Exploring the impact of the intellectually challenged demands through Architecture:

Towards a training and living facility within the iLembe district

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DECLARATION

The Registrar Academic
University of KwaZulu-Natal

Dear Sir/ Madam

I, Joeshnee Pillay, hereby declare that unless otherwise indicated, this thesis is my work and has not been submitted in part or full for any other degree purposes at any other University.

_____ _____

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Masters Candidate **Date**

DEDICATION

To my parents, Edwin and Lucy,

You have shown me what hard work and dedication can achieve. Thank you for always supporting me throughout this process and providing me with the love and motivation to keep going. There are not enough words to tell you how grateful I am to have you as my parents.

This dissertation is dedicated to both of you.

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Thank you to my supervisor, Juan Solis-Arias for all your help and guidance.

To the Stanger Training Centre team for letting me inside your school with your arms wide open and for always answering my never-ending questions.

I am immensely grateful to my best friend and sister, Serisha, for putting up with my crazy moods while I was writing this dissertation and for always listening to me and giving me advice when I really needed it.

ABSTRACT

In South Africa, those who are intellectually cognitive challenged are still a highly stigmatised group of people. However, the country has one of the highest numbers in Africa of people who have intellectual cognitive challenges. A 2003 census found that there were 2,255,982 people living with some sort of disability in South Africa. Rural areas have the highest percentage, with about 3,7 % of the population suffering with some type of intellectual cognitive challenges. This number increases yearly and the lack of appropriate facilities to accommodate this community has been a constant struggle. Thus, appropriate architectural interventions are required.

"In addition to resolving rational problems and fulfilling functional, technical and other demands, *profound architecture* is always expected to evoke human, experiential and existential values that cannot be prescribed" (Pallasmaa, 2009: 109).

This architecture can be achieved by employing various design elements, such as composition of form, orientation and multi-sensory design. The latter can be implemented in the built environment to create architecture with powerful outcomes that enrich the lives of those with intellectual cognitive challenges. Moreover, in recent years, multisensory interventions have been utilised to help facilitate the learning process for the intellectually cognitive challenged.

According to the scholar Briony Turner (2016)"Multi-sensory design offers a framing for the conscious consideration and testing of how the built environment can provide a healthy and beneficial human experience. The design and placement of objects, urban form, the opportunities afforded for social interaction and the environmental characteristics of a place all interact at a moment in time to create a multi-sensory experience. The legacy of these sensory stimuli is manifest in the perceptions, emotions and experiences we individually and collectively feel, respond to and remember."

Various theories, employed to critically analyse the precedent and the case studies, are explored in the literature review. Culture theory is investigated, in order to understand KwaDukuza's society and assist in creating a connection between people with intellectual cognitive challenges and the existing community. In addition, phenomenology is utilised as a theoretical philosophy to link architecture with architectural interventions .Wayfinding is employed as a means to help those with intellectual cognitive challenges to navigate through the proposed building with comfort and ease.

This dissertation seeks to provide valuable information and appropriate architectural interventions that will assist in designing a facility to educate, train and accommodate adults with intellectual cognitive challenges. This facility will be located adjacent to an existing educational facility in KwaDukuza for children who have intellectual cognitive challenges.

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CHAPTER ONE

RESEARCH BACKGROUND AND METHODOLOGY

1.1 INTRODUCTION

1.1.1 Background

People with intellectual cognitive challenges are one of the most marginalised groups of people in the world. A lack of understanding about the basic requirements and facilities to cater for their needs has resulted in a large gap in healthcare provision (Foskett, 2014).

Healthcare is one of the fundamental rights of citizens, while equality in accessing good healthcare is the basis of fulfilling a human's right to health. According to the World Health Organisation (WHO), intellectual cognitive challenges are a serious problem for the entire world, with an estimated 1-3% of the world's population suffering from this impairment (Forsett, 2014). Epidemiological surveys indicate that up to two-thirds of children and adults with mental challenges have co-morbid disorders that include cerebral palsy and epilepsy (Christianson, Zwane, et al, 2001).

In South Africa, there has been a drastic increase of people with intellectual cognitive challenges, with the last census in 2015 showing an extremely high rate of mental retardation (Statistics South Africa, 2015). Figure 1 demonstrates the percentage of disabled people living in each province. In fact, four out of every 100 South Africans are affected by some level of intellectual impairment, according to Cape Mental Health (Cape Mental Health ,2017), as a result of factors that include trauma before birth, infection, and exposure to alcohol, drugs or other toxins. However, according to the South African college of applied psychology in South Africa, the leading cause of intellectual cognitive challenges is Fetal Alcohol Spectrum Disorder (FASD) (South African College of Applied Psychology, 2015). These patients require treatment for their disabilities their entire lives. The Mental Health Care Act 17 of 2002 states that the government is "to provide for the care, treatment and rehabilitation of persons who are mentally ill" (Mental Health Care Act 17 of 2002, :1).

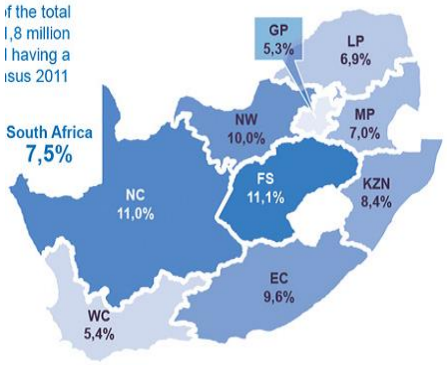


Figure 1: Map of South Africa showing the percentage of disabled people that live in each province.This includes people who are intellectually cognitve challenged.
Source: www.statssa.gov.za 2014

However, the lack of appropriate facilities for the treatment of patients has become a major issue. Figure 2 demonstrates this, with a psychiatric hospital being utilised to accommodate those with intellectual cognitive challenges. Today many challenges face the design of appropriate facilities, in terms of meeting patients' needs. Then there is the issue of the inaccessibility of patients to their families as well as the outside world, preventing any participation within society. This research seeks to understand the role of the built environment in relation to this. How can the use of architectural design elements influence a patient? How can architecture influence treatment of these patients, as well as allow them to understand and navigate within the spaces around them? In essence, a successful design could give patients an amount of freedom and independence and take away their frustration at being a burden to their families.

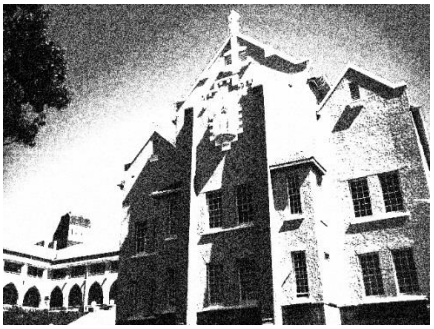


Figure 2: Sketch of St Joseph's psychiatric hospital in Durban, where patients who have intellectual cognitive challenges are housed
Source:www.lifehealthcare.co.za
2015

1.1.2 Motivation/justification of the study

This research has been inspired by two factors. One, by the recent Life Esidimeni disaster that occurred in 2017, when the decision was made by the MEC for Health in Gauteng, Qedani Mahlangu, to terminate the contract between the Department of Health and Life Esidimeni. This resulted in around 2,000 patients who had intellectual cognitive challenges and others who were mentally ill being moved out of Life Esidimeni to NGOs, families, or psychiatric hospitals, similar to figure 3, in a period of one year. The MEC claimed that her decision was made due to the need to economise and the policy of deinstitutionalising. This policy required a gradual process after developing and implementing alternative community care facilities. The lack of these alternative care facilities resulted in 143 mentally ill and intellectually cognitive challenged patients dying. The second factor motivating this research emerges from the personal experience of growing up with a person afflicted by the impairment. It was noticed that, with continuous support of family, as well as other interventions, that gradual improvements could be made by a patient. How can a built environment influence recovery in a patient? What kind of facilities and spaces could add in the facilitation of the healing process?

Figure 3: Showcasing the state of Tower Psychiatric Hospital. This is similar to many of the NGOs where the patients of Life Esidimeni hospital were sent to live.
Source: www.grocotts.co.za
2018

1.2 DEFINITION OF THE PROBLEM, AIMS AND OBJECTIVES

1.2.1 Definition of the problem

Intellectual cognitive challenges in South Africa, especially in rural communities, have been associated with witchcraft, redemption or punishment from God. As a result, many families conceal the identity of persons suffering from intellectual cognitive challenges and regard them with shame. This has led to a lack of exposure for people with such challenges in their communities. Families do not see the need to send these children suffering from Intellectual cognitive challenges to school and, as a result, they grow up to be non-participating members of society, with no education and no future. Figure 4 describes the challenges faced by the families of children with intellectual intellectually cognitive challenged face.

The government then has the task of providing these persons with an alternative living facility. However, the provision of long-term mental health care for people with mental disorders has been, and still is, one of the major challenges facing the mental health care system in South Africa. With the lack of funding and overcrowding of existing facilities, thousands of patients are out roaming the streets. The design of these facilities and treatments they offer are made to meet budgets and not the needs of patients, which causes them to feel more isolated and insecure, which is detrimental to their health and wellbeing.

The built environment has the ability to enrich the way we experience space, and, with the right design tools, one can create an environment that eases stress, supports the patient and informs the community at large, creating a network of educated, supportive community members.

According to Bacon: “It is one thing to delimit space by structural elements such as walls. It is quite another to infuse the space with a spirit which relates to the activities that take place in it and which stirs the senses and emotions of the people who use it.” (Bacon, 1976, in Jencks & Kopf, 1997)

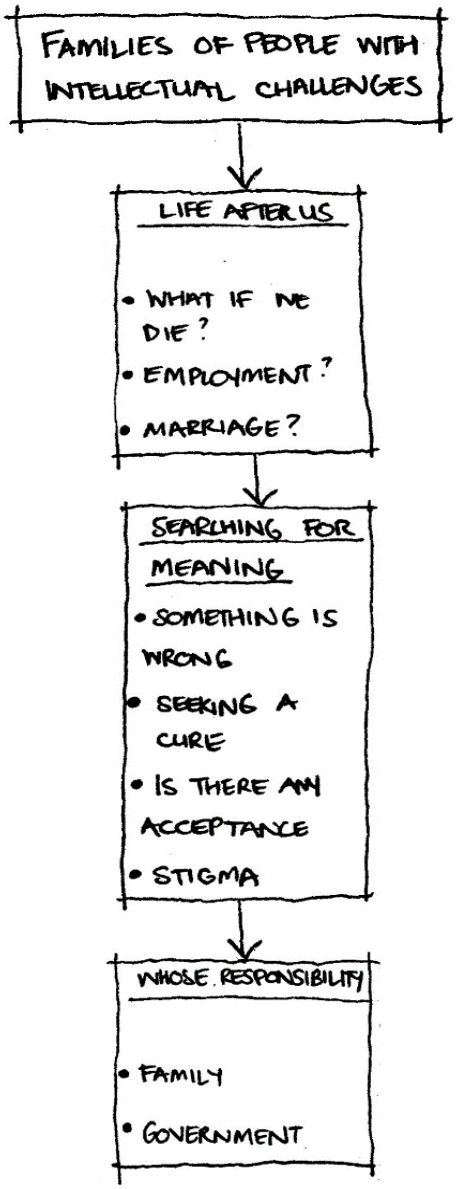


Figure 4: Challenges faced by the families of the intellectually challenged.
Source: www.ajod.org 2016

1.2.2 Aims

The main aim of this research is to create substantial knowledge on architectural designed spaces, to treat, educate and create a better living environment for people with intellectual cognitive challenges. This information will help to influence the future designs of facilities for people that are intellectually cognitive challenged.

Researching facilities specifically for adults with intellectual cognitive challenges, the design employed will focus on a way in which to treat these persons using non-intrusive methods, ensuring benefits not only to the patient, but the families and healthcare workers.

1.2.3 Objectives

The main objective of this research is to achieve wellness for those who have intellectual cognitive challenges, through appropriate architectural design.

To achieve some amount of independence and dignity in the lifestyles of people with intellectual cognitive challenges, perpetuated through the use of architectural design solutions.

To create Salutogenic architectural design that achieves the correct balance between medical treatment, supervision and patient privileges.

To assist intellectually challenged adults to achieve their full potential, regardless of the challenges that they may have had to face during their childhoods or are experiencing at present.

To use architectural design to help create an environment in which persons with intellectual challenges can learn new skills that they can use to improve themselves.

1.3 SETTING OUT THE SCOPE

1.3.1 Delimitation of Research Problem

This research will include the design elements utilised for adults with mild intellectual cognitive challenges. This includes adults with cerebral palsy, Down syndrome, autism spectrum disorders, Fragile X syndrome and developmental delay. These people have an IQ that ranges from 50 to 70.

This is due to the fact that while there are facilities that cater for challenged children, once they have become adults there is a lack of inclusive environments for them to live, learn and work in. This study will focus on a training facility and living environment that targets the main senses in which we explore the built environment, such as: vision, hearing, smell and touch.

Finally, it will include the design elements employed to create a training facility and living environment for persons with intellectual cognitive challenges.

1.3.2 Definition of terms

Intellectual cognitive challenges: These are conditions that are characterised by a combination of a significantly below-average level of general intellectual functioning, accompanied by significant limitations in adaptive functioning in the areas of communication, self-care, home living, social skills, community use, self-direction, health and safety, functional academics, leisure and work (APA, 1994) .

Intellectual functioning: This is also known as IQ, which refers to a person's ability to learn, reason, make decisions and solve problems.

Community Mental Health Services: These are mental health services delivered at a community level, supported by psychiatrists and specialist mental health professionals, and that incorporate the provision of residential care.

Cognitive demands: These are abilities that enable a person to think conceptually and stimulate the person to make connections that lead to different actions or skills to complete a task.

Culture: This is the way in which a society thinks, behaves and reacts to situations. It encompasses their beliefs, rituals and values.

Adaptive behaviour: These are skills that are necessary for day-to-day life, such as being able to communicate effectively, interact with others and take care of oneself.

Disability: This refers to specific learning problems that affect the development of certain skills, such as reading, writing, listening, speaking, reasoning and mathematics.

Co-occurring conditions: Some mental health, neurodevelopmental, medical and physical conditions frequently co-occur in individuals with intellectual disability, including cerebral palsy, epilepsy, ADHD, autism spectrum disorder and depression and anxiety disorders. Identifying and diagnosing such conditions can be challenging, for example recognising depression in someone with limited verbal ability.

Health Care Facility: This is a community health centre, clinic, hospital or any institution that provides health care in any form, including treatment, nursing care, rehabilitation, palliative, preventative or other health services to members of the public.

Medium- to long-stay facilities: These are healthcare facilities that provide long-term care with 24-hour skilled nursing care for homes, daycare facilities, ambulatory psychiatric care and primary mental health care.

Multi-sensory: Such structures convey impulses that result or tend to result in sensation, as a nerve. “Multi” suggests the many ways whereby people receive impulses through sight, hearing, taste, smell, and touch.

Figure 5: Open Circle is an example of a medium- to long-stay facility for those who have intellectual cognitive challenges. It is located in Cape Town. Source:www.opencircle.org.za

Light: This is a natural agent that stimulates sight and makes things visible.

Materials: This refers to a substance or substances of which a thing is made or composed.

1.3.3 Stating the Assumptions

The following statements are assumed to allow for the continuation of research:

- There is no problem in gaining access to the required information; and

- There are no problems in obtaining participants for questionnaires.

1.3.4 Key Questions

1.3.5.1 Primary Question

1. How can the wellness of those who have intellectual cognitive challenges be influenced through appropriate architecturally designed space?

1.3.5.2 Secondary questions

1. What kind of treatments assist people with intellectual cognitive challenges and how can architectural design influence these treatments?

2. What type of Salutogenic architectural design is typically employed for the intellectually cognitive challenged?

3. What architectural design principles will facilitate a multi-sensory environment for the intellectually challenged and how can these architectural design principles be implemented to create an ideal training and living environment for adults who have intellectual challenges?

1.3.5 Hypothesis

If multi-sensory design approaches are utilised in architecturally designed facilities for those who have intellectual cognitive challenges, an appropriate environment that is conducive to better learning and living for people with intellectual cognitive challenges will be created, while also educating the community about such facilities.

1.4 RESEARCH METHODS AND MATERIALS

1.4.1 Introduction

The type of research that will be conducted seeks to provide great insight to garner a wealth of knowledge for future facilities for those with intellectual cognitive challenges. Thus, the qualitative research method will be utilised for this dissertation, as it will provide a more holistic synthetic and interpretive approach. (Mouton, 1996).

1.4.2 Research method

For this dissertation, the research has been divided into two categories, Primary data and secondary data. Primary data will be in the form of questionnaires, observations and investigations for two case studies: one at the Training center located in KwaDukuza and the other at Little Eden, in Bapsfontein, Johannesburg.

This type of data collection method has been chosen because it will obtain first-hand experience of people engaged with the intellectually cognitive challenged on a daily basis. This information will be useful in understanding the needs of those who have intellectual cognitive challenges and the shortcomings of spaces designed for them.

Secondary data will be in the form of literature review and information gathered through precedent study one, at the 3 Pins Residence and Day Centre for People with Intellectual Disabilities and Troubles of Behavior.

The literature will explore theories of culture, multi-sensory design, phenomenology, and the concept of wayfinding, while the precedent studies will seek to understand existing buildings and how these theories have been implemented.

Primary data

Questionnaires & observations

Twenty questions will be asked in the questionnaire. Each has been specifically tailored to provide insight and gain a wealth of knowledge that will be employed to produce data. These questionnaires will be handed out to built environment professionals, government workers in the Department of Health (DOH), psychologists and people who work with the intellectually challenged on a daily basis. There will be no direct questionnaires to those who are intellectually cognitive challenged. These questionnaires aim to provide a greater knowledge of new and existing design techniques for these people.

Observations will be undertaken in existing facilities for adults with intellectually cognitive challenges. These will be made during the course of four visits. Each visit will consist of two hours' observation of those with intellectual cognitive challenges. Observation visits will also provide an opportunity for the researcher to take photographs, some of which can be utilised for the dissertation to strengthen the argument. This will provide insight into how such people use the existing spaces as well as the objects around them, which will inform the proposed design.

Case studies

These will be physical observations of local buildings that have incorporated theories of culture, multi-sensory design and the concept of wayfinding into built form. This architecture will be investigated in terms of architectural principles, forms, functionality, site incorporation as well as the positives and negatives of each building.

This investigation will help to understand the relationship between architecture and literature.

Secondary data

Literature review

To answer the main research questions, knowledge acquired through existing material – such the book by Anna Jean Ayres, *Sensory Integration and Learning Disorders* (1970), published articles such as Kaye Foskett's (2014) *Intellectual Disability in South Africa* and Lindsay Castell's (2014) *Adapting Building Design to Access by Individuals with Intellectual Disability* – as well as other information, will be employed to understand the topic and its relationship to the built environment. This will lead to a process whereby the scientific facts and information that have been gathered are first utilised to determine their validity and then applied sequentially to make sense for the reader, before validating the research.

Precedents studies

A critical analysis will be conducted of existing buildings designed for the accommodation and treatment of the intellectually cognitive challenged, which are located in similar areas, in order to discern how these strategies worked and whether they can be incorporated into the proposed design.

1.4.3 Sampling Method

The stratified random sample method will be employed. There will be no interviews of or handing out of questionnaires to those who have intellectual cognitive challenges, but rather to the people who work with them and who are around them daily. A total of 20 participants will be utilised for data collection. Ten participants will be used from case study one, which is the Training centre in KwaDukuza.

The Training centre is a facility for children with intellectual cognitive challenges, ranging in age from 4 to 18 years old. This case study has been chosen firstly to understand the type of education that children with intellectual cognitive challenges receive, in order to comprehend the type of learning that would be best for adults with these challenges. The second reason of choosing this case study is that the site is located adjacent to where the proposed facility will be located. It thus deals with the culture of the area, which will be incorporated into the proposed facility.

The other 10 participants come from case study two, Little Eden, a facility for adults with intellectual cognitive challenges located in Bapsfontein, Johannesburg. This case study was chosen because it is one of the oldest live-in facilities in South Africa for adults with intellectual cognitive challenges. Thus, it would have a wealth of knowledge on people with intellectual cognitive challenges and their needs. The facility has also implemented culture theory and the Theory of Multi-Sensory Design and phenomenology in the construction of their building. These theories will also be utilised in the proposed project. This will demonstrate how these theories can be implemented in built form in a South African setting.

1.4.4 Data analysis method

The information will be thematically analysed and placed into various charts and graphs to give a clear understanding of the findings. Thematic analysis will be employed, as the main data is gathered from people and this type of data analysis allows for the flexibility that is required in dealing with human subjects; it also allows for interpretation of the data, as it is simple to use and allows patterns to be identified within the data (Braun and Clarke, 2006).

1.4.5 Conclusion

These findings will help to understand what is required to create the best design for adults who are intellectually challenged.

Data analysis will be undertaken with theories, concepts and research questions to validate this research. The analysis will result in a reliable source of information, as every precaution will be taken to ensure that the integrity of the data is maintained. The questionnaire process will be achieved in an open setting with willing participants. All observations will be undertaken in an unbiased manner so that the outcomes will represent real data and not preconceived ideas. The data can then be utilised to answer research questions and problems, as well as provide valuable information on architectural principles to be employed for people with intellectual cognitive challenges.

1.5 CONCEPTS AND THEORIES

1.5.1 Introduction

Architecture, on a primary level, is there to serve man by providing necessary shelter. However, this mere shelter can be transformed radically when it is given greater meaning on a psychological level. Architecture, in essence, can be meaningful and provide a deeper function by offering a heightened experience of a building and providing a better quality of life. These can transform a person's daily existence in a building and help to define the relationship between space and man (Hong-Li Wong, 2006).

1.5.2 Cultural Theory

In some cases, architecture can be described as the direct expression of a society's culture. It is the sum product of the culture that surrounds it. However, only certain aspects of culture are manifested in a building. To learn how this happens, we must first understand what culture is.
Culture can be described as "the collective programming of the mind which distinguishes the members of one group or category of people from another" (Hofstede, 1994: 5). This includes the various religious beliefs, mannerisms, values and the way in which a society interacts and uses the built form.

However, children are not born in possession of a culture; it is taught to them as they grow up. Figure 6 describes the different aspects that comprise culture.

One may then ask: How can we see culture? As Amos Rapoport (1969) says in his book, *House Form and Culture*, culture cannot be observed in itself, but rather through its influences and direct reactions, in this case, the architecture (Rapoport, 1969).

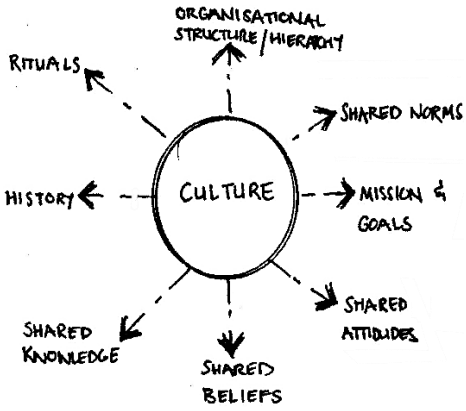


Figure 6: What is culture?
Source: Ghazaleh, 2014

1.5.3 Key Theory of Multi-Sensory Design and Phenomenology

Multi-sensory design is architecture experienced through seeing, touching, hearing, smelling and tasting, all resulting in the total experience of a building. It finds meaning in the surrounding context and creates a rich tapestry of stimuli that touch the human body and inspire the imagination (Turner et al., 2006). Figure 7 illustrates the sensorial elements that make up multi-sensory design.

The built environment consists of form and materials, and the use of light in these spaces has been a primary factor in treating people with intellectual cognitive challenges.

The use of sensory devices can create an environment that is enriched with experience and that affects the emotions, but these can also influence the way a person utilises the space, learns and remembers, as seen in Figure 8. Creating these spaces provides a patient with a way to easily understand their surroundings as these spaces give them a sense of safety, the ability to learn skills and the opportunity to be self-sufficient.

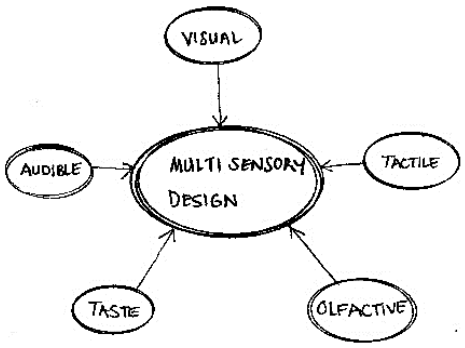


Figure 7: Elements of multi-sensory design.
Source: Author 2018

Although adults with intellectual cognitive challenges have experience of the world through their lives, the manner in which they experience is completely different from the way in which a person without intellectual challenges would have experienced the same situation.

The way that intellectually disabled people function relies greatly on their outward experience. Thus, a multi-sensory design not only enriches their lives, but creates a healthy environment that is filled with multiple interactions and a positive mindset, influenced by the functional quality of space.

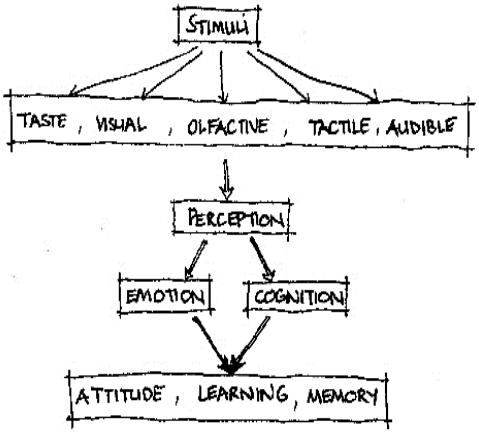


Figure 8: Flow diagram demonstrating how stimuli can lead to learning memory and influence a person's attitude. Source.shoppernews. files.wordpress.com 2012

"Phenomenology is the study of the phenomena or experiences of everyday human life and is part of the development of Western philosophy" (Brenna et al :10). The German philosopher Martin Heidegger theorised that consciousness is not the fundamental idea of phenomenology, but rather an existential approach to one's "being" (Seaman, 2000). Many theorists have sought to understand the awareness of space through the field of phenomenology. During the 1980s, Christian Norberg-Schulz began to research the phenomenology of "place" and he became one of the first theorists to bring Martin Heidegger's theory into architecture. He explained that the environment influences human beings and that phenomenology is, in fact, the "function of quality" (Seamon, 2000). Figure 9 demonstrates the relationship between man and the environment.

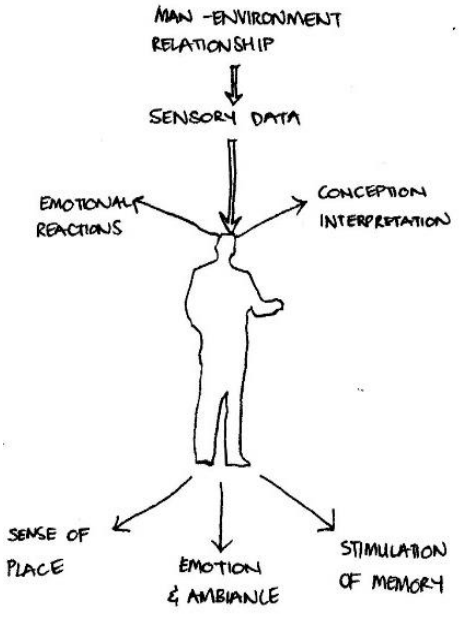


Figure 9: The relationships between man and the environment. Source: www.journals.openedition.org

Through this research, the theory of phenomenology is utilised as a device to connect theory with architectural interventions. This is achieved in order to understand the trigger of experience in terms of acquisition of knowledge and positive experience gained by people who use a building.

1.5.4 Wayfinding

Wayfinding is an information system designed to assist users of a building to navigate and understand a structure, and the space they are experiencing. The ability to understand and use wayfinding information involves cognitive processing and much has been written about how this occurs and how it affects wayfinding (Golledge 1999, 2003; Golledge, Parnicky & Rayner 1979; Passini et al. 1998). Figure 10 demonstrates the four main elements of wayfinding and the information that these elements can relay to a person.

However, according to Castel (2016) wayfinding is problematic for people with intellectual disabilities, as they have cognitive impairments (Castell, 2016). As a result, a special type of wayfinding must be employed for them. Items such as maps, lighting and colour play a vital role for those with intellectual disabilities. Signs need to be clear, concise and easy to understand, preferably utilising pictures instead of words. This provides them with a clear picture for them to orientate themselves and create a memory of how to get from point A to B without fear or hesitation.

Possession of the right amount of information is also important – too little and the person becomes lost, while too much may cause confusion and result in a person being unable to find his or her destination.

Some architectural elements lend themselves to wayfinding, as seen in figure 12. These elements are employed because they are simple and easy understand, especially for those with cognitive challenges.

Figure 11: Wayfinding that utilises stickers of different colours on the floor. Source: www.emchimneysweep.co.uk

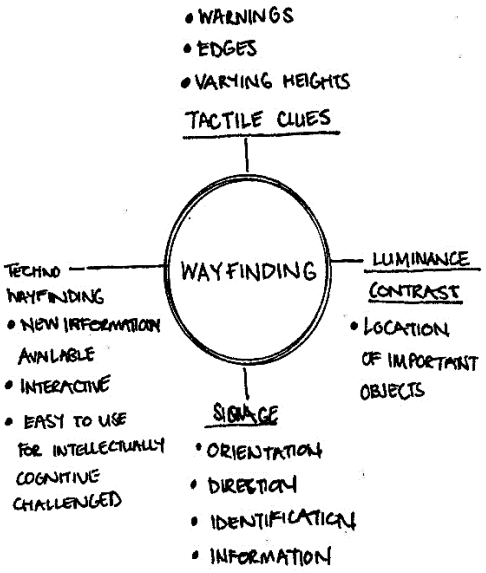


Figure 10: Elements of wayfinding.
Source: Author 2018

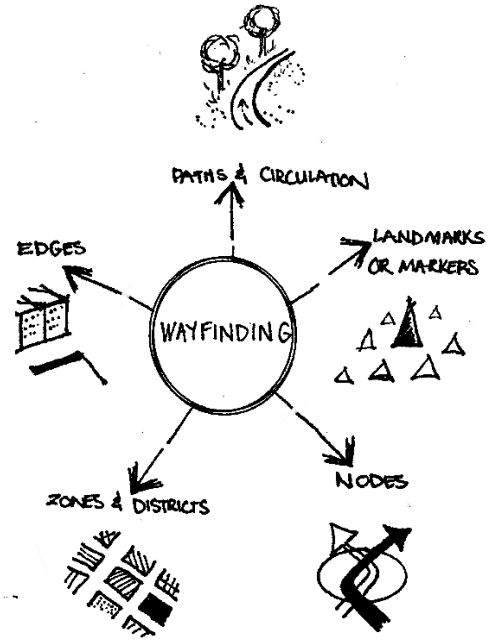


Figure 12: Main architectural elements employed in wayfinding
Source: Author 2018

1.6 Conclusion

People who are cognitively challenged are often rejected, both by the built environment and by people in the mainstream. The lack of knowledge , policy and implementation regarding this impairment has led to the suffering as well negative stigma against countless of intellectually cognitive challenged people and their families in South Africa.

Through this dissertation different theories will be investiated to understand how to address the problems that this community faces. Culture theory will be explored to find a connection and create a community between the intellectually challenged and existing inhabitants. Multi-sensory design will be investigated to understand how these design elements can be utilised to help those with these challenges to learn, as well as live a better quality of life. The concept of wayfinding then seeks to understand how different aspects of a building can be employed to make a building easier for the intellectually challenged to navigate through.

This dissertation seeks to provide architectural guidelines that enable the intellectually cognitive challenged to lead a productive life and demonstrate their true potential in society. The following research seeks to prove this hypothesis.

CHAPTER TWO

LITERATURE REVIEW – THEORIES AND CONCEPTS

CHAPTER 2-LITERATURE REVIEW: THEORIES AND CONCEPTS

2.1 INTRODUCTION

This chapter will investigate the literature that pertains to the theories and how they help to answer the questions raised in the research topic and questions. Figure 13 shows the theories and concept being utilised. Various sources of literature will be employed for comparison, including journal articles, relevant thesis and books that focus on adults with intellectual cognitive challenges and the connections that they make with the built environment. This research aims to investigate how the use of architecture can have a positive impact on the lives of people with intellectual challenges.

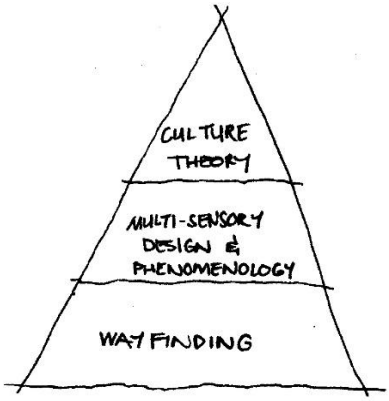


Figure 13: Theories and concepts. Source: Author, 2018.

2.2 INTELLECTUALLY AND COGNITIVELY CHALLENGED ADULTS IN THEIR ENVIRONMENTS

2.2.1 Connection between built form and the wellness of patients

Those with intellectual cognitive challenges experience the world and their environments in a different way to the able-bodied experience the same environment. People with intellectual cognitive challenges seek simpler information from their environments, in order to understand where they are, which enables them to feel safe and navigate their way to their desired destinations.

From our homes to work, most of a person's life is spent indoors. This is truer for people with intellectual cognitive challenges, as they are usually sequestered to the inside of a home or facility. Thus, for the intellectually cognitive challenged the building that they live in becomes their entire world and they make many . There are many connections that the intellectually cognitive challenged make with built form on a daily basis, from the physical connection of touching a wall or opening a window, to the psychological connection of how one experiences feelings of unease or happiness while being exposed to a certain space.

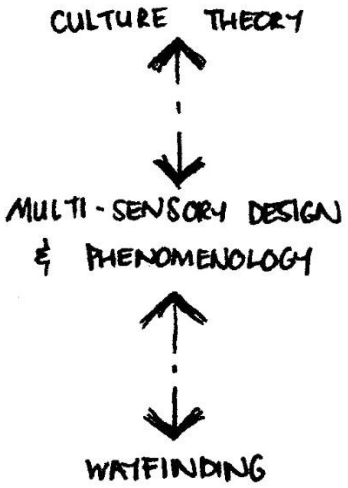


Figure 14: Demonstrates how all of the theories and concepts connect and interlink with each other. Source: Author 2018.

It is then that one must ask how certain elements of built form can assist in guiding a person or uplifting their spirits. Ulrich (1991) and Lawton and Nahemow (1973), in terms of their ecological theory, both argue that there is a "sweet-spot" to be found in a trade-off between designing for comfort and designing for mental and physical challenges.

Salutogenic architecture has been utilised in healthcare facilities for many years in an effort to create a harmonious environment in which the patient feels comfortable and secure. It was developed in the late 1970s by Dr Aaron Antonovsky, a professor and researcher, as a methodical approach that focused on health instead of disease (Ziegler, 2009). This type of architecture has also been proven to improve the mental health and well-being of a patient, as well as enable the user of the building to achieve his or her peak performance while carrying out tasks (Golembiewski, 2016).

Various design principles can be utilised to achieve Salutogenesis. These design principles were proposed by architect Alan Dilani, who sought to apply Antonovsky's methodology into the built environment. As Dilani (2005) states: "The Psychosocially Supportive Design approach is offered as a useful theory and framework to guide healthcare designers and planners who consider how the physical environment impacts wellness factors in order to promote health" (Dilani ,2005:13). Some of the principles that Dilani (2005) suggests are: a clean environment free from filth and disease; a copious amount of natural light that floods all areas of the building; and colours and textures that incite feelings of calm, happiness and comfort (Golembiewski, 2016). Figure 15 (following page) showcases Antonovsky's key principles with Dilani's matching design principles. These tools coincide with aspects of multi-sensory design and, in combination, will inform the design principles to employ in the proposed facility.

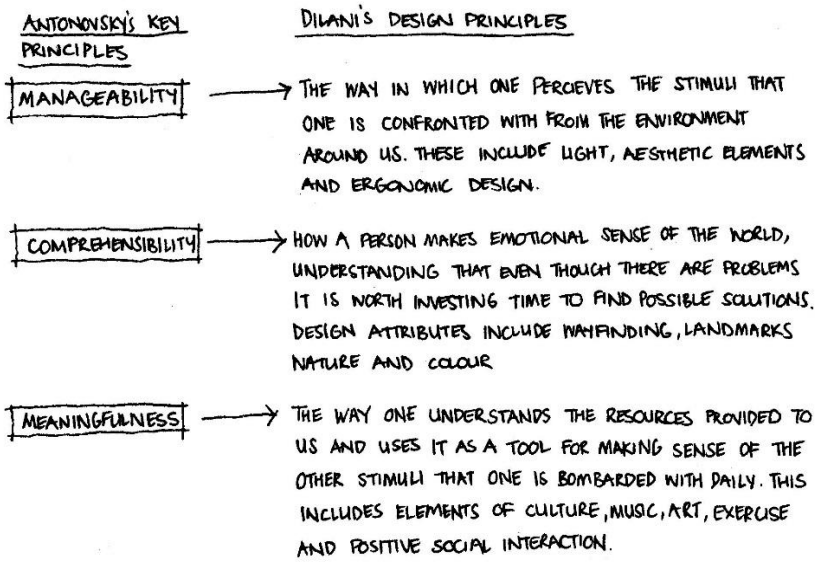


Figure 15: Antonovsky's sense of coherence factors in combination with Dilani's design attributes. Source: Ziegler 2009

2.2.2 Community living and social integration

Deinstitutionalisation is a result of many complex factors spanning across political, monetary and social contexts. It is a practice which has been implemented in other parts of the world, such as in Europe and the US, for many years. In South Africa, deinstitutionalisation only began to take place after the 1997 White Paper Act and the National Health Act 61, when the government began to transfer most of its institutionalised patients to Primary Health Care sites, which are residential and community-based facilities (Mansell, Ericsson, 1996).

However, deinstitutionalisation has led to many problems, due to the lack of planning and proper community living facilities for those who have intellectual cognitive challenges. Nevertheless, it can have many positive effects. One of the major factors which is of benefit is the normalisation of people with intellectual cognitive challenges, by desegregating this community from the rest of the society (Mansell, Ericsson, 1996). According to Krauss and Erickson (1988), people with intellectual cognitive challenges are said to function better in community living situations.

With community living, more priority is placed on personal relationships, person-centred support structures, as well as choice and control (Mansell, Ericsson 1996). In these facilities there is the need to take into account the patient's voice, what he or she wants and desires, and to provide a space where families can easily visit without hesitation. This is in addition to providing a safe and secure environment for the patient, as well as assistants, to create a home and sense of belonging to a community and, ultimately a better quality of life for the intellectually cognitive challenged. This helps them to live a better, healthier, happier life than they would have in an asylum or large intuition. Figure 16 reveals an example of such accommodation in Australia.

Figure 16: Community Housing built in Australia especially for those with intellectual cognitive challenges. The architects have taken into consideration their needs and incorporated this into the homes.
Source: www.abc.net.au 2015

2.2.3 Types of care and support that are needed for adults with intellectual cognitive challenges

People with intellectual cognitive challenges require a certain type of care and support from their helpers. The environment around them needs to be a positive place where people accept them for who they are. Assistants should show encouragement for the daily tasks that their patients perform, from eating and helping to prepare meals, to daily hygiene. It is also the duty of an assistant to help with managing the patients' personal money, co-ordinating their appointments with doctors, psychologists and other service providers, and facilitating their social/recreational activities as well as their interaction with people from the community (Karim, 2018).

Support must also come from the built environment in terms of how a building is designed to meet their needs. This includes floor plans that are simple to navigate and understand, have rooms with adequate amount of space and light, and materials that are strong and hard-wearing, and have specialised spaces for treatment.

2.3 ARCHITECTURE AND THE SENSES

2.3.1 Introduction

"This guidance and appraisal system are known as vision. More than sight, it is the ability to see roughness without feeling, to feel shape without seeing it, to judge distance without walking it, and to interpret attitudes and meanings by gestures and facial expressions." (Getman; Kane; Halgren; Gordon 1968, p. 2).

A human being has five senses – sight, hearing, touch, smell, and taste – and we experience a building by utilising them. The manner in which we engage the senses define an experience as either positive or negative. For people with intellectual cognitive challenges, correct sensory stimulation can be of great value, not only to their lives but also to their development. Castel argues that multi-sensory design can be a great tool for architects and designers to employ in creating environments that benefit people with intellectual cognitive challenges (Castel, 2014).

2.3.2 Defining the role of sensory stimulation in development

For many years now, doctors, psychologists and occupational therapists have come to see the benefits of sensory stimulation for the development and learning of people with intellectual cognitive challenges. Anna Jean Ayres, an occupational therapist, was one of the first to see the progress that intellectually cognitive challenged people made when she introduced this type of treatment as an integrated therapy (Ayres, 1970).

Her research into this therapy began in the 1950s, reviewing literature from the fields of psychology, neurobiology, neurophysiology, motor learning and motor control, something which had never been achieved before by an occupational therapist (Roley, 2007). Ayers discovered that the literature supported her hypothesis, which led to the

development of her own therapy, titled "sensory integration" (Roley, 2007).

Ayers's therapy is highly significant, as it is one of the few theories that has been systematically researched and tested in a clinical setting. The studies that she conducted were able to prove her theories and, in doing so, opened up a whole new field of research for years to come.

Sensory integration is a theory that is continually evolving and growing through updates in practice and advancements in science. It stems from the fact that a human behaviour is the result of neurological processes. If brain stem-level sensory processing is stimulated, it enables the development and specialisation of higher neural centers (Roley, 2007). Ayers noted that the use of sensory integration therapy resulted in improved social participation, behaviour, academic achievement, personal identity and the activities of daily living (Roley, 2007). She also noted the connection between the cognitively challenged and the natural world. Figure 17 demonstrates the elements employed to create this connection.

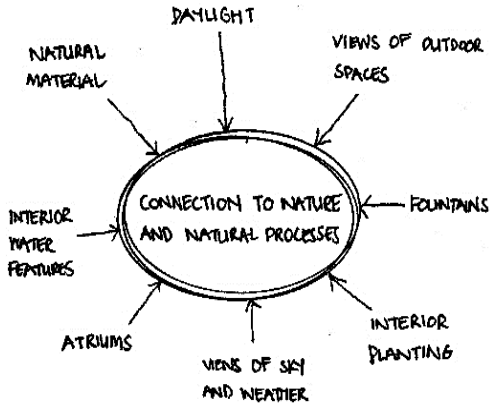


Figure 17: The various elements employed to connect man with nature.
Source: Author 2018

Although this therapy was created for children, Ayers found that it could be of great benefit for adults who had intellectual cognitive challenges. As she conducted her research over many decades, she began to find that people who were challenged did not possess neurological damage, but rather deficits in the central processing of information, which she called sensory integration deficits or sensory integrative dysfunction (Roley, 2007). Ayers discovered that even though those with these challenges showed impairment in one area, they could thrive in other areas. As Ayres (1972) states: "A sensory integrative approach to treating learning disorders differs from many other approaches, in that it does not teach specific skills. Rather, the objective is to enhance the brain's capacity to perceive, remember, and motor plan (as a basis for learning)" (Ayres, 1972). Figure 18 demonstrates the different elements that cause sensory change and variability. These add to a quality of space and create intrigue.

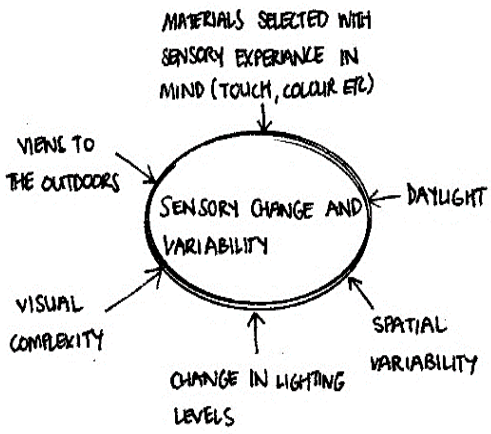


Figure 18: Elements that create sensory change and variability.
Source: Author 2018

2.3.3 Multi-sensory design control

"Multi-sensory design understands the difference between the shallow and the deep; or the enveloping and immersive experiences that nurture us and those that overwhelm. It opens perception rather than swamps it with overload. It does not drown and drain identity and instead enriches it in a paced and purposeful way."
– Charles Landry

Multi-sensory design can be described as the way in which design tools such as light, materials, colours, texture and smells can enhance a building. Briony Turner (2014) argues that having a controlled multi-sensory design not only enhances a person's experience of the building but can manifest perceptions and emotions that create experiences and memories.

Light

Natural daylight is utilised in hospitals and care facilities, as it holds many benefits, including improving the psychological and physiological state of patients and staff members. According to Edwards and Torcellini (2002), numerous studies have shown that use of daylight can reduce the physical and mental strain of both patients and doctors (Edwards & Torcellini, 2002). "Daylighting offers a sense of spirituality, openness, and freedom from the prison-like confinements and intensity that characterise windowless spaces" (Verderber, 1983)as seen in Figure 19. According to Vischer (1986) and Verderber (1983), a correctly placed window has a psychotherapeutic quality, as it provides a view to the outside world and brings in natural daylight, which creates a more therapeutic environment with a better spatial quality. The experience of natural daylight and openness is another benefit for patients, staff and workers. In a study conducted on the health effects of natural light, it was revealed that natural light benefited the central nervous system through a discharge of hormones that were released upon exposure to sunlight (Kiraly et al., 2006).

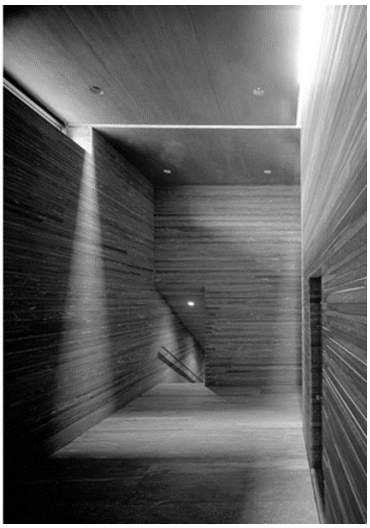


Figure 19: Thermal Vals, by Peter Zumthor, showcases how natural light can be utilised not only to illuminate a space, but to create atmosphere that can evoke various feelings.
Source: www.thinkingform.com 2011

Laboratory and field research in two studies (Boubekri, et al., 1991 & Leather, et al., 1998) revealed that even interior patches of sunlight could vastly improve patients' moods. Natural daylight helps to create a healing environment that can drastically improve quality of life for those with intellectual cognitive challenges. The use of appropriate light in these facilities can have a profound impact on patients, while exposure to bright, artificial lights can affect their natural clock and make them feel out of balance (Edwards & Torcellini, 2002).

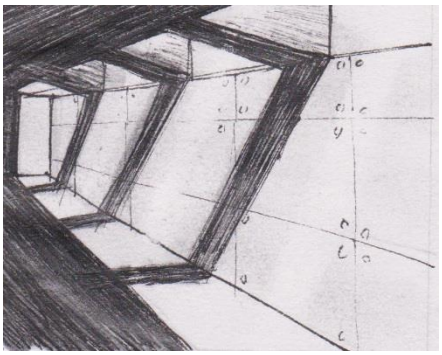


Figure 20: Light entering a building through skylights.
Source: www.arch-student.com.

Thus, the use of cool-white fluorescent lights was banned in German hospitals and other medical and care facilities (Walker, 1998). Flickering artificial lights can also cause headaches and create an unpleasant feeling for those with intellectual cognitive challenges.

There are many ways in which to let daylight into a building and this can also add aesthetic benefits to a structure, as seen in figures 20 and 21. The use of various sized windows, clerestory lighting, sunlight, glass atriums and sunrooms can all be employed to create an intriguing, naturally lit space that will benefit the lives of those with intellectual cognitive challenges.

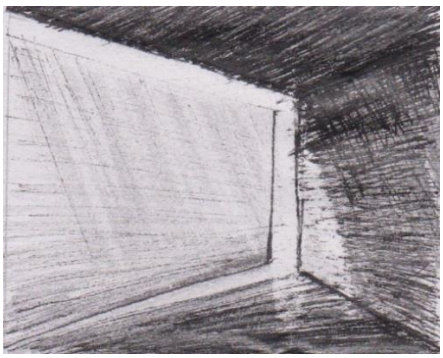


Figure 21: Light entering a building through clerestory windows.
Source: www.arch-student.com.

Touch/ Materials

It is crucial for an architect to choose the correct materials for a building, as these will establish the lifespan of structure. However, material choice becomes even more critical when designing for a multi-sensory approach. The material does not only become the structure of the building, but a way in which to create an experience, initiate a journey and construct a new way for a patient to interact with a building. Materials can be familiar and elicit various emotions.

Figure 22: Curved wooden ceiling.
Source: www.za.pinterest.com.

Brick, while solid and sturdy, is warm and recognisable. Cement, on the other hand, is well-known and considered to be cold and harsh, but with modern technology it can be moulded into tactile surfaces that intersect the line between hard and soft. Wood elicits feelings of happiness and comfort. While it is one of the oldest building materials

in the world, it can now be moulded and cut in new and innovative ways, such as the curved wooden ceilings seen in Figure 22.

Then there are the new materials that have been developed in recent years through modern technology ,which in some cases are eco-friendly. Thermochromic paint, seen in figure 23, is a new innovation which responds to heat and is utilised to create interactive walls.

Digital panels, seen in figure 24, are able to constantly change, making a space change according to the mood, time or even season.

Figure 23: Thermochromic painted wall.
Source: www.pschraven.wordpress.com, 2010

Colour beyond aesthetics

Colour affects everyone; it can provoke thought, change moods, stimulate the brain and create memory (Buscemi, 2018). For those with intellectual cognitive challenges, colour becomes a vital design element. Harsh colours can initiate feelings of rage, while cooler colours inspire calm and feelings of content. According to Buscemi, soothing blues, greens and yellows work well to inspire comfort in those with challenges while they participate in activities, read or sleep (Buscemi, 2018).

Smell

Smell is a major factor that can influence our emotions and the way in which we interpret a space. Smell has such a profound effect on the brain that it becomes associated with memory and place. The smell of trees and grass is associated with being relaxed and calm, while the smell of rubbish or decomposition can inspire feelings of being physically ill. For those with intellectual cognitive challenges, the correct smells can benefit their lives .A study by the scholars Weber and Heuberger (2008) revealed that natural smells could improve emotional functioning.

Figure 24: Digital screened walls.
Source: www.architectmagazine.com.

Sound

Sound has been known to affect a person emotionally and leave a lasting impact. The sound of gentle, flowing water is used to create a sense of calm. Sound is something that greatly influences the lives of those with cognitive challenges, as it can be utilised as a therapy. Music therapy is now being employed for people with intellectual cognitive challenges to deal with communication needs (Fidell, 2000). Music therapy is defined as a "clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program" (Weiss, 2009 :11). Figure 25 demonstrates the effect of music on the brain. The goal of music therapy for those with cognitive challenges is to create positive behaviour, social interaction, communication and listening and sharing skills. Music also adds to memorisation skills, as well as stimulating speech, which is often problematic for those with cognitive challenges (Weiss, 2009). For those who are non-verbal, music therapy provides an invaluable tool for learning, as it employs an augmentative or alternative system of communication.

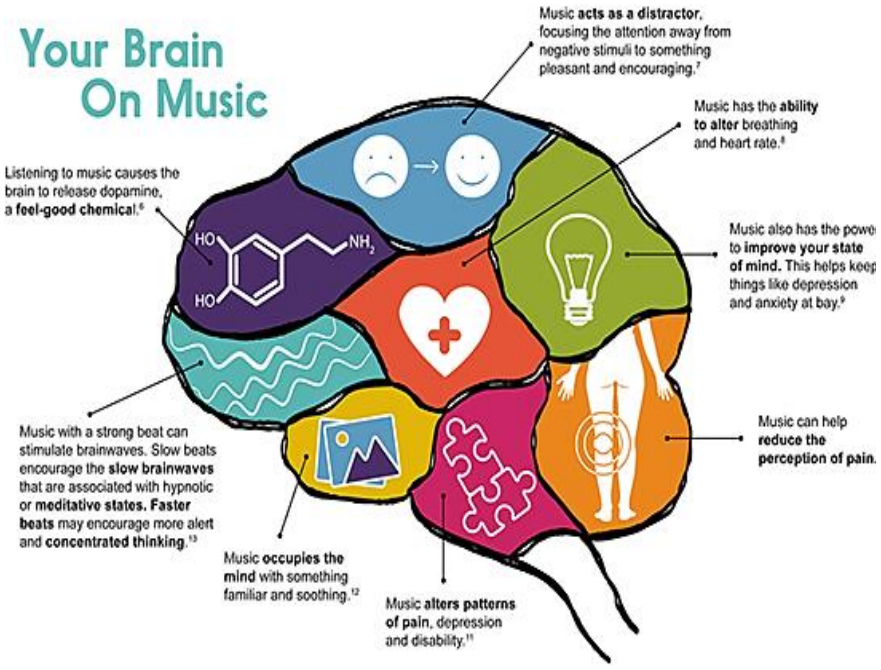


Figure 25: Effects of Music on the brain. Source: www.behance.net

A new form of multi-sensory design is Snoezelen therapy, which employs a controlled multi-sensory room for the treatment of the elderly, brain injured, those with neurological conditions and are mentally ill , as well as children and adults with intellectual challenges.

If the proper elements are in place, it can also be used to teach people who have intellectual cognitive challenges. According to Lotan and Gold (2009), it was created in the Netherlands in 1987 by Dutch therapists Jan Hulsegge and Ad Verheul. Snoezelen therapy employs various design tools, such as bubble tubes, fibre optics, interactive panels and light systems, wireless switches, aroma diffusers, aroma fan, aroma dough, interactive aroma panels, recorded music, sounds and proprioception therapies (figures 26, 27 and 28).

The use of these elements together has numerous functions, including: relaxation, developing self-confidence, providing leisure and enjoyment, improving attention span, establishing rapport with carers, achieving self-control and promoting choice (Hong Kong Med J Vol 9 ,2003).

Research conducted by Matson et al (2004) demonstrated that the input received in the stimulation from Snoezelen rooms reduced self-aggression, as well as other disruption behaviour in those with intellectual cognitive challenges. Thus, in recent years it has become popular in terms of their treatment.

Figure 26: Snoezelen room Source:www.akimusa.org

Figure 27: A person with intellectual cognitive challenges engaging in therapy using fibre optic cables.
Source: www.brantwood.ca.

Figure 28: Snoezelen rooms with projection on floor.
Source: www.emchimney sweep.co.uk.

2.3.4 Applying phenomenology

"The eyes want to collaborate with the other senses. All the senses, including vision, can be regarded as extensions of the sense of touch – as specialisations of the skin. They define the interface between the skin and the environment – between the opaque interiority of the body and exteriority of the world." (Pallasmaa, 2005 :42)

German philosopher Edmund Husserl sought to apply a scientific method to analyse the way in which we acquire experience. This approach to phenomenology is known as "transcendental". However, Husserl and other transcendental phenomenologists did not look at real-world experiences that occurred on a daily basis, but rather at an inward reflection (Seamon, 2000). Martin Heidegger (1962) argued in his book, *Being and Time*, that a human's experiences in the real world were directly linked to their consciousness (Seamon, 2000). Maurice Merleau-Ponty began to elaborate on this in his work, by including the body in this experience. He understood that the movement of the body added to one's perception of the world.

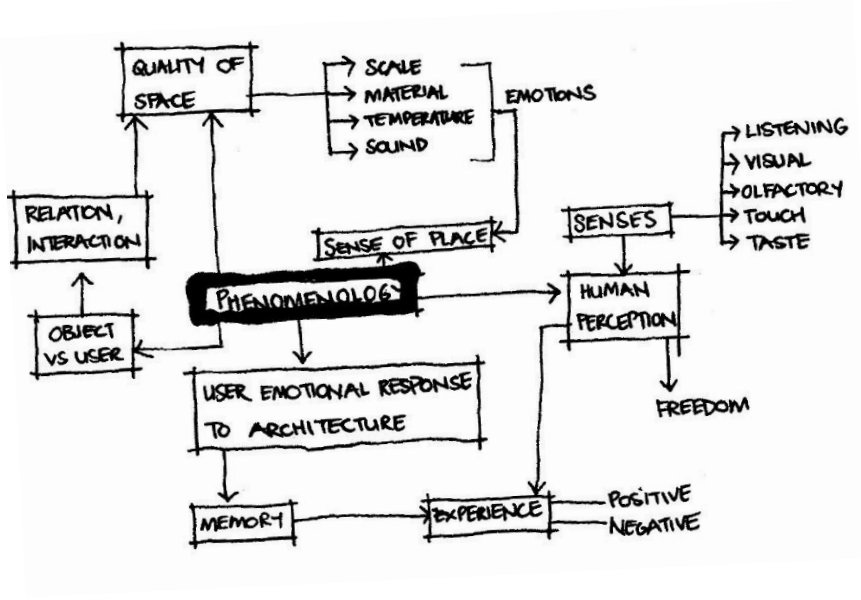


Figure 29: The various aspects of phenomenology.
Source: www. issuu.com.

Christian Norberg-Schulz explores how the outward world plays a vital role in perception. A dwelling is essential in man's life and gives meaning to the world. This connection to a place creates memory, identity and belonging (Van Nes, 2008). Juhani Pallasmaa investigated experiencing architecture through a multisensory exploration with scale and space, in relation to the human body. This sensory experience is taken even further, in exploring how intimacy, nearness and affection can create stronger experiences.

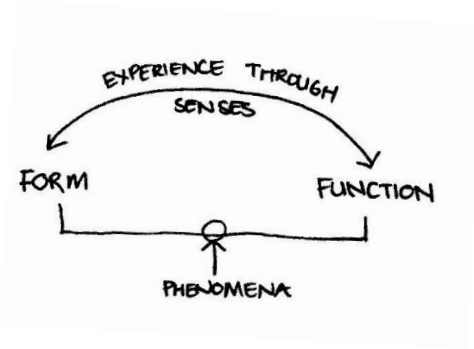


Figure 30: How phenomena are created. Source: Author 2018.

The elements of multisensory design drive human perception and create experience. The theory of phenomenology is relevant to this study, as it is utilised to understand how the application of various architectural design elements can create phenomena experienced through the senses.

2.4 CULTURUAL INFLUNCES AND THEIR EFFECT ON ARCHITECTURE

2.4.1 Introduction

People with intellectual cognitive challenges are in general a section of society that is ostracised from the community for many reasons. This does not benefit those with these challenges. Here, this scholar discusses how cultural theory is employed to bring together the existing community with the intellectually cognitive challenged community.

Figure 31: Tshaka Monument. Source: www.ulwaziprogramme.org.

2.4.2 The culture of KwaDukuza

The culture of KwaDukuza is specific in the sense that it has a rich history. King Shaka, the King of the Zulus, founded the town in 1825 and his grave, seen in figure 31, which is a heritage site, is located in the town. Surrounded by a bounty of sugarcane fields, the town became a home for many Indians, who came to South Africa as indentured labourers to work in these fields.

Figure 32 is a statue of Mahatma Gandhi that is dedicated to the indentured Indians who lived in KwaDukuza. Since then, the town has become a mixed pot of inhabitants, who work and thrive together. While various religions and ethnicities co-exist, community spirit lies at the core of the town's culture.

Figure 32: Statue of Mahatma Gandhi. Source: www.sa-venues.com.

Figure 33: Statue of Chief Albert Luthuli, who lived in KwaDukuza Source: de.wikipedia.org.

2.4.3 Effects of this culture on architectural elements

Culture usually affects architecture in determining various spaces, as well as the hierarchy of the space. This derives from society's

behaviour and laws. Another way in which culture affects built form is through shared memories and community values, which are then interpreted into forms, symbols and architectural space (Ettehad et al., 2014). When architecture is built in this manner, it helps the community of the area to connect to the building and find meaning in its existence and purpose. This also ensures that it will be used properly and taken care of by the community.

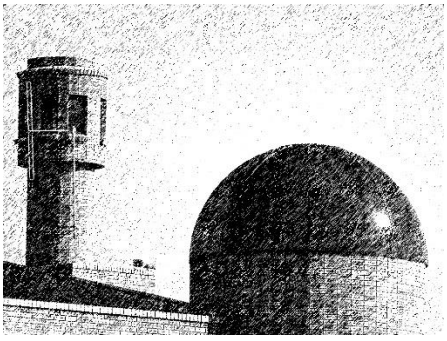


Figure 34: Stanger Musjid. Source: http://iic.org.za.

The effects of culture on built form in KwaDukuza stem from this multi-ethnic background, which in turn has generated a vernacular architecture as a form of cultural influence in its local built environment. This is can be seen in the use of common building materials, such as facebrick. This material is used all over KwaDukuza, from homes to mosques and churches, as seen in figures 34 and 35. This material has been utilised through the decades due to its low maintenance properties, as well as its availability. This tradition is still in keeping today, with new buildings such as the KwaDukuza courthouse being constructed out of facebrick.

Figure 35: Stanger Baptist church. Source: Author 2018.

2.4.4 Conclusion

Culture is a vast topic and can be interpreted in various ways. For this dissertation, the specific culture of KwaDukuza is harnessed to help form new architecture that responds to existing structures, thus, creating a link to the people of this area. However, it is not about creating mere links to a place but generating meaningful ties which will bring people together in a literal and subconscious way. By using culture theory, we take the fundamental essence of a community and use it to bring together two very different groups of people.

This will be achieved by utilising similar aesthetic qualities and existing materials in new, innovative ways that include the creation of spaces for community integration with those who have intellectual cognitive challenges. This will hopefully produce a lasting community tie and bring the people of KwaDukuza together with those who are intellectually cognitive challenged.

The theory of Multi-Sensory Design and phenomenology has been explored to understand how numerous materials, lighting and tactile elements, of the built environment can be employed to create a positive experience for those with intellectual cognitive challenges. Helping them to learn as well as to live a better life.

Further, it is now clear how the concept of wayfinding can be implemented in creative ways to create a simple and easy to understand building, where the intellectually challenged can feel safe, at home and comfortable.

While an understanding of the theoretical background and application of this into built form is crucial, one also needs to grasp the context and socio-political background of the situation in order to design the best facility possible for the intellectually challenged.

Thus, the next chapter focuses on the problems that the intellectually cognitive challenged face in South Africa. This will include the social stigmas attached to these people, the lack of facilities available, the lack of government policies and laws which enable these people to retain their dignity and live a healthy life as well as the lack of funding for the organisations which seek to help this community .This in turn will also explain why a facility that accommodates and trains people with intellectual cognitive challenges is so desperately needed.

CHAPTER 3 – LITERATURE REVIEW: PROBLEM STATEMENT

3.1 INTELLECTUAL COGNITIVE CHALLENGES IN SOUTH AFRICA

3.1.1 Introduction

Being challenged with intellectual cognitive disorders in South Africa carries a huge stigma. As a result, many families choose to ignore the problems facing people with the disorder or, as a convenience, place them into institutions. In rural areas, about 3,7% of the population suffer with some type of intellectual cognitive challenges.

This chapter tackles the issues of those with intellectual cognitive challenges in South Africa. These include: the organisations that support them; the lack of educational facilities, employment and appropriate accommodation; barriers to the provision of good health care; polices; and the stigma attached to them by the public.

It will further provide a background to the lives of the intellectually challenged and the information needed to demonstrate the demand for a suitably designed training and living facility for this community.

3.1.2 South Africa and the Disability Rights Movement

"Disabled people in South Africa have effectively suffered apartheid twice. Once under the political system that divided the races and secondly under an unwritten system that segregated the disabled from the able bodied." (Foskett, 2014: 14).

Before the 1980s, those with intellectual cognitive challenges had little to no rights. They were left to live in facilities where they were given no dignity. The government provided them with no education or access to employment and this meant that they could not do anything to improve their lives. The situation was even worse if they were black and disabled or a disabled woman. Their living conditions were appalling, they had no medical care and were kept hidden away

from the rest of society. This resulted in such people being forgotten by the community.

Figure 36: March for disabled rights in Cape Town in 2002.
Source: www.wcfid.co.za

The disability rights movement in South Africa started in 1981 as a result of the UN Year of Disabled Persons. In 1984, Disabled People South Africa (DPSA) was established as a way to provide all disabled children and adults with a voice. This movement fights for the rights of all disabled people, from the physically disabled to those who have intellectual cognitive challenges. However, the government did not recognise this movement until 1986, by which time it was a well-run organisation. The first government funding helped to purchase assistive devices for the disabled who were very poor (Foskett, 2014). DPSA contributed in shaping policies that now exist for the intellectually cognitive challenged, thus ensuring that people with disabilities were always represented in future policy making.

DPSA's main strategy was to form local groups that would assist in providing better environments for people with all types of disabilities. This grassroots approach was a fundamental stepping stone to enabling a better quality of life for people with intellectual cognitive challenges. The organisation believed in fairness at all levels, from disabilities to gender parity, with each local group having one elected male and female leader (Foskett, 2014). DPSA fights for disabled rights, to ensure they are treated fairly and given proper medical attention. In addition, it facilitates their reintegration of these people into society.

Together with DPSA, a number of other organisations have assisted with the cause. The Western Cape Forum for Intellectual Disability, established by Doctor Vera Grover in 1970, has been making consistent headway in giving those with intellectual cognitive challenges better facilities and healthcare. The organisation was founded by the South African National Council of Mental Health which, in 1986, "changed the term mental retardation to mental handicap and from this to the term intellectual disability in 2000" (Foskett 2014:7).

The aims of the Western Cape Forum for Intellectual Disability are to attain mutual training, support and research in the field (Foskett, 2014). The Western Cape Forum for intellectual disability has achieved a great deal in its 48 years, from lobbying for increased grants for disabled adults and increasing funds for workshops and care centres, to enforcing new policies that ensure that even people with profound intellectually disabilities have the right to be educated. The organisation has filled the gap that has long been a problem for the department of health (DOH). It provides on-site training to facilities in disadvantaged communities in physiotherapy, management and development programmes, as well as information pamphlets that are designed for those with intellectual cognitive challenges.

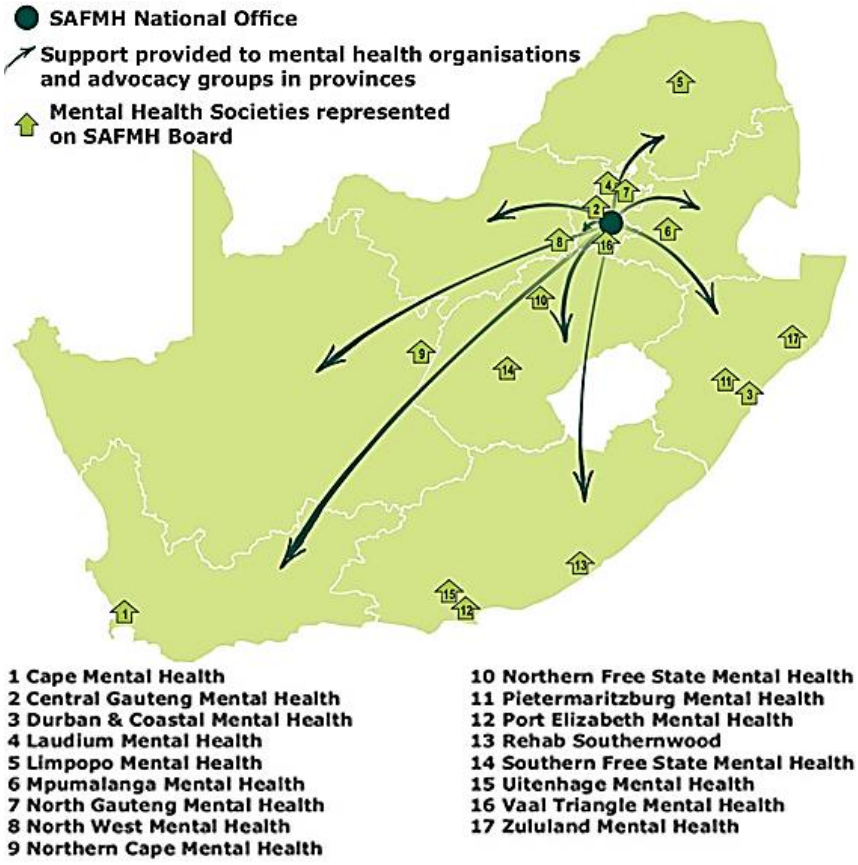


Figure 37: The south African map showing various mental health societies in South Africa. Source: www.safmh.org.za.

Unfortunately, there are no organisations in KwaDukuza that caters for those with intellectual cognitive challenges.

One of the largest organisations for mental health is the Durban and Coastal Mental Health Society, founded in 1940 by a group of doctors who wanted to improve the lives of the mentally disabled. Initially called the Durban Mental Hygiene Committee, the organisation changed its named in 1947. In the same year, it opened its first clinic with a psychiatrist that would conduct one session per week. Through the years, the organisation has achieved a great deal. It opened the Golden Hours Occupation Centre in 1953, a day-care facility for mentally ill children, and the first training centre in Clarehaven for intellectually cognitive challenged and mentally disabled adults.

Figure 38: People with intellectual cognitive challenges, who are part of the Durban and Coastal Mental Health Society, engage in bead work.
Source: www.dcmh.org.za.

In recent years, the level of care has improved markedly. Mrs Gita Harie, chairman of the Durban and Coastal Mental Health Society, stated that the society had focused on "quality, free, accessible services to our service users from disadvantaged communities, rural outreach, prevention programmes, advocating for a human rights approach to mental health and mental disability, social integration and economic empowerment of persons with mental disability, consumer advocacy and strengthening communities' capacity for supporting persons with mental disability, and promoting mental wellbeing within communities with subscribing to the slogan of South African Federation of Mental Health" (Harie, 2010:5).

Durban and costal mental health society is a non-profit organisation that services the mentally ill and intellectual cognitive challenged within the Durban and coastal regions. They are open Monday to Friday from 8am to 4pm.The organisation provides counselling, social work services and training programmes as well as running 9 day-care centres for children with profound and severe intellectual disability and 7 residential care centres for adults. They also have workshops for many mental issues and stress management. However, one of the most successful programmes of the project is the "Challenge" protective training workshops which offers protective employment for adults with mental disabilities and who are intellectually cognitive challenged.

3.1.3 Education

One of the biggest problems facing the intellectually challenged is lack of education. This has always been an issue for this community, as they were not allowed an education before 1955. In 2001, the White Paper on Special Needs Education developed a system whereby special needs children were to be integrated into normal government schools. Over a period of 20 years, all schools were to be adjusted to meet the needs of disabled and intellectually challenged children. This meant children with motor disabilities, the blind, deaf and those with intellectual cognitive challenges. However, this did not drastically increase the number of disabled children being educated, as their parents judged the condition of institutions as poor, felt their children would not be welcomed at these places, or did not see any benefit deriving from their education, due to low expectations of their children's performance (Mckenzie et al., 2013).

According to Foskett, "only about 64,200 learners with disabilities or impairments were accommodated in about 380 special schools throughout the country. Further, it was estimated that there were 280,000 learners with disabilities or impairments who were not in the system at all" (Foskett, 2014: 15). To help decrease this number, the government opened multiple special schools that provided education for children with an IQ of 30-70, who are classified as having moderate to mild intellectual cognitive challenges. According to the Department of Education (DOE), KZN has one of the lowest percentages of children that attend these schools. However, children with an IQ lower than this were not admitted to government schools or any special schools. Instead, they were cared for by NGOs funded by the Department of Education. These special needs schools faced a myriad problems, as the government curriculum followed a "one size fits all" model that could not be effective for children with challenges (Foskett, 2014).

When it comes to higher education (HE), the situation becomes dire, as most HE facilities are incapable of accommodating adults with

disabilities. Furthermore, are the standardised tests which regulate entry into HE facilities, which do not accommodate the special needs of children with intellectual cognitive challenges.

According to Foskett (2014), the department has been working towards a policy of inclusive education, to be put into effect in 2020. In addition, the Department of Higher Education and Training has been awarding full bursaries to disabled children that cover the full cost of studying at a higher education institute. However, the truth is that very few intellectual cognitive challenged adults manage to undertake higher education. This is due to the fact that the intellectually cognitive challenged develop slower and thus take longer to learn (Vlachos, 2008).

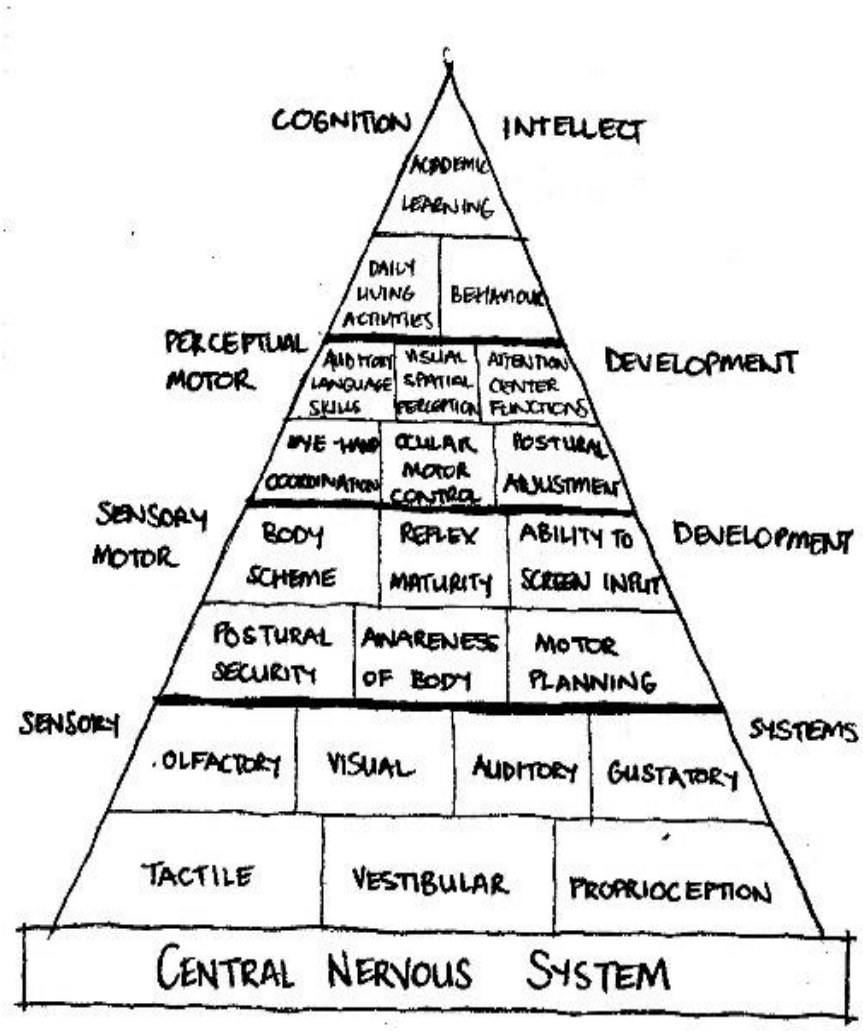


Figure 39: Diagram indicating how people with intellectual cognitive challenges undertake learning. Source: www.khushi.net.

Vocational training is a more suitable education route for the intellectually cognitive challenged, as they can acquire skills and trades quite well (Vlachos, 2008). Vocational training is defined as training for a specific vocation in industry, trade or agriculture (Kotsikis, 2007) According to McGrath (Akoojee, Gewer & McGrath, 2005), vocational training has been badly neglected in South Africa. No new policies have been created to include the intellectually cognitive challenged in the curriculum. This is a great disadvantage, as these programmes provide skills that the intellectually cognitive challenged can utilise to procure work. This would provide economic development for people in this community, which is currently non-existent.

Figure 40: People with intellectual cognitive challenges learn how to make bricks. Source: dcmh.org.za.

In an effort to counteract this, however, the Department of Labour launched a new national skills development strategy in 2005, yet Durban still lacks training facilities. In addition, KwaDukuza and its surrounding areas still have no vocational training institutions for the intellectually challenged. Figure 41 describes the responsibilities of various departments of government have in the education of the intellectually cognitive challenged throughout their lives. Most of the education that intellectually challenged adults receive is from NGOs that organise training programmes. The Living Link is one such body that offers various training projects, for these people in South Africa from adult integration to work readiness programmes. A small number of these are free, but for the most part, they are expensive, and few can afford them. This lack of education and training has unfortunately led to poverty among those who are intellectually cognitive challenged.

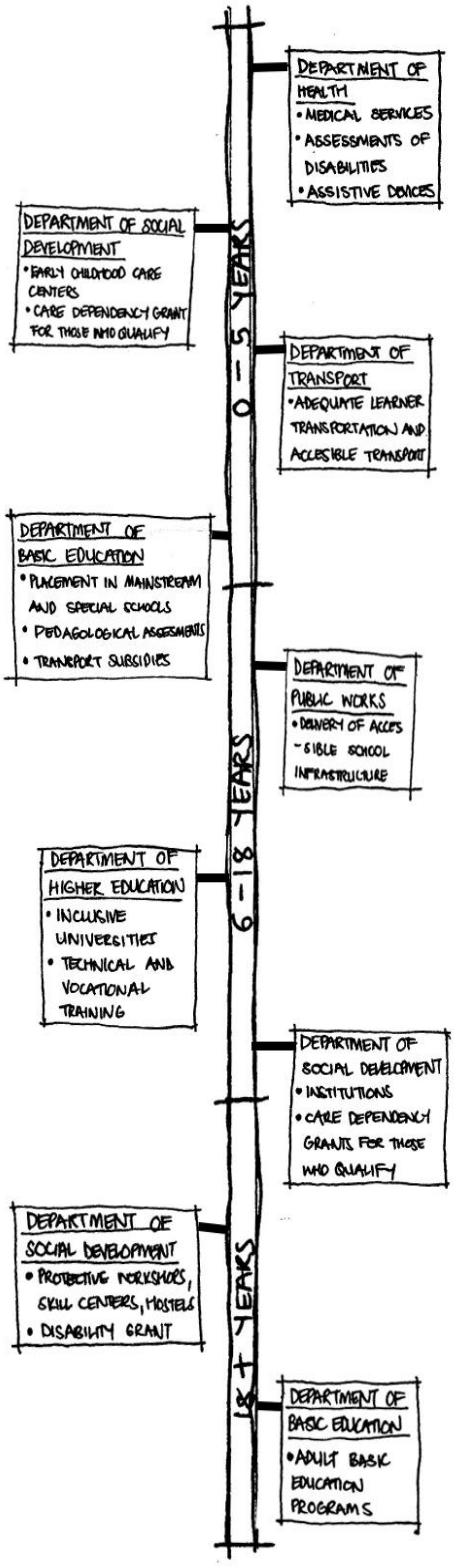


Figure 41: Shared responsibilities of the government.
Source: www.hrw.org.

3.1.4 Disability and Employment in South Africa

South Africa is experiencing a massive problem with unemployment and this affects people with intellectual cognitive challenges more severely. According to Foskett, a census taken in 2001 indicated "that 702,011 individuals between the ages 15 and 65 were unemployed due to illness and disability. It also indicated that a significantly high number ,99.28%, of the disabled that are employable, are unemployed and that 33% had received no schooling at all." (Foskett, 2014: 20) The government's Reconstruction and Development Programme policy (RDP), created in the new democratic era after 1994, indicated that "the government will design, in consultation with disabled persons, a comprehensive programme for disabled persons which will enhance their engagement in society and remove discriminatory practices against them, especially in the workplace" (RDP, 1994).

Thus, the South African integrated national disability strategy was created in 1997. It aimed to improve the lives of the disabled and its principles included: creating a people-driven process, integration and sustainability, disability management and lastly to create a strategic guideline of the Equalization of Opportunities for Persons with Disabilities.

The latter includes six chapters and policies on public education and awareness raising, health care, rehabilitation, barrier free access, transport, communications, data, information and research, education, employment, human resource development, social welfare and community development, social security, housing and sport and recreation. The then deputy president at the time, Mr. Thabo Mbeki, mentions in the foreword that "the White Paper represents government's thinking about what it can contribute to the development of disabled people and to the promotion and protection of their rights. I believe in a partnership with disabled people. Therefore, the furtherance of our joint objectives can only be met by the involvement of persons with disabilities themselves" (INDS 1997).

However, employment did not improve for the disabled. Thus, the government's response to the lack of jobs for the intellectually cognitive challenged was to enforce new policy stating that two percent of people working in the public service should be a part of the disabled community. This goal was to be achieved in 1995, but, by 2005, there were just a mere 0.15% disabled people in the workforce. Thus, the deadline was extended to 2010 and again to 2014, yet the goal was still not met (Foskett, 2014). The fact that in a period of 19 years the very small goal of two percent had still not been achieved showcased the lengthy and difficult process in improving the potential of people with intellectual cognitive challenges.

According to the Baseline Country report to the UN on the implementation of the Committee on the Rights of Persons with Disabilities (CRPD Committee) in South Africa (2013), only 0,8% disabled people work in the private sector. The government has attempted to improve upon this number with the development of a training course by the Public Administration Leadership and Management Academy to provide the skills for people with disabilities that are required for employers. To help improve these figures, the Department of Social Development initiated over 293 protected workshops for all types of disabilities within South Africa. At these workshops, the disabled are educated on entrepreneurship and skills development. Recently, a workshop was opened in in Mitchells Plain for youth with intellectual cognitive challenges. However, more of these workshops are needed, especially in rural areas, where there is a lack of jobs and skills.

While the government does provide some funding for these workshops, more funds are required in order to sustain these places. Thus, the Department of Social Development is working with the South African Federation of Mental Health (SAFMH) to help design a better model to enable these workshops to function more efficiently, for longer periods of time. According to the South African Federation of Mental Health (2013), "the best practice model for protective workshops is based on six levels of skills and aims to equip people with mental health issues

and or intellectual cognitive challenges with the skills to enable them to participate in the open labour market" (Foskett, 2014:13).The new model also assists intellectually cognitive challenged children in rural areas with training programmes and also teaches basic work skills to adults with the same challenges, so that they have a better chance of finding employment. These intellectual cognitive challenged adults 0may find jobs in sheltered programmes and welfare organisations or are hired to undertake menial employment. Unfortunately, this labour does not provide them with a sustainable income, opportunities for competitive economic activity or enough money to live independently.

Figure 42: Lynette trains in the kitchen at Brownies and Downies in Cape Town.
Source: www.browniesdownies.co.za

As a result, many privately-owned businesses have come up with innovative ways to help this community. This is the case with Brownies and Downies, which was started in 2010 in the Netherlands by two friends, one a chef (Teun Horck) and the other a worker at a special needs school (Thijs Swinkels), who sought to help the intellectual cognitive challenged. They created a bakery where they could teach skills to people with intellectual challenges and hire them as staff of the bakery. They now have 30 branches around Europe and one in Cape Town. The South African branch was the idea of Wendy Vermeulen, who had just completed her degree in social sciences. She travelled from her home in the Netherlands to Cape Town to complete her internship in social work. Here she saw the lack of training facilities and employment for people with intellectual cognitive challenges. Moreover, she perceived the fear and mistrust that the South African public had for these challenged folk. Vermeulen decided to use this business not only to help intellectually cognitive challenged but also to teach the South African public about these amazing people and how they could be participating members of society.

However, the sad truth is that most will not be employed. Their inability to find suitable jobs means that they can only rely on government grants, which are not enough for them to live independently. Thus, they become burdens to their families or, in most cases, are placed into inefficient government care facilities.

3.1.5 South African attitudes on the intellectual cognitive challenged

The way in which people react, their attitudes, bias and responses to situations have significantly high implications. For the intellectually cognitive challenged, these attitudes determine where they are able to live, work and go to school, as well as their integration into society (Bardon et al., 2004).

According to Barden et al. (2004), the South African public greatly underestimates the capabilities of what those with intellectually cognitive challenged can do and considers them as more impaired compared to the rest of Africa. They also view them as less able to help themselves and interact with other people. Only 62% of the South African public thinks that the intellectually cognitive challenged can make friends, 59% believe they are able to wash and dress themselves and 53% that they can prepare their own food. These statistics already reveal that the intellectually cognitive challenged are at a great disadvantage, due to these low opinions. There is also a perception of the South African public that the intellectually challenged should live with family, work in sheltered workshops and should not be included in society (Bardon et al., 2004). These perceptions stem from a lack of knowledge and interaction with those who are challenged.

Figure 43: Weskoppies Psychiatric Hospital, the first psychiatric hospital in South Africa. Source:www.iol.co.za.

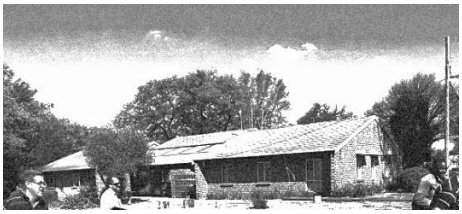


Figure 44: Cresset House in Johannesburg, a residential facility for people with intellectual cognitive challenges.
Source: www.cresset.org.za.

3.1.6 Available care facilities for people with intellectual cognitive challenges

The huge community of the intellectually cognitive challenged lives with their families, due to various factors: lack of local facilities in the area, unaffordability, the facility is in poor condition, or that their families think they can take better care of them within their community (Foskett, 2014). The rest either live in psychiatric or residential facilities such as the ones seen in Figure 43 and Figure 44. Psychiatric facilities have been the home of the intellectually cognitive challenged for many decades. They have been kept in these facilities because initially they were thought to be mentally disabled. However, after

further research was conducted, it was understood that these facilities were not meant for people with intellectual cognitive challenges. There was, though, no place else that they could go. The psychiatric facilities were run like hospitals, where residents lived in dormitory style wards and were told what time to go to bed, wake up and eat. In most cases, these challenged people were kept medicated and not allowed to go outside unless supervised (Foskett, 2014). Unfortunately, in South Africa, this remains the situation for many adults with intellectual cognitive challenges, as there are not enough residential facilities for them.

Residential facilities become popular in the 1980s, when deinstitutionalisation became the new ideal (Mansell, 2011). South Africa began its work into deinstitutionalisation after 1994 (Foskett, 2014). At these facilities, residents were made to be as independent as possible, with residents being part of every decision that involved their care and daily routine. They were taught skills, allowed to take part in recreational activities and were able to go outside and socialise. This was the opposite of the previous health model.

According to Foskett, the Department of Social Development subsidises 149 residential facilities across South Africa that are run by NGOs and provide residential care for 7,982 people with disabilities (6,416 persons in urban and 1,566 in rural areas) (Foskett,2014) . Then there are communication issues with doctors and patients. Another option for the intellectual cognitive challenged are community based residential services. These intellectually cognitive challenged persons live in small group homes and are supported by the community. There are various levels in this model, minimal support living, partial support living and full support living (Foskett 2014).

3.1.7.Architectural style of existing facilities for the intellectually cognitive challenged in South Africa

In South Africa there are very few facilities which are designed specifically for the intellectually cognitive challenged. In most cases existing residential homes and hospitals are converted to house this

community. As a result of this, the architectural style which exists for these people is a conglomeration of the existing building and what has been developed to meet the basic needs of the intellectually cognitive challenged.

Function is a number one priority thus, the architectural elements which are chosen are things that make it easier for the staff to handle the residents as well as easier for the residents to navigate through. This means having simple pathways and an easy to understand plan as well as employing materials which are strong and highly durable. In most instances facebrick is used due to the fact that it is strong and very low maintenance.

In the newly built facilities, the architecture takes on a form follows function approach. There are multiple buildings with each function having its own structure. Windows and shading devices become a key feature as creating enough natural light in spaces are highly beneficial to the intellectually cognitive challenged. However, in other instances rooms require darkness so shading devices are harnessed to create this effect. The shading devices also become an aesthetic element on the exterior of the building.

An architectural feature which appears in most facilities is the use of courtyard design . Gardens become a central feature where the intellectually cognitive challenged can interact with each other. In some cases, group activities are held here, or they become vegetable and herb gardens.

Roofs are usually higher than standard to create rooms which are large and airy. Clerestory lighting is also a key feature which is employed to allow more natural light to penetrate the building.

However , budget constraints play a major role in defining the architectural style as in a large number of projects this dictates what type of structure can be built to stay under the cost.

3.1.8 Barriers to provision of adequate Health Services

Lack of information and support services

One of the biggest barrier to the provision of adequate health services for the intellectually cognitive challenged is the lack of knowledge as to what treatments and facilities these people need to live a healthy, satisfying life (Caldas, 2011). This is due to the fact that the information is not readily available in South Africa as most of the studies and research is done overseas and are published in journals which cost money to access. Whilst various organisations have tried to get information out to the general public in easy to understand pamphlets and posters it is still hard to get this information in rural areas where it is needed the most.

It has been noted by Ali et al (2013) that the intellectually cognitive challenged are at a higher risk to get physically ill. This means that this community needs good health care service provisions. However, in most instances this is not the case. Unfortunately, South Africa's public health services is a very backlogged system and many patients have to wait days or even months before the can get the proper care needed (Foskett, 2014). Then there are the communication issues with doctors and patients. The intellectually cognitive challenged take a longer time to understand and process new information. In a study by Ali et al. (2013), the intellectually cognitive challenged said that during consultations, doctors or nurses spoke too fast or in language they did not understand and, when caregivers were present, they were being talked over, with medical staff communicating information to caregivers and ignoring them. This resulted in feeling insignificant.

Lack of funding for those with intellectual cognitive challenges

Lack of funding for the intellectually challenged is apparent in all aspects of their lives, from lack of services to poor medical care. This is due to many factors, such as corruption and poor implementation of

policy. However, one of the biggest issues is lack of government budget for the needs of the intellectually cognitive challenged.

In South Africa, an intellectually cognitive challenged person between the ages of 18-59 can receive a disability grant of R1,690 per month, on condition that they have a valid identity document, have been medically assessed and do not earn more than R78,120 a year. However, the amount of the grant is extremely low and does not cover the basic needs of the person. Thus, if they do not have family members to take care of them or are not able to be placed in a government facility, this results in many of the intellectually challenged becoming homeless.

Local authority planning processes

In South Africa, the building authority has implemented various codes and planning regulations to create a barrier-free environment for the disabled. However, these rules list no specific conditions that relate particularly to people with intellectual cognitive challenges. In any event, these disabled regulations are usually poorly administered and monitored. In the iLembe district this is even more apparent, with many planning professionals choosing to ignore the regulations put forth by the planning commission.

Thus, many new buildings are built with no regard for barrier-free requirements. Mismanagement of funds and the implementation of new policies with no proper planning is also still a major problem. This was seen when, in October 2015, the MEC for Health in Gauteng, Qedani Mahlangu, announced the termination of the contract between the Department of Health and Life Esidimeni, resulting in the death of 148 people.

Lack of NGO funding for people with intellectual cognitive challenges

South Africa has few funders of disabled organisations and there is almost no focus on funding institutions for those with just intellectual impairments. This is detrimental to these people as, in most cases, NGOs become their only form of support. One of the main funders of disability organisations is the Momentum group and there are in addition private groups that fund such bodies. One notable example is the Vera Grover Will Trust who specifically left money for the training and education of the intellectual cognitive challenged who lack financial resources as well as people working in the field of intellectual cognitive challenges (Foskett, 2014). The Rolf Stephan Nussbaum Foundation also contributes to many organisations that take care of the intellectually cognitive challenged.

While most NGOs look to private trusts for funds, their situations can be precarious. Most of the trusts can only donate small amounts that are sufficient to purchase small items, but not enough to drastically improve their situation in terms of increases in staffing or keeping their NGOs in operation for years. What is required is large, multi-year funding to allow for stability and great improvements to be made in the quality of life of the intellectually cognitive challenged.

3.1.9 Constitutional, Policy and Legislative Framework

South Africa, unlike other developing countries, has a number of policies that address the disabled. In South African policy, the term disabled are utilised as an umbrella term for all disabled persons, including people with intellectual cognitive challenges. Figure 45 illustrates how an act is formulated in South Africa. According to the White Paper on the Rights of Persons with Disabilities 2015, disability is described as “the presence of impairment; internal and external limitations or barriers which hinder full and equal participation, and loss or lack of access to opportunities due to environmental barriers

and/or negative perceptions and attitudes of society" (White paper on the rights of persons with disabilities, 2015 : 17).

This paper provides guidelines on promoting the lives of all disabled people in South Africa through removing barriers, providing education, equitable healthcare, transport and social support (White paper on the rights of persons with disabilities ,20150).

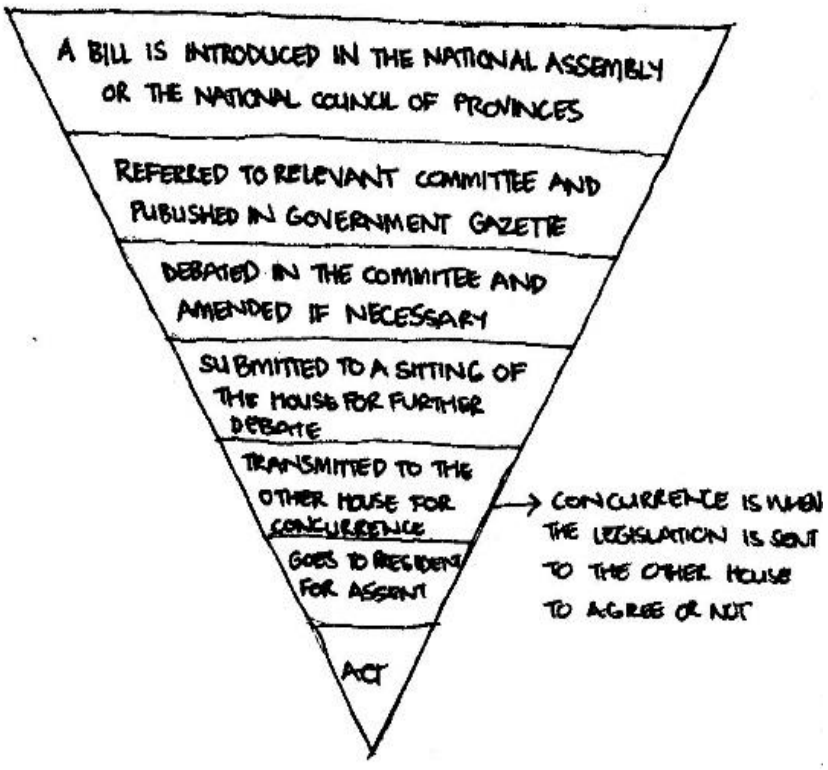


Figure 45: How an act is formulated in South Africa.
Source: www.parliament.gov.za.

People with intellectual cognitive challenges are legally protected. This starts with the highest law of the land, the Constitution of the Republic of South Africa (1996), in chapter two, section nine, which states that "everyone is equal before the law and has the right to equal protection and benefit of the law. Equality includes the full and equal enjoyment of all rights and freedoms. To promote the achievement of equality, legislative and other measures designed to protect or advance persons

or categories of persons, disadvantaged by unfair discrimination may be taken" (Constitution of the Republic of South Africa, 1996:. 5).

Several policies and laws also promote the intellectually cognitive challenged, by protecting their rights and implementing their equality and integration within society. The Employment Equity Act of 1998 states: "No person may unfairly discriminate, directly or indirectly, against an employee, in any employment policy or practice, on one or more grounds, including race, gender, sex, pregnancy, marital status, family responsibility, ethnic or social origin, colour, sexual orientation, age, disability, religion, HIV status, conscience, belief, political opinion, culture, language, birth or on any other arbitrary ground." (South African government, Employment Equity Act, 1998: 14).
It also states that disabled people, including those with intellectual cognitive challenges, have the right to the same opportunities and benefits as any other person in the workplace and they must be treated fairly.

The Act also ensures that there is reasonable accommodation for the disabled. Reasonable in the sense that the employer is financially able, must not cause undue hardship and does not bring forth negative implications on the organisation. This "accommodation" may include, but is not limited to, the provision of a disabled parking space, special chairs, desks and equipment, and the allowance of modified hours of work, such a flexi-time.

The Promotion of Equality and Prevention of Unfair Discrimination Act of 2000 (PEPUDA) provides protection to companies, organisations, individuals and states of government from any discrimination as well as redresses past discrimination and disadvantages in employment experienced by certain groups through affirmative action. The Labour Relations Act 66 of 1995 has various sections on protecting the rights of the disabled. It protects the worker from dismissal due to discrimination based on "race, gender, sex, ethnic or social origin, colour, sexual orientation, age, disability, religion, conscience, belief, political opinion, culture, language, marital status or

family responsibility" (South African government ,Labour Relations Act No 66 of 1995:2).

The Occupational Health and Safety Act 85 of 1993 seeks "to provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith" (South African government, Occupational Health and Safety Amendment Act, No 181 of 1993:1). This may be essential to the workplace in terms of dealing with the intellectually cognitive challenged as an employer may need to place specialised signs that indicate dangerous situations. Emergency and evacuation plans must also accommodate for the intellectually cognitive challenged. The National Mental Health Care Act (South African government 2002) addresses the rights of mental healthcare users and people with an intellectual cognitive challenges. Figure 46 explains the elements of the act.

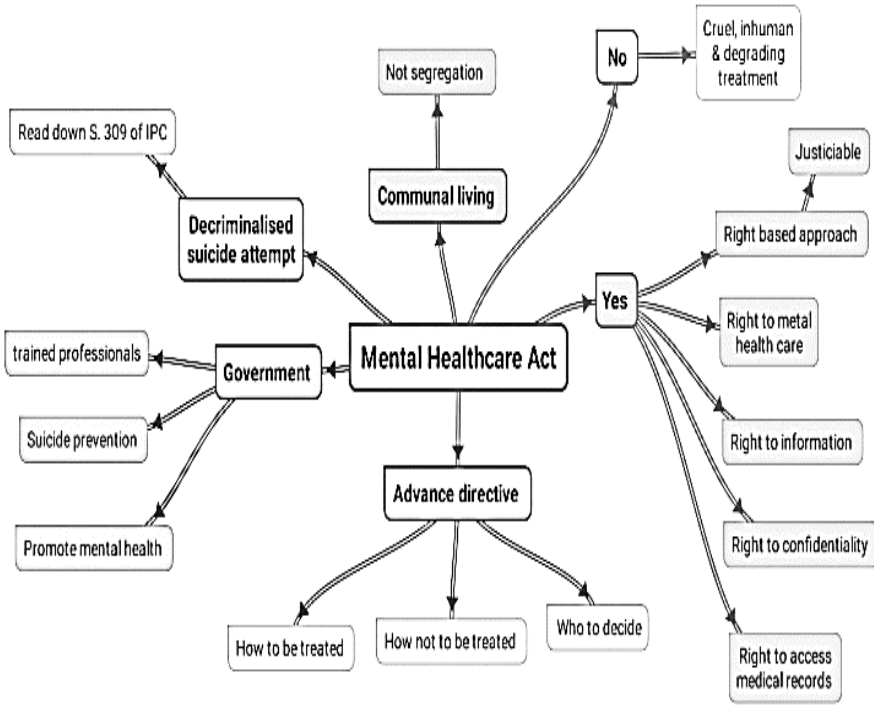


Figure 46: Elements of the Mental Care Act.

Source: www.chaaipani.com.

The act states that the government must provide care, treatment and rehabilitation for those with intellectual cognitive challenges. In certain instances, a judge may elect an administrator to take care of their property, if the person is under legal age or is found incapable of managing the property.

The National Building Regulations Part S (1990) provides building regulations that pertain to designing facilities for the disabled. These include, among others, the design of ramps and wheelchair friendly lavatories and wider doorways, passageways and elevators to accommodate wheelchairs and other regulations. While this code makes provision for the physically disabled, no real design regulations exist for building for people who have intellectual challenges.

The National Development Plan (2012) visualises a country that, by 2030, has eradicated poverty, decreased inequality and enabled citizens to "have the capabilities to grasp the ever-broadening opportunities available" (The National Development Plan, 2012). The Integrated National Disability Strategy White Paper refers specifically to the intellectually cognitive challenged. It states: "People with severe intellectual disabilities living in rural areas often have a low life expectancy, due to lack of care, support and access even to the most basic services. Families can seldom meet the additional financial burden of regular visits to hospitals, additional expenses for equipment and assistive devices, and other necessaries." (South African government,The Integrated National Disability Strategy White Paper, 2004 : 9)

The strategy notes that people with intellectual cognitive challenges are particularly vulnerable, especially in terms of when they may face the justice system. The testimony of the intellectually cognitive challenged is not believed or they are not regarded as reliable witnesses. This has led to injustice and, in recent years, investigations have revealed numerous human rights violations taking place against this community at institutions and by people trying to take advantage of them. The strategy seeks to address these problems with the use of a new

advocacy programme by the South African Federation for Mental Health, which aims to develop a mechanism enabling the intellectually cognitive challenged to speak for themselves, through self-representation.

Legislation and policy should be administered in a two-pronged approach by government and citizens. If correctly administered, government legislation and policies will serve the disabled, however, in some cases, they may lead to harm being inflicted. While these policies seek to address the disabled, they do not adequately cover the needs of those with intellectual cognitive challenges.

3.1.10 Conclusion

This chapter has explored the multi-faceted landscape of South Africa and the issues faced by the intellectually cognitive challenged. The lack of education and training facilities, as well as appropriate accommodation and funding for the intellectual cognitive challenged has been highlighted. While South Africa has come a long way in terms of policies and rights, lack of adequate implementation, in addition to a paucity in funding for NGOs, has led to very little being achieved for people with intellectual cognitive challenges. The issues that are explored in this literature review provide strong justification for why a training and living facility is needed.

The next chapters shall examine precedent and case studies in order to analyse and gain further information on existing facilities for those with intellectual cognitive challenges. These facilities have been chosen for specific reasons. However, all of them are built in areas which have a similar socio-political and geographic background as the site for the proposed building. The buildings will also be analysed using a theoretical framework to comprehend how theories can be placed into built form. This will assist in understanding how to design the proposed facility in the best way possible.

CHAPTER 4 – PRECEDENTS STUDY

CHAPTER 4-PRECEDENT STUDY: 3 PINS RESIDENCE AND DAY CENTRE, BARCELONA

4.1 INTRODUCTION

This chapter investigates and reviews existing architecture that has been designed especially for people with intellectual cognitive challenges. The choice of this precedent study is to understand how the theories of multi-sensory design and phenomenology, culture theory and the concept of wayfinding have been utilised in built form. Figure 48 demonstrates how these theories will be used to analyse each building. Although this precedent study is from an international location, the site and context of the building are similar to this project's proposed site. The building will be analysed in the following way to ascertain which spaces, functions and architectural elements would be beneficial to people with intellectual challenges. This will later aid in the development of an accommodation schedule and design of the proposal project.

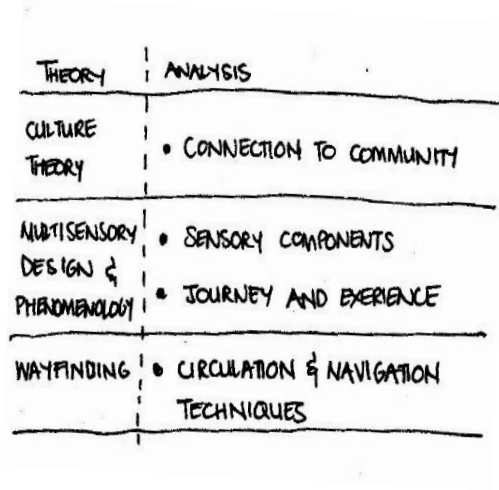


Figure 48: Diagram demonstrating how theories can be employed to analyse buildings.
Source: Author 2018

4.2 PRECEDENT STUDY 1 :3 Pins Residence and Day Centre for People with Intellectual Disabilities and Troubles of Behaviour

Figure 47: Artistic sketch of the building.
Source: www.archdaily.com.

4.2.1 Background

The building was commissioned by the Government of Catalonia's Department of Public Health as a competition. It was won by Onze04 Architecture and construction began in 2009 and was completed in 2012.The architects designed the building to be a safe place where people with intellectual challenges could live, play and thrive.

4.2.2 Context

The building is located on the northern slopes of a mountain in Montjuic Park, Barcelona, Spain. The park is located in the centre of Barcelona and is surrounded by residential buildings. It is an extremely steep site that is dense in vegetation. The site has two natural terraces into which the two wings of the building were placed. This enabled the architects to construct a building that had the least effect on the site (Onze04.com, 2012). As a result, a multitude of courtyards have been created to connect the building and its inhabitants to the surrounding nature.

4.2.3 Project schedule and plan

The facility is a total of 2307m² that consists of classrooms, a clinic, nurses and communication centers, lounges, public and private gardens, kitchens and cafeteria, offices and independent living rooms.

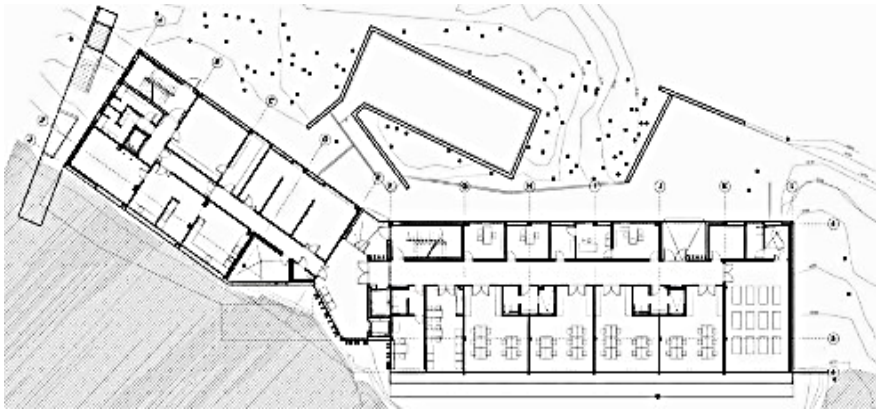


Figure 49: Ground floor plan. Source: www.archdaily.com

The facility is a daycare centre, as well as being a residence for people with intellectual cognitive challenges. The building is designed to be as efficient as possible. The group functions that require more space are located at the centre of the building and the residents' rooms located in the ancillary areas, as can be seen in Figure 49, the ground floor plan of the facility. The building has two separate wings that divide the building both functionally and visually. This makes the design extremely functional and simple for nurses, staff and residents to use, as shown in figure 50.

Figure 50: First-floor plan. Source: www.archdaily.com

For this type of facility, it is essential for the functions of the rooms be able to be changed according to the residents' requirements. Thus, most rooms in the facility are designed to be multipurpose, enabling the facility to be more flexible and able to meet the demands of those with intellectual cognitive challenges

In addition, security is an extremely important element in this building, as ensuring the safety of the residents is imperative. The architects have employed two strategies to achieve safety without the use of walls. The first utilises the natural steep topography, seen in figure (Figure 51) and the existing breakwater as a physical boundary, while the second strategy employs the dense vegetation. This not only enables security but also integrates the building into the landscape.

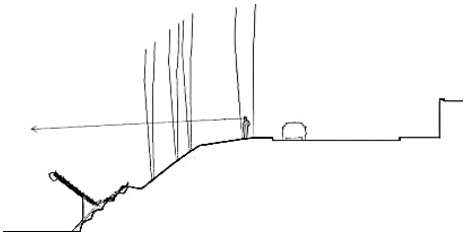


Figure 51: Section of bank
Source :www.archdaily.com

4.2.4 Justification of precedent

Choosing this precedent study stems from the fact that the architects have incorporated the culture of the area, as well as the concept of wayfinding into their building (Silva-Nicoletti, 2012). Wayfinding is integrated with the use of specialised lighting located on the roof, as can be seen in Figure 52. This enables inhabitants to navigate the building with ease (Castell, 2016). Theories of multisensory design and phenomenology have also been employed in the design, which allows slivers of light to enter the building and courtyards to create a stimulating journey. The building is also located in an area that is similar, in terms of culture and climate, to this study's proposed building. Thus, an analysis of this building will be helpful, as these design elements can be implemented into the proposed building with the knowledge that they will work effectively in the chosen location.

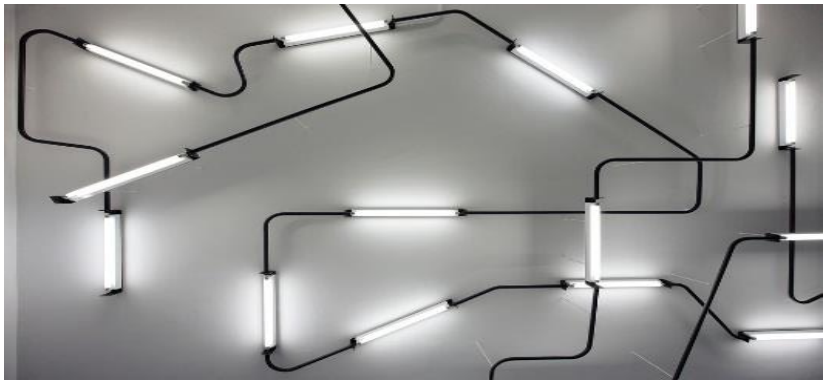


Figure 52: Wayfinding device. Source: www.archdaily.com.

4.2.5 Analysis

Culture theory – Connection to community

A connection to community has been created by utilising materials in the building that hold meaning for the people of the area and that incorporate the building into its surroundings. It is a design element that is used frequently in the architecture of the area. This type of cultural integration is discussed in depth by Amos Rapoport, in his book, *Culture and Environment* (Hofstede, 1994).

Multi-sensory design-Sensory components

Daylight is the main sensory component used in this building. Vast sliding glass panels and skylights are used to let in streams of daylight. The panels on the exterior of the building distort this light in some areas and create sensory variability, seen in figure 53.

Figure 53: Interior view that reveals the light quality.
Source: www.archdaily.com.

Phenomenology – Journey and experience

Journey is created in this building by the many places of interaction with various levels of privacy. The main social spaces are the community areas and terraces, where residents can learn skills and fully interact with one another. One benefit of the steep hill is that the sunken courtyards are partly visible, as seen in Figure 54. The experience of using these courtyards helps to blur the perception of enclosure or being in a locked facility and is highly beneficial for those with intellectual cognitive challenges.

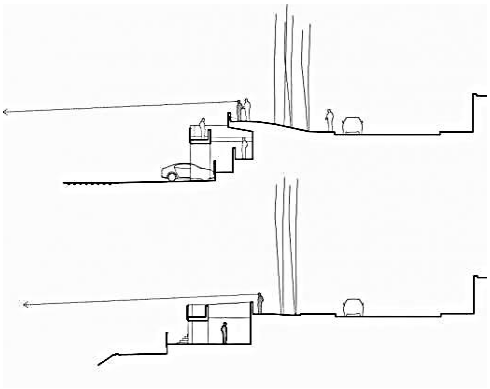


Figure 54: Section showing sunken courtyards.
Source: www.archdaily.com.

Concept of wayfinding – Circulation and navigation techniques

The circulation paths are all short, clear and easy to navigate in this building. Those who are intellectually challenged find dark passageways frightening and stressful, thus the circulation in this building has been designed to allow natural light into the passages at all times. The wayfinding light device also assists with navigating through the spaces.

Design Guidelines Obtained from Analysis

Through analysis of this building, it is understood that certain aspects of design can vastly improve upon the wellness of people with intellectual cognitive challenges.

- The use of natural light, as well as the amount of controlled freedom with the use of courtyards, results in the patient feeling more happy and energised.

- The spaces designed for patient interaction have also helped improve the lives of those experiencing challenges, as they can interact with one another and thus form friendships and create a sense of community among themselves.

4.2.6 Summary

The facility achieves security, as well as a sense of freedom, while the courtyards create an escape for residents, without them having to leave the building. The materials are robust yet made to look delicate in the choice of design, and the orientation of the building allows the most amount of natural light to enter.

Through analysis of this building, one can conclude that the facility is an excellent example of a building that not only meets the needs of people with intellectual challenges, but also integrates seamlessly into the landscape. The theory of multisensory design and phenomenology has subtly been added, through the great amounts of natural light that enter the building that are turned into enticing shapes and forms, as well as the hidden courtyards that allow users to experience a captivating journey and feel a sense of freedom in an otherwise closed space.

The implementation of culture theory, through the use of local materials, and landscape integration has been successful in tying the new building into the existing architecture as well as with the community. The use of wayfinding with lighting, and not signs , is an innovative way to apply this concept into built form .All the above-mentioned architectural elements will help to inform the principles of design for the proposed facility.

The following chapter will explore examples of buildings that the researcher has physically been to .This will assist in designing a facility that relates to a South African setting.

CHAPTER 5 – CASE STUDIES

5.1 INTRODUCTION

In this chapter, an investigation is undertaken into two case studies that the researcher has physically visited. These have been chosen, as they demonstrate how theories of culture, multi-sensory design and phenomenology, as well as the concept of wayfinding, have been translated into built form.

Each of these facilities have been analysed by examining context, functionality, circulation, levels of interaction, adaptability and connection to community as well as theories on culture, multi-sensory design and phenomenology, and the concept of wayfinding. This has been conducted to understand how architecture has been employed to help people with intellectual cognitive challenges. This will eventually aid in designing the proposed project.

5.2 CASE STUDY 1 – STANGER TRAINING CENTRE, KWADUKUZA

5.2.1 Background

The Stanger Training Centre, located in KwaDukuza, opened its doors in 1983 as an education facility for intellectually challenged children aged 4 to 18 years old. It is a government/public organisation, which also serves as a research facility. The facility was intended to resolve the lack of education facilities for children with intellectual challenges in the town and surrounding areas. The centre is managed by its principal, Mr. K.P. Hira, and a staff of 30 educators, helpers, cooks, cleaners, bus drivers and groundkeepers. It has an in-house physiotherapist, psychologist and occupational therapist who work with the children each day and a doctor come once a month to check on the children's health. The centre is a day facility that is open from Monday to Friday, from 8am to 1.45pm. It has its own transportation services, which brings scholars to and from school. There is also a meal scheme whereby students are offered one meal a day, which is prepared in-house by the kitchen staff.

The school's mission statement is "to deliver in a nurturing environment quality relevant education and training, incorporating all stakeholders and ongoing research, with a view of learners realizing their optimum potential and taking their rightful place in mainstream community" (Hira, 1986).

5.2.2 Context

The Stanger Training Centre is a public intellectual disability school located off Townview Road, Glenhills, KwaDukuza. Glenhills is a predominantly low-income area with a great number of unemployed people living on government grants. The area has a mixture of black, coloured and Indian residents, who live harmoniously with one another and have formed a strong community that believes in and lives by the principles of ubuntu. Its architecture is a combination of government housing, apartment buildings and small homes. Houses are built close together as plots are small and, in some vacant lots, shacks have been erected. A combination of facebrick and corrugated iron characterise the predominant use of building materials.

The site that the facility is located on is quite flat, however, due to its elevation above the town, it has the best views of the sea. The facility is surrounded by a great deal of vegetation and trees that have been planted throughout the years. This has been achieved due to the fact that nature provides a calming effect on people with intellectual cognitive challenges (Castel ,2014).

5.2.3 Project schedule and plans

The facility offers specialised education for those with intellectual cognitive challenges and various sports such as swimming, soccer, netball, basketball and cricket (Figure 55 shows the various sports fields). The facility is designed with courtyard planning and each block has its own garden courtyard.

Figure 55: Aerial view of the Stanger Training Centre.
Source: Author, 2018

Each phase of learning is assigned their own block, with the playschool located in block A, the junior primary in blocks B and C, intermediate learners in D and E and senior children in block F, located further away from the young children. The staff rooms and offices are located at the centre of the facility, with a carpark adjacent to this.

The facility has just two entrances to get into the facility. The main entrance is located a distance away from the buildings and is monitored by a security guard. This is a safety precaution, to stop children from wandering off from the facility and prohibiting entry to anyone who may pose a threat. The second entrance is located near the kitchen to facilitate the delivery of goods. A specialised block caters for severely autistic children and has its own small playground and equipment, as shown in Figure 56.

The facility also offers other vocational training, such as beadwork, woodwork, metalwork, cosmetology and horticulture, which is used as a form of therapy and contributes to the fruits and vegetables used in the daily meals. Work has been provided by a local business to five students who have graduated from the school. They are tasked with cutting large pieces of material into smaller pieces, packing them and sending them back to a store for sale.

Figure 56: Picture of the playground.
Source: Author, 2018

Figure 57: The gardens, which the children learn to plant in. Source: Author, 2018

The centre has a mock apartment, as seen in Figure 59. It is fully functional and is where learners are taught etiquette such as how to greet guests, have a meal at the table using the proper utensils, and those pertaining to other daily tasks. The older children are taught how to wash dishes, prepare simple meals, make beds and wash laundry. While these tasks might seem simple, they can in fact prove difficult for children with intellectual challenges. Thus, these skills are taught to them so that they can carry out chores by themselves.

Figure 59: Picture of the inside of the apartment.
Source: Author, 2018

The facility is highly functional, and its spaces have been designed to meet the children's needs. For example, the classroom in Figure 58 has been designed with easy-to-clean tiles, enough room to ensure the children do not feel enclosed and a doubled-sided mirror that enables doctors and psychologists to observe the pupils without interrupting lessons. Each classroom has a sensory deprivation room (Figure 60) and store room. The classrooms at the centre are also painted in calming colours to help soothe the children. The facility itself has a simple floor plan that is very easy to navigate, it also has a gym that the older children can use to work on their fitness.

Figure 58: Picture of the classroom. Source: Author, 2018

Figure 60: Sensory deprivation room.
Source: Author, 2018

5.2.4 Justification of precedent

The Stanger Training Centre has been researched to understand how and what children with intellectual cognitive challenges are taught, so as to analyse what should be taught to adults with intellectually cognitive challenges. Culture theory has been implemented into this building quite successfully, with the use of familiar architectural style as well as very strong community integration. Multisensory design and phenomenology have been explored in terms of experiencing nature and space, while wayfinding is executed through the use of strong, simple circulation paths. The facility is also located at a site adjacent to where the proposed facility will be located. Thus, it addresses the existing context as well as creates a captivating node for people with intellectual challenges, organisations that want to assist this society, those who are looking to conduct research and funders who want to support this facility.

5.2.5 Analysis

Culture theory-Connection to community

The people living in this area are a mixed group from various cultures and backgrounds, thus culture has been implemented into this building through the use of a similar typology, materials and architectural styles that are similar to those of the surrounding area. Amos Rapoport discusses the use of these type of elements as a form of cultural integration (Hofstede, 1994). The area is known for its face-brick buildings and tiled roofs, and the architects have employed these elements in the design of this facility. The building also has many small, high windows, which is also a key feature unique to the area. These allow light and fresh air to enter the rooms, and their size makes them impossible for intruders to utilise as a means of entry.

KwaDukuza has no other organisations for the intellectually challenged, thus this facility serves both as a school and as a connection between the intellectually challenged and the community.

The facility is located in Glenhills and is an integral part of its community. This is low-income area of KwaDukuza, so the facility hires and trains people that live in the area, thus providing financial support and community ties. Its location has also brought new development to the surrounding area. The facility hosts many fundraisers and community events to raise money for people with intellectual cognitive challenges, as well as educate the community about them. A major event that brings together the community and those with intellectual challenges is the yearly concert, which is held in the KwaDukuza town hall. This is a huge event that is sold-out every year and showcases the support of the KwaDukuza people for this community.

Multi-sensory design-Sensory components

The sensory components that are employed in this building include a connection to nature. From the planting gardens to the playgrounds, there is always some form of connection to nature that stimulates the senses. The teachers also employ sensory education to help the children learn. This is achieved through the use of specific methods, such as seeing and doing, as well as using colours and texture. Figure 61 demonstrates the workings of sensory education.

Figure 61: Elements of multisensory learning**.**

Source: www.northcoasted.com

Phenomenology – Journey and Experience

Journey and experience are created through interaction that occurs at the facility. Figure 62 shows various levels of interaction with different colours. Red is the highest level of interaction and orange the medium level, while yellow indicates little interaction and green, no interaction. As can be seen, a great deal of interaction takes place in this facility, especially in the public areas. Interaction is beneficial for those with intellectual cognitive challenges, as it gives them a chance to socialise, make friends and become a community. There are spaces for no interaction, located in each classroom. These are for children who are sensitive to excessive stimulation. These sensory deprivation rooms help to calm them down before they can resume their lessons.

Figure 62: Levels of interaction. Source: Author, 2018.

Concept of wayfinding – Circulation and navigation techniques

The entire facility is designed so that one is never far away from nature. Open walkways form the circulation paths to and from each block, which can be seen in Figure 64. This brings relief from being inside an enclosed space and allows the children to admire the scenery and obtain fresh air and sunlight while they move through the facility. This is highly beneficial to the intellectually challenged, as they dislike dark passageways and the feeling of being confined (Hofstede, 1994).

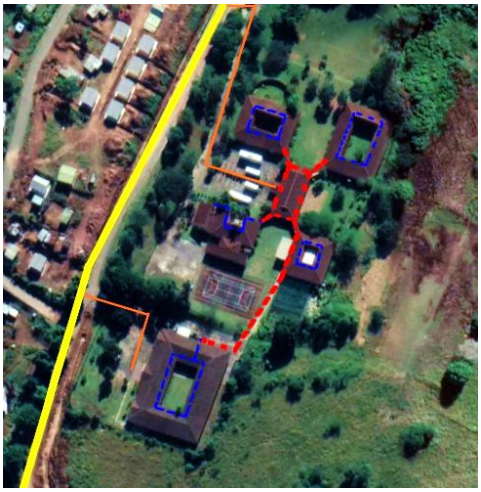


Figure 63: Circulation paths. Source: Author, 2018.

These circulation routes in essence become a journey that the children can experience. Figure 63 demonstrates the various circulation paths in and around the facility. The yellow path is the main road that is used to get to the facility, the orange paths are the entrance roads, the red path represents the main circulation path to get to and from the blocks, and the purple path indicates the secondary circulation within each block.

Figure 64: Open walkways. Source: Author, 2018.

Design Guidelines Obtained from Analysis

Through analysis of this building, various design aspects have been noted to have a positive effect on children who have intellectual cognitive challenges. These will be incorporated into the proposed design and they include:

- The use of a courtyard design, which creates the option of designing interesting spaces at the centre of the building, will be of great benefit. This can include play and relaxation areas or, as in most cases, a garden. This creates a pleasant setting and the intellectually challenged respond well to it, as they do when they are close to nature (Hofstede 1994).
- The use of multiple buildings with open walkways connecting them together will also be considered as this allows the facility to be open and mitigates the need for long, dark passageways that are proven to cause stress to those with intellectual cognitive challenged.

- In terms of an accommodation schedule, a number of activities from this facility will be applied to the proposed facility. These include the metalwork and woodwork rooms, the horticulture gardens, the gym, the beauty and health care room, and the teaching kitchens. These have been chosen, as they all greatly benefit the intellectually cognitive challenged.

  While the classes at this facility focus on the basics, those at the proposed facility will cover both the basics and advanced skills. This is due to the fact that although the children are taught the basics at the Stanger Training Centre, those with cognitive challenges take more time to learn skills. Thus, they will get additional time to learn the basics, before they can improve upon their skills. These activities have been chosen, as learning such skills could help intellectually cognitive challenged adults to secure employment.

5.2.6 Summary

The facility is a great example of a school for children with intellectual cognitive challenges. It has been built with hardy materials that have lasted well throughout the years of wear and tear. An analysis of the building through culture theory helps gain an understanding of how architecture can create a connection to people. This building not only serves the community and its special pupils, but is also a symbol of acceptance, belonging and hope.

By means of Multisensory design and phenomenology, the connection of nature and the varying degrees of interaction have been explored to understand the needs of the intellectually cognitive challenged and what they require to feel comfortable and happy.

The concept of wayfinding has identified strong, clear circulation paths. These, plus a village plan will be implemented in this project as two of the design drivers.

The architecture is not flamboyant or cutting-edge but stays true to the context and manages to meld into its surroundings. This is the key lesson to derive from this analysis and will be used as a main driver for the proposed building.

This facility has demonstrated what is being taught to children with intellectual cognitive challenges. This provides information on what then needs to be taught to adults with intellectual cognitive challenges and will help establish the accommodation schedule and planning in the proposed facility.

5.3 CASE STUDY 2 – LITTLE EDEN, JOHANNESBURG

"My greatest wish is that more will be done to ensure the comfort and safety of persons with intellectual disability. And that more communities, families and individuals will come to understand the value of these special people and reach out to them, instead of choosing to look the other way," (Hyams, 2007, p. 3)

5.3.1 Background

Little Eden is a non-profit organisation founded by Danny and Domitilla Hyams in 1967. Domitilla was just a housewife with no experience or knowledge of the challenges experienced by those with intellectual cognitive challenges. All she possessed was the drive and determination to help them. With assistance from experts and a donation from her husband, Domitilla began her organisation with just three little girls in the Edenvale Methodist church hall. Initially just a daycare centre, the project started to accommodate permanent residents when Domitilla promised a dying mother that she would take care of her intellectually challenged child.

Over the years, the organisation moved several times until, in 1974, construction began on their new facility, on land donated by the municipality. The centre, called the Domitilla and Danny Hyams Home, is dedicated to the care of children who are intellectually

challenged. It later expanded to include a 43-hectare farm in Bapsfontein, acquired in 1970. Through years of saving and donations by citizens, the organisation constructed a specialised facility, Elvira Rota Village, which was completed in 1992. It benefits adults with intellectual challenges and has been designed so that residents can enjoy a connection with nature and be able to interact with it. The Edenvale home now accommodates over 300 intellectually cognitive challenged children and adults, and the Bapsfontein homes cares for 110 of the more mobile adults.

The organisation's core values include treating its residents with respect and observing the sanctity of life, as they help people with intellectual cognitive challenges to reach their full potential, despite their limitations. The last and most important value is providing love, care and protection to residents. These driving forces are implemented into everything that the organisation undertakes.

5.3.2 Context

The Elvira Rota Village is located on a large farm in Bapsfontein, Gauteng. Bapsfontein is known for its impressive variety of birds, as well as its sublime grasslands. The area is classified as agricultural, with a small peri-urban town. The site is generally flat, which makes it easy to navigate. The mission of the organisation is "to care for, develop and enhance the quality of life, with love and understanding from a dedicated staff, persons with intellectual disability of all races and creeds entrusted to us, by providing with trust in Divine Providence and in cooperation with the parents, the community and the State the necessary spiritual, nursing, therapy and stimulation services in as an efficient and economic manner as possible" (Hyams, 2007: 3).

Figure 65: Pilgrims gather at the garden of remembrance.
Source: www.littleeden.org.za.

5.3.3 Project schedule and plans

The facility comprises various buildings with different functions. Figure 66 showcases the entire facility. There is a farmyard (A), which includes a workshop and barn where animals are kept for therapeutic reasons, as they are tended to by willing residents.

The staff quarters are located at the entrance to the facility and an administration building (B) is situated at the north-east point, where the rest of the village is situated. A garden of remembrance (D), where the past members of the facility are remembered and celebrated, is located next to a chapel. The hall and laundry (E) are connected to the therapy facilities, dormitories, day rooms, dining room, ablution facilities and verandas (F) through an open walkway.

Figure 67: Holy Family Chapel Source:www.littleeden.org.za

Through the experience of living and working in the Domitilla and Danny Hyams' home in Edenvale, the organisation learned a great deal about what did and did not work in terms of design for the intellectually challenged. Thus, when designing the Elvira Rota village, they were able to amend the many design flaws that were experienced in the Edenvale home. The dormitories in this facility are placed together in a "village" design, allowing for better security and monitoring of patients, while allowing them some privacy. Each wing has its own courtyard.

Figure 66: Elvira Rota Village, as seen from the air.
Source: www.littleeden.org.za.

Pino's Place (G) is a residential block for intellectually challenged adults with disturbing behaviors, who might be a danger to themselves or others. There is a horse-riding area (H), which forms part of the resident's therapy. A Sensory Garden (I) utilising the theory of multi-sensory design is also located on the farm. This is where residents can

interact with nature in a design that also holds therapeutic benefits. One of the stand-out features of the facility is the Labyrinth (J), which has a calming effect on residents.

The Labyrinth helps the intellectual cognitive challenged to focus better and creates a spiritual journey where the end is clearly visible. Through the many years that the labyrinth (Figure 69) has been used, the facility has noted a marked difference in the behaviour of the patients who utilise it on a regular basis. They are calmer and even the aggressive residents display fewer outbursts of temper (Jensen, 2007). The Boma and Chimes (K) are where the residents partake in music therapy, which is highly beneficial to those with intellectual cognitive challenges.

Located on the farm are the settling ponds (L), as well as a wetlands and dam (M). A major feature of the farm is a pecan nut orchard, in which the residents work, as well as the maize and bean plantations, whose produce is sold in the charity shop in Edenvale. The profits from the sale are used to run the facility.

Figure 69: Residents using the Labyrinth.
Source: www.littleeden.org.za.

Figure 68: Aerial view of the village. Source: Author, 2018.

Nicky's Nook is where the older men live seen in Figure 68. While they are aged in their 40s and 50s, this is considered elderly for people with intellectual cognitive challenges, as their bodies age faster than those of average people, due to the fact that they are prone to illness and many suffer some physical impairment. Louis Lodge is where girls in their late 20s and 30s reside with younger residents, as the women enjoy mothering the younger residents. The sleeping area is separated into male and female sections.

The entire facility is highly functional, from the layout to the materials used. Red facebrick is employed in construction for almost every part of the building. This was used for its low maintenance, as well as its durable properties. Double-pitched IBR with gable end walls are utilised for all roofs with exposed trusses.

The walkways are constructed with red brick paving for its hard-wearing properties, as well as to match the facebrick of the rest of the building. While designing the facility, the organisation took into account the fact that permanent brick walls of their previous institute had hindered them from changing spaces. Thus, they made the new design adaptable, with prefabricated walls that could be moved to make room for different activities to take place.

5.3.4 Justification of case study

The facility is one of the best buildings designed specifically for intellectually cognitive challenged adults in South Africa. The architect has employed the Multi-sensory theory throughout the facility, from the sensory and music gardens, to the interior design of the buildings. Culture theory is incorporated, with the connection to the community and wayfinding through the simple navigation paths. This facility encompasses all of the fundamental design elements and therapies that will be incorporated into the proposed facility. The facility is also located in a similar area to the proposed facility's site. Thus, design elements from this case study will be able to be employed successfully in the proposed facility.

5.3.5 Analysis

Culture theory – Connection to community

The facility has deep-rooted ties to the community, since many of the workers and helpers are from the surrounding area and have lived in the area their entire lives. The facility is a very special part of the community and its residents are seen as family, thus many community members also volunteer at the facility. Every year, it hosts a large Christmas party and sports day, attended by the community and supporting members from around the country. The facility also hosts many fundraisers that the community gets involved in through volunteering or donating goods and money.

Figure 70: Clerestory lighting Source: www.repository.up.ac.za.

Multi-sensory design – Sensory components

- Natural sunlight – Sunlight has been used to light most parts of the building. Large windows, as well as clerestory lighting (Figure 70), facilitates the most amount of natural light penetrating the building.
- Interaction with the outdoors – Gardens, courtyards and indoor green spaces have been integrated throughout the facility. There is also a large park (Figure 71) with shaded benches, as well as playground equipment that the residents can use. Those with intellectual cognitive challenges also interact with nature when they work in the gardens, orchards and plantation, to grow and reap crops.
- Material choice – Various materials have been employed to create texture and intrigue. Facebrick, timber and IBR roofing comprise the main structure, while tiles, carpets and timber enhance the structure and create warmth. This ensures that the building feels more like a home and not an institution.
- Sensory and musical gardens – The sensory garden is a fundamental component of Multisensory design, which is employed in the facility. This garden is not only used for recreational purposes, but also has therapeutic benefits for those who have intellectual cognitive challenges.

Figure 71: Garden space.
Source: www.repository.up.ac.za

- The waterfall (Figure 72) is used to stimulate sight, smell and sound with the cascading water creating a tranquil feeling.

Figure 72: The sensory garden Source: www.littleeden.org.za.

Phenomenology – Journey and experience

The journey is created in this facility in many ways. Through the experience of moving through the separate indoor and outdoor spaces, as well as the enthralling labyrinth, numerous experiences occur in the various other parts of the facility. In Nicky's Nook and Louis Lodge, there is a great deal of interaction as residents like to perform activities and socialise together However, in Pino's Place, there is not much interaction, as residents have their own rooms and do not like to interact with one another or have too much stimulation, as this causes violent behaviours.

Concept of wayfinding – Circulation and navigation techniques

Circulation in this facility is quite similar to that in the previous case study. The building is separated with open walkways that connect each building. The corridors are wide, with many windows that let in the natural light and fresh air (Figure 74). This is so that those with intellectual challenges don't become scared or claustrophobic.

Design Guidelines Obtained from Analysis

- A secure environment that allows freedom – The facility has managed to create a secure environment, while creating a sense of freedom for their residents, with the use of the village plan. This layout allows for surveillance of the residents by doctors and nurses, but the use of courtyards allows the residents to have some privacy and helps them feel more independent.

Figure 73: Pino's Place. Source: www.repository.up.ac.za.

- Practicality – In conducting this case study, much information has been gathered as to how various design elements of a building, in terms of the maintenance and durability, must fulfil a practical, day-to-day function for those with intellectual cognitive challenges. The use of hardy building materials, with the addition of specialised design elements aids those with challenges, not to mention the placing together of similar tasks, as well as the distance between the buildings, to make these easier for people with intellectual challenges to find.

- Environment and economy – This facility has considered the environment by using sustainable methods such as rainwater harvesting for its water supply. It also employs the environment to drive its funding. The walnut orchard and maize and bean plantation provide an income that helps to keep the facility running. The organisation also has a shop at which the public can donate various items that are sold at its shop in Edenvale. This money helps provide for the facility.

Figure 74: Walkway and corridors in the facility. Source: www.repository.up.ac.za.

5.3.6 Summary

The entire facility has been designed with the needs of people with intellectual cognitive challenges in mind. The site has allowed for phenomenal outdoor spaces to be created to serve their needs and have a therapeutic benefit. Multi-sensory design has been integrated more successfully into the outdoor facilities. However, the indoor facilities could have more elements of Multisensory design, in terms of employing more stimulating materials.

An exploration of culture theory has demonstrated how allowing spaces for community interaction and participation can bring people together and create a helpful caring community. An analysis of the building through the concept of wayfinding has demonstrated how those with intellectual challenges respond better and feel more secure when the pathways are clear, simple and well-lit, as well as when they can see their final destination.

The facility is a successful example of how a well-functioning, cleverly designed building can improve the quality of life of those with intellectual cognitive challenges. The lessons learned through the study of this facility will serve as fundamental design guidelines that will be incorporated into the proposed facility.

The next chapter focuses on the unique elements of the built environment that provide positive outcomes for people with such challenges. This knowledge will be gained through empirical data collected from questionnaires filled in by professionals and people who work with the residents each day. Observations of those who have intellectual cognitive challenges in the various spaces that they utilise will also add to the knowledge of how the built environment can be employed to support and enhance their lives.

CHAPTER SIX: DATA COLLECTION AND ANALYSIS

6.1 INTRODUCTION

In this chapter of the research, first-hand data from questionnaires, as well as observations, are analysed to understand the relationship between built form and the wellness of the intellectually challenged. These questionnaires have been answered by a range of participants who possess varying degrees of knowledge, different jobs and backgrounds, and have varying degrees of involvement with residents. They include a psychologist, occupational therapist, principals, teachers, assistants and caregivers, who assist the intellectually challenged each day.

Every participant answered the same questionnaire. This was done in order to understand if participants from various backgrounds had similar opinions. The questionnaire asked participants if they thought that a correctly designed building could help the intellectually challenged to live a better life.

The observations were conducted by the researcher, in order to obtain first-hand experience and an understanding of how the intellectually challenged use a building and the spaces provided, and which design elements make it easier for those with intellectual challenges to function well and which provide them with a better quality of life.

6.2 ANALYSIS OF FINDINGS

6.2.1 Theory of Multisensory design and phenomenology

Designing for the intellectually cognitive challenged requires an understanding of how they perceive the world and the role of sensory processing . Perception is a highly complex process and is greatly influenced by the senses which create emotion, experience and memories. Thus, multi-sensory design, that is; light, colour, sound, texture, pattern ,shape ,sounds and smells become an integral part of the built environment which influence a person’s emotions and well-being . This is especially so for the intellectually cognitive challenged

who are affected by some sort of developmental delay or neurological disorder. Through the research gathered it was understood that for the intellectually cognitive challenged, sensory stimulation not only formed part of the buildings elements but also served as a therapeutic remedy to help the intellectually cognitive challenged learn and process their emotions. This was clearly stated by all participants in the study.

According to Karen de Kock ,a registered Music therapist that has been working at the Little Eden facility for 15 years , sensory therapies such as music therapy have the ability to improve the life of the intellectually cognitive challenged as it works holistically with the total person and does not exclude any resident.

Multi-sensory design is also used at the Stanger training center as a form of teaching for the students. As the teachers explained, textures and colours are used to stimulate the brain and in turn help in memory. This has seen a vast improvement in their literacy and communication skills. The training center boasts a on staff occupational therapist and speech therapist who both use multi-sensory design elements as a form of treating the intellectually cognitive challenged.

Paulo Slaviero, the Manager of Little Eden ,explained how the intellectually cognitive challenged have improved with the various therapies. These therapies form an important element of the intellectually cognitive challenged lives. Eighty percent of the staff at Little Eden believed that the facility had enough therapies available for the residents. Ninety percent of the staff believed that the facility should acquire a physiotherapist as most of the residents have some sort of body ailment. Fifty percent of the staff suggested a psychologist also be employed to help the intellectually cognitive challenged deal with their mental needs.

Paulo Slaviero noted that one of the most successful therapies offered at the facility was the horse therapy in which the residents interact and ride horses. He stated that one resident who had previously been mute started to speak through the help of the horse therapy.

With regards to phenomenology an investigation into the feeling which is created by the spaces was explored as well as the journey in which ones moves through the building. This was seen in both case studies as the architects created various individual buildings with open walkways. This allowed the residents to walk through to each building interacting with nature and experiencing a journey to reach their desired destination. As the helpers and teacher's assistants of both case studies stated, this type of design was of great benefit as the intellectually cognitive challenged got to be outside and were not contained in a large enclosed facility which made them feel scared and nervous.

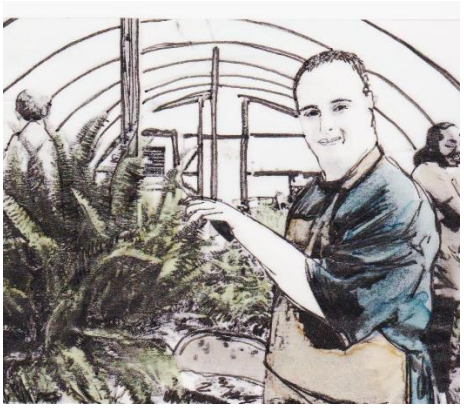


Figure 75:Sketch of authors observation of an intellectually challenged person feeling the textures of the ferns :Author 2018

Every participant of the study agreed that a correctly designed building could positively affect the intellectually cognitive challenged experience in the space. They felt that by using vast amounts of natural light and sensory stimulation such as the elements of multi-sensory design it created a better space for the intellectually cognitive challenged, improving their daily lives and making them feel happier.

This was noted first hand by the observations conducted by the researcher. As the intellectually cognitive challenged were exposed to natural light or in close proximity to nature their behavior improved greatly. The use of multiple textures created an appealing space where the intellectually challenged would engage not only with the texture but with each other . At the Stanger training center, the students worked in gardens planting fruits, vegetables and herbs as one of their daily lessons. Teachers stated that this helped the students concentrate and that they immediately became calmer and felt at ease. The highest form of excitement was noted in the sensory gardens. This was where the intellectually cognitive challenged walked through the paths tasting the fruits, smelling the variety of herbs and plants touching the assortment of textures, seen in figure 75, and listening to the sound of the water trickling from the fountain all eliciting great joy and happiness.

In the classes at The Stanger training center the researcher observed the senses that were stimulated. Figure 76 indicates the percentage of senses that were stimulated whilst the researcher observed the intellectually cognitive challenged.

It is noted that touch was the primary sense that was stimulated whilst sight and hearing come next with 20%. This is due to the fact that the intellectually cognitive challenged seem to need to touch an object to understand it. Smell and taste are the least stimulated as not all objects in the classroom had any smell or were meant to be tasted.

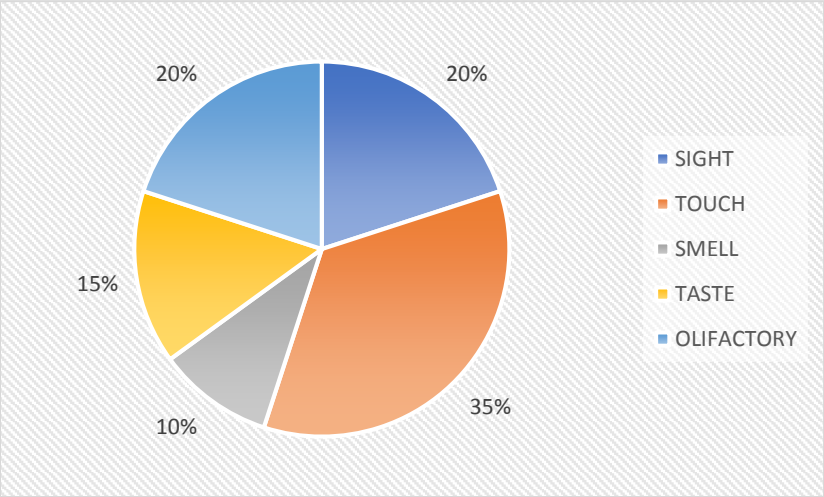


Figure 76:Pie chart showing the observed senses that were stimulated
Source :Author 2018

6.2.2 Culture theory

Considering the local culture of an area, their people, history ,traditions and materials aids in connecting to a place. Creating a building which not only meets the requirements of pure function but also seeks to express the culture of the area allows for the recognition that people attach to place and this in turn creates emotions and experiences which add to the connection of built form and community. This has proven to be of vital importance when trying to establish a new facility which is able to integrate with the existing community.

This incorporation was noted by the researcher in both case studies. At Little Eden the surrounding community were always included in all events held by the facility. People from the community also volunteered at the facility and grew close ties to its residents. In terms of the architecture the researcher noted that the facility used many of the materials that were used by the surrounding area .

At Stanger training centre the architecture took into consideration the traditions of the area with the use of brick and other architectural elements. Another major factor was that most of the staff hired at the facility came from the surrounding areas. Notably being a very poor area, this not only created an income for the people but also a remarkable link to the community. This made the community view the facility as a part of the integral fabric of the area. By knowing the intellectually cognitive challenged children personally it helped remove the stigma tied to this disorder.

6.2.3 The concept of wayfinding

For the intellectually cognitive challenged orientation, legibility and wayfinding are key elements related to how they find and use spaces. Creating clear paths ,simple access corridors and easy to understand signage helps the intellectually cognitive to navigate a building without the fear of being lost . However, to create simplicity in a building requires complexity in design.

As most participants stated that when it comes to designing signage for the intellectually challenged using pictures and bright colours instead of words help them to get a clearer understanding of where they are going. Through the research it was understood that wayfinding can be done in innovative methods. With new technology such as intelligent lighting and interactive boards the intellectually cognitive challenged are able to travel through buildings more confidently and safely.

Through observations conducted it was clear that the intellectually cognitive challenged relied heavily on the various elements of wayfinding as a means of navigating spaces.

In Little Eden many of the intellectually cognitive challenged are not literate thus, most of the signage used in the facility are pictures. Paulo Slaviero, the Manager of Little Eden explained how the staff are able to teach the intellectually cognitive challenged what each sign means, and they are able to recognize ,understand and move from point A to B with ease.

At Stanger training center it was observed that colour was used as a form of wayfinding. Each building was identified with a certain colour and thus, the students knew which block contained each function by means of identifying the colour.

6.3 CONCLUSION

Taking participants from two different types of facilities which housed the intellectually cognitive challenged from ages 4 to 64 was done so to grasp the most amount of knowledge on the intellectually cognitive challenged. It was understood that most of the participants believed that the involvement of the community within the facility was paramount to achieving the success of the facility and the residents.

Participants also recognized the benefits of the concept of wayfinding as well as the theory of multi-sensory design. Whilst the participants come from different backgrounds and areas it is noted that incredibly 100 percent of them believe that a correctly designed building can improve the lives of the intellectually cognitive challenged and that the building itself can form part of the therapy. This alone showcases how architecture can be used as a fundamental tool to help the intellectually cognitive challenged to live a better ,healthier and more dignified life.

In the next chapter recommendations ascertained through research will be discussed as well as concluding statements .

CHAPTER SEVEN: RECOMMENDATIONS AND CONCLUSION

7.1 INTRODUCTION

This dissertation seeks to understand how architectural interventions can create an ideal designed building which provides the intellectually cognitive challenged with a better quality of life. The great need for this information is highlighted through the motivation of this dissertation which is the Life Esidimeni crises and the horrific state of other facilities for the intellectually cognitive challenged in South Africa.

It is clear to understand that the theories explored in this dissertation have helped to get a greater sense of how to design an appropriate facility for the intellectually cognitive challenged. The information explored on the state of affairs for the intellectually challenged in South Africa further indicate why this type of facility is so desperately needed in South Africa.

This chapter shall address recommendations derived from the research conducted through literature review and analysis of precedents and case studies from a global and local means .This will inform the proposed building and will help to answer the key questions that were asked earlier in this document.

7.2 RECOMMENDATIONS DERIVED FROM THE STUDY

7.2.1 Architectural design elements for facilities aimed at the intellectually cognitive challenged

From the information gathered through research ,questionnaires and observations it becomes clearer to understand what architecturally designed spaces contribute to the wellness of the intellectually cognitive challenged ,which is the primary question of the research. These elements also include Salutogenic architectural design that are typically used for the intellectually cognitive challenged.

Natural light

Large rooms with plenty of natural light would be a defining factor of all spaces in the proposed building. This could be achieved in various ways such as sunrooms, clerestory lighting , large windows and light wells. The use of natural light provides the intellectually cognitive challenged with a sense of calm and has physical benefits such as improving health.

Connection to nature

By including elements of nature into the design it not only provides aesthetic beauty but also aids in creating a better atmosphere in which the intellectually cognitive challenged live in. Courtyards allows nature and light to penetrate into the building .Landscaping and outdoor architectural elements also offer great opportunities for the residents to enjoy the outdoors. A labyrinth not only delivers a unique design element but also provides therapeutic benefits for the intellectually cognitive challenged. Sensory gardens which intentionally stimulate the senses with deliberately chosen plants and foliage is another element that should be incorporated.

Multi-sensory design elements

To answer what architectural design principles will facilitate a multi-sensory environment for the intellectually challenged we explore the materials that will be used in the proposed design. Thus, using materials which stimulate the intellectually cognitive challenged such as highly textured materials, materials which activate with heat and new innovative materials become a vital design element . This also means materials should be appropriately chosen for each room in terms of how they activate the senses .

Individual buildings

To understand how architectural design principles can be implemented to create an ideal training and living environment for adults with intellectual challenges one looks at the building form and navigation.

Individual buildings provide a way in which to separate and identify the functions. This is of great benefit for the intellectually cognitive challenged as it allows them a greater understanding of where things are on site and in turn makes it a simple, easy to understand facility. Having individual buildings also offers more interaction with nature and allows the addition of walkways.

Open walkways

Using open walkways allows the intellectually cognitive challenged to be outside in the natural environment feeling and seeing the elements. It also creates a journey from one building to another. Whilst the top can be covered to protect from rain and harsh weather the climate of Durban allows for open walkways where the intellectually cognitive challenged can enjoy the relief of being outdoors.

7.3.2 Recommendations on facilities for the intellectually cognitive challenged

To understand what kind of treatments, help the intellectually cognitive challenged and how architectural design influences these kinds of treatments the researcher has investigated the numerous facilities that benefit the intellectually cognitive challenged.These will be the various facilities which should be incorporated into the proposed building. These facilities have been chosen from the research conducted in this study.

This includes therapeutic facilities such as a Snoezelen room, hydrotherapy , physiotherapy ,occupational therapy ,speech therapy and psychotherapy. Vocational training should be considered especially education that will provide the intellectually cognitive challenged a means to get a job or provide them with an income. This includes facilities such as training in metalwork, woodwork, handicrafts, baking, and cosmetology. This provides them with knowledge that they can grasp and use in society.

In terms of architectural design, the way in which each space is built to meet the individual functions will contribute to how effective these treatments can be.

7.3.3 Advantages of using this type of architecture for the intellectually cognitive challenged

There are various benefits of using this type of architecture for the intellectually cognitive challenged. They are able to use the building with ease ,they are given dignity ,a sense of purpose, provided with safety and security ,and given a place in which to call home. However, the most important aspect is that through the means of architectural interventions they are given a better quality of life.

7.3.4 Advantages of creating an inclusive community for the intellectually cognitive challenged

As previously stated by incorporating culture theory into the building it allows for the intellectually cognitive challenged to be incorporated into the existing community. But what is the purposed of doing so?

By creating this inclusive community, it gives the facility an identity and ties the residents into the fabric of the existing society. This means that the community will want to take care of not only the facility but the people who reside within it. In terms of the benefit for the intellectually cognitive challenged the idea of being part of a community gives them a sense of belonging and makes them feel whole.

7.4 CONCLUSION

The comprehensive research explored on the theory of multisensory design and phenomenology, culture theory and the concept of wayfinding, and their varying aspects have provided a solid understand

-ing on how the design of a building can affect the intellectually cognitive challenged. Thus, one can conclude a building can either have a positive or negative impact on the intellectually cognitive challenged .

This dissertation will provide the knowledge on how to create a building which does the former. The information will not only help people in Stanger but all-over South Africa who lack knowledge on the intellectually cognitive challenged and appropriate design of facilities for them.

Thus, the architect must consider this document and recommendations when designing future facilities for this community so that the intellectually cognitive challenged can live a full, purposeful and satisfying life.

PART TWO

DESIGN REPORT

CHAPTER EIGHT: DESIGN DEVELOPMENT

8.1 INTRODUCTION

This project seeks to create a new typology of buildings, designed specifically for the intellectually cognitive challenged, that moves away from the institutional quality of previous designs. It aims to create a building which not only meets the needs of these people but also provides a better quality of life.

The design interventions shown in this section have been obtained through the researched conducted in the previous chapters.

8.2 THE CLIENT

One of the clients of this facility will be the department of health however, due to budget cuts, they will only be able to provide 30% of the funding for the new facility .The rest of the funding ,which is 70%, will come from large group private funding as well as private donors such as the Vera Grover Will Trust. The facility will also raise funds through the goods sold from charity shop as well as the cafe and concerts.

8.3 THE TYPOLOGY

Residential and Educational

The proposed building is not a single typology but a combination of various typologies that are used in conjunction to create a holistic facility that caters to all their needs in one place. The proposed building will be a Living and training facility for adults who are mildly intellectually challenged. It will consist of accommodation where the intellectually challenged can live for their entire lives. It will also have a training facility where the intellectually challenged may learn vocational skills that will empower them and stimulate their minds. The products made by the intellectually challenged will be sold in the shop and proceeds go to the maker providing them with an income. The facility will also have a cafe as well as community gardens and an open-air market where the members can interact with the community.

8.4 THE CONCEPTUAL FRAMEWORK

The figure below explains the conceptual framework of the proposed project, it underlines how one will translate the theories explored into built form through the research conducted in the dissertation. It is divided into the experience one hopes to the create as well as the architecture which would illicit a certain type of emotion.

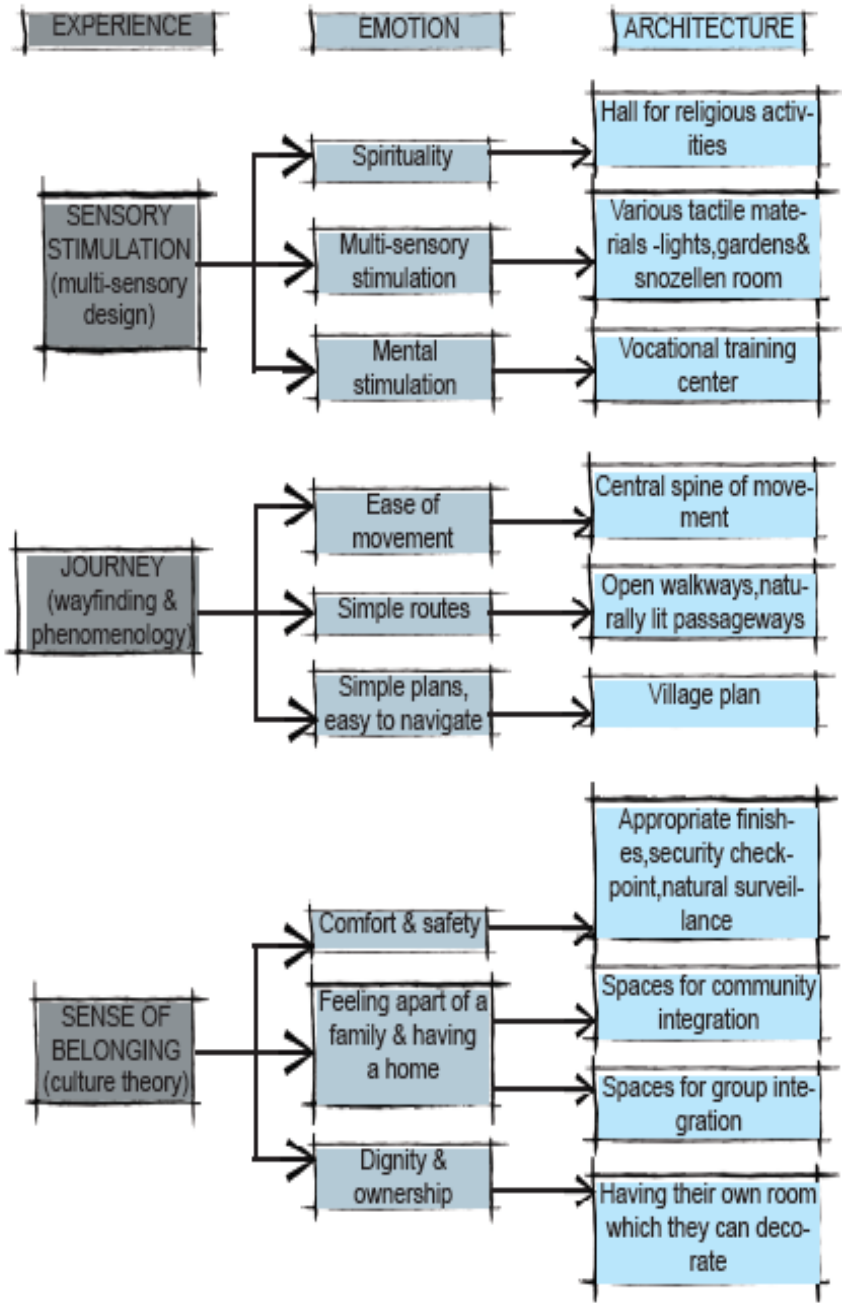


Figure 77: Flow diagram of conceptual framework
Source :Author 2018

8.5 DESIGN DRIVERS

The design drivers have been divided into operations, facilities and location. The design of the new facility should facilitate the integration of the intellectually cognitive challenged with existing community. It should also stimulate the economy. The building will be constructed from durable materials and should be designed and built with a maximum lifespan .The environment should also be considered. The facility layout and design should facilitate the needs of the intellectually cognitive challenged. Aesthetic values rooted into the community by using existing materials in innovative ways. The new facility must provide for all the needs of the residents. This would include the physiological and safety needs. Thus, the facilities should stimulate the Mind, Body and Soul. The site that has been chosen is located in KwaDukuza. This is due to the fact that there is a lack of facilities for intellectually cognitive challenged adults in and around this area.

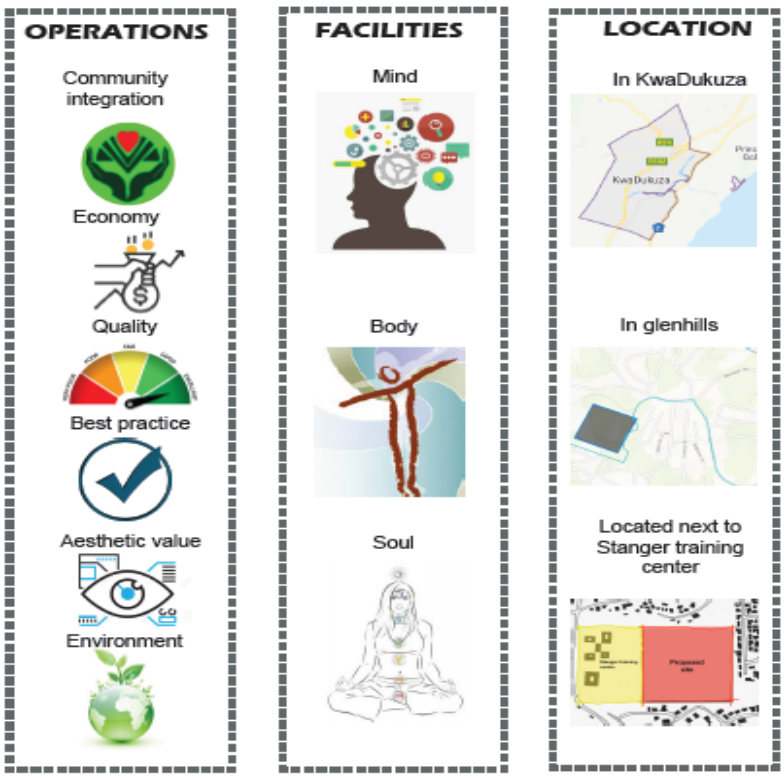


Figure 78: Design drivers
Source :Author 2018

8.6 SITE SELECTION

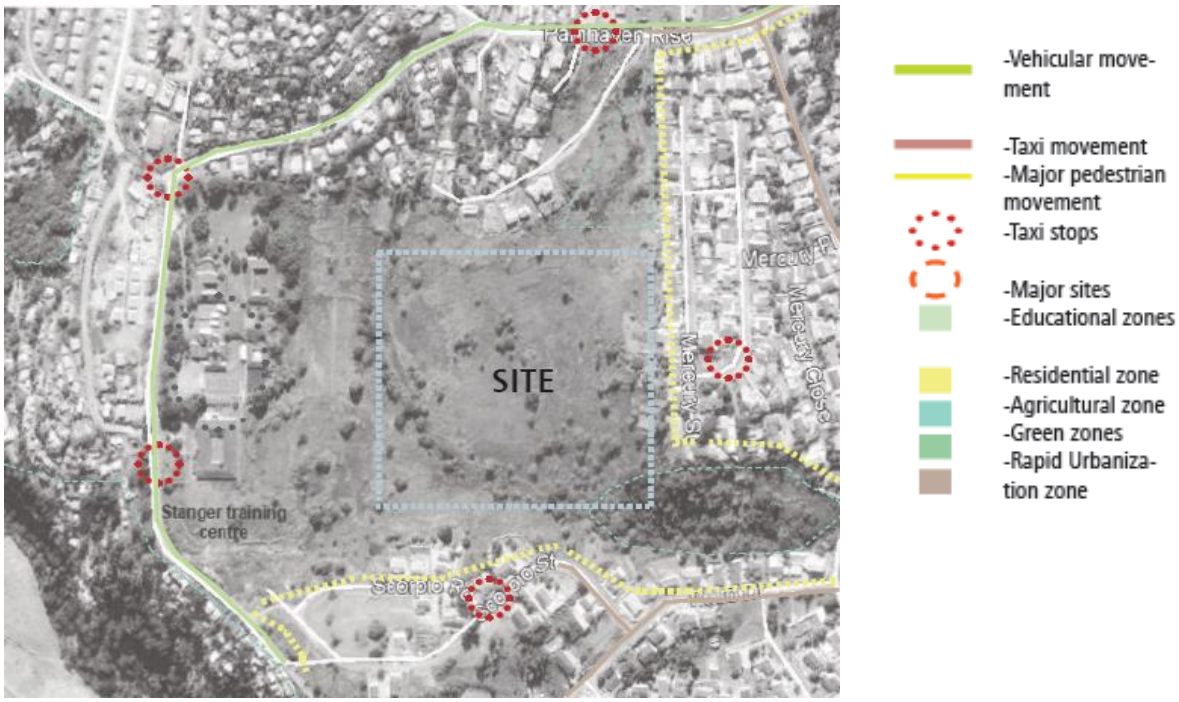


Figure 79: Contextual plan
Source :Author 2018

Why has this site been chosen?

-The area I choose is located in KwaDukuza. I have chosen this site due to the lack of facilities for the intellectually challenged in the surrounding area. The major reason for choosing this site is that it is located next to the Stanger training which is a well-established facility for the intellectually challenged from the ages 4-18 .As I want to construct a facility for ages 18 and above this not only creates a link to the existing facility but a great node.

-The Site is located in the Glenhills, KwaDukuza. It is a low-income area surrounded by homes, informal settlements and sugar cane fields. It has access from one road and the site is close to Stanger hospital which is a public hospital.

-The Neighborhood that surrounds the site is a tight knit community who care for one another. This is also a positive as the intellectually cognitive challenged thrive in good community settings.

8.7 SITE ANALYSIS

Security

-The site is most secure in the center of the site. Security is very important as the intellectually challenged need to feel safe and secure at all times.

Privacy

-Public access is mostly located on the north edge of the site as there is a small dirt road on the corner where people can gain access to the site easily. The most private area is located at the south corner where most of the planting is located.

Services and dimensions

-The topography of the site is quite flat which is the prominent physical feature of the site.

-There is a slight 1:30 bank located on the North West side of the site. The site also has good services

-The site is quite large, but this allows for a good size facility with great outdoor spaces.

View corridors

-The site not only has views to the sugar cane fields and a green field but also to the ocean due to its elevation.

Traffic and pedestrian flow

-The main forms of transport are cars, taxis and buses. There is plenty of public transport in this area in terms of buses and taxis. There are pedestrian routes near site , to and from the numerous bus and taxi stops.

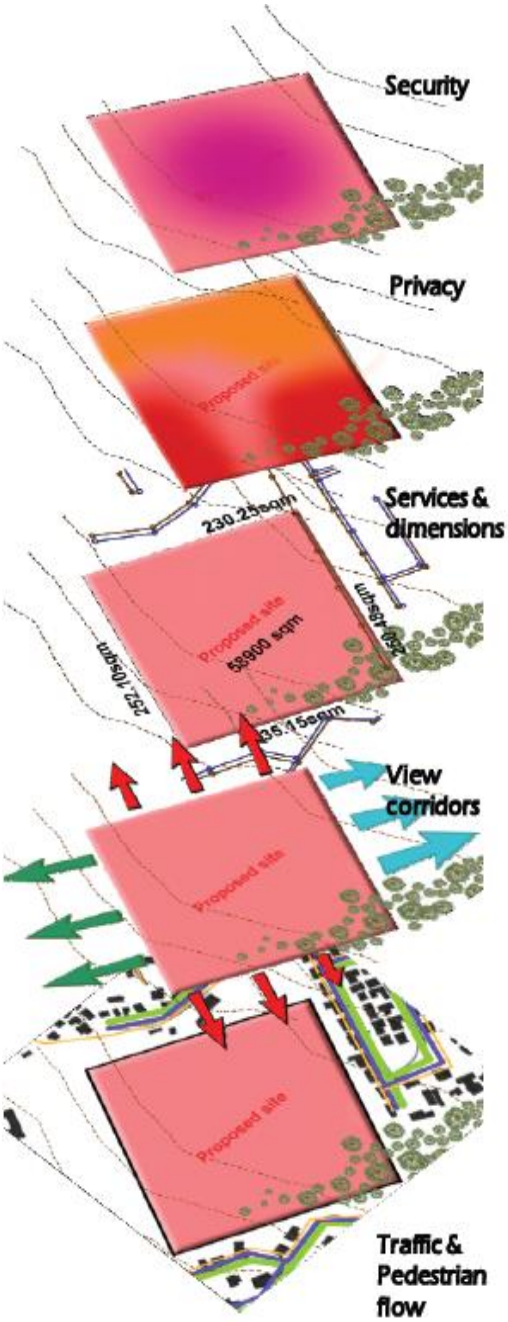


Figure 80: Micro analysis of site
Source :Author 2018

Zoning

-The major zones around the site is residential.

-The site itself is an educational zone.

-There are also green zones.

-Sugar cane fields are located to the west of the site

Climate

-KwaDukuza has a hot ,humid climate with dry winters and rainy summers. The site is open and thus, receives good air flow as well as the interior north westerly winds. This allows for cross ventilation. It also has a good North orientation.

Noise

Most of the noise is generated by the residential homes near the site. Whilst their school is located next to site it does not generate a lot of noise. Thus, the site is generally a quiet place which is good for the intellectually challenged.

8.8 FINAL DESIGN PROPOSAL

THE MOTIVATION

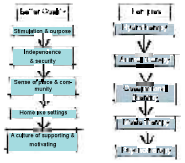
-To create architecturally designed spaces, to treat, educate and create a better living environment for people with intellectual cognitive challenges.

INTRODUCTION TO THE CLIENT

WHO ARE THE INTELLECTUALLY CHALLENGED?

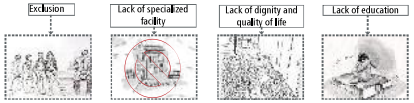
These include people with:
-Cerebral palsy
-Down syndrome
-Autism spectrum disorders
- Fragile X syndrome and
-Developmental delay.

WHAT PROVIDES THE INTELLECTUALLY CHALLENGED WITH A BETTER QUALITY OF LIFE?



HOW ARE THEIR LIVES AFFECTED?

PROBLEM STATEMENT



Previously designed buildings do not cater for the specialized needs of this community. This creates sterile ,difficult to use buildings which make the users feel unhappy,as well as leaving them with a feeling of unworthiness.
Previously designed buildings do not cater for the specialized needs of this community.

THE TYPOLOGY

Residential and Educational

-The proposed building is not a single typology but a combination of various typologies that are used in conjunction to create a holistic facility that caters to all their needs in one place.
-The proposed building will be a living and training facility for adults who are intellectually challenged. It will consist of accommodation where the intellectually challenged can live for their entire lives. It will also have a training facility where the intellectually challenged may learn vocational skills that will empower them and stimulate their minds.
-The products made by the intellectualy challenged will be sold in the shop and proceeds go to the maker providing them with an income, The facility will also have a cafe where the members can work as well a day center for the intellectually challenged who live with their families but chose to partake in the learning and training.

MAIN AIMS

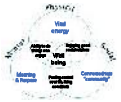
-To achieve a design that will focus on a way in which to treat these persons using non-intrusive methods, ensuring benefits not only to the patient but the families and healthcare workers.

-To create architecturally designed spaces, to treat, educate and create a better living environment for people with intellectual cognitive challenges.

-Creating a sensory rich building that also allows the user to navigate with ease and comfort

-Sustainability in regard to the environment and life cycle costs of the building

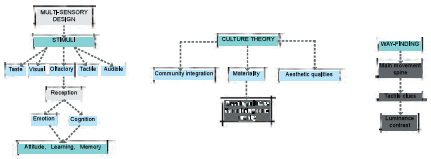
DESIGN OBJECTIVES



KEY WORDS

THEORETICAL FRAMEWORK

Multi sensory design and Phenomenology
The built environment consists of form and materials and the use of light in these spaces have been a primary factor in treating the intellectualy cognitive challenged. The use of these sensory devices can create an environment that is enriched with experience and which can not only affect one's emotions but also the way in which a person uses the space, learns and remembers. The way in which people with intellectual disabilities function relies greatly on their outward experience, Thus, a multi-sensory design not only enriches their lives but creates a healthy environment filled with multiple interactions and a positive mindset, influenced by the functional quality of space.



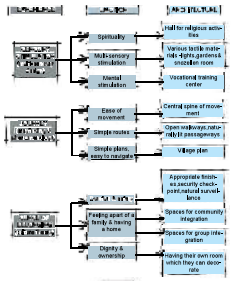
Culture theory
Culture is a vast topic and can be interpreted in various ways. For this dissertation the specific culture of KwaDukuza is used to help create new architecture which responds to the existing structures creating a link to the people of this area Community integration is vital for the intellectually challenged thus, culture theory has been used to tie the new facility with the existing community.

Way-finding
Way-finding is an information system designed to help users of the building to navigate and understand a structure, and the space they are experiencing. Things such as maps, lighting and colour play a vital role for people with intellectual cognitive challenges. Signs need to be clear, concise and easy to understand, preferably using pictures instead of words. this gives them a clear picture to orientate themselves and create the memory of how to get from point A to B without fear or hesitation.

CONCEPTUAL FRAMEWORK

The figure below explains the conceptual framework of the proposed project. it underlines how one will translate the theories explored into built form through the research conducted in the dissertation.

It is divided into the experience one hopes to the create as well as the architecture which would illict a certain type of emotion.



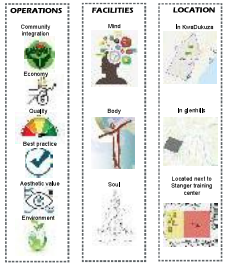
DRIVERS OF THE NEW FACILITY

The drivers of the new facility are broken down into three categories;

Operations: Having elements of community integration which creates economy, is constructed with a long life span and low maintenance, uses the newest forms of therapies for the intellectually challenged and takes into account the aesthetics as well as the environment.

Facilities: Which stimulate the mind,the body as well as the soul

Location: This area was chosen after research into where this facility is most needed.



SITE ANALYSIS

Why has this site been chosen?

-The area I choose is located in KwaDukuza, I have chosen this site due to the lack of facilities for the intellectually challenged in the surrounding area.
-The site is located next to the stanger training which is a well established facility for the intellectually challenged from the ages 4-18 .As I want to construct a facility for ages 18 and above this not only creates a link to the existing facility but a great node.
-It is large enough to have outdoor gardens ,and therapy.

MACRO ANALYSIS

-The Site is located in the Glenhills, KwaDukuza, It is a low income area surrounded by homes,informal settlements and sugar cane fields.
-It has access from one road
-There are small shops located near the area as well.

URBAN CHARACTERISTICS& ZONING

-The major zones around the site is residential.
-The site itself is an educational zone.
-It is also green zones.
-Sugar cane fields are located to the west of the site

PEDESTRIAN/ VEHICULAR MOVEMENT

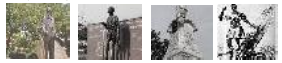
-I have adjacent figure shows the traffic flow to and from site, The main forms of transport are cars,taxis and buses, There is plenty of public transport in this area in terms of buses and taxis, There are pedestrian routes near site , to and from the numerous bus and taxi stops.

What makes the site suitable for the intellectually challenged?

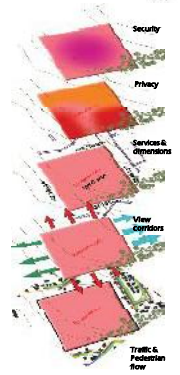
-The Neighborhood that surrounds the site is a tight knit community who care for one anothes This is also a positive as the intellectually challenged thrive in good community settings.
-The site not only has views to the sugar cane fields and a green field but also to the ocean due to its elevation.
-Around the site are some recreational areas such as soccer grounds ,tennis grounds and a community recreational ground.
-The divine life society is also located up the road from the site. This group helps the less fortunate and helps to keep the community of this area together.
-The area is close to Stanger hospital which is a public hospital.

Historical context of the site of KwaDukuza

-King Shaka ,the King of the Zulu's founded the town in 1825 and his grave , which is a heritage site is located in the town.
-Surrounded by a beauty of sugar cane fields the town became the home of many Indians who came to South Africa as indentured slaves to work on these fields.
-In 1872 permission was granted to create a town



MICRO ANALYSIS



EXPLORING THE IMPACT OF THE INTELLECTUALLY CHALLENGED DEMANDS THROUGH ARCHITECTURE: TOWARDS A TRAINING AND LIVING FACILITY WITHIN THE ILEMBE DISTRICT

JOESHNEE PILLAY(212514569)

PRECEDENT & CASE STUDIES

3 PINS RESIDENCE AND DAY CENTER,BARCELONA

THEORETICAL ANALYSIS
-The architects designed the building to be a safe place where people with intellectual cognitive challenges could live, play and thrive.
-Way-finding is integrated with the use of special lighting that is located on the roof seen in figure below.
-A connection to community has been created by using materials in the building which hold meaning for the people of the area as well as incorporating the building with its surroundings

DESIGN GUIDELINES OBTAINED FROM ANALYSIS
-The use of natural light
-Controlled freedom with the use of courtyards have been able to make the patient feel happier and more energized.
-The spaces which have been designed for patient interaction has seen improvement in the life of the intellectually cognitive challenged
-As they are able to interact with one another it helps form friendships and create a community amongst them.

LITTLE EDEN, JOHANNESBURG

THEORETICAL ANALYSIS
-Culture theory is incorporated with the connection to the community and way-finding through the simple navigation paths.
-Multi-sensory design is implemented throughout the facility from the sensory and music gardens to the interior design
-Way-finding through the simple navigation paths

DESIGN GUIDELINES OBTAINED FROM ANALYSIS
-A secure environment that allows freedom. Courtyards allows the residents to have some privacy making them feel more independent.
-Practicality: This is in terms of the maintenance and durability of the building, Using hardy building materials, adding specialized design elements
-Environment and economy: using sustainable methods such as rainwater harvesting for its water supply.

STANGER TRAINING CENTRE, KWADUKUZA

THEORETICAL ANALYSIS
-Culture theory has been implemented into the building quite successfully with the use of tonic architectural style
-Multisensory design and phenomenology have been explored the experiences with natural and space with its way finding is executed through the use of strong, simple circulation paths.

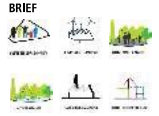
DESIGN GUIDELINES OBTAINED FROM ANALYSIS
-The use of a courtyard design
-The use of multiple buildings with open walkways connecting them together
-Various facilities: metal work room, the woodwork room, the horticulture gardens, the gym, the beauty and health care room, as well as the teaching kitchens, These have been chosen as they all greatly benefit the intellectually cognitive challenged,

ACCOMMODATION SCHEDULE

IDENTIFICATION OF CLUSTERS

Similar accommodation where identified and placed into clusters, By placing these clusters into individual buildings it simplifies the plans which in turn helps the intellectually cognitive challenged to understand and navigate the facility better.
These clusters include:
1. Reception and Training cluster: This cluster represents those buildings providing public facing service, The administration as well as the training centre,shop and cafe is located in the public area of the facility
2. Therapy Cluster: Consisting of all the various therapies available on site located in the semi-private area of site
3. Services cluster: These are the building and structures providing essential operational services to the rest of the facility and include the hall,dinning area,laundry and kitchens,
4. Residential cluster: Consists of the Male and female accommodation connected to the outdoor courtyards and central meeting areas

BRIEF



-Education: By incorporating a training facility it not only allows the intellectually challenged to learn skills that can offer them stimulation but also help them to find jobs and earn an income.

-Community integration: By allowing the existing community to enter the facility and participate it allows the people to create a connection with the intellectually challenged and lets them become apart of the existing community.

THE CLIENT

The government then has the task to provide these persons with an alternative living facility, However, the provision of long-term mental health care for people with mental disorders has been and still is, one of the major challenges for mental health care systems in South Africa,

With the lack of funding and overcrowding of existing facilities, thousands of mentally ill patients are out roaming the streets, The treatment and design of these facilities are made to meet budgets and not the needs of the patients causing the user to feel even more isolated and insecure which is detrimental to their health and wellbeing.

-30% of the funding for the new facility will be provided by the department of health, The lack of funding means that they are not able to provide full funding,
-The rest of the funding which is 70% will come from large group private funding as well as private donors such as the Vela Grower Will Trust.
-The facility will also raise funds through the goods sold from the the skills they learn as well as

THE ACCOMMODATION

The building will accommodate

44 FEMALES

44 MALES

-The center will accommodate a total of 88 intellectually challenged adults,
-These adults will be able to live at the center their entire lives,
-They will be brought in by social workers,
-They will not be required to pay an accommodation fee

What is this building meant to do?

Create a better quality of life for the intellectually challenged whilst integrating these people into the existing community

How is this Project different from existing buildings?

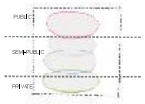
By creating a building which caters specifically to the needs of the intellectually challenged and provides spaces which generate a better quality of life

Benefits Of This Facility

-Economy: It will boost the economy first by the construction industry ,then by creating employment especially in the healthcare and services industry.

This will greatly help the people in the surrounding area as it is a very low income area. The facility will also have a cafe and shop which will not help with jobs but also the community meeting and interacting with the intellectually challenged.

CONCEPTUAL THINKING /DESIGN DEVELOPMENT



PRIVACY GRADIENT/ ZONING

BUBBLE DIAGRAM

BUILDING FORM

SYMMETRY & VIEW CORRIDORS

COMMUNITY SPACES

PATHWAYS

Cultural Theory

-Culture theory has been implemented into the design by having spaces for community and group interaction seen in the figure above,
-The structure is also made out of materials which are common in the area which ties the buildings to the community.

Way-finding

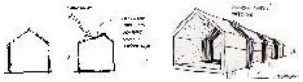
-The ability of the user to see their and destination makes orientation and survey easier and less unknown for the intellectually cognitive challenged, This is important where residents can become easily anxious if they feel they are lost, Thus there is always a constant visual link with clear paths,
-A different interior material palette is used in each building as a form of way-finding to identify each building

SECURITY

FORM DEVELOPMENT

How to move away from the institutional building?

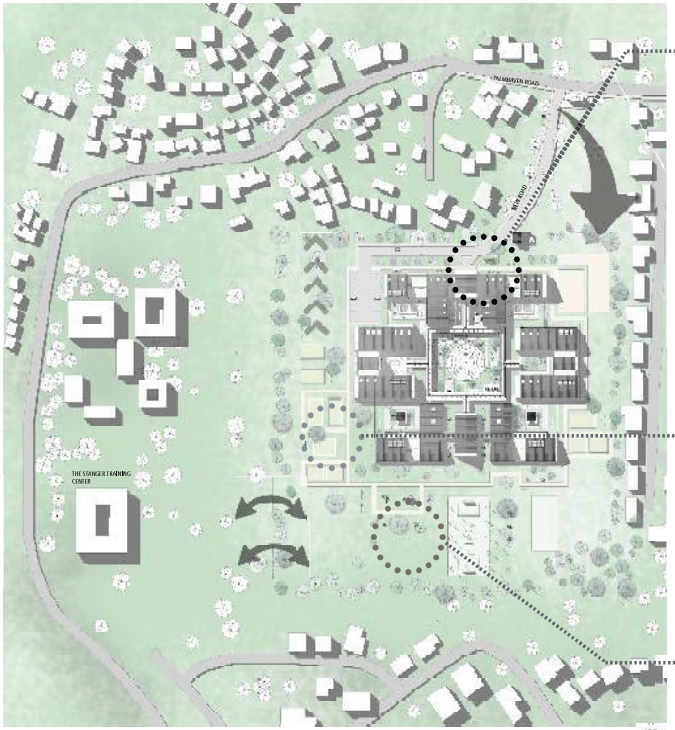
Drawing by the Intellectually Challenged



Key Theory of Multi-sensory design and phenomenology

-Multi-sensory design has been implemented in various ways throughout the building with the use of various tactile materials on the outside of the building which simulate the senses,
-Light also plays an important role with many of the pathways being lit by natural light

MASTER PLAN



CONNECTIONS TO SITE

Paths and walkways

-There will be various paths built to bring people from all over the Glenhills precinct to site,
-The pathway from Palmhaven road will have specific texture and colour to indicate that you are on the path to the arts and cultural complex

Transportation

-There will be special shuttles that will bring people to the site,
-There will also be shuttles that bring children and adults for the theater ,musical ,dance shows,
-A new bust stop is located at the entrance of the road

Interactions between the surroundings

-The musical garden and cafe will open onto the central courtyard on the south of the site, People can get some coffee and then walk through the central courtyard space of the area.
-An open air market located at the front of the center will happen twice a month a bring in people from around the area to the site
-The community gardens enable a strong connection to form between the community and the residents of the center

ENTRANCE OF PALMHAVEN CENTER

COMMUNITY GARDENS

RECREATIONAL SPORTS FIELD

THEORIES INTO PLAN

CULTURAL THEORY

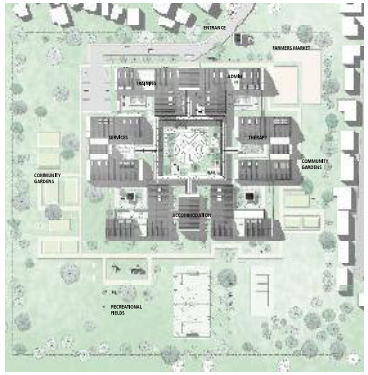
-Culture theory has been implemented into the design by having spaces for community and group interaction seen in the figures below.
-The structure is also made out of materials which are common in the area which ties the buildings to the community.

KEY THEORY OF MULTI-SENSORY DESIGN AND PHENOMENOLOGY

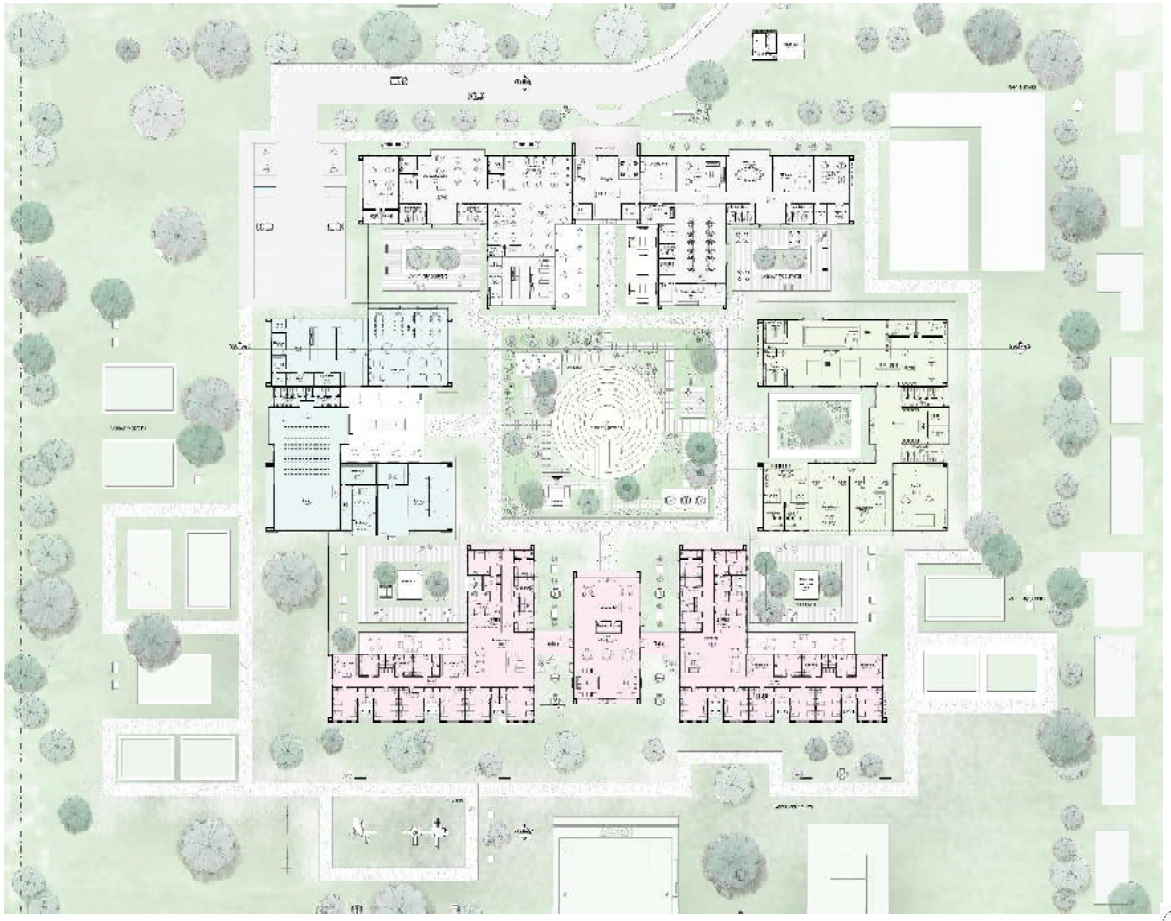
-Multi sensory design has been implemented in various ways throughout the building with the use of various tactile materials on the outside of the building which stimulate the senses.
-Light also plays an important role with many of the pathways being lit by natural light
-Skylights have also been employed
-The snoezelen room is an integral part of the multi-sensory theory as it uses the stimulation of the senses as a form of therapy for the intellectually cognitive challenged.

WAY-FINDING

-The ability of the user to see their end destination makes orientation and journey easier and less unknown for the intellectually cognitive challenged, This is important where residents can become easily anxious if they feel they are lost, Thus,their is always a constant visual line with clear paths,
-A different interior material palette is used in each building as a form of way-finding to identify each building



SITE PLAN



GROUND FLOOR PLAN 1:200

UNIT FOR TWO PEOPLE

TWO BEDROOM FLOOR PLAN

TWO BEDROOM INTERIOR RENDER

FOUR BEDROOM UNIT

FOUR BEDROOM FLOOR PLAN

FOUR BEDROOM INTERIOR RENDER

How are these rooms suited for the intellectually challenged?

Multi sensory design
-The rooms have been painted in muted colour with a highlight of blue, as blue is a calming colour
-Multiple textures are used such as the exposed facebrick, plastered walls, timber and subtle colour
-The outdoors have been brought indoors with a use of a green wall shade

Way-finding
-The carpet has been designed with a pattern that leads to the exit and the bathroom
-Signs are used to identify rooms instead of words

Individuality
-Each person has a strip of wall that they are able to paint in whatever colour they want,making the room more homely.
-Each person has there own shelving above their bed as well as their own cupboards

-Universal design
-The room has been designed to accommodate persons who are wheelchair bound
-Beds have been designed to be low for this purpose
-The showers run flat to the tile so that a person in the wheelchair can wheel into.

SECTIONAL VIEW

EXPLORING THE IMPACT OF THE INTELLECTUALLY CHALLENGED DEMANDS THROUGH ARCHITECTURE: TOWARDS A TRAINING AND LIVING FACILITY WITHIN THE ILEMBE DISTRICT

JOESHNEE PILLAY(212514569)

CENTRAL COURTYARD

TRAINING CENTER & ADMIN BUILDING

ARIEL VIEW OF BUILDING

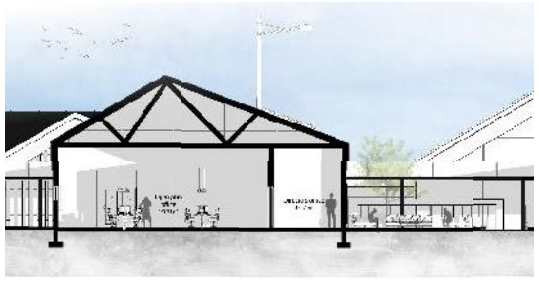
WEST ELEVATION 1:200

NORTH ELEVATION 1:200

Open plan office

Cafe

INTERIOR RENDERS



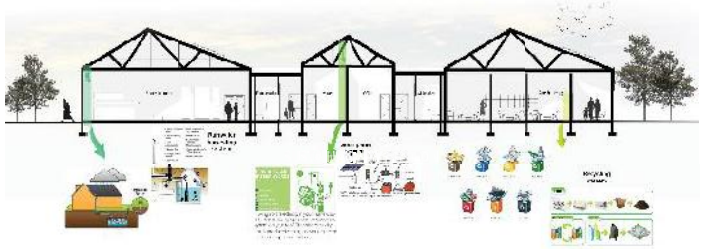
SECTION THROUGH ADMIN 1:100

SENSORY GARDENS

SENSORY MATERIALS

To help create individuality each building has its own interior material and colour palette to help clearly differentiate it for the user

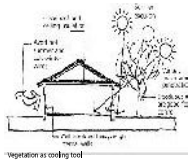
INDIVIDUALITY



SECTION SHOWING GREEN STRATEGIES

WATER COLLECTION PLAN

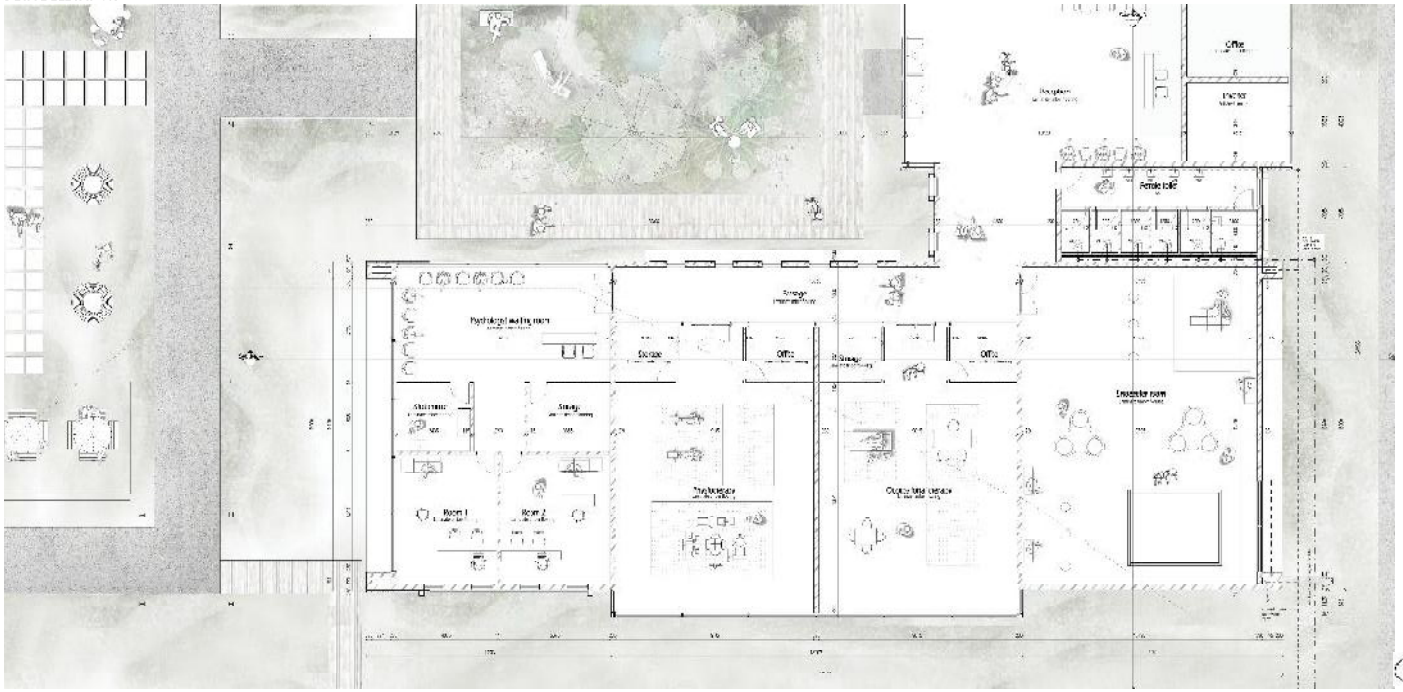
PASSIVE COOLING SYSTEMS



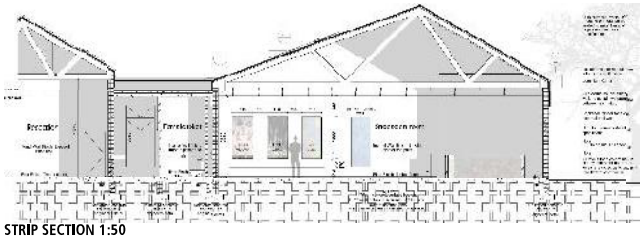
-The adjacent plan shows the storm-water plan
-All storm-water is collected from the gutters through pipes and sent to the water tank stored below ground .
-This water is then used for watering the sensory gardens as well as the community gardens.
-The water can also be filtered and used for showering and other activities.

O CARBON OFF THE GRID STRATEGIES

DETAIL ELEVATION

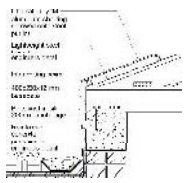


FLOOR PLAN 1:50

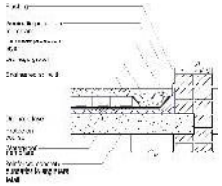


STRIP SECTION 1:50

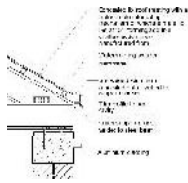
This strip section has been chosen as it shows both of the roofs that are used throughout the center,
-It also showcases the multi-sensory design aspects that are used in the interior of the buildings, This includes the thermo-chromatic wall that changes colour when touched through the bodies heat, The various sensory alcoves which include a smell alcove that has infuses which release various smells, a light alcove which has fiber optic cables and a touch alcove which has various textures that one can interact with,



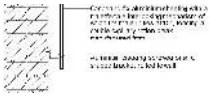
ROOF TRUSS ANCHOR DETAIL



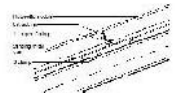
GREEN ROOF DETAIL



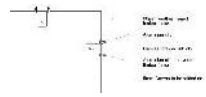
GUTTER DETAIL



WALL CLADDING DETAIL

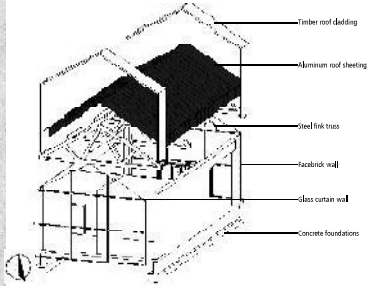


SOLAR PANEL DETAIL

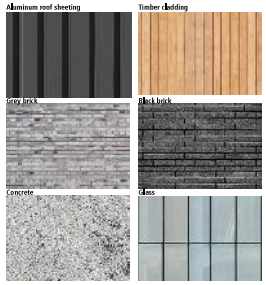


CANVAS FRAME DETAIL

-The exterior materials that are used have been chosen due to their hardy qualities
-They also do not need a lot of maintenance and thus keep building costs low



AXONOMETRIC



MATERIALS

SITE SECTION A-A

SOUTH ELEVATION

SITE SECTION B-B

FEMALE COURTYARD

THERAPY COURTYARD

COMMUNITY COURTYARD

COURTYARD RENDER

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LIST OF FIGURES

ABREVIATIONS

– ADHD: Attention-deficit/hyperactivity disorder

– FAS: Fetal Alcohol Syndrome

– DPSA: Disabled People South Africa

– RDP: Reconstruction and Development Programme

– SAFMH: South African Federation of Mental Health

–PEPUDA: The Promotion of Equality and Prevention of Unfair Discrimination Act of 2000

LIST OF TABLES

- Tables not applicable in this document.

LIST OF APPENDICES

Appendix A: Example of Interview Questions

RESEARCH QUESTIONNAIRE

Dear Sir/Madam

My name is Joeshnee Pillay, a Master's second year student in Architecture. I am conducting a study on your subjective experience of working in your facility and your daily experience with working with the intellectually cognitive challenged. The results of this questionnaire will allow me to have statistical evidence of your subjective experience. This information will help me to design an appropriate facility created specially to meet the needs of the intellectually cognitive challenged.

Please note:

 You may only pick a single box per question;

 Your name and other information is not required, and your individual input will never be shared with any unauthorized person for that matter as it is for academic purposes

 This study is for the purposes of scholarly academic research

 The full study shall be available to you in line with the University's guidelines on dissertations.

The data will be presented and analysed in the same order as it appears in the questionnaire:

CONSENT FORM

(To be signed by the participant before each interview)

One copy to participant, and one signed copy to the researcher

I have read the information presented in the information letter about a project being conducted by Joeshnee Pillay of The Department of Humanities and Built Environment Studies at Howard College, Ukzn, under the supervision of Juan Solis-Arias. I have had the opportunity to ask any questions related to this study, to receive satisfactory answers to my questions, and additional details I wanted.

I am aware that my quotations will be anonymous.

I was informed that I may withdraw my consent at any time without penalty by advising the researcher.

I was informed that if I have any comments or concerns resulting from my participation in this project, that I may contact the researcher.

With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

☐ Yes ☐ No

I agree to the use of anonymous quotations in the final research project report that comes of this research.

☐ Yes ☐ No

I agree to allow audio-recording during the interview.

☐ Yes ☐ No

Participant name :…….(please print)

Participant signature…….

Witness name:...……..(please print)

Witness signature……

Date……..

Please comment on the following questions:

1.What is your occupation?

_____

2.How long have you been working at this facility?

_____

3.What type of activities are available at this facility?

_____

_____

4.What type of therapies are offered at your facility?

_____

5.Do you think that these therapies help the patient?

_____

_____

6.If you could offer any other form of therapy what would it be?

_____

_____

7.Do you think the way a building is designed could be used as a form of therapy for the patient?

_____

_____

8.Do you think well-designed accommodation could help the patient to live a better life?

_____

9.If you had to change anything about the building what would it be and why

_____

_____

10.What is your interpretation of multi-sensory design?

_____

_____

Please tick only one box

11.Do you think that there are enough activities available for the patients?
□ -Yes
□ –No

12.If you could, would you add more activities?
□ -Yes
□ –No

13.Do you think that the facility is easy to navigate for the patient?
□ -Yes
□ – No

14.Does this facility have accommodation for the patient?
□ -Yes
□ –No

15.Do you think the design of the accommodation meets the needs of the patient?
□ -Yes
□ –No

16.If you could, would you change anything about the accommodation facilities?
□ -Yes
□ –No

17.Do you think that a building could affect a patient's wellbeing?
□ -Yes
□ – No

18.Do you think the way a building is designed could positively affect a patient experience in the space?
□ -Yes
□ – No

Appendix B: Example of Observation Schedule

OBSERVATION SCHEDULE

Date of observation:

_____

Time observed:

_____

Location:

_____

Purpose of observation:

_____

Comment on the following questions:

1. How is the space organised?

2.What is the space used for?

3.How many people are using the space?

4.How do they intellectually cognitive challenged use the space?

5. What kind of interaction is the setting designed for?

6. What kind of interactions are taking place?

7. What objects, resources and technologies are in the setting and how are they used?

8. What multisensory design elements used in this space?

9. What type of activities are going on?

10.What architectural elements are beneficial to the intellectually cognitive challenged in this space?

11.What obstacles do the intellectually cognitive challenged face in this environment?

12. Summary/Comments

CHECKLIST

Please tick only one box

13. Is wayfinding incorporated into the space?

14. Is multisensory design elements used in this space?

☐ Yes ☐ No

15.Is culture being incorporated into the building?

☐ Yes ☐ No

16. Does the built environment in this facility help create better interactions?

☐ Yes ☐ No

17.Is the architecture of the building beneficial to the intellectually cognitive challenged?

☐ Yes ☐ No

Appendix C: Ethical approval