medieval civilisations also made use of squares as market spaces and in addition to the market square there was also a plaza square adjacent to the cities’ town halls (Carr et al, 1992: 54).

During the development of the modern city, based around vehicular transport, market spaces became a thing of the past, people now moved away from the city centres to the suburbs and with this the need and use of public squares changed (Gehl, 1987). It is this change in city planning and usage that has resulted in a shift of balance in society and lead to the decline of public space life (Carr et al, 1992: 4).

The five archetypal squares that have been identified are: the closed square, the dominated square, the nuclear square, grouped squares; and the amorphous square.

PUBLIC SQUARE TYPOLOGIES

Closed square (space self-contained)
These squares are complete enclosures that are interrupted only by the streets leading to them with their primary element being their regular geometric layout. A spatial balance is achieved through horizontal and vertical forces. (Chand, 2013: 10).
Example: Place des Vosges, Paris

Dominated square (space directed)
In this square the open space is directed towards a main building which may be a church, palace or town hall. The main street leading towards the square usually establishes the axis towards the main building in the square. (Chand, 2013: 14).
Example: St. Peters, Rome
Nuclear square (space formed around a centre)
The square is formalised around a strong central vertical element “the nucleus”, it could be a monument, fountain or an obelisk. The element is powerful enough to evoke the square around it. (Chand, 2013: 19).
Example: Trafalgar Square, London

Amorphous square (space unlimited)
These squares are formless, unorganised and have no specific shape. They do not represent aesthetic qualities or artistic possibilities. (Chand, 2013: 27).
Example: Washington Square, New York

Grouped squares (space units combined)
Grouped squares are made up of individual squares that have organically and aesthetically been merged together. Each individual unit is its’ own entity as well as still being part of a larger order. This square is also based on an axial organisation where squares of different sizes and forms are established in only one direction. (Chand, 2013: 21).
Example: San Marco Piazza, Venice
INTEGRATION OF THE PUBLIC SQUARE INTO CONTEXT

Centres are an important design concept when aiming to create a hierarchical place of high concentration in an area. Generally, these centres originate and develop at convergence points or along major movement routes that give these centres high public concentration. Kevin Lynch, in his book The Image of the City (1960), emphasizes how a centre or node becomes an element by which the city is understood and gives a strong image to its community as it forms an anchor in its environment (Bursey, 2016).

By emphasizing the provision of civic public facilities, such as law courts, libraries, post offices, police stations and community centres, within these centres the community’s identity is all together strengthened within the greater urban context. The provision of these public civic facilities together with public squares accentuates the importance of these civic centres’ status. (Bursey, 2016).

IMPORTANCE OF PUBLIC SPACE

It is important to understand the significant role that public spaces play in the lives of the urban poor especially looking at South Africa and the impact apartheid had on public spaces (Dewar & Uytenbogaardt, 1995: 10). Public spaces may seem like nothing more than well designed physical locations that meet the criteria for good quality environments but they are so much more than that, they are platforms for building a sense of community and for social inclusion and where a sense of belonging is fostered (Project for Public Spaces, 2014).

Public spaces should be promoted and seen as the heart of a community. They have the power to transform our local communities, and generate pride and a sense of belonging that translates into sustainability, economic development and increased quality of life (Project for Public Spaces, 2014).

There is a strong connection between the sense of community and the quality of public spaces. If public spaces are successful they are inclusive of the diversity of groups present in our cities and create a social space for everyone in the community to participate in (SaferSpaces, n.d.).

The future of communities depends on quality public places and more specifically, on place-making, a powerful approach to creating and revitalizing public spaces around the specific needs and desires of the community. “Place-making is a concept based on the identity of a community and takes advantage of a local community’s assets, inspiration, and potential, with the intention of creating public spaces that promote people’s health, happiness, and well being” Project for Public Spaces. (Project for Public Spaces, n.d.).

The place-making concept gained momentum with the backing from the likes of Jane Jacobs and William H. Whyte whose ideas focused on “the social and cultural importance of lively neighbourhoods and inviting public spaces.” (Project for Public Spaces, n.d.).
The concept aims to design public spaces at the heart of a community that draws people together and shapes the public realm to promote togetherness and identity. It is said that great public space is made up of sociability, uses and activities, access and linkage, and comfort and image. (fig. 141)

It must be understood that the meaning of public space differs between cultures and each culture impacts the structure of that space to a different extent. This balance of activities is unique to every culture and shifts under the influence of cultural exchange, technology, politics, economics and social changes (Carr et al, 1992: 3).

**PRINCIPLES OF GOOD QUALITY PUBLIC SPACE**

According to William Whyte (Toth, 2016), successful public spaces are built on a set of basic principles:

- Places to Sit
- Sun/Shade
- Water
- Sense of Scale
- Trees
- Food
- Multiple things to do/Triangulation
- Places to People Watch
- Programming

Gary Toth (2016) notes some valuable principles for place-making and creating successful performing places and shows the importance of the place-making concept in order to re-establish the richness and value of public spaces and the capturing of the culture and identity of the community.

The principles are namely Attractions and destinations, Identity and image, Active & connected edge uses, Amenities, Management of space and its activities, Diverse user group, blending of uses and modes, Traffic transit and pedestrians and Neighbourhood preservation (Toth, 2016).

**Identity and image**

The public spaces become platform that allows the community to showcase local assets to create a distinct sense of place. (Toth, 2016).
Active & connected edge uses
This concept includes a sense of enclosure, ground level transparency and physical connections. (Toth, 2016).

- **Enclosure** refers to the extent to which streets and public spaces are defined by their physical elements, buildings or trees. These spaces can be of high enclosure where elements create a continuous street wall on both sides or low enclosure where the elements are not arranged to define a street wall. (Toth, 2016).

Management of space and its activities
It is important that these spaces are maintained and kept safe as they provide for daily activities and cultural events. (Toth, 2016).

Amenities
The provision of amenities is important in contributing to public space and its comfort to the users achieved through the implementation of elements such as benches, rubbish bins, planters, lamp posts, shading devices, transport waiting areas and landscaping. (Toth, 2016).

- **Transparency** refers to the degree to which people can perceive what lies beyond the street edge. Physical elements that influence levels of transparency include windows, trees, walls, fences or openings into other spaces. High transparency is emphasised through continuous street wall with active uses and with many windows at eye level. Low transparency is therefore the opposite with few windows and no appealing character. (Toth, 2016).
PRECEDEENTS OF QUALITY PUBLIC SPACE

The following public spaces all show characteristics of good quality spaces according to William Whyte and Gary Toth’s principles of creating good public space.

CAMDEN MARKET: LONDON

Camden market exemplifies most if not all the characteristics that contribute to positive public space. This space allows the community to showcase their local assets, crafts and culture which contributes to a strong sense of identity to this community. Much of the interest and atmosphere created in this market space is due to the “pop up” stalls and street vendors and is not limited only to the permanent retail outlets.

The buildings with their number of shop fronts and openings onto the street activates the buildings edge. The street and its spaces aim to connect with the pedestrians with activities flowing out of the shops onto the street, this increases the transparency between inside and outside. The use of canopies and awnings outside the shop entrances softens the transitions between inside and outside as well as scales the building down to pedestrian scale along the street.

These streets are lined with various retail and street vendors which contributes to a variety of activities and public interest. Through the provision of amenities such as seating, shading, lighting, rubbish bins and greenery together with flexible street layouts it improves the overall experience and comfort of the users.

The Camden Market area prioritises pedestrian movement and activities in the streets over vehicular movements and makes these different areas easily identifiable through a change in floor texture between tar to paving.
The V&A Waterfront is a good example of a quality public space in the South African context. This space represents a good sense of active and connected edges with a high sense of transparency between the those inside and those passing by. This is achieved through the use of transparent glass facades as well as the activities that pour out into the streets and squares. An example would be restaurants that make use of tables in the squares that allow those sitting down to feel included into the atmosphere happening around them.

The V&A Waterfront has successfully created pedestrian friendly walkable spaces within the high-density Waterfront environment that has defined itself as a destination by clustering various activities. By manipulating ground levels between road and verge and use of different materials for each it allows the public space to priorities pedestrian movement and distinguish itself from vehicular movement. These environments slow down vehicular traffic flow by constructing the road to rise up to meet the verge at intersecting point and often use brick paving to show pedestrian priority. These spaces are well defined by its physical elements of buildings and their awnings, trees and bollards which give this space a high sense of enclosure, and pedestrian orientation.

Like Camden, the V&A provides the users with amenities such as seating, shading, lighting, rubbish bins, greenery and transport waiting areas all in an attempt to improve the users overall experience.
PART 2

06
DESIGN DEVELOPMENT

INTRODUCTION

This chapter will address the identified urban issues within the precinct scale in the form of an urban framework proposal. The brief, user group and accommodation spaces of the activities of the Learning Resource Centre will be presented. It looks at the development of a programme based on a resource audit of the existing schools in New Brighton and the activities and nature of this programme develop from this understanding. This chapter will also use the findings from all previous chapters to start generating a composite well informed design response through the understandings of “learning” building typology, the physical context of New Brighton and the principles which constitute to positive place-making.
URBAN FRAMEWORK

The proposed urban framework strategy for New Brighton comprises of 6 main objectives to improve the spatial and physical planning of the area.

These key objectives include:
1. Establishing hierarchical nodes
2. Promoting street activity
3. Improving the legibility of routes
4. Improving pedestrian street space
5. Articulating the space
6. Traffic control

Through the establishment of an urban framework a positive fabric will be created within which the proposal will be placed further contributing to the betterment of the community and its public realm.

1. Establishing hierarchical nodes

The hierarchy of nodes results predominantly from their locations, the ease of accessibility and the nature of its activities. It is at these important nodes that future development will radiate from.
2. Promoting street activity

The provision of public spaces and activity nodes along movement routes and at intersections will contribute to community interaction and promote future development around these points.

3. Improving the legibility of routes

Within townships urban fabric there is a low degree of legibility in the hierarchy or function of spaces. Through the implementation of landmarks along movement routes one can improve this legibility by placing space defining elements that allow users to easily position themselves within a relatively flat monotonous landscape.
4. Improving pedestrian street space

Township communities predominantly make use of pedestrian movement routes and therefore consideration to the design of these spaces is important. The provision of street amenities such as lighting, seating, rubbish bins and shading can all add to the comfort and safety of its users.

5. Articulating the space

Articulation of a public square and the defining of its buildings edges is important in order to contribute to positive public space making. This articulation of space should meet the basic needs of its users and could be through the use of trees to define edge or the widening of sidewalks.
6. Traffic control

As previously stated township communities predominantly make use of pedestrian movement routes and therefore an effort should be placed on pedestrian activity and controlling vehicular traffic flow through public spaces. This control can be through the use of kinks in roads, changes in road surface material or implementing speed bumps and pedestrian crossings.

Street amenities

The provision of amenities is important in contributing to public space and its comfort to the users achieved through the implementation of elements such as benches, rubbish bins, planters, lamp posts, shading devices, transport waiting areas and landscaping. (Toth, 2016).
Figure 168

Design Development
Figure 169

Design Development
The information displayed in fig.161 is based on a resource audit by the author in order to determine an understanding of the current resources of the schools in New Brighton. The findings show that though there are one or two resources dedicated to each school there is no school that houses all the facilities that are required for a composite quality education further emphasising the need for the Learning Resource Centre.

![Figure 170](image-url)
BRIEF

The brief is to design a Learning Resource Centre that is concerned with the preoccupation of place based education in a newly established educational hub in New Brighton. The centre will be placed on the most centralised and suitable site that provides opportunity to address the identified issues that the township faces at a precinct scale. Most importantly the Centre should create a good quality public space and realm that provides connection between the existing isolated schools and their community and where social interaction is encouraged to take place. The design must implement the principles of place-making and critical regionalism to achieve an architecture that responds directly to its urban context.

The building should accommodate for the necessary facilities that will be determined by the needs of the existing Secondary Schools together with the standards of the Department Of Education.

THE CLIENT

The client for this project is the Nelson Mandela Development Agency together with the South Africa Development Fund who’s main goal is to provide grants to community-based organizations committed to non-sexist, non-racial, democratic practices and which address education and development by providing services and resources to communities disadvantaged by decades of apartheid policies.

ACTIVITIES

The Learning Resource Centre consists of various structured and unstructured activities that will occur throughout the day. The structured activities comprise the classes provided and the set resources that can be made use of, while the unstructured activities are those that fill the time and spaces between the structured.

Structured activities include:

- Art & music lessons
- Science & biology lessons
- Computers
- Home economics
- Library reading or research
- Administration

Unstructured activities include:

- Socialisation and relaxation
- Informal study areas

These activities will be utilized by three main user groups:

Secondary School Children- these are children roughly between, but not limited to, the ages of 13-18 from the local secondary schools in the area that will make use of the Learning Resource Centre between regular school hours of 8:00 and 14:15 or after hours for extra lessons and library use.

The Learning Resource Centre Staff- these staff members include administration staff, the director, teachers, janitors and librarians, all of whom will be responsible for the general and smooth running of the centre.

Public- these are members of the community that will make use of the library, computer labs and the community hall facilities. Although the facility is mainly aimed towards Secondary Scholars, primary school students may too benefit from the library with initiatives such as reading and writing workshops.
DEVELOPING PROGRAMME

The programme of the Learning Resource Centre was developed by conducting a resource audit of the existing schools in New Brighton in order to determine which specialised learning facilities were most needed by the schools to aid in better education for their users. The needs determined by the audit together with the prerequisites of the Education Department result in the well-established programme. An accommodation schedule will be provided to understand spatial size within the programme.

Public
- Library & Computer labs
- Multi-functional community hall
- Formalised Vendors

Private
- Science laboratory
- Biology laboratory
- Music block
- Home Economics
- Learning spaces
- Server room
- Store room

Semi-public
- Art studio
- Administration
- Food cafeteria

The nature of these spaces will be looked at in the following section.

NATURE OF SPACES

Public Spaces
- **Forecourt**
  Nature: An unstable public space that enhances the entrance to the building as well as creates opportunity for a social gathering space, and transition space.
  Spatial relationships: Acts as a transition area between the main street and the entrance of the building. It is also connected to the formalised vendors.
  Considerations:
  - provision of amenities such as trees, shading devices, seating, lighting, rubbish bins, aiming to improve the users comfort
  - articulating the entrance to the building
  - using spatial defining elements to create a sense of enclosure and safety of pedestrians from main vehicle routes.

- **Formalised Vendors**
  Nature: A stable public space that offers secure formalised vending areas
  Spatial relationships: Edging the main street and connected to the envelope of the building
  Considerations:
  - provision of amenities such as trees, shading devices, seating, lighting, rubbish bins aiming to improve the users comfort
  - provision of formalised trading spots for the locals to improve and activate building edge conditions,
  - security measure to prevent theft of goods
o Library

**Nature:** A semi-public stable space for learning and access to physical and digital resources. The library space will not only comprise of reading material but also provide learning spaces for individuals or group study so privacy gradients are important. The space will emphasise social and interactive learning.

**Spatial relationships:** The library should be placed at the most public part of the campus and remain connected to entrance area, computer laboratories, circulation and courtyard spaces. The more interactive parts of the library will be closer to the entrance while quieter study areas further from high activity.

**Considerations:**
- materiality and texture of structure and finishes,
- a visual connection to forecourt and greater community,
- reading areas with lots of natural lighting without glare or direct sunlight onto books,
- acoustic quality of space,
- noise consideration for users inside the library as well as between the various activity components inside,
- flexibility of space and furniture for users needs and comfort,
- control of user access into library to ensure security of valuable material.

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o Computer Laboratory

**Nature:** A semi-public stable space for learning Information Technology, general computer skills and access to digital resources.

**Spatial relationships:** The computer laboratories should be placed at the most public part of the campus and connected to a Rehab print and copy office as well as to the library, entrance area, circulation and courtyard spaces. The computer rooms should be semi-flexible to accommodate various activities within the same space.

**Considerations:**
- natural lighting without glare or direct sunlight onto computer screens, ventilation and security,
- semi-flexible teaching spaces that can cater for classes and self-use simultaneously,
- ventilation for improved air quality together with controlling heat gain from all the computers,
- control of user access into library to ensure security of valuable material,
- acoustic quality of space,
- a visual connection to the courtyard space.
Private Spaces

Laboratories

**Nature:** These private stable learning spaces provide specialised resources necessary for science and biology teaching syllabus.

**Spatial relationships:** The laboratories should be placed at the most private part of the campus and be connected to circulation routes and courtyard spaces. These learning spaces are specialised and are solely for the use of the secondary school scholars in New Brighton.

**Considerations:**
- semi-flexible practical teaching spaces with permanent fixtures for gas supply, fume cupboard and wash basins,
- natural lighting without glare and electric sensor lighting for when the weather doesn’t permit,
- provision of a sunroom for the biology classes,
- acoustic quality of learning space,
- proper ventilation as experiments will be performed in these classes,
- safety and security of scholars around chemicals and gasses, first aid
- comfortable classroom size for all students
- materiality and texture of structure and finishes.

Home Economics

**Nature:** A private stable learning space to provide specialised resources for the home economics syllabus.

**Spatial relationships:** The home economics room should be placed at the most private part of the campus and connected to the roof top garden, circulation routes and courtyard spaces. These learning spaces are specialised for home economics and cooking practicals, solely for the use of the secondary school scholars in New Brighton.

**Considerations:**
- semi-flexible practical teaching spaces with permanent fixtures for stoves, ovens and wash basins,
- comfortable classroom size for all students to move around easily,
- natural lighting without glare,
- safety and security of scholars around stoves and ovens, first aid,
- proper ventilation as cooking will be performed in these classes
- materiality and texture of structure and finishes,
- connection to and use of the roof top garden for practicals and teaching.
Music block

**Nature:** A private stable learning space for music, both practical and theory classes will be provided for.

**Spatial relationships:** The music block should be placed at the private part of the campus and connected to the circulation, courtyard spaces and outside performance space.

**Considerations:**
- natural lighting without glare,
- high acoustic quality to prevent sound traveling and disturbing learning in nearby classes,
- materiality and texture of structure and finishes,
- size and shape of the spaces can effect the sound quality within them.

Art studio

**Nature:** A private stable learning space for all art activities.

**Spatial relationships:** The placement of the art studio within the building should connect to the outside and allow those in the studio to feel included into the courtyard atmosphere happening around them.

**Considerations:**
- lots of natural lighting without glare,
- proper ventilation of fumes from paint, clay or wood carving,
- flexibility of space and furniture for users needs and comfort, increase the functions of the space,
- direct access to courtyard and provision of outdoor working areas,
- provision of storage and wash basins.

Semi Public Spaces

Food cafeteria

**Nature:** An unstable communal eating space for scholars, teachers and other users, for socialisation and relaxation

**Spatial relationships:** linked to main circulation and is placed within the courtyard and green space. The placement of the eating area within the courtyard allows those sitting down to feel included into the atmosphere happening around them.

**Considerations:**
- flexibility of space and furniture for users needs and comfort,
- provision of amenities such as trees, shading devices, seating, lighting, rubbish bins aiming to improve the users comfort.

Courtyard

**Nature:** An unstable public space that provides a sheltered and secure space for the users and encourages socialisation and relaxation between its users.

**Spatial relationships:** The learning spaces are directly connected to the courtyard. This spaces also houses all circulation routes and the eating area.

**Considerations:**
- flexibility of space and furniture for users needs and comfort,
- provision of amenities such as trees, shading devices, seating, lighting, rubbish bins aiming to improve the users comfort. Amenities, flexibility, shading, shelter and user comfort
- the influence of this spaces’ atmosphere on the learning environments making use of views out onto these spaces.
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<th>TOTAL M²</th>
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</table>
GRID STRUCTURE
Through a site reading the order of the site is established and the design is placed within this grid order.
ACTIVATING EDGES
The design should respond to the public edge by encouraging activity to spill out on to the street and public forecourt and thus enhancing the public nature of the building.
IN-BETWEEN
The ability of space to mediate the transitioning from public street to private building using thresholds and moments of pause that allows the users to experience the true sense of the place they are moving through.
DESIGN

Render
Site plan
Ground floor plan
First floor plan
Mezzanine level
Elevations
Section a-a
Section b-b
Details
Renders
Model photos
ELEVATIONS

WEST ELEVATION

EAST ELEVATION
SECTION A-A

11. 300mm STEEL RE-INFORCED CONCRETE ROOF SLAB. FINAL DETERMINATION ACCORDING TO ENGINEER'S SPECIFICATION AND DETAIL.

10. 400mm HIGH STEEL RE-INFORCED CONCRETE PARAPET.

9. 450mmx680mm STEEL RE-INFORCED CONCRETE BEAMS. FINAL DETERMINATION ACCORDING TO ENGINEER'S DETAIL.

8. S.A.B.S. APPROVED SAFETY GLASS CURTAIN WALLING.

7. STEEL SHEET FACADE GLAZING AS PER SPECIALISTS SPECIFICATIONS AND INSTALLATION WITH CUSTOM FINISH AS PER FURTHER DETAIL.

6. CONCRETE PAY LOAD BED.
Figure 2.18

Drawings not to scale
DETAILS

Figure 219

PVC PLASTIC BOX GUTTER PLACE ON LAYER OF GYPSUM BOARD, RECESSED BEHIND IBR SHEETING

STEEL IBR PROFILE ROOF SHEETING 500mm GIRTH 125X60XX30X3 COLD FORMED UPPED CHANNEL FIXED TO RAFTER WITH WELDED GALVANISED STEEL PLATE

PURUNS AT 92RC/C ON SUPER INSULATION LAYER WITH FIXINGS TO MANUFACTURERS SPECIFICATIONS

GRADE 304 MILD STEEL CHORD TRUSS BOLTED WITH M12 BOLTS TO A STEEL BRACE PLATE CAST INTO A REINFORCED CONCRETE RING BEAM 280mmX1000mm, AS PER ENGINEERS DETAILS

STEEL IBR ROOF SHEETING CRANDED OVER TO FORM WALL CLADDING WHICH WILL BE JOINED WITH SELF-TAPPING SCREWS TO A UPPED CHANNEL WELDED TO C-CHANNELS BOLTED TO THE WALLING.

C-CHANNEL WILL HOLD THE 100mm PVC PLASTIC DOWN PIPE IN PLACE WHICH IS TO BE HIDDEN BEHIND THE IBR SHEETING.

Figure 220

FULL BORE OUTLET AS PER SPECIALIST INSTALLATION
DERBISUM SP4 ON 40mm SCREWED WITH MIN SLOPE OF 5 DEGREES ON 225mm REINFORCED CONCRETE SLAB AS PER ENGINEERS DETAILS

300mm REINFORCED CONCRETE WALL WITH 400mm HIGH PARAPET AS PER ENGINEERS DETAILS

FULL BORE RAIN WATER OUTLET INTO 100mm PVC PLASTIC DOWN PIPE HIDDEN IN CONCRETE WALL AND HELD IN PLACE BY STEEL CAGE AS PER ENGINEERS DETAILS

600x1200 X 10mm RHINOBORD SUSPENDED CEILING BOARD FIXED ON COLD ROLLED UPPED GALVANISED MILD STEEL WELDED WITH SUSPENSION SPRING CLIP ACROSS, HOOKS COMBINED WITH SUSPENSION PLATES FIXED AND DETERMINED BY SPECIALIST.

MIN 400mm SPACE BETWEEN SLAB AND CEILING BOARD TO SUPPORT INSULATION LAYER AND HIDE LIGHT FIXTURE FIXED AND DETERMINED BY SPECIALIST.

Figure 221

DETAIL 2

IBR SHEETING ATTACHED WITH SELF-TAPPING SCREWS TO UPPED CHANNEL PURUNS FIXED TO RAFTER WITH WELDED GALVANISED STEEL PLATE

75mm PVC RAIN WATER OUTLET PIPE HIDDEN WITH THE H-BEAMS WEB HOLLOW FLOWING DOWN FROM PVC BOX GUTTER

76.3mm HSS STEEL STRUCTURAL TUBING STRUT RUNNING THE LENGTH OF THE OVERHANG

I-BEAM AND COLUMN CONNECTED WITH M6 BOLTS AND SUPPORTED BY A REINFORCEMENT HAUNCH AND STRUT
50mm diameter grade 316 stainless steel handrail fixed to 10mm diameter grade 316 stainless steel rod with screw threads to fix to underside of handrail.

10mm diameter grade 316 stainless steel rods with screw threads to fix to underside of handrail.

50mm x 20mm grade 316 stainless steel balustrade fixed to 25x76x3mm cold formed galvanised steel angle with M6 galvanised mild steel bolts and nuts.

10mm grade 316 stainless steel balusters fixed to grade 304 stainless steel purpose made 8mm shoe screwed to 50x20mm grade 316 stainless steel balustrade with stainless steel self-tapping screws.

350x50mm galvanised steel treads fixed with 6mm steel angled self-tapping screws.

200x100mm hot rolled galvanised steel I-section bolted to concrete surface bed with M12 galvanised mild steel anchor bolts.

75x50x3mm cold formed galvanised steel angle bolted to 200x100mm hot-rolled galvanised steel I-section.

Concrete surface bed.

Steel I/B profile roof sheeting 550mm width 125x65x30x3 cold formed u/pep channel fixed to rafter with welded galvanised steel plate.

Purlins at 920c/c on super sidilation 405 insulation layer with fixings to manufacturers specifications.

Grade 304 mild steel chord truss site welded and bolted with M12 bolts to a steel grade 304 girder running perpendicular to truss.

Steel angles welded to the girder allows the clerestory awning windows to be held in place at 2000mm intervals in line with adjacent trusses.

Loctite clear silicone waterproof sealant.

S.A.B.S. approved safety glass.

Grade 304 mild steel girder is supported on reinforced concrete ring.

Extending girder beam downwards provides area for attachment of lower level I-beam to the girder by means of M12 bolts.

Figure.222  Figure.223

Drawings not to scale

Design
LIST OF FIGURES

Figure 1: Cover
Source: Author (2018)

Figure 2: Relocating Township
Source: Author (2018)

Figure 3: Document Structure
Source: Author (2018)

Figure 4: Isolated Civic Buildings
Source: Author (2018)

Figure 5: Township Landscape
Source: Author (2018)

Figure 6: Segregated City
Source: Author (2018)

Figure 7: Disconnected Core
Source: Author (2018)

Figure 8:
Source: https://www.emaze.com/@ALIZLOZL/Imperialism-SA

Figure 9:
Source: https://www.travelground.com/attractions/apartheid-museum

Figure 10:

Figure 11:
Source: https://sobify.com/25-incredible-images-that-couldnt-possibly-change-your-life/

Figure 12:
Source: https://www.rnews.co.za/article/singaphi-street-steering-new-brighton-into-vibrant-township-economy

Figure 13:
Source: https://www.nmbt.co.za/listing/red_location_museum.html

Figure 14:
Source: https://thematrixcc.co.za/project/embizweni-square

Figure 15: Apartheid group areas

Figure 16: Garden City Model
Source: https://www.researchgate.net/figure/Ebenezer-Howard-Garden-City-model-1898_fig1_307138728

Figure 17:
Source: https://www.researchgate.net/figure/The-Clarence-Perry-Neighborhood-Unit-diagram-of-1929-Note-the-size-roughly-1-2-mile_fig9_307746242

Figure 18: Public building has no connection to the public realm
Source: Author (2018)

Figure 19: Poor relationship between buildings
Source: Author (2018)

Figure 20: No attempt to create public space
Source: Author (2018)

Figure 21: Wasted potential
Source: Author (2018)

Figure 22: Separated
Source: Author (2018)

Figure 23: Isolated
Source: Author (2018)

Figure 24: Neighbourhood model
Source: Author (2018)
Figure 25: Neighbourhood Model in New Brighton
Source: Author (2018)

Figure 26: Physical nature of schools
Source: Author (2018)

Figure 27: Physical nature of school plans
Source: Author (2018)

Figure 28: Physical nature of school elevation
Source: Author (2018)

Figure 29: Department of education school model
Source: Author (2018)

Figure 30: Port Elizabeth
Source: Author (2018)

Figure 31: Northern Suburbs
Source: Author (2018)

Figure 32: Port Elizabeth as a racially segregated city
Source: Author (2018)

Figure 33: The closure of existing townships and relocation of its residents to the newly established New Brighton in 1903
Source: Author (2018)

Figure 34: New Brighton’s placement in relation to Port Elizabeths CBD
Source: Author (2018)

Figure 35: https://www.nmbt.co.za/arts__culture_port_elizabeth.html

Figure 36: Source: Author (2018)

Figure 37: Source: http://www.thecricketmonthly.com/story/863979/the-faces-of-transformation

Figure 38: Source: alamy.com

Figure 39: Source: Author (2018)

Figure 40: Source: http://thecasualobserver.co.za/port-elizabeth-yore-defiance-campaign-1952/

Figure 41: Source: Author (2018)

Figure 42: Source: https://shotleft.co.za/2017/11/explore-more-of-port-elizabeth/

Figure 43: Connectivity Framework
Source: Author (2018)

Figure 44: Built form
Source: Author (2018)

Figure 45: New Brighton urban fabric
Source: Author (2018)

Figure 46: All activities in New Brighton
Source: Author (2018)

Figure 47: Schools in New Brighton
Source: Author (2018)

Figure 48: Chosen schools
Source: Author (2018)

Figure 49: Composite analysis
Source: Author (2018)

Figure 50: Chosen site
Source: Author (2018)
Figure 51: New Brighton
Source: Author (2018)

Figure 52: Site
Source: Author (2018)

Figure 53: Natural vs built environment
Source: Author (2018)

Figure 54: Site investigation
Source: Author (2018)

Figure 55: Aerial investigation
Source: Author (2018)

Figure 56: Photos
Source: Author (2018)

Figure 57: Photos
Source: Author (2018)

Figure 58: Photos
Source: Author (2018)

Figure 59: Photos
Source: Author (2018)

Figure 60: Photos
Source: Author (2018)

Figure 61: Photos
Source: Author (2018)

Figure 62: Security Bars
Source: www.archdaily.com/135432/ubuntu-centre-field-architecture

Figure 63: Security
Source: www.archdaily.com/135432/ubuntu-centre-field-architecture

Figure 64: Fencing Isolation
Source: Author (2018)

Figure 65: Helenvale Security Tower
Source: https://www.mbda.co.za/programmes/helenvale-spuu/

Figure 66: Segregation
Source: Author (2018)

Figure 67: Inkwenkwezi Secondary School hierarchy
Source: http://www.spatialagency.net/database/noero.wolff.architects

Figure 68: Red Location hierarchy
Source: https://iwan.com/portfolio/red-location-museum-port-elizabeth-noero-wolff/

Figure 69: Source: https://iwan.com/portfolio/red-location-museum-port-elizabeth-noero-wolff/

Figure 70: Source: http://www.sbtbuilding.co.za/Project_RedLocationLibrary.html

Figure 71: Source: https://fireflyafrica.blogspot.com/2008/10/red-location-museum-and-cottages.html

Figure 72: Source: https://www.nmbt.co.za/arts__culture_port_elizabeth.html

Figure 73: Source: https://www.archdaily.com/603169/7-architects-designing-a-diverse-future-in-africa/54eb4d83e58ece56e300000b-the-thusong-service

Figure 74: Source: https://cooper.edu/isd/news/KereLecture

Figure 75: Source: https://architizer.com/projects/guga-sthebe-childrens-theatre/
Figure 76: Vegetation  
Source: https://www.archdaily.com/135432/ubuntu-centre-field-architecture

Figure 77: Landscaping  
Source: https://www.archdaily.com.br/01-46699/canadas-parque-abis-arquitectura/1334889072-05610-155/

Figure 78: Tree lined street  
Source: Author (2018)

Figure 79  
Source: https://www.noeroarchitects.com/project/delft-day-care-centres

Figure 80  
Source: https://www.noeroarchitects.com/project/delft-day-care-centres

Figure 81  
Source: https://www.noeroarchitects.com/project/delft-day-care-centres

Figure 82  
Source: https://www.noeroarchitects.com/project/delft-day-care-centres

Figure 83  
Source: https://www.noeroarchitects.com/project/delft-day-care-centres

Figure 84  
Source: https://www.archdaily.com/135432/ubuntu-centre-field-architecture

Figure 85  
Source: https://www.archdaily.com/135432/ubuntu-centre-field-architecture

Figure 86  
Source: https://www.archdaily.com/135432/ubuntu-centre-field-architecture

Figure 87  
Source: https://www.archdaily.com/135432/ubuntu-centre-field-architecture

Figure 88  
Source: http://www.wolffarchitects.co.za/projects/all/first/

Figure 89  
Source: http://www.wolffarchitects.co.za/projects/all/first/

Figure 90  

Figure 91: Traditional Plan  

Figure 92: Montessori Plan  

Figure 93: Spine/ Street Plan  
Source: www.infrastructure.alberta.ca/Content/docType486/Production/ArchitecturalGuidelines.pdf

Figure 94: Courtyard Plan  
Source: www.infrastructure.alberta.ca/Content/docType486/Production/ArchitecturalGuidelines.pdf

Figure 95: City/ town Plan  
Source: www.infrastructure.alberta.ca/Content/docType486/Production/Architectural

Figure 96: Atrium Plan  
Source: www.infrastructure.alberta.ca/Content/docType486/Production/Architectural

Figure 97: Cluster Plan  
Source: www.infrastructure.alberta.ca/Content/docType486/Production/Architectural

Figure 98: At an intersection of public transport routes  
Source: Author (2018)

Figure 99: On a public transport route  
Source: Author (2018)
Figure 100: Next to a public transport route  
Source: Author (2018)

Figure 101: Modern vs Traditional  
Source: Author (2018)

Figure 102: Classroom Arrangements  
Source: Author (2018)

Figure 103: Arranged along circulation route  
Source: Pinterest

Figure 104: Inbetween classroom arrangements  

Figure 105: Loosely arranged classrooms  
Source: van der Walt (2015)

Figure 106: Linear arranged classrooms  
Source: https://constructionreviewonline.com/2016/05/south-african-schools-get-mobile-double-storey-buildings/

Figure 107: Staggered arranged classrooms  

Figure 108: Flexible Classrooms  
Source: van der Walt (2015)

Figure 109: Forecourt  
Source: https://www.leadingarchitecture.co.za/tag/limpopo/

Figure 110: Courtyard  
Source: http://www.wolfarchitects.co.za/projects/all/inkwenkwezi/

Figure 111: Outside Learning  
Source: https://www.visi.co.za/winning-sa-school-architecture/

Figure 112: Frame views  
Source: http://madiathavha.com/dsc_0173x800

Figure 113: Pass by a space  
Source: Ching (2007)

Figure 114: Terminate in a space  
Source: Ching (2007)

Figure 115: Pass through a space  
Source: Ching (2007)

Figure 116: Pass by a space  
Source: http://www.sherwoodengineers.com/projects/campus-education/marin-county-day-school/

Figure 117: Terminate in a space  
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Figure 118: Pass through a space  
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Figure 120: Natural Lighting  
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Figure 121: Natural Ventilation  
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Figure 123: Concrete Wall  
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Figure 124: Brick Wall  
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Figure 172: Forecourt

Figure 173: Formalised shop fronts

Figure 174: Flexible spaces
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Figure 185: Music class

Figure 186: Art Studio

Figure 187: Eating area
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Figure 188: Courtyard

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Figure 190: GRID STRUCTURE
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Figure 191: ACTIVATING EDGES
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NAME: LAUREN HENDERSON

STUDENT NUMBER: 211072850

QUALIFICATION: M. ARCH PROFESSIONAL

TITLE OF PROJECT: THE DESIGN OF A LEARNING RESOURCE CENTRE IN NEW BRIGHTON, PORT ELIZABETH

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