EMPOWERING EDUCATION THROUGH THE BUILT ENVIRONMENT

Towards a Proposed Integrated Skills Development Centre for Durban

By

C R A I G N O B L E

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DECLARATION

I, ……., declare the following:

1. The research reported in this dissertation, except where otherwise indicated is my original research.

2. This thesis has not been submitted for any degree or examination at any other university.

3. This thesis does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons.

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Signed

……

Dated:

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DEDICATION

I wish to dedicate this dissertation to my better half, Lauren Ann Jones.

It has been a long road for us already. You have been beside me since 2005, through my bachelor's degree in 2007 and now through my masters. Your support on this long journey has been incredible. Thank you for all your help when it comes to writing, referencing and the like. Mostly though, thank you for believing in me, for helping me realise and reach my own potential, for supporting me every time I struggled and celebrating with me when I achieved. You have inspired me.

I wish to dedicate this dissertation to you, to us, and to our future, to what lies immediately ahead for us, and to the doors that this degree may open to us in the future.

From the bottom of my heart, I thank you.

ABSTRACT

Twenty years since the establishment of democracy in South Africa the country remains in a process of transformation and is currently facing a skills paradox whereby there are severe skills shortages and high unemployment rates. Historically education in South Africa has been restrained by poor governmental policies, poor funding, apartheid, corruption, rapid growth and most importantly by the subsequent built environment of educational facilities. This dissertation sets out to explore the role of the built environment in empowering education, specifically skills development.

The aim of this study is to investigate how the built environment may be used as a tool for empowering education. The objectives that are derived from this aim include understanding what empowerment means in the context of the study, to investigate how the built environment can empower learning, to investigate how the built environment can change the perception of FET colleges and to critique existing FET colleges in the context of the study.

The research problem therefore centres on establishing the nature of the impact of the built environment on education and, in turn, society.

This study used a mixed method approach to the problem in order to prove the hypothesis and achieve the aim and objectives of the study. The research materials included in the quantitative research include the analysis of the learners' views on existing learning environments in the KZN Coastal FET College and the Umbilo Skills Training Centre in order to understand the conditions of existing educational facilities in Durban, South Africa. The qualitative research was carried out in the form of a site investigation and in the form of focussed interviews with the managers of the respective case studies in order to further understand the quantitative research and to determine how the built environment can empower education.

This study determined a set of criteria for educational facilities to empower education and showed that the built environment of existing skills based learning centres in Durban is not empowering education sufficiently in terms of improving the quality of

learning and in terms of improving the perception of such facilities. The impact of the philosophy and vision, the location, the physical and micro-design and the physical conditions on education is not understood by the executive personnel who manage these facilities. Similarly, the policies that define and structure FET colleges are not enabling these facilities to realise their potential. If education is to be a vehicle for the development of the country and to resolve the skills paradox then the impact of the built environment on empowering education must be realised and the built environment must be invested in in order to achieve this aim.

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ABBREVIATIONS

ECC:	Ewha Campus Complex
FET:	Further Education and Training
HET:	Higher Education and Training
KZN:	Kwazulu Natal
MGC:	Marysville Getchell Campus
NATED	National N Diploma
NC(V)	National Certificate (Vocational)
SES:	Social Economic Status
SLC:	Small Learning Community
USTC:	Umbilo Skills Training Centre

PART ONE

BACKGROUND RESEARCH ON ISSUES

CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

1.1.1 Background

Winston Churchill once stated that: “We shape our buildings, and thereafter our buildings shape us” (Web 01: content.time.com). This dissertation will expand on this notion by analysing the impact of the built environment on empowering education. The research of this topic will be applied specifically to Further Education and Training (FET) colleges within the context in South Africa.

At present, two decades since apartheid was abolished, there is a new democratic dispensation upheld by a constitution that promotes freedom, equality and dignity in order to heal the divisions and injustices of the past and free the potential of each person. The constitution is aimed at empowering society and education provides the greatest opportunity whereby this is may be achieved. Below are a number of quotes from the world’s leaders who stated the following:

> Education is the most powerful weapon which you can use to change the world. – Nelson Mandela, Former South African President (Web 02: unesco.org).
>
> I believe education helps to empower. It is the number one priority of government” – Jacob Zuma, South African President on 13 January 2014 (Web 03: iol.co.za).
>
> Literacy is a bridge from misery to hope. It is a tool for daily life in modern society. It is a bulwark against poverty, and a building block of development” – Kofi Annan, former Secretary-General of the United Nations (Web 04: news24.com).

The history of South African education has entrenched poverty amongst select groups of the population and the effects of which still manifests itself in society today. Apart from the well-known impact of apartheid on education, more recent initiatives have focussed on increasing the *quantity* of education received by individuals. This relates not only to the amount of individuals being educated but also for how many years. This process of rapid growth has improved the quantity of education in terms of the amount of society that is educated and for how many years. This has however affected the *quality* of education (Crouch and Vinjevold, 2006). Currently education receives approximately 20% of the total state expenditure which is the largest share of government expenditure (Web 05: southafrica.info). According to the 2013-2014 World Economic Forum Global Competitiveness Report, South Africa’s educational

system is rated very poor, placed 146th out of all 148 economies. It further states that the improvement of the high unemployment rate, which is currently over 20% with the youth unemployment at 50%, is highly dependent on raising educational standards (Web 06: weforum.org). Edward Glaeser, a Harvard economist states:

> A ten percent increase in the share of the population with college degrees is directly associated with an increase in economic activity and productivity (Glaeser, 2009: 22).

The basis for how this works is based on the human capital model whereby education acts to improve an individual's potential productivity which in turn is rewarded in the labour market by higher earnings. The growth of the individuals collectively raises the human capital of the labour force (Taylor and Yu, 2009: 3). There are also social ramifications of this; Van der Berg argues that overall inequality in South Africa is mainly driven by wage inequality and agrees that labour market outcomes are largely determined by differences in educational outcomes (Van der Berg: 2010). There is a skills paradox which faces South Africa whereby there is a high unemployment rate and severe skills shortages.

South Africa is a young population with an average age of 25 (Statistics SA, 2012: 20) and currently approximately 60% of South Africa's population reside in towns and cities which is expected to increase to 70% by 2030 (NPC, 2012: 29) which coupled with the youth unemployment rate threatens to exacerbate the situation. Therefore the impact of the built environment empowering education within urban centres of South Africa therefore cannot be underestimated.

The FET sector plays an important role in resolving this problem by equipping young people with the necessary skills to enter the labour market and become productive through occupational training in the NC(V) and NATED courses. Occupational training is the term given to the process in which a learner is taught practical job skills in order to be able to participate in the workforce that enables the learner to become an active member of society and be responsible for his or her own well-being (Website 07: McNamara & Pike, 1980: 33). FET Colleges have not been achieving this in recent times however which has resulted in the institution recently implementing a turnaround strategy that includes three objectives that are specific to this study (Web 08: careersportal.co.za) and formulate a vision for the future of FET colleges. The first objective is to differentiate FET Colleges as individual institutions for addressing specific skills shortages with tailored interventions for addressing these skills shortages. One of the current skills shortages stated by Mduduzi

Manana, Deputy Minister of Higher Education and Training, is the need for artisans and has called for the “decade of the artisan” from 2014-2024 in a bid to increase skills levels in South Africa to meet the demands of its struggling economy (Web 09: skillssummit.co.za). The National Development Plan requires that, by 2030, at least 30 000 qualified artisans are produced per year. The second objective is to change the 'image' of FET Colleges to that of desired educational institutions. The perception of FET Colleges is currently contributing to disempowerment of this form of education. ‘The country’s further education and training (FET) colleges are battling a tarnished reputation stemming largely from their own deficiencies and a poor public image’ (Web 10: mg.co.za). The third objective is to focus on student performance and success in order to improve the quality of educational outcomes.

1.1.2 Motivation/Justification of the Study

The study stems from the problems currently surrounding education in South Africa and is motivated by the notion of the built environment empowering education in order to enhance its role in the empowerment of individuals and of society. The topic is important because a failing education system is highly detrimental to the long term future of the state. From an architectural perspective, the author is motivated by exploring this relationship between education and the built environment in order to contribute to resolution of this problem. Existing education facilities in South Africa are predominantly designed to be introverted institutions which ignore the power that society and community can have on learning outcomes. The outcomes of this research may be used not only to expand on the knowledge existing on the subject but also to investigate what the role of the architect is in contributing to the development of an empowered society through the built environment.

1.2 DEFINITION OF THE PROBLEM, AIMS & OBJECTIVES

1.2.1 Definition of the Problem

The research problem therefore centres on establishing the nature of the impact of the built environment on education and, in turn, society.

As described in the introduction, the built environment has an impact on education and an empowered education is the catalyst for change South Africa. One of the challenges facing this problem is that this study will need to adapt existing research and apply it to skills based learning in South Africa.

Another challenge is that the perception of FET Colleges is poor. The education system in itself is not something that this study aims to affect but rather this study is focused on improving both the perception of FET colleges and the improving the quality of education through the built environment.

1.2.2 Aims

The aim of this study is to investigate how the built environment may be used as a tool for empowering education.

The primary aim of this study has both academic and strategic perspectives. From an academic perspective, this dissertation aims to discuss research relevant to occupational or occupational training for artisans within the South African context. Strategically the output of the research may also be used within the non-academic community in order to understand the impact that the built environment has on this form of education and the subsequent impact of empowering education on the socio-economic issues within the context of South Africa. It is from this perspective that this research finds its originality.

1.2.3 Objectives

The aim of the research can be broken down into a number of individual objectives which will combine to inform how the overall aim may be achieved. The objectives are therefore as follows:

-to understand what empowerment means in the context of the study,
-to investigate how the built environment can empower learning,
-to investigate how the built environment can change the perception of FET colleges,
-to critique existing FET colleges in the context of the study,

1.3 SETTING OUT THE SCOPE

1.3.1 Delimitation of Research Problem

Education as an entity will be reduced and focussed towards occupational or occupational training as used by FET colleges for the development of artisans. This will reduce the scale, time required and cost of the research required for the completion of this dissertation. In terms of empowerment, the research will focus on the architectural response to creating environments that have the ability to improve the quality of education and have the ability to change the perception of FET colleges in order to enhance their role in empowering education. The research will be focussed on the research problem which is a current issue that exists today. The

physical study area for empirical research will be focussed within urban centres of Durban in order to achieve a greater depth of research.

1.3.2 Definition of Terms

The following terms are defined in the New Oxford American Dictionary (Lindberg and Stevenson, 2010) and will aide in contextualizing the subject and the focus of the research. The terms will, however, be elaborated and contextualized further in the body of the dissertation:

-**Empower:** *Verb*

To give (someone) the authority or power to do something or to make (someone) stronger and more confident, especially in controlling their life and claiming their rights.

-**Empowering:** *Adjective*

The act or process of giving authority or power to (someone) to do something.

-**Education**: Noun

The act or process of imparting and acquiring knowledge through teaching and learning.

-**Built Environment**: *Noun*

The human-made or human-altered space in which individuals live out their daily lives.

-**Socio-economics**: *Adjective*

The study of both social and economic factors and analyses for example how social change affects economic trends and vice versa.

- **Occupational**: *Adjective*

Relating to an occupation or employment**.**

-**Perception**: *Noun*

The way in which something is regarded, understood, or interpreted.

-**Artisan**: *Noun*

A worker in a skilled trade, especially one that involves making things by hand.

1.3.3 Stating the Assumptions

It can be assumed that all primary data that will be gathered through observation, questionnaires and interviews will be done so in a manner that is truthful and to the best of the one's ability. It can be assumed that the quality of educations levels will continue to decrease as per the current statistics which motivates the need for such a study. In the greater equation of the study, education and empowerment are intrinsically connected and it may be assumed that the physical infrastructure of occupational education systems is not empowering individuals and communities to its full potential.

1.3.4 Key Questions

The key question relates directly to the aim of the study. The key question therefore asks how the built environment of FET colleges can empower education. This forms the main question and aims to respond to the tangible nature of the research. This key question is further broken down into a number of sub-questions will combine to answer the key question and relates to the objectives of the study. The sub-questions therefore ask the following:

-what does empowerment mean in the context of the study?

-how can the built environment empower learning?

-how can the built environment change the perception of FET colleges?

-is the built environment of existing FET colleges contributing to empowering education inadequately?

1.3.5 Hypothesis

The built environment has the potential to empower education however FET colleges are not fully making the most of this opportunity in order to empower education in South Africa.

1.4 CONCEPTS AND THEORIES

1.4.1 Introduction

This section will introduce the theories and concepts that will be explored further in the literature review. The key question of this study as previously stated aims to determine how the built environment of FET colleges within the inner city of Durban are able empower education in South Africa. The data discussed in the literature

review will be further synthesised in order to answer the key question, find gaps in the literature and to form the theoretical framework for conducting empirical research and for informing the design of a proposed learning centre for Durban.

This section deals with three key issues. The first key issue is analysing what is meant by empowerment and understanding how the built environment can be an empowering tool. The second key issue is the need for the built environment to empower the process of learning which will require the analysis of learning theories and the effects of the built environment on learning. The last key issue deals with the impact of the built environment on the perception of FET Colleges which will analyse how perception is affected by the built environment.

1.4.2 Built Environment and Empowerment

Empowering, as previously defined, is the act or process of giving authority or power to someone or something to do something. To be empowered relates to what is not only a process but also an outcome in order to the effort to obtain a relative degree of ability to influence the world (Staples, 1990). This section will analyse the relationship between the built environment and empowerment in order to understand how the built environment can be used a tool for empowerment. This study views the built environment as the vehicle through which authority or power is given to education in South Africa.

1.4.3 Built Environment and Learning

This section deals specifically with improving the quality of educational outcomes. Therefore in the learning component of this section, literature that pertains to the learning process and the effect of the built environment on learning will be analysed. In terms of the learning theories, there are a number of theories and models of learning for educational research and practice that aim to explain how people learn. The following learning theories are being used due to their relevance to the study which is aimed at occupational training for adults: the humanism paradigm, the Social Development Theory, the Social Learning Theory and the Situated Learning Theory. These theories will be analysed and synthesised in order to create a framework of understanding around the learning process. In terms of the effects of the built environment on learning, the following factors will be analysed in relation to the respective learning processes: the design process, the physical environment in terms of its location, physical design, the micro-design which considers spatial planning,

furniture layouts, proxemics, colour and technology, the physical conditions which features, noise, light and air.

1.4.4 Built Environment and Perception

This section deals specifically with in the aim of improving the perception of the institution. The first part of this section will briefly investigate the mechanics of perception as a phenomenological entity which includes the use of the Gestalt Theory. This theory suggests that individuals perceive the world only insofar as it appears to us in ‘structured wholes’ or patterns, as opposed to random sequences of data which the brain later interprets. This will allow for an understanding of perception as an entity before focussing on the integrative mechanic of perception. Kofi Annan, the former secretary-general of the United Nations, once said that knowledge is power and that information is liberating. In this case, FET colleges directly contribute to empowering individuals and to improving socio-economic conditions in South Africa and it is the knowledge of this that should liberate the institution of any pre-existing perceptions that oppose this process and undermine from its role in achieving this. Perception is a ‘continually unfolding temporal process of interaction between an embodied subject and a surrounding world of objects in which we are inevitably enmeshed’ (Ots, 2011: 167). This statement shows that a person’s perception is an integrative experience between the body and the built environment which forms the focus of this section. This section will therefore investigate theories that promote interaction between the built environment and society. In this regard, this section will analyse the Linkages Theory as postulated by Roger Trancik in order to create an understanding of how to enable integration on an urban design scale. This will allow for an understanding of how spaces and sites connect and fit into the spatial patterns of the city. Further theories of physical connectivity will be analysed in order to understand how to integrate the building with its context which will be furthered by the theory of blurring boundaries which will further promote integration but also create an understanding of the formulation of a learning community. This will form the framework that informs how to promote integrative experiences between a body and the built environment which influence the perception of individuals.

1.4.5 Conclusion

In this chapter, the theories and concepts that will be explored further in the literature review were introduced. This included the three issues: the built environment and empowerment, education and perception. The built environment and empowerment

was broken down into individual empowerment, which is directly aimed at improving the quality of education, and group empowerment, which aimed to empower the perception of the institution. The built environment and education was broken down into the learning process and learning spaces which aims to understand the effects of the built environment on learning. The built environment and perception was broken down into the integration of the learning facility and its context and the analysis of the impact of the built environment on individual perception. The formulation of this theoretical framework will contribute to answering the key question, finding the gaps in the literature, to form the theoretical framework for conducting empirical research and for informing the design of a proposed learning centre for Durban that contributes to the empowerment of education in South Africa.

1.5 RESEARCH METHODS AND MATERIALS

1.5.1 RESEARCH METHODS

Methodology

The aim of this study as stated is to explore how the built environment can empower education in South Africa. The data that is to be collected in order to resolve this aim will be done so in a mixed method whereby both quantitative and qualitative research will be undertaken. The reason for using both is because quantitative research in the form of questionnaires and observation will be useful specifically for the learners of the skills based training centres as they are high in number and this is an appropriate method to use to extract information efficiently. This data will also identify key themes and relationships among variables in order to make assumptions based on numerical data. These assumptions may then inform the qualitative research which will be in the form of focussed interviews with executive personnel such as the members involved in the design of the learning facilities, the heads of the skills based training centres, and the members responsible for the policies that define the design of skills based training facilities.

Sampling

Expert sampling technique will be used in order to choose the interview targets in order to provide appropriate data based on their knowledge that is relevant to the study. Maximum variation sampling techniques will be used to choose the questionnaire targets in order to represent the body of learners therefore learners chosen to complete the questionnaire will be equally varied in race, age and gender to provide balanced outcomes.

1.5.2 RESEARCH MATERIALS

Primary Data

Primary data will be collected in order to allow for the testing of a working hypothesis. Primary data as discussed will consist of case studies of existing FET colleges in Durban, focussed interviews with executive professionals and short, simple questionnaires that will be issued to the learners who use the identified case studies. Possible case study targets in KZN include the public Coastal FET College, Durban Campus and the Umbilo Skills training centre. Interview targets include the HOD of Engineering at the KZN Coastal FET College Mr Pinto, the Director/Owner of Umbilo Skills Training Centre Mr Glendon and the Director of Policy and Planning at Department of Higher Education and Training, Mr Steve Mommen.

Secondary Data

Secondary data will be collected in order to form a general understanding around the research question and a boarder perspective can be applied to the design of a learning centre for Durban. Secondary research will consist of an extensive literature review that will examine the literature around the subject as well as both local and international precedent studies that pertain to the research problem. The gathered data in conjunction with the synthesis of the data will be used to form part of the final design assumptions and solutions. The findings will form the basis on which the key questions will be answered in relation to the development of a design brief. The secondary data sources will include various published materials namely books, journal articles, internet pages reports, documents and academic papers. In addition non-published items such as other theses, design and drawings may also be viewed.

Study Area

The study area for the primary research will take place within Durban, South Africa. The secondary research extends internationally including two precedent studies from Washington and South Korea in order to generate a greater understanding of how the problems have been addressed within a diverse set of conditions and contexts. This will allow for cross examination of conditions and characteristics that bear relation to the study area.

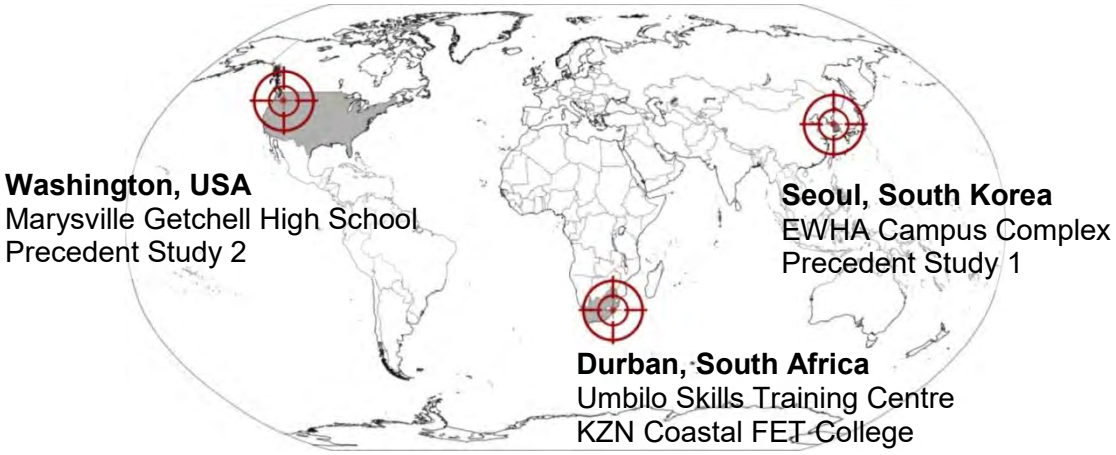


Fig 01: Map of Study Area (Author, 2014)

1.6 CONCLUSION

In this introductory chapter the author has introduced the background and motivation for analysing the research problem, defined the research problem and outlined the aims and objectives, set the scope whereby the research was provided with limitations, definitions of terms, assumptions key questions and a working hypothesis. Concepts and theories pertaining to the research problem were introduced and the methods and materials in which the data is to be collected, structured and analysed were defined. Each chapter contributes to define and structure the direction of the dissertation in order to clearly and precisely create an informed process that will inform the latter chapters to follow in the aim of deriving a brief and a location for the development of a proposed learning centre for Durban.

CHAPTER 2
LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 INTRODUCTION

This literature review will be structured thematically and aims to review literature that contributes to the understanding of *how* the built environment of FET colleges within the inner city of Durban can empower education in South Africa. This requires the understanding each component within the study and the understanding the nature of the relationships between each other. The outcomes of this process will serve to answer the key question, to find any gaps within the literature, to form the theoretical framework for conducting empirical research, and for informing the design of a proposed learning centre for Durban. As mentioned in the introductory chapter, this section will analyse the role of the built environment in empowerment, education and perception in the context of this study.

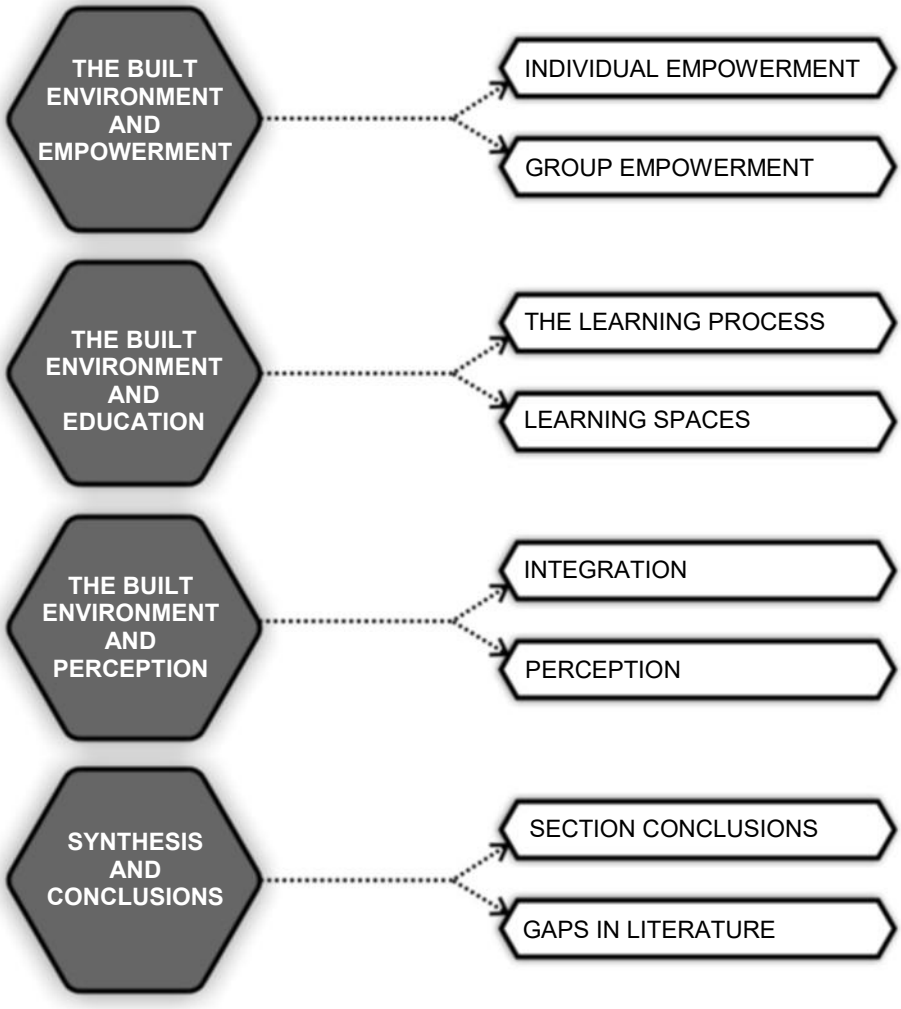


Fig 02: Diagram of Literature Review Structure (Author, 2014)

2.2 BUILT ENVIRONMENT AND EMPOWERMENT

2.2.1 Introduction

This study is focussed on analysing the built environment as a tool for empowering education which focusses on affecting the *quality* of education as well as the *perception* of FET colleges. This means that the built environment is required to empower learners on an individual capacity as well as to empower the collective perception of the college. It is therefore important to understand individual empowerment as well as group empowerment before understanding how the built environment may affect these two elements.

2.2.2 Individual Empowerment

Individual empowerment is intrinsically linked with the power or authority an individual has in order to make decisions and to act in order to attain goals (Sadan, 1997: 75). In the context of South Africa and in the aim of this study, understanding what it is that empowerment gives someone the power or the authority to do is important in order to understand how the built environment can begin to facilitate this process. The learners of FET colleges apply because they seek further education in order to attain personal goals. These may vary between from individual to individual however at the essence of the process is the motivation to attain goals which can be understood through the principles of Maslow's hierarchy of needs.

Maslow's Hierarchy of Needs

The needs of individuals can be understood through Maslow's Extended Hierarchy of Needs. Maslow (1943) stated that individuals are constantly motivated to satisfy needs. When one need is fulfilled a person seeks to fulfil the next one, and so on (Web 11: simplypsychology.org). The needs are broken down into eight levels which are broken up into deficiency needs and growth needs.

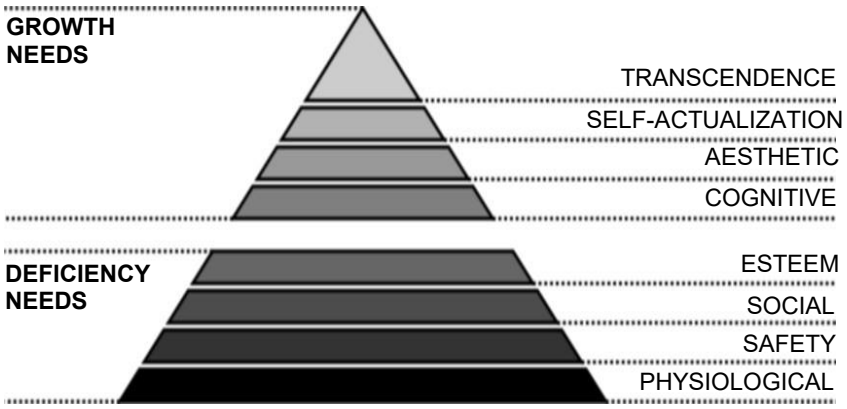


Fig 03: Maslow's Extended Hierarchy of Needs (simplypsychology.org/maslow)

At the foundation of the pyramid and at the base of the deficiency needs are the physiological needs. This involves the basic survival elements such as food, water and sleep that enable the physical body to function. The second tier consists of safety needs such as physical security from harm, from the elements or financial stability which all contribute to alleviating fear and anxiety. The third tier consists of social needs which involves of a sense of belongingness, a connection to people which alleviates estrangement, social polarisation and personal depression. The final deficiency tier consists of the esteem needs which consist of all the elements that impact the way individuals are seen by others and how they see themselves which can be influenced by achievements, social status or financial status for example. These make up the fundamental needs of all human beings which constitutes the basis for which individuals are able to cope with daily life.

According to Maslow the final set of needs within the growth bracket will only be acted upon if and when the deficiency needs are met. The fifth tier of the pyramid and the first tier of the growth needs feature the cognitive needs. The cognitive needs consist of the need to understand and know. This is the most important need in the context of this study as it is this need that the built environment aims to impact.

The sixth tier consists of the aesthetic needs, this relates to visual, audible and tangible beauty which could consist of elements of nature such as a beautiful woman, a sunset for example as well as art, music or architecture. The seventh tier consists of the self-actualisation needs which feature elements of realising personal potential, finding purpose, self-fulfilment and personal growth which is also intrinsically linked with the educational component of this study. The final tier consists of the transcendence needs which relates to an individuals need to help others achieve *their* needs. This begins to suggest a positive cycle that stems from achieving transcendence needs. An understanding of this relationship suggests that the built environment of learning facilities should facilitate this process in order to enable learners to fulfil their needs in order to achieve their goals. This would greatly impact the quality of education.

2.2.3 Group Empowerment

Group empowerment differs slightly from individual empowerment as group empowerment means coming out from the limited boundaries of the '*I*' into the expanse of possibilities of the '*we*' (Sadan, 1997: 81). Keohane believes that universities are, or at least should be

> intergenerational partnerships in learning and discovery, with compelling moral purposes that include not only teaching and research but also service to society…we are not just collections of loosely affiliated persons with convergent or conflicting interests, but institutions that make a difference in the world (Keohane, 2006: 2).

This reinforces the idea that learning facilities play a far greater role to society than merely educating individual learners efficiently.

The body of the university has the potential to empower beyond its boundary walls and the built environment should facilitate this process. Steven Holl believes that there is a need to create architecture that serves to bind the intention of the architecture to the perception of the viewer which supports this idea. This motivates the need for the users to feel a part of the *purpose* of the built environment which, in this case, is to empower education in order to facilitate improved socio-economic conditions in South Africa. This is also supported by Muschamp who believes that 'Architecture is the scientific art of making structure express ideas' (Muschamp, 2002a: 49). The built environment should engage with the building users in terms of the reason for the existence of the built environment in which they inhabit.

The process of community empowerment is a social change process which involves the organizing and creating of a community with a common critical characteristic that suffers from social stigmas and discrimination and acquires ability to control its relevant environment better and to influence its future (Sadan, 1997: 145). In this case, learners from the community suffer from social stigmas and discrimination through the perception of FET colleges. The built environment is a vehicle that has the ability to empower education by changing the existing stigmas which will give the learning community more control and ability in order to influence its future.

The relationship between the built environment and group empowerment is therefore reliant on the ability of the built environment to facilitate the organizing and creating of a community. Secondly, to change the perception of FET colleges in order enable this form of education to contribute to improving socio-economic conditions in South Africa.

2.3 BUILT ENVIRONMENT AND LEARNING

2.3.1 Introduction

Research into teaching practices, learning processes, human development, human psychology and the impact of the built environment on learning should have significantly modified the way learning spaces are designed. This hasn't been the case in South Africa as the pursuit of improving the quantity of education produced a process of rapid growth that has affected the quality of education (Crouch and Vinjevold, 2006) as stated in the introduction. It is the role of educators and architects to implement this knowledge into the development of future educational environments. This section relates directly to individual empowerment in order to improve the *quality* of education.

2.3.2 Learning Theories

There are a number of theories and models of learning for educational research and practice that aim to explain how people learn. The following learning theories are being utilised due to their relevance to the study which is aimed at occupational training for adults. The theories fall into two categories, the first, The Humanism paradigm is related to Maslow's Hierarchy of Needs and relates more to the individual in the role of learning, where the Social Learning Theory, the Social Development Theory and the Situated Learning Theory relate to the importance of the social component within the learning process.

Humanism Paradigm

The Humanism Paradigm emerged in the 1960's and focuses on the human freedom, dignity and potential. This relates closely to the aims of the Constitution of South Africa which aims to free the potential of each individual. Humanism is a paradigm that believes learning is viewed as a personal act to fulfil one's potential. A central assumption of humanism is that individuals act with intentionality and values. This paradigm aligns itself to the study of the individual as it grows and develops in order to create self-actualised, autonomous individuals. This is also closely related to Maslow's Hierarchy of needs and aims to promote learning that is student centred and personalised according to the individuals' self-motivation, goals and individual interests (DeCarvalho, 1991: 88-104).

Social Development Theory

The Social Development Theory argues that social interaction precedes growth and consciousness, and argues that cognition is the end product of socialization and social behaviour (Vygotsky, 1978). This theory as stated by Lev Vygotsky, a Russian psychologist reinforces three major themes. The first is that is that of the role of the

social element in learning by stating that social interaction plays a fundamental role in the process of cognitive growth. The second theme is the presence of a 'more knowledgeable other' which refers to something with a better understanding or ability level than the learner, such as a teacher or even a computer that promotes the transferal of knowledge. The third and final theme is the 'zone of proximal development' which is the area in between the student's ability to perform a task under adult guidance and/or with peer collaboration and the student's ability solving the problem independently. According to Vygotsky, learning occurred in this zone. Vygotsky's theory promotes learning contexts in which students play an active role in learning. Roles of the teacher and student are therefore shifted, as a teacher should collaborate with his or her students in order to help facilitate meaning construction in students. Learning therefore becomes a reciprocal experience for the students and teacher.

Social Learning Theory

The Social Learning Theory as postulated by Bandura states that individuals learn from one another via observation, imitation and modelling (Bandura, 1977). This theory encompasses motivational aspects as Maslow hypothesised however Bandura believed in reciprocal determinism that was generated by the social element as individuals saw the outcomes of the actions of others. This is important because an education process that displays successful outcomes for individuals directly influences the motivation for others to learn. Similarly, the opposite is true whereby unsuccessful outcomes leads to a lack of motivation to learn. The social learning theory explains human behaviour in terms of continuous reciprocal interaction between cognitive, behavioural, and environmental influences. Passion and motivation are critical; without it students do not learn to their greatest potential, and innovation and creativity happen more readily when minds are engaged. Bandura later expanded on this in the social cognitive theory which added that learner's personal beliefs also impact the process of learning which established a dynamic relationship between personal factors, environmental factors, and human behaviour.

Situated Learning Theory

The situated learning theory postulates that learning is usually unintentional rather than deliberate when situated within authentic activity, context, and culture. This is called a process of 'legitimate peripheral participation' (Lave and Wenger, 1990). This theory promotes the idea of knowledge being presented in authentic contexts which leans itself towards apprenticeship training and occupational training and also

begins to suggest that occupational training should be implemented within the context whereby it is used which is one of the objectives of the turnaround strategy. Urban environments create the greatest opportunity for this to happen. Social interaction and collaboration are essential components of situated learning which is closely related to Vygotsky's ideas however it adds the context or environment in which knowledge is produced is the key to the learning process.

2.3.3 Learning Spaces

This section aims to inform the views of the effect of the physical learning environment on learning. The literature surrounding the design of learning spaces extensive and the conversation regarding this topic is ongoing which continues to influence the way learning spaces are being designed. Earthman stated that

> There is sufficient research to state without equivocation that the building in which students spends a good deal of their time learning does in fact influence how well they learn (Web 12: aclumd.org).

As stated in the introductory chapter, the debate addresses elements such as the design process, the physical environment in terms of its location, physical design, the micro-design which considers spatial planning, furniture layouts, colour, proxemics or technology, the physical conditions which features, noise, light, temperature and air conditions.

Design Process

With regards to the design process, McGregor believes that schools should not be designed and imposed on the teachers and learners. By including the users in the design process it is possible to '[make] meaning around what they want from education' for both learners and teachers (2004: 5). McGregor continues by stating that initiatives which enable a community to actively participate in the design process are enacting citizenship (McGregor, 2004: 5). Fisher and Wright support this idea and suggest that school designs should not be imposed or built from standard templates but rather that they must be the result of an articulated vision which should be facilitated by architects and designers in conjunction with the school community in order 'to create integrated solutions' (Higgins et al, 2005: 3) based on the philosophy and vision of the school.

Location

The majority of significant learning facilities such as universities are situated within the urban environment. According to Goddard, these facilities are a major resource of

high quality human capital and are important contributors of socio-economic vitality within these urban environments (Goddard, 1999). Elliot called this notion ‘asphalt intelligentsia’ and further adds that universities or colleges can also benefit from urban social and economic structures (Elliott, 1994: 65). The city itself, then becomes an ‘ideopolis’ and may be seen as a learning space for education (Dobson, 2006).

Urban learning environments have the potential to contribute to learning and to socio-economic conditions. This idea is indirectly taken further by Taylor and Yu who analysed the impact of existing socio-economic status on educational achievement. The study found that the social economic status (SES) of a student had a lesser impact on achievement than the mean SES (Taylor and Yu, 2009: 49). The South African General Education System Quality Assessment of October 2013 backs up this notion by stating that learners and teachers are the actors within the classroom, and each brings a ‘subsidy of educational capital’ to the classroom. This means that learning environments that feature students with a predominantly low SES will result in lower achievement rates than a school with learners of a higher average SES. This is important because it promotes the idea of learning centres that can attract a varying degree of learners in order to achieve a higher mean SES. This is unlikely to happen in rural environments however it is plausible in urban environments due to their accessibility. This idea is acknowledged by Blade Nzimande who stated that ‘one of the critical things we need to do with FET Colleges is bring them closer to employers’, Nzimande promoted this idea because it would create interaction between occupational training and employment opportunities. Nzimande also believed that this would contribute to the removal of the stigma surrounding FET colleges (Web 11: iol.co.za).

Physical Design

The ideas of integrating urban environments and learning environments begin to speak to the physical design of the built environment. Horne proposes that the walls of educational facilities are to be torn down to eradicate the institutionalised fortress typology in order to provide learning environments whereby the context is more closely related to that of the real life situations where their knowledge would be put to use suggesting the adoption of the situated learning theory. Horne makes the further point that by tearing down the walls, the levels of integration between community, learner and teachers will be increased which contributes to improving learning and teaching (Horne, 2004: 6). Stevenson also promotes this idea of learning environments being more open to the community (Stevenson, 2007: 3). Kerr believed

that learning took place most effectively in a community setting which correlates with the learning theories discussed in the previous section. Kerr also believed that there was a need for a well-articulated built environment to nurture this learning community (Kerr, 1987).

Bunting recommends that today's learning facilities should be designed in such a way that will learners will want to spend time at, similar to the way cafes attract people (Bunting, 2004: 12). Kuh et al emphasises the importance of creating human-scale learning environments and further state that ‘through buildings, signs, and the landscape of the campus, the physical environment communicates messages that influence students’ feelings of well-being, belonging, and identity’ and so aides learning (Kuh et al., 2005: 106). Banning suggests that learning is helped by providing students with possibilities for a ‘socially-catalytic third place’ that is a space that is neither where you live nor work, a place to ‘hang out’ (Strange and Banning, 2001: 146). Guterman suggests that by providing nearby refreshment facilities and semi-private meeting spaces may also increase the likelihood of ‘serendipity and story-telling’ to take place (Guterman, 2004).

A final point on the physical environment, which brings a certain level of contradiction to the concept of opening up learning spaces for social connectivity, is the need for safety and security. Students and staff need to feel physically safe in the university if teaching and learning are to be effective and efficient. This is backed up by Maslow’s hierarchy of needs that states that the safety needs fall before the cognitive needs. Strange and Banning (2001) and Keep (2002) dedicate a chapter which advises on overall campus design issues, individual building design, and issues such a lighting and landscaping. The literature begins to create juxtaposing objectives which enforce trade-offs such as the impact that increasing security has on openness and connectivity. It must be noted however that human scale, welcoming environments attract social activity which is not only a successful deterrent of criminal activity but also creates a sense of security amongst the learning community.

Micro-Design

The micro-design of learning spaces is has an impact on social interactions and on learning outcomes. Strange and Banning emphasise the impact of micro-design on the social dimension within learning spaces by stating that the proxemics associated with seating arrangements in a lounge area have the ability to either promote or

inhibit social interaction which, in turn, enhances or detracts from students' ability to cope with college stress' and their ability to learn (Strange and Banning, 2001: 31).

Pearlman quoted Schank, the founder of the Institute for Learning Sciences at Northwestern University, who stated that 'computer work, talk with others, and making something' are the three primary student work modes in 21st century learning. He goes on to state that these working modes 'require three distinct environments for learning: focused work environments, collaborative work environments, and hands-on project work environment' (Pearlman, 2010: 126). Learning environments should include spaces for group collaboration and study, large and small group presentations, and individual study. Pearlman notes that typical distinctions such as "classroom" are changing to support varied needs, and it is recommended that there be open, multipurpose spaces in addition to specialized areas for activities (Pearlman, 2009: 116-147). These views are explored in greater detail in a study of learning spaces in further and higher education facilities, it was argued that seven types of learning space could be identified. The typologies were for aimed at social learning processes that promoted group teaching and learning in square rather than rectangular rooms due to the former being more adaptable which featured flexible furniture arrangements in order to accommodate groups of varying sizes (SFC, 2006). The study did not consider the lecture theatre as a modern learning space however, despite the many doubts surrounding the traditional lecture as an effective means of learning however another study found that it was still popular with staff and students (Barnett and Temple, 2006: 12). The seven typologies were as follows:

-simulated environments where practical learning can take place in representative contexts which require space for observation as well as for performing the task in hand,
-immersive environments such as highly interactive virtual environments with advanced information communications technology,
-peer-to-peer environments, where informal learning can take place,
-clusters, where student group work can take place,
-individual work, in quiet areas,
-external work in areas outside the building suitable for individual or small group activity

These learning spaces form the context in which the micro-design is organised according to their relevant requirements. In terms of the micro-design of typical higher education learning spaces, a room featuring tables, chairs and a means of displaying information remains the common practice. This is occasionally altered by changing the seating arrangements to suit a more collaborative learning method. Marks suggests that the traditional classroom boxes with desks lined up in rows bolted to the floors impedes the teachers' ability to work in teams and have students in the flexible and varied groupings necessary. (Marks, 2001: 5). Bunting agrees that traditional classrooms must change and proposes a model of a generic space for students to be co-located with teachers, which are decorated by the students to give them ownership, and teachers and students only move when necessary to access specialised space (Bunting, 2004: 11–12). Students should be able to learn in ways that are appropriate to their individual strengths which is backed up by the humanism paradigm. Marks argues that the most effective teaching and learning strategies allow teachers to work collaboratively with each other and allow for team teaching. On the basis that much effective learning takes place as a result of interactions between students, designs need to provide a variety of spaces in which they can work and socialise together (Kuh et al., 2005: 206). Brunette suggests that occupational training spaces should not be rigid, but rather flexible, informal and portray a relaxed atmosphere in their interpretation and should be able to adapt to the groups wants and needs (2006: 58). Keep motivated the idea using the built environment as an active contributor to the students learning process by including learning opportunities into the built fabric to create active rather than passive spaces (Keep, 2002: 1), this combines the social component of learning spaces with learning opportunity through the built environment.

With regards to technology within learning spaces, Kress argues that the screen has replaced the book as the dominant medium of communication. New media makes it easy to incorporate multiple communication modes which change the structures of ideas, of conceptual arrangements and of the structures of our knowledge (Kress, 2003: 16) which suggests the need for the built environment to respond to this paradigm to enable technology based learning facilities. This promotes the use of blended environments. Wireless technology has enabled more flexible environments that are designed around human needs rather than technological needs which contribute to more pleasant spaces for working. Mitchell states that this is a very exciting development because you can take a laptop to a space that you'd like to be, and that you can work just as people have always done with books (Mitchell, 2003).

Physical Conditions

With regards to the physical conditions of learning spaces, Earthman believes that the temperature, heating and air quality are the most important elements for student achievement (2004: 11–16). In a study comparing daylight in classrooms from the least to the most amount of daylight, student performance was found to increase by 21% (Heschong Mahone Group Inc., 2003). A study of the Fresno school district in California found that 'an ample and pleasant view out of a window, that includes vegetation or human activity and objects in the far distance, supports better outcomes of student learning' (Heschong Mahone Group Inc., 2003: ix).

Chronic noise exposure impairs cognitive functioning with several studies finding noise-related reading problems and general cognitive difficulties. (Higgins et al, 2004: 18). Acoustics affect teachers' health concerning voice strain, and student achievement by what they are able to decipher, which in turn affects learning outcomes (Acoustical Society of America, cited in Baker and Bernstien, 2011).

Colour also has an impact on learning outcomes, Higgins sates that the best use of colours is dependent on the age of the learner and the gender. Brighter colours for younger students and more subdued colours for adolescents as well as brighter colours for males and softer colours for females create optimal learning environments. Much research findings about colour is conflicting however, and remains hotly debated (Higgins et al, 2004: 21–22). Colour can play a role in all learning environments, affecting factors such as student motivation and pride in the institute (Kollie, 2004). Daggett states that there are many ways in which colour in schools can be beneficial such as relieving eye fatigue, increasing productivity and can also help in way-finding (Daggett, 2008).

2.4 BUILT ENVIRONMENT AND PERCEPTION

2.4.1 Introduction

This section aims to investigate how the perception of FET colleges can be influenced through the built environment. Perception is a phenomenon that requires comprehensive research to fully understand however this is not the focus of this study. For this reason, the first component of this section will aim to briefly analyse the mechanics of perception as a phenomenon. The second component of this section will focus on the integrative mechanic of perception which forms the focus of this section.

2.4.2 Perception

Perception associates itself to the phenomenological discourse in architecture. Phenomenology in architecture constitutes a way of describing, discussing and deciding about architecture, from the perspective of our lived experience as embodied building users (Ots, 2011: 167). It has been stated previously that perception is an integrative experience between the body and the built environment. Husserl and Strauss believe that the body is the medium of all perception (Husserl, 1989: 61; Strauss, 1963, 1966 cited in George: 2003). Steven Holl, an American architect who takes an interest In phenomenological architecture, believed that by focusing on the central role of the moving body in the perception of space, the sensory qualities of light, sound, temperature, and materiality can be seen as the "primordial language" of architecture which are often only unconsciously experienced by the embodied observer as part of the background to their everyday existence. Steven Holl suggests in his book *Questions of Perception* that the subjective qualities of materials, light, shadow and form as well as foreground, middle ground and distant views all combined to make up the complete perception of an individual (Holl et al, 2006: 44).

The views expressed by Holl relate closely to the Gestalt theory which focusses more on the visual perception of the building. The Gestalt Theory is a psychological discourse that states that individuals perceive the world only insofar as it appears to us in "structured wholes" or patterns, as opposed to random sequences of data which the brain later interprets (Web 12: psychology.about.com). This explores the mental recognition and interpretation of how one experience and understands 'space' and environments through visual perception. Gestalt means 'organised whole' which can be interpreted as when parts are identified individually have different characteristics to the whole. The structured whole should communicate these elements to exemplify how the college contributes to socio-economic development through empowered education. This perception therefore will be impacted on by the factors of the Gestalt theory. The six principles of Gestalt perception are proximity, similarity, common fate, good continuation, closure, area and symmetry which demonstrated how the mind organises and sees the 'collective wholes'. This suggests that in order to create a new perception of the college, the integration of the college to its purpose, in its context is an important factor in terms of building a new perception that represents the purpose of the built environment.

As defined in the introductory chapter, perception is a ‘continually unfolding temporal process of interaction between an embodied subject and a surrounding world of objects in which we are inevitably enmeshed’ (Ots, 2011: 167) which shows that perception is an integrative experience. This study will focus on integration as the main component of perception in order to create a framework for understanding how the built environment can promote integration and how it interacts with society as an entity. By encouraging interaction between embodied subjects and the built environment, this will lead to the built environment having an impact on the perception of individuals.

2.4.3 Integration

Linkages

Looking at macro-connectivity within Durban, there is a need to consider the context of South African history. Durban city and the city outskirts were previously designed to be disengaged from each other and to this day, largely remain disconnected or lost spaces. It is because of this that it is important to look at theories that relates to the study at an urban design level. Roger Trancik, an experienced educator and urban designer, addresses what he calls ‘lost space’ in the city on an urban design level; he describes the lost spaces as spaces in the city that have been forgotten or left over, a space that ought to be rejuvenated in some way in order for it to contribute fully to the city itself (Trancik, 1986). This notion is one that is evident in areas in the Warwick precinct of Durban, for example. These urban spaces were initially planned, around a vision of segregation, to sit physically disconnected on the exterior of the city and as a result, have been devoid of development for long periods in history and have a degenerated physical appearance. Socially these spaces lack diversity and the barriers continue to prevent integration with the city as a whole. This results in poor socio-economic conditions. Trancik’s linkages theory uses imaginary lines to link elements together, the lines themselves originate from the built environment through visas, streets, pedestrian pathways or linear open spaces that connects the city. The more connected the space is to its surrounding context, the more integrated the space. In the case of Durban these lines are often disrupted by urban initiatives that were developed with the aim of segregation. These need to be addressed primarily before the built environment can be properly integrated on an urban design level.

Physical Connectivity

When urban spaces are knitted together to enable integration on an urban scale, the built form needs to interact appropriately with the surrounding context to create

interaction between the building and its context. Christopher Alexander's theories on connectivity speaks to a more physical, visual and tangible aspect of integration between building. He states that a building should connect to the earth through a series of paths, terraces and steps around its edges to blur the separateness that can act as a divide or a boundary from its surroundings (Alexander, 1979: 787). This act of connecting the building to its surroundings creates positive spaces that become interactive and enlivened which contributes to the interface as discussed above. In the same way, the manner in which built form connects to the earth has a very direct impact on the passing pedestrians and can speak either of an interactive lively space or a deterring space. Physically interactive and enlivened spaces are vitally important in occupational learning environments as they encourage building users to spend more time within those environments which provides optimal conditions for social and economic exchanges and for promoting occupational education to the public which is important when influencing the perception of individuals through the built environment.

Blurring Boundaries

The theory of blurring boundaries has an influence on the relationships between the building and its context as well as between people. When something is blurred its focus is lost, and things become combined when their separateness is not recognised (Ots, 2011: 40). This theory reinforces the idea of integrating the built environment with its context and has a significant impact on the formulation of a learning community. In the empowerment section, it was stated that the process of community empowerment is a social change process which involves the organizing and creating of a community. Education creates a shared interest with a shared aim of empowering themselves. Social integration and group empowerment is reliant on the formulation of communities and education can become a foundation for people to connect and grow. This blurs boundaries in itself. The act of removing boundaries is related to Trancik's linkages theory and can be related into built form in the way that spaces are planned, expressed and defined, not just in relation to the outside but also between each other. The relationships between these elements have a very direct impact on the way individuals behave under different parameters.

2.5 SYNTHESIS AND THEORETICAL FRAMEWORK

In this chapter, literature was reviewed in order to form the theoretical framework for conducting empirical research, answering the key question and for informing the design of a proposed learning centre for Durban. This section will synthesise the

literature review sections and define the theoretical framework which will be used to analyse the precedent and case studies to follow.

In the built environment and empowerment section, individual empowerment was defined as the process whereby individuals are given the power whereby they can achieve their own needs and goals. In terms of education, this was broken down and analysed through Maslow's hierarchy of needs in order to understand the psychological motivation of individuals to achieve goals. This demonstrated that the cognitive needs were dependent on the meeting of the deficiency needs. It also set out additional growth needs that follow the cognitive needs in terms of becoming self-actualised and self-fulfilled which begins to positively affect the community. In terms of the response to the built environment, in order for a learning centre to empower individuals' cognitive needs, it must ensure that the deficiency needs are met primarily and enable to rest of the growth needs to be met in order to fully empower individuals. In the South African context, it can be assumed that learners with a low SES are frequently unable to fulfil all of their deficiency needs. Deficiencies such as food insecurity, restricted access to clean running water, poor sleeping conditions, poor safety conditions and a lack of self-esteem are just a number of obvious scenario's that face individuals with a low SES. If built environment aims to empower education and education is to be a driver of individual empowerment, this process is hindered when the individuals deficiency needs are not being met. With the aim of improving the quality of education, what if educational facilities were able to satisfy all the prerequisites for cognitive learning to take place? This concept has been used extensively within learning environments. In order for learners to fulfil their cognitive needs they must have already fulfilled the needs that fall before them. These principles coincide with the act of improving the *quality* of education which was further analysed in the following section in order to enable individuals in this manner.

The final part of the built environment and empowerment section understood group empowerment as the process formulating and enabling a community to acquire ability to control its relevant environment better and to influence its future. This was linked to the perception of FET colleges which would be further analysed in the final section. The current perception of FET colleges is detrimental to the success and to the future of FET colleges. The need for the built environment to contribute to the change of this image into one that represents the learning community's role in collectively, positively affecting socio economic conditions within South Africa.

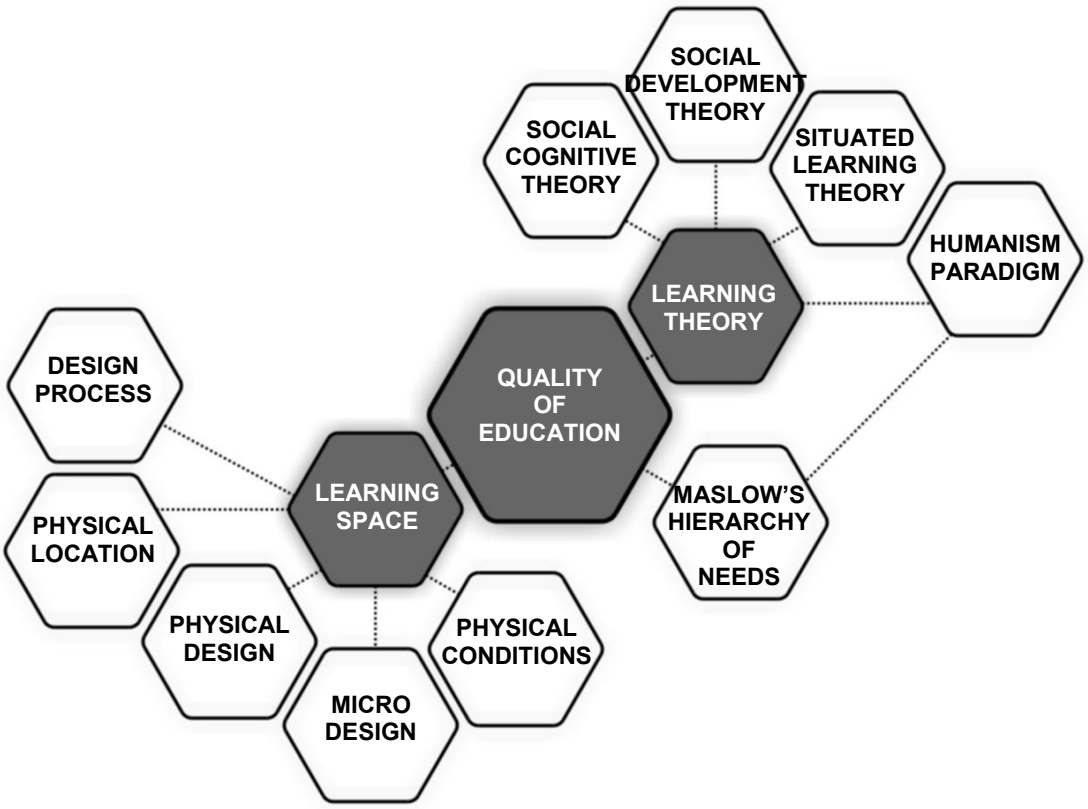


Fig 04: Quality of Education Diagram (Author, 2014)

The analysis of the quality of education was subdivided into two main parts, learning theory and learning space as illustrated above in figure 05. The first component of the built environment and learning section looked at learning theory in order to understand the learning process. The Humanism Paradigm Learning Theory emphasized the relevance of the individual in the learning process and suggested the need for learning spaces and educators to tailor the learning experience around the individual's specific needs and strengths. This theory is dependent on the motivation of learners to fulfil their potential. The Social Development Theory emphasised the role of the social element in learning by stating that social interaction precedes growth. This theory promotes learning contexts in which students play an active role in learning and suggests a more social, collaborative style of learning before learners can execute obtained knowledge individually. The Social Learning Theory stated that individuals learn through observation, imitation and modelling. It emphasised the motivational aspect of learning comes from the social component as learners are encouraged to learn by seeing the positive outcomes of the process. It was also noted that students are equally discouraged when positive outcomes of the process are absent. The Situated Learning Theory emphasised the role of the learning environment in the learning process. It suggested that learning is an unintentional

process that is a result of knowledge being provided in the authentic context whereby social interaction and collaboration was allowed. Each learning theory contributes critical stipulations to the learning process that are important to successful vocational training. By using these theories as a framework for 21st century vocational training, it emphasises learning environments that not only facilitate the social component in learning but also facilitate the learner as an individual whilst creating learning environments that simulate the context in which the learning material may be utilised in real world scenarios.

The second and final part of built environment and learning section investigated literature pertaining to the impact of the built environment on learning. The design process suggested that the learning centre be developed in tandem with the learners and educators to enable a sense of community, ownership and to create a shared vision of the school rather which speaks to a 'bottom up' approach to design. This promotes a shared philosophy and vision that is established by the community involved in the school in tandem with the management and design team that would drive the design decisions throughout the design process. This becomes the fundamental starting point of the development of learning facilities whereby the following subsections would all be driven by the school philosophy and vision. The philosophy differs from college to college however the vision of the turnaround strategy for FET colleges in South Africa includes, as discussed in the introduction, to dedicate colleges to specific skills development and bring these colleges closer to employers, to improve the image of FET colleges and to improve the quality of learning outcomes.

The physical location of learning facilities proved to have a significant bearing on educational outcomes. Urban environments were shown to promote higher mean SES due to the higher densities of the population and the diversity of the public that have access urban environments. Rural FET colleges suffer from lower densities and lower diversity which contributes to poorer educational outcomes which suggests FET Colleges to be located in urban areas or close as transport nodes that facilitate these communities. It was also shown that urban learning environments affect socio-economic vitality and that this had a subsequent impact on learning. The situated learning theory suggested that the environments of learning should replicate the context in which the learning is applied. In this sense the location of learning environments should be analysed not its ability to the located in an appropriate context dependant on the learning philosophy and vision of the school. For example,

an artisan training centre should ideally be located closer to industrial zones whereby learners can be exposed to the context in which their trade is applied which not only supports the learning outcomes but also creates an opportunity to create an interface between learners and employers. This further enables a public-private relationship that allows employers to support the development of specific skills as per the markets requirements, a critical progression in the future success of FET colleges.

The literature pertaining to the physical design of urban learning centres further supported the idea of creating an interface whereby learners can integrate with the surrounding community. This encourages a certain level of permeability with the community beyond the school, one that draws students and members of the community into the school just as it encourages students to interface outward which is becoming increasingly necessary in today's connected world. The concept of tearing down the walls of learning environments is very much opposed to the traditional practice of learning institutions however by enabling integration between learner, teachers, community and employers will have a significant impact on educational outcomes. The social element in learning spaces was reinforced through encouraging a 'socially-catalytic third place' whereby students are inclined to spend more time in learning environments. Reference was made to the security concerns of opening up the school to the public however safety and security can also be achieved through environments that promote human scale and encourage socio-economic vitality.

The micro-design of learning spaces was shown to have a significant impact on the social parameters within learning environments which has a direct impact on vocational training outcomes. Brunette suggests that occupational training spaces should not be rigid, but rather flexible, informal and portray a relaxed atmosphere in their interpretation and should be able to adapt to the groups wants and needs. It was stated that through proxemics, the furniture layouts have the potential to promote or inhibit social interaction. The furniture itself creates varied comfort levels that are appropriate to varied learning modes and can enable or disable flexibility which significantly affects the long term adaptability of educational programs and learning modes. Learning space typologies were analysed to allow for varied modes of learning appropriate to the different modes of learning. The final component of micro-design dealt with technology within learning spaces which indicated that technological advancements have enabled greater flexibility and promoted blended learning environments. It was further stated that technology has brought back the

ability to choose where one would like to work as one did with the book, where previously students had dedicated technology centres due to technological requirements.

The physical conditions of learning spaces, which included the amount of light, ventilation, temperature, access to views, use of colour, has a significant impact on learning outcomes. A lack or an overexposure of any of the abovementioned aspects can be highly detrimental to learning outcomes. Some of these aspects are addressed in green building requirements however in the context of the study which focusses on improving the quality of education this becomes an essential concern in the design of learning spaces and should be analysed as per the specific learning modes. This concludes the issues discussed in the literature review that pertain to affecting the quality of educational outcomes and forms theoretical framework that will guide design choices surrounding the design of learning spaces informed by the learning process.

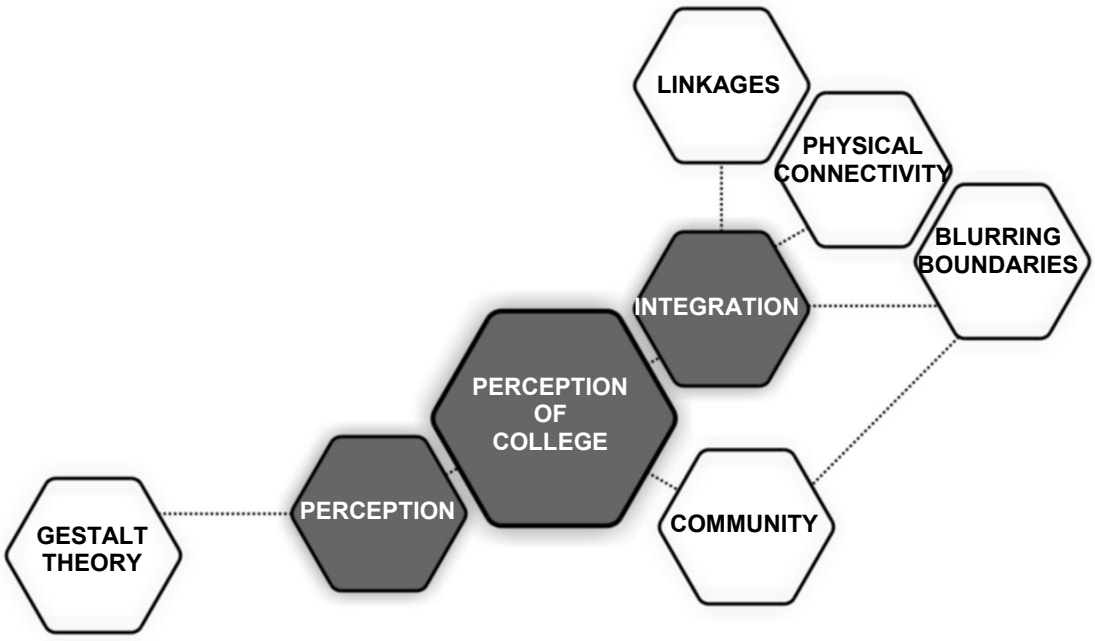


Fig 05: Perception of FET College Diagram (Author, 2014)

The final section in the literature review aimed to review literature that pertained to understanding how the built environment can contribute to improving the perception of the FET colleges. The first component of the built environment and perception section analysed the mechanics of perception as a phenomenon. It was concluded that the body is the medium of all perception and that perception is an integrative experience between the body and the built environment. It was concluded through an

understanding of the gestalt theory that humans perceive visually in structure wholes or patterns rather than in random sequences of data. It is therefore imperative that the built environment, as a patterned or structure entity, communicates one legible language in terms of communicating its role in improving socio-economic conditions through empowering education. This can be achieved by exposing the mechanics and the functions of the college and their relationship to the public in a socio-economic dialog between learning facility and context.

The second component of the built environment and perception section, which dealt specifically with integration, understood that the built environment needs to facilitate interaction before the perception of the user can be impacted on. In this regard, Trancik's theories of lost space were analysed which showed that existing barriers that contribute to segregation must be removed in order to integrate spaces together on an urban scale. Alexander's theories on physical connectivity were explored in order to understand how the built environment can physically connect with its context and the theory of blurring boundaries was explored to further facilitate integration, not only with the surrounding context but also in terms of the spatial relationships within the facility and with the formulation of a learning community. This created a framework for understanding how to integrate society with the built environment of learning facilities within the city. These theories can be analysed most effectively when analysing the physical design of learning facilities.

The summation of the literature analysed in this literature was aimed to find any gaps in the research that could be analysed through empirical research in the field through the analysis of case studies. In this case, it was found that the study of the effects of the learning environment on learning is not yet a science and that the response of the built environment to specific learning theories had not been sufficiently demonstrated. It has been established that the design of the learning environments has a substantial influence on the learning process, the debate is ongoing and the design of contemporary learning spaces continues to adapt to new information. It is clear that the way in which learning spaces are designed is going through radical changes to respond to the needs of the learners more efficiently. It can be assumed that this debate will continue and learning spaces should be designed not only in line with the knowledge surrounding learning but also with the knowledge that learning spaces will need to be adaptable to respond to the testing of the many hypothesis discussed above and that have yet to be discussed. Some of the findings have triggered building programmes and innovation in design. Much of the literature points to the

fact that, the conclusions are far from representing a full understanding of this dynamic and there is much work still to be done to accomplish this. The information does serve however as building blocks to innovation and further understanding through practice.

CHAPTER 3
KEY PRECEDENT STUDIES

3.1 INTRODUCTION

This chapter will review two existing education facilities that encompass the issues defined in the literature review. Each precedent study will be analysed in relation to the theoretical framework in order to understand how the following facilities have succeeded or failed and in order to allow for comparison between each project. This process will begin with regards to how the built environment has become a product of the learning philosophy. This includes the analysis of the design process, the location, the physical design which includes the linkages theory, issues of physical connectivity, the theory of blurring boundaries, the micro-design and the physical conditions of the learning spaces.

The following precedent studies have been selected for their individual success internationally with regards to the issues discussed in the literature review and theoretical framework. The locations of each project are illustrated below to provide context in the scope of the study. The analysis of these projects will lead to the case study, which will be discussed in the following chapter, which is also illustrated below.

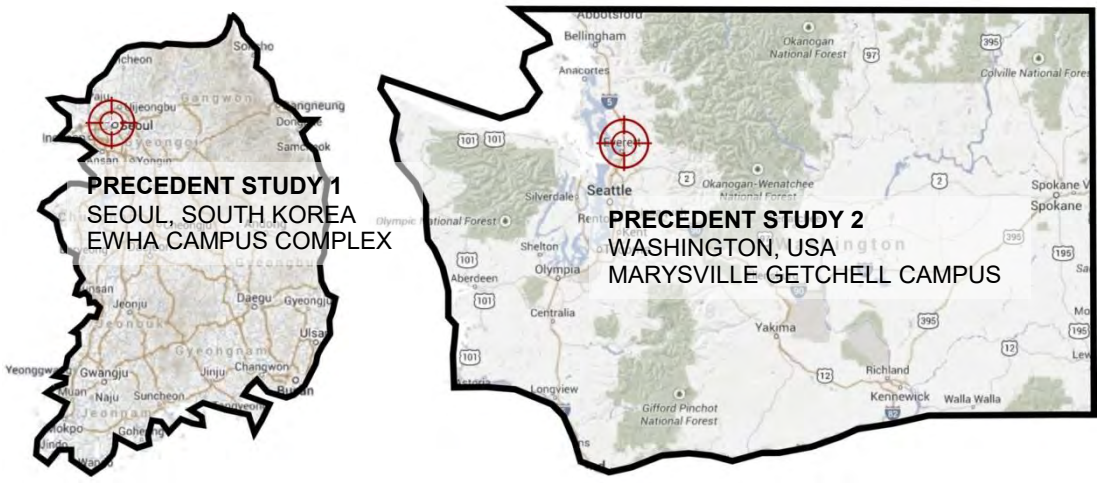


Fig 06: Location of Precedent Studies (Author, 2014)

3.2 EWHA CAMPUS COMPLEX (ECC)

3.2.1 Introduction

Architect: Dominique Perrault Architecture | Location: Seoul, Korea | Date: 2008

Fig 07: Photo of Ewha Campus Complex (archdaily.com)

The motivation for using this particular precedent study is based on the way this facility is integrated within the city which contributes significantly to the theoretical discourse in this study. It demonstrates the impact of the location and the physical design on empowering education through the built environment. Secondary to this, the learning facility is a direct product of the learning philosophy at Ewha University.

3.2.2 Learning Philosophy and Vision

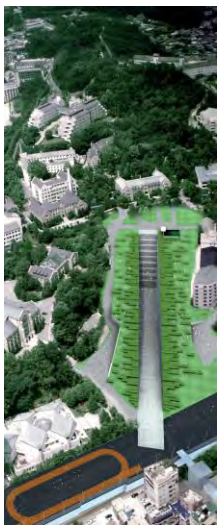
Ewha University's mantra is 'where change begins' and is an international institution that envisions greater change in the world through empowered individual learners. The institution was the first women's university and today is the largest in the world. The vision of this facility is to be the cradle of the world's woman leaders by remaining on the cutting edge of research and education. Learners at Ewha University have a long tradition of engagement with the world. This integration is a vital component of the philosophy which can be seen in the joint partnerships with global corporations and, most importantly, is reflected in the built environment (Web 13: ewha.ac.kr).

3.2.3 Response of the Built Environment

Design Process

In the words of Dominique Perrault: ‘This project was the opportunity to confirm that Architecture is a gesture of authority’ (Web 14: architype.org). The design of this project was the result of DPA’s winning proposal in response to the competition for the development in which the architects worked with the clients to realise a vision conceived by the architects for the development that is rooted in the philosophy of the institution. The strong philosophy and vision of Ewha resulted in a design concept that is intertwined in this philosophy.

Location



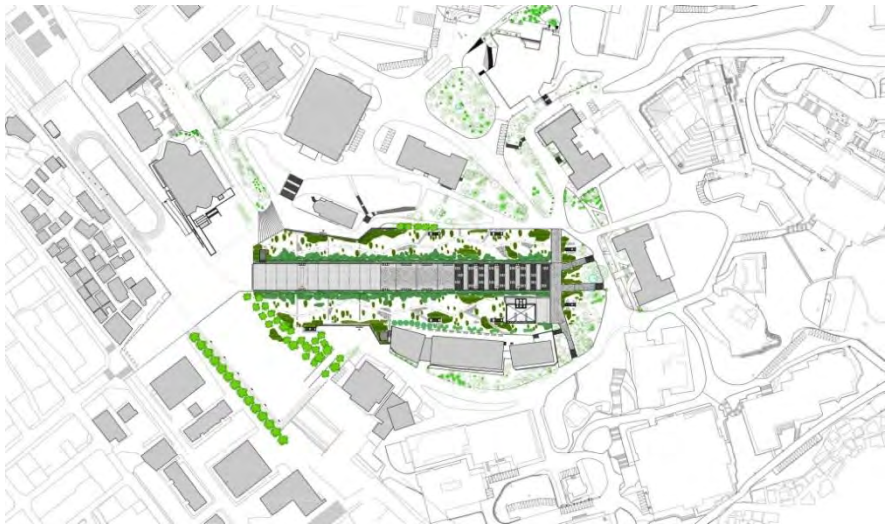


Fig 08 (Left): Arial Render of ECC (arcspace.com)
Fig 09 (Right): Site Plan of ECC (archdaily.com)

The site is situated in the urban centre and university zone of Seoul, Korea called the campus valley. The campus valley is a district where nature, sport grounds, event locations and educational buildings mix and intermingle. The campus centre is found at the heart of this valley. This is directly accessible to the city which improves the diversity and increases the population of learners who have access to this facility. This promotes a more diverse SES within the facility which in itself enables higher educational outcomes. The site is linked to an urban intervention called the ‘sports strip’ which is a place for daily sports activities, grounds for the special yearly festivals and celebrations. This is an area which brings the university and the city together; a place for all that is animated all year long. This sports strip acts as a horizontal billboard which presents the life of the university to the inhabitants of Shinchon and vice versa. Dominique Perrault stated that ‘the complexity of the site,

through its relationship to the greater campus and the city of Shinchon, demanded a “larger than site" response, an urban response, a global landscaped solution, weaving together the tissue of the Ewha campus with that of the city’ (Web 15: arcspace.com). This suggests that the campus programmatically needed to do more than provide space for learning and teaching, but also allow for connection to enable the exchange of ideas and the interaction between the city and the facility. This is also motivated by the teaching philosophy and vision of Ewha University. In this way the facility becomes enmeshed with the city and society.

Physical Design

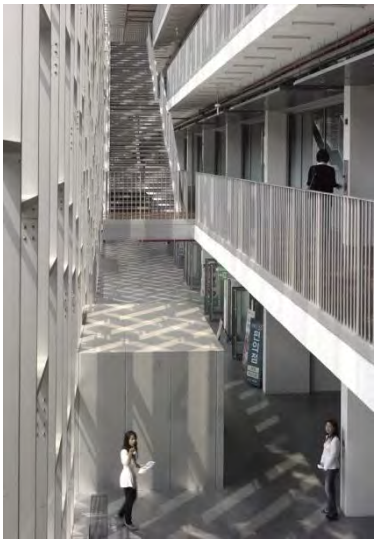


Fig 10 (Left): Photo of ECC ‘Boulevard’ (archdaily.com)
Fig 11 (Right): Photo of ECC Circulation Spaces (archdaily.com)

The building is a large scale underground structure that has been designed with an excavated boulevard in the centre. The boulevard acts as a void and invites the public into the site carrying students and visitors alike through the campus centre while simultaneously bringing together the different levels of the site. This space has been designed to slope down from one edge of the slope to a grand staircase that can be used as an open air amphitheatre if necessary. This is an important design tool for promoting interaction between the facility and the city. The boulevard acts as more of a destination than a passageway. The excavation exposes the interior of the ECC through a transparent curtain wall facade. On the opposite side of the façade the circulation and social spaces can be seen with the more private functional learning spaces situated deeper within the structure. The centre itself is divided vertically into five floors which consist of two levels of underground parking, a ground level featuring social and commercial components and two levels of institutional

functions above. The green roof acts as a pedestrian bridge which spans the length of the building which brings together the different levels of the site.

The macro context of the site combined with the program created a need far greater than merely providing the functions required within the ECC. Through the design of the green roof the ECC creates a place that ties all the existing campus buildings together. The design contributes to physically connect built environment to its context, this is achieved partially through the roof garden that connects two levels at both ends of the site together and also by the visible circulation routes just beyond this façade and the grand stairs physically connect all the levels of the building together.

The transparent façade on both sides of the boulevard appear to blur the boundaries between public and private space. These elements combine to encourage interaction between the built environment and the city and between the learners and the general public which is a direct result of the philosophy at Ewha. By enabling such high levels of interaction and enabling the public it enables the built environment to act as a tool for influencing the perception of the public.

Micro-design

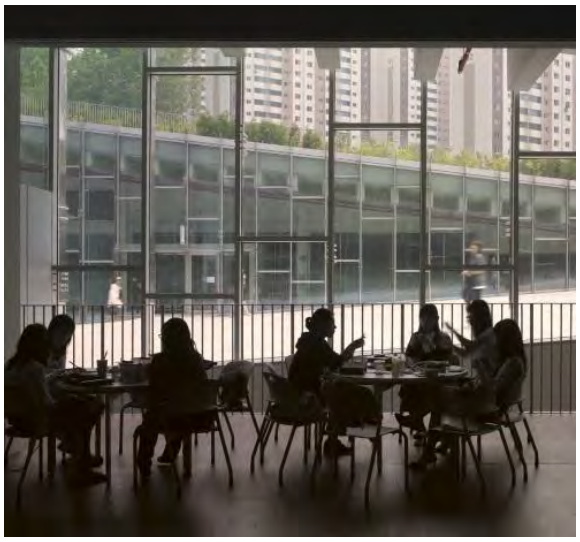


Fig 12 (Left): Photo of ECC Classroom (architonic.com)
Fig 13 (Right): Photo of ECC Informal Spaces (archdaily.com)

There is a significantly smaller amount of data published on the micro-design of the Ehwa University Centre in relation to the macro design. As shown in the literature review, this has an equally important impact on learning and in this regard, it cannot

be confirmed with certainty whether or not the micro-design of the learning environment is responding adequately to this need. A lot can be assumed from the planning of the buildings and from the photos of the interior learning spaces and the micro-design of Ewha Campus Complex will be analysed in this regard.

The interior on plan is organized in a linear, pragmatic and functional way (Web 16: iconeye.com). The plan shows that classrooms are defined by a rectangular structural grid which in the literature review has been shown to be less successful at adapting to varied work styles. It seems that there is less focus on collaborative learning in the ECC classroom environments. Figure 12 shows the use of lightweight aluminum furniture that is moveable however is not designed to function in any other way than in traditional rows which support the traditional typology of learning. There are many opportunities for collaborative learning around the circulation spaces however. These spaces are visually connected between floors vertically and horizontally, and between interior and exterior suggesting a conscious decision to integrate these spaces together.

Ewha states that the Centre is a ‘ubiquitous campus where tradition and future, nature and cutting edge technology coexist’ (Web 13: ewha.ac.kr). Due to the fact that Ehwa aims to pioneer, the learning environments have been designed to be adaptable to changing needs and technological advancements.

Physical Conditions

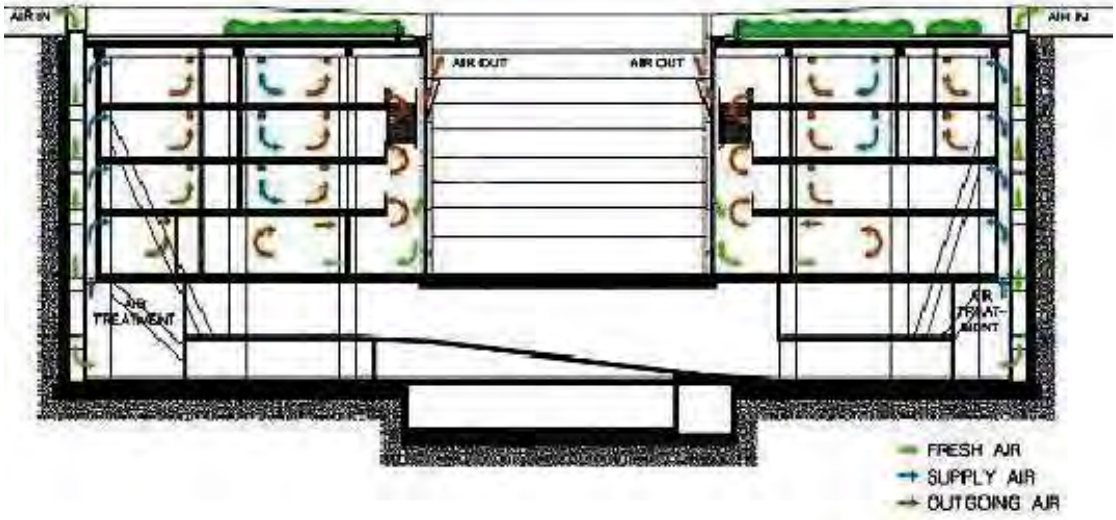


Fig 14: HVAC System Diagram (annex59.com)

Natural light and ventilation form the biggest challenges in this building. Two large glass curtain walls divide interior from exterior on either side of the boulevard; this forms the predominant natural light and ventilation sources. In the private classrooms that are situated deeper within the structure, electrical lighting is used as there is insufficient natural light. Where possible, the walls on both sides of the rooms are made of glass, allowing light to penetrate deeper into the building. Secondary ventilation shafts are used on the outside of the structure as illustrated in Figure 14 which supply treated air through convection however this does not allow for effective cross ventilation. The system is reliant on mechanical systems that regulate air quality, lighting conditions and subsequently the temperature. The classrooms offer no access to views which is detrimental to the learning process. The actual learning environments are rather harsh and clinical to the eye. This issue has been alleviated somewhat by the provision of the rooftop garden which creates a pastoral nature in an urban environment and in a relatively 'hard' building however learning takes place predominantly in the classroom spaces. Colour is not a major feature throughout the building which in this design could have contributed to way-finding significantly and of course to the learners psychological state of mind.

3.2.4 Project Drawings

***See Figure 09 for Site Plan**

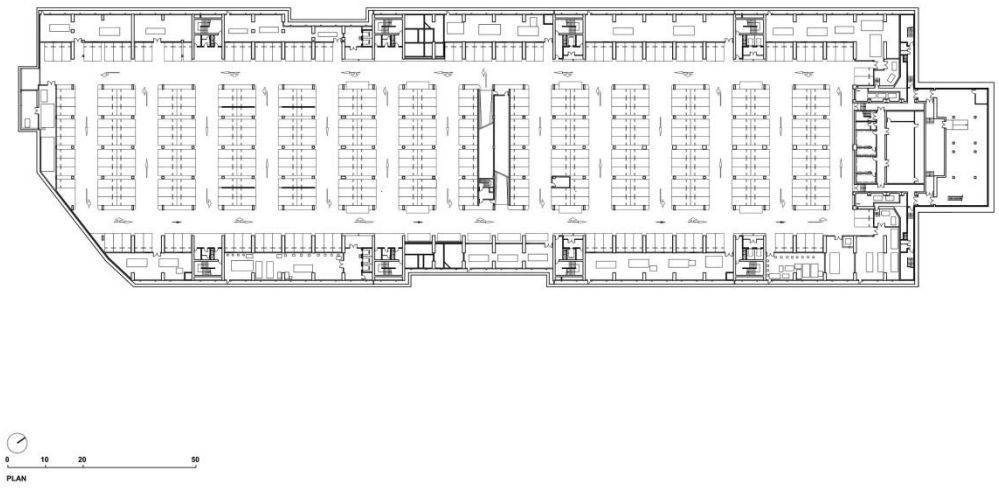


Fig 15: Second Basement Floor Plan (archdaily.com)

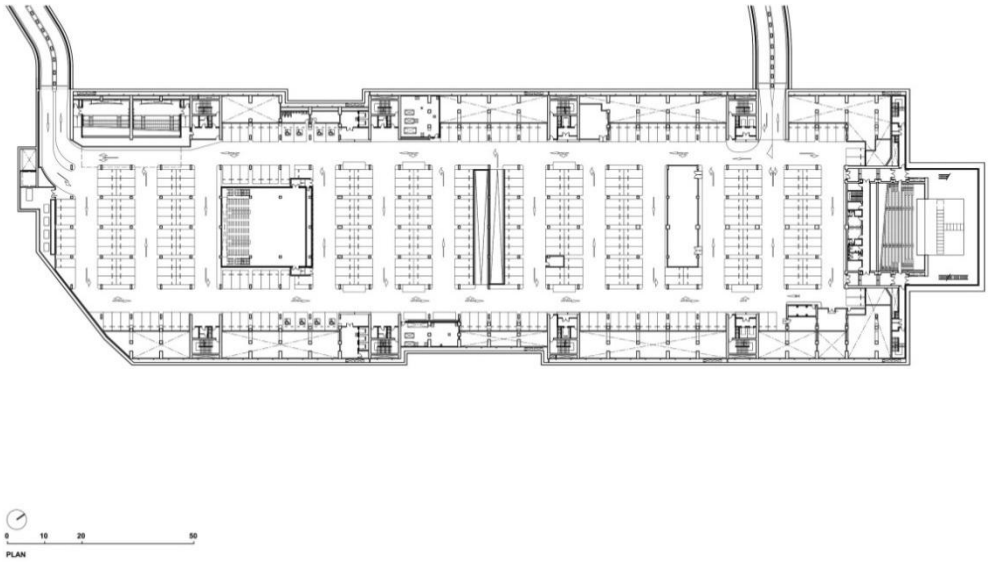


Fig 16: First Basement Floor Plan (archdaily.com)

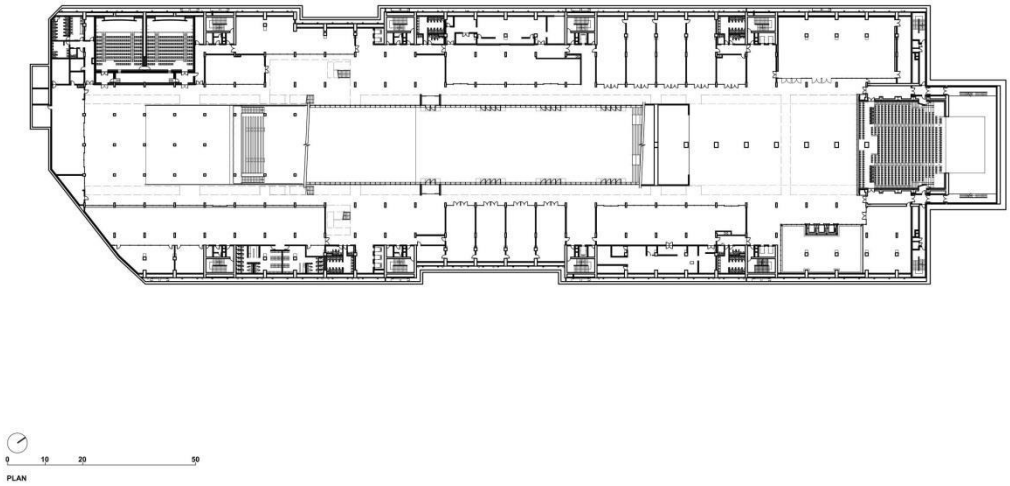


Fig 17: Ground Floor Plan (archdaily.com)

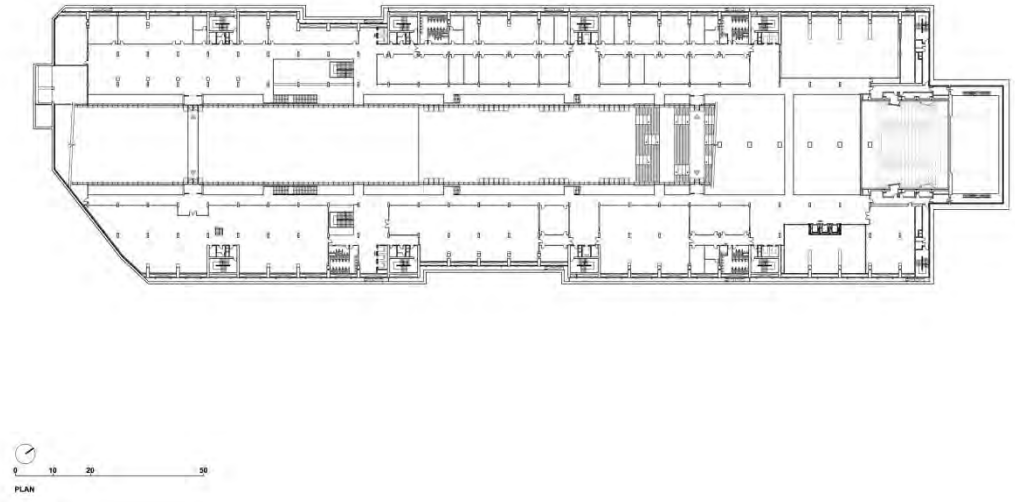


Fig 18: First Floor Plan (archdaily.com)

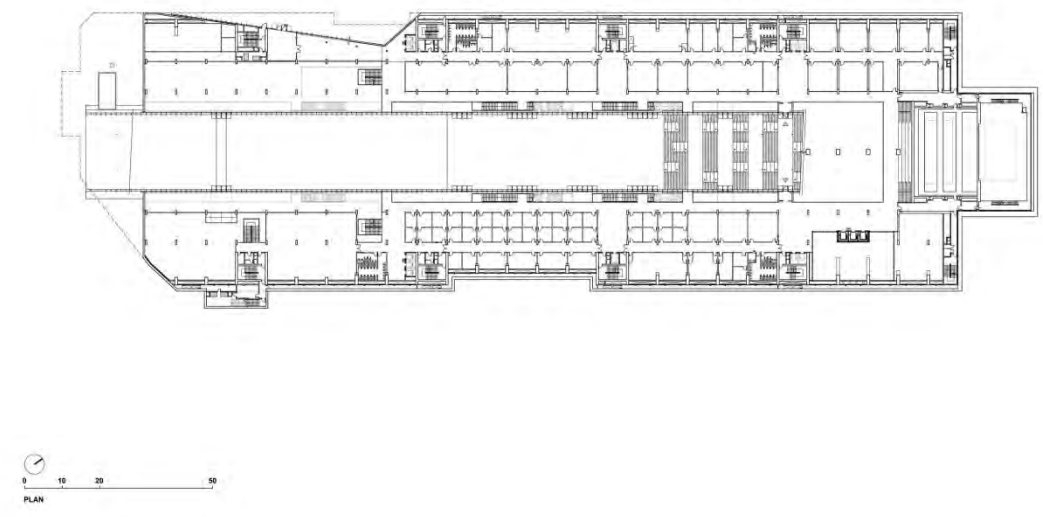


Fig 19: Second Floor Plan (archdaily.com)

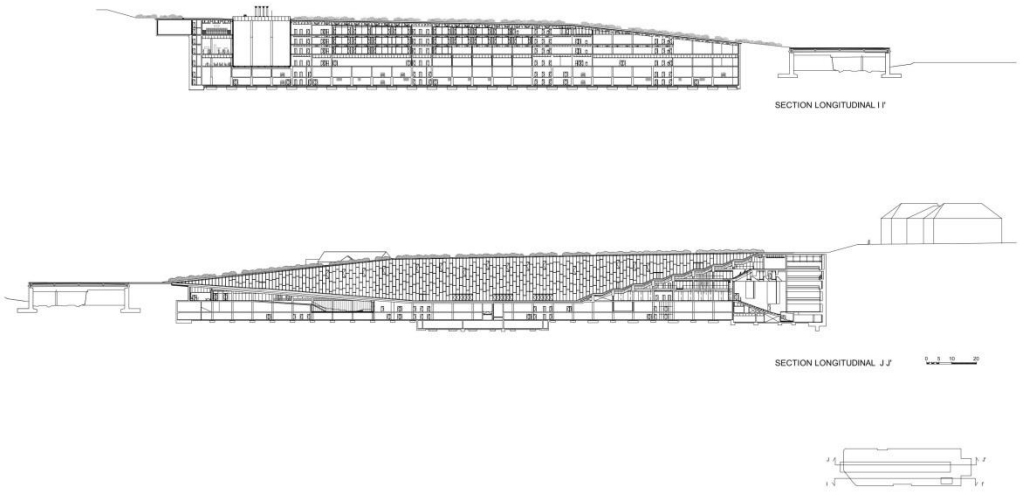


Fig 20: Sections J-J and I-I (archdaily.com)

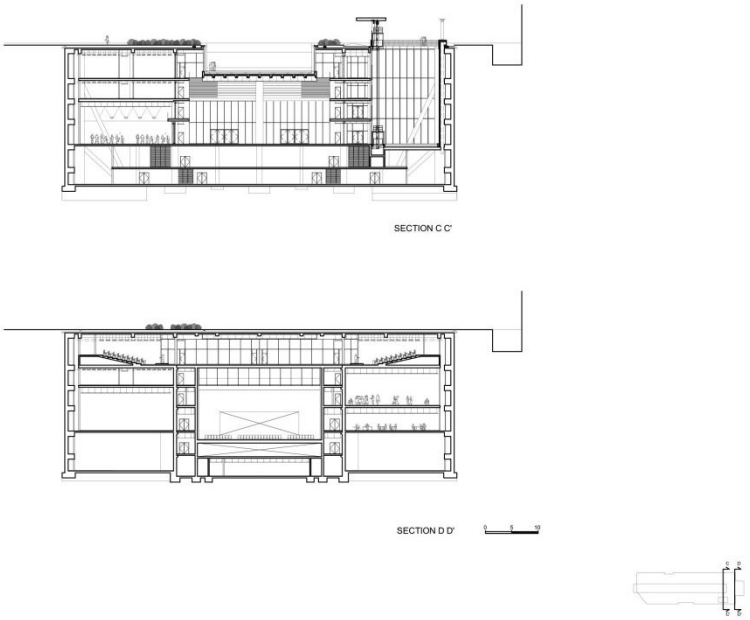


Fig 21: Sections C-C and D-D (archdaily.com)

3.2.5 Conclusions

This precedent study has shown to be a very good example of how to integrate education into the urban fabric in order to enable interaction. In terms of analysing the theories surrounding integration such as the linkages theory, physical connectivity and the theory of blurring boundaries, this project achieves what FET colleges should be aiming to achieve. On a macro scale this facility connects the campus valley to the city and maximises interaction. It has also shown how the built environment and the design process can respond to the learning philosophy and vision of the institution. The project does however show a lack of understanding when it comes to the impact of the built environment on learning through its lack of understanding of the micro-design and the physical learning conditions of learning spaces.

3.3 MARYSVILLE GETCHELL CAMPUS (MGC)

3.3.1 Introduction

Architect: DLR Group | Location: Washington, United States of America | Date: 2010

Fig 22: Arial Photo of Marysville Getchell Campus (archrecord.com)

The motivation for using this particular precedent study is based on the way this facility responded to the poor standard of education and a poor public perception through a new community developed vision and through an appropriate response from the built environment to facilitate this vision.

3.3.2 Learning Philosophy and Vision

The learning philosophy for the Marysville Getchell Campus was developed collaboratively in order to respond to existing issues such as low graduation rates, hostility between the community and school board, school overcrowding and a state-record 49-day teacher strike (Web 17: educationdesignshowcase.com). The aim was to engage the community, reinvigorate teachers and inspire public confidence in the schooling system. The learning philosophy included five principles. The first of which is called *'relationships at the centre'* which aimed blur the boundaries between educators and learners and between the school and the community in order to achieve transparency and allow students to feel known and valued. The second principle pertained to the quality of learning outcomes which is called *'focussed learning'* and aimed to drive all decisions including the design of the built environment. The third principle is called *'identity and purpose'* which aimed to facilitate a unique identity for each of five buildings which contained unique functions. The fourth principle is *'community'* which promoted different levels of integration as allowable in each building serving a specific education. The final principle is *'accountability'* which aims to enable transparency and accountability between staff and students (Web 18: dlrgroup.com). These five principles make up the philosophy at the Marysville Getchell Campus.

3.3.3 Response of the Built Environment

Design Process

The design process began with extensive research on existing education facilities throughout USA to guide and develop a new philosophy for a new institution (Web 17: educationdesignshowcase.com). The five guiding principles were developed prior to the architects and educational planners beginning to design the campus. The architects and educational planners used in this project had experience in community engagement and educational facility design. The design proposals were analysed against the five principles by the same members responsible for the development of the principles through workshops, displaying the designs to the community in open house scenarios and through focus groups (Web 17: educationdesignshowcase. com). Continuous community engagement was a key factor in the design process. The outcome of this resulted in a sense of community ownership and responsibility within the community which continues to contribute to the success of the project. This has resulted in a 39% increase in graduation rates just three years after the new program was implemented (Web 18: dlrgroup.com).

Location

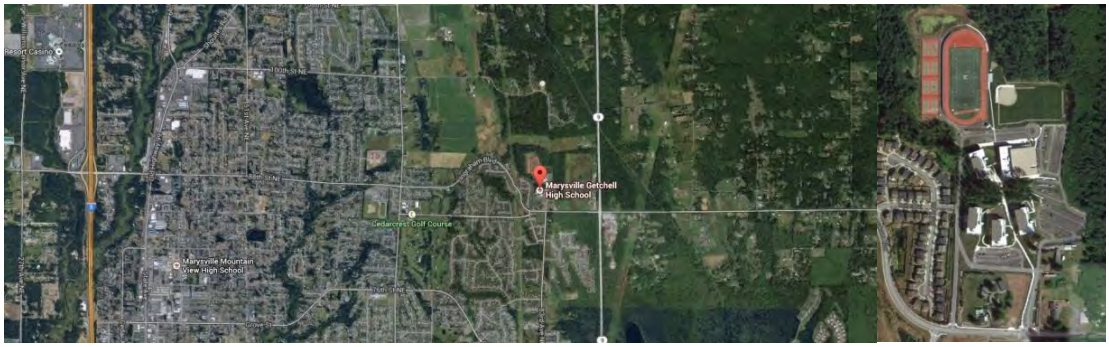


Fig 23: Satellite Photo of MGC Location (google.com/maps)
Fig 24: Satellite Photo of MGC Campus (google.com/maps)

The MGC is located on the fringe of a suburban precinct which is bordered by wetlands and a forest which offer long distant views into the natural surroundings. The location of the school creates a level of privacy and seclusion which contradicts the evidence stated in the literature. The location is not directly engaged with the urban fabric, however, the school caters for high school students within the district from grades nine to twelve and therefore does not share the same relationship to the city that a further education or higher education institution does. Learners move from this institution into colleges rather than directly into the workplace which reduces the need for access to the city to influence learning outcomes. The impact of a high school on socio-economic opportunities is also far inferior to that of a further education or higher education institution.

Physical Design

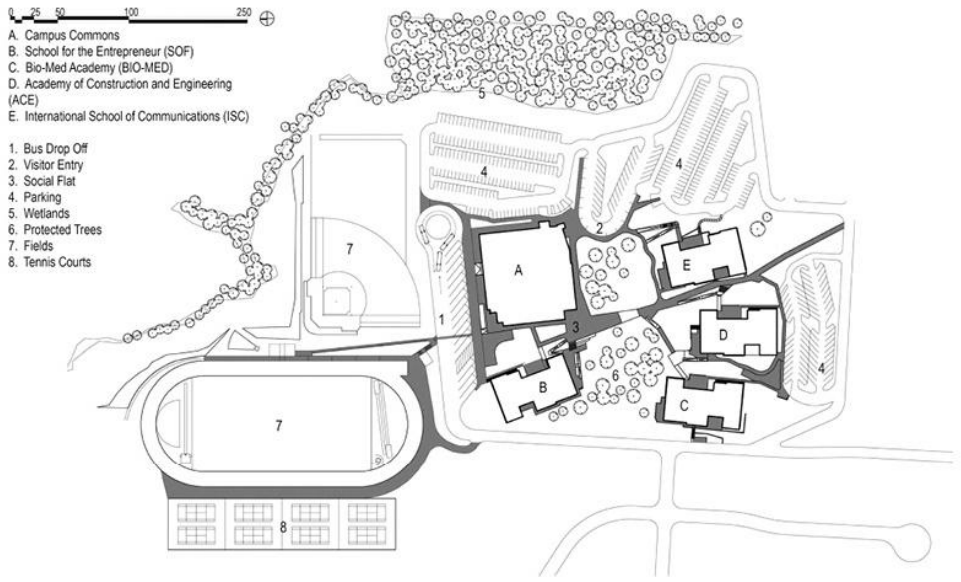


Fig 25: MGC Campus Plan (dlrgroup.com)

The campus consists of a campus commons building and four high schools called small learning communities (SLC) which represent four separate programs designed for the area: Global Connections, International School of Communications, Bio-Medical Academy, and the School for the Entrepreneur. Each of the four high schools acts independently. The SLC's have been designed in a park-like setting activating the shared communal spaces similar to the way that public buildings typically do. Each SLC is linked to the campus commons building through raised boardwalks that also cater for disabled learners. The campus commons building houses shared activities such as food services, a health and fitness centre, indoor running track, and social spaces. This design approach of grouping of buildings centred on an inner courtyard with interconnected learning spaces creates a new aged and innovative design that avoids the use of traditional corridors. This arrangement creates outdoor in-between spaces which are used as informal learning opportunities and spaces for integration. The four schools are similar in design but are given their own identities through the use of colour and unique architectural requirements.

Fig 26: Photo of MGC (educationdesignshowcase.com)

The individual building structures are 'three story shell and core buildings' (Web 18: dlrgroup.com). This method forces the services to the exterior of the building and enables interior connectivity and flexibility. Intersecting volumes create visual

connectivity between floors vertically and between the interior and exterior. The architects of DLR Group stated that

> the eventual design reflected the communal inception and orientation of the school. While the idea was to create a learning community' and further state that this was achieved 'through extensive transparency and collaborative spaces, the design blurs boundaries between teachers, students, school and community (Web 18: dlrgroup.com).

There is a strong focus on blurring boundaries to enable the formulation of a learning community and to enable interaction between the building users. The use of the individual building in a campus layout that feature compact planning of the three storey structures in conjunction with the use of glass and volumes enable a strong sense of inter-connectivity and blurs the boundaries between building and environment and between faculty and students. This contributes to the formulation of a learning community and a strong sense of place.

There is a careful approach to the physical connectivity between natural environment and building. The buildings sit on earthy masonry bases from which the structures float on steel beams. The buildings are connected by raised timber boardwalks which also appear to float over the landscape. This physical connectivity is purposeful to create an awareness of the environment and the campus' sustainable approach. This has still achieved a physical connectivity between buildings and creates strong, visible links for the building users.

Micro-design

Fig 27: Photo of MGC Classroom (educationdesignshowcase.com)

Fig 28: Photo of MGC Informal Spaces (archdaily.com)

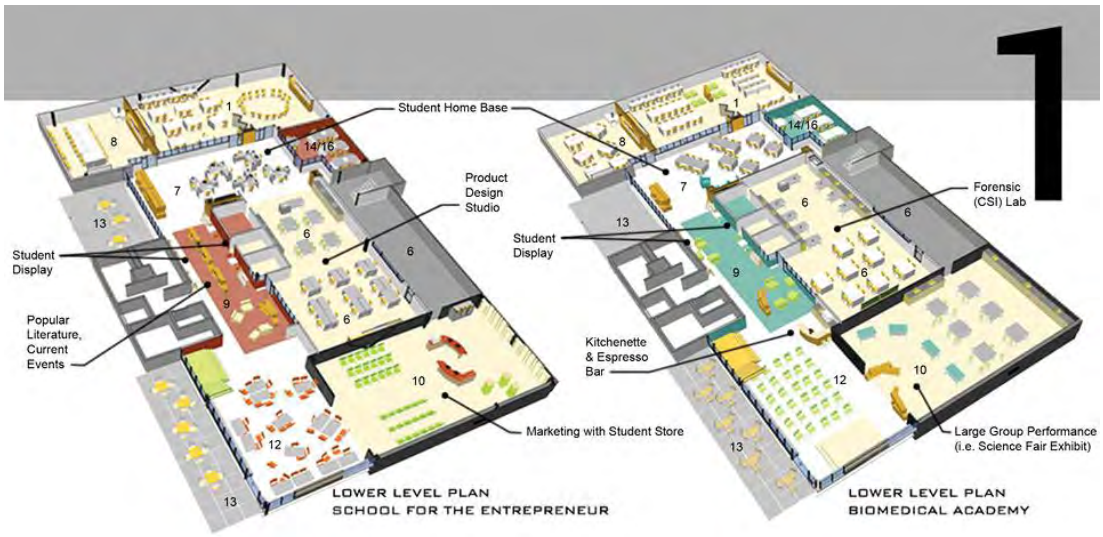


Fig 29: School for the Entrepreneur Micro-design Layout (dlrgroup.com)

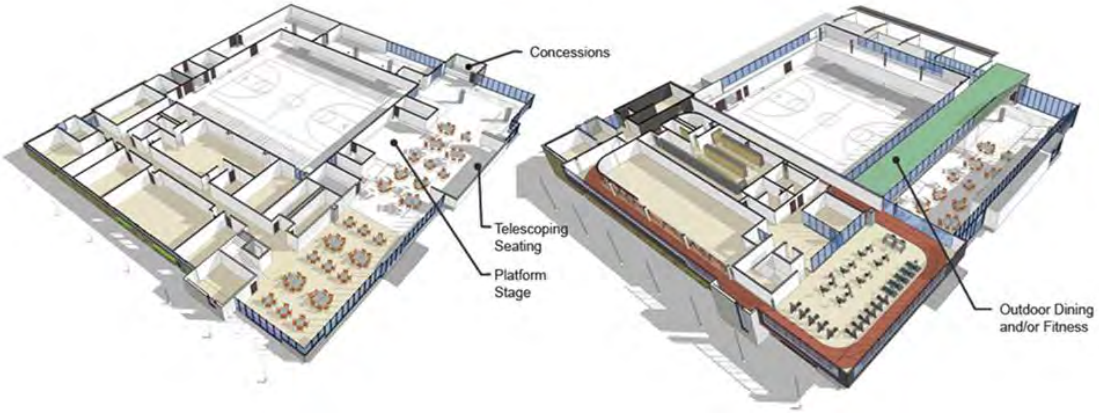


Fig 30: Plans of Campus Commons Building (dlrgroup.com)

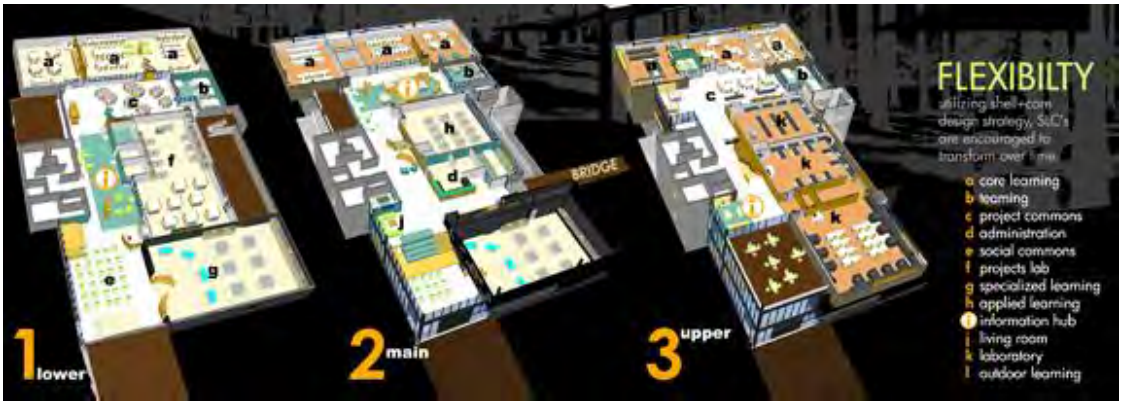


Fig 31: Planning Diagrams (archdaily.com)

In terms of the flexibility and adaptability of the shell and core structures, the individual buildings are capable of adapting to changing specifics in educational

program and curriculum needs. There are eight distinct learning spaces which include the following; "*Core Learning*: instructional space, *Specialized Learning*: curriculum-specific space, *Applied Learning*: real world application of learning, *Project Learning*: interdisciplinary, interactive projects, *Science*: labs and grounds as powerful learning tools that promote inquiry-based learning, *Learning Commons*: resource/research area, and interactive/interdisciplinary support spaces to Core Learning, *Social Commons*: informal gathering space" and "*Admin/Student Services*: administration" (Web 18: dlrgroup.com). Each of these learning spaces include interior windows, movable walls, furniture on wheels, and ubiquitous technology, the design extends to allow for dynamic and integrated learning opportunities. The use of colour has also aided the creation of a sense of identity, to facilitate way-finding and creative expression.

Physical Conditions

This project embodies all of the aspects that optimize the physical conditions for learning. Each SLC is situated in such a way to receive maximum exposure to natural light and ventilation which also enables long distance views out of learning spaces. The views into natural surroundings have been shown to improve work-rate and learning outcomes. The windows feature high performance glass and are operable by the users to control their environments, they are also shaded by the surrounding trees to improve air quality and filter sunlight to control indoor temperatures. The lighting and ventilation system is not all natural however; it is a hybrid system that features occupancy sensors, task lighting to allow users to adjust light intensity as well as high-efficiency air-conditioning. It also features carbon dioxide sensors in classrooms in order to monitor the indoor air quality. These systems, in conjunction with low-emitting materials, maintain healthy air quality to promote optimum learning conditions and ensure the well-being of the building users. Acoustic ceilings are utilized in order to absorb ambient sounds which have been shown to have an effect on the learning outcomes and also reduce the strain on teachers' vocal chords. There is a vivid colour palette which is visible in Figure 27 and Figure 28. The bold use of colour brings vitality to the informal spaces where the use of shades of blue in the classroom creates distinctive moods that contribute to space making.

3.2.4 Project Drawings

***See Figure 25 for Site Plan**

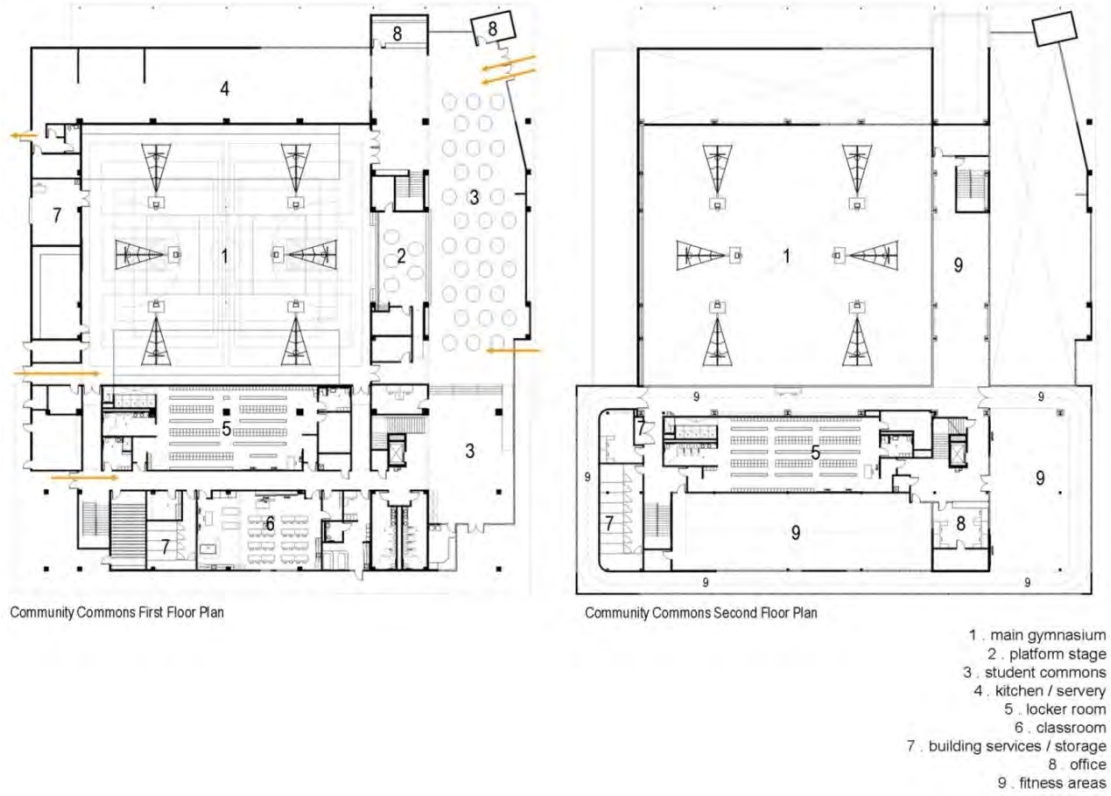


Fig 32: Campus Commons Plans (media.cefpi.org)

Fig 33: Small Learning Community (SLC) Plan (media.cefpi.org)

3.2.5 Conclusions

This precedent study has shown to be a very good example of how the learning philosophy and vision in conjunction with the design process can define the built environment. This process created a shared vision, a sense of community and overcame poor standards of education and issues of perception. It showed strengths in terms of its design process, physical design, micro-design, physical conditions and theoretical discourse. It has also shown how the built environment can respond to the learning philosophy and vision of the institution and how the built environment can effect perception and the quality of educational outcomes. The project does not contribute significantly in terms of its location, however the nature of the type of education does provide motive for its location.

CHAPTER 4
CASE STUDY

4.1 INTRODUCTION

In the previous chapter two precedent studies illustrated how the built environment can successfully empower education. This chapter will analyse two vocational education facilities in Durban that contribute to the training of artisans. Empirical research was carried out at each of these facilities which will be discussed further in the following chapter. Each case study will be analysed in relation to the same theoretical framework. This process will begin with regards to how the built environment has become a product of the learning philosophy. This includes the analysis of the design process, the location which includes the linkages theory, the physical design which includes issues of physical connectivity and blurring boundaries, the micro-design and the physical conditions of the learning spaces. This will allow for the comparison of international precedents against practices found in Durban, South Africa in an attempt to understand why the perception of vocational training and the quality of educational outcomes is poor and further decreasing.

4.2 UMBILO SKILLS TRAINING CENTRE

4.2.1 Introduction

Architect: Unknown | Location: Durban, South Africa | Date: 2009

Fig 34: Umbilo Skills Training Centre (Author, 2014)

The motivation for using the Umbilo Skills Training Centre as a case study is based on its focus on an integrated approach to the skills development of artisans. The training centre provides vocational skills according to the apprenticeship schedule that leads to on-site trade tests which includes the electrical, welding, boilermaking, fitting, millwright and turning trades. The skills training centre is privately owned, meaning it is therefore not influenced by governmental policies and educational structures, and managed with the aim of serving the industry directly. This also means that the facility has the ability to teach skills to learners of any age, gender or educational background. Unlike many of the prominent FET Colleges, this vocational training centre focusses on one type of skill: artisan skills development. This case study provides insight into the needs of learning facilities that promote artisan training and provides insight into the condition of the built environments of private vocational skills training centres.

4.2.2 Learning Philosophy and Vision

The learning philosophy and vision of the USTC is to provide the most applicable skills to learners as they would experience in the workplace. There is a strong focus on staying on par with the requirements of the industry and on enabling the learners to become work-ready. The mantra is ‘skills for life’ which corresponds with the philosophy, as the artisan industry grows and advances in technology or skills or needs, learning adapts. Therefore individuals who have completed their training and their trade tests can come back to USTC in order to further their skills in new areas throughout their lifetime. This makes up the learning philosophy and vision at USTC. The predominant learning theory visible is the situated learning theory which focusses on the transferal of knowledge in authentic contexts.

4.2.3 Response of the Built Environment

Design Process

The design process of the USTC is challenging to define due to the fact that there were no considerable architectural or engineering alterations made to the built environment of the premises. The USTC needed to relocate into larger premises in order to expand and keep up with the growing demand for artisans within the industry. The building identified for use was previously used as a gasket factory which has been adapted and reused in order to meet the requirements of an educational facility by the owner and by the management team. The team consisted of specialists of the industry who worked within the electrical, welding, boilermaking, fitting, millwright and turning sectors. The team did not feature architects or engineers

due to the fact that there was no construction changes required. The building spaces were subdivided through dry walling and translucent screens where necessary with the remainder of the spaces being allocated to functions as deemed appropriate by the specialists.

It can be determined however that this design process goes against the principles defined in the theoretical framework. This not only results in a building that forces building parameters onto the building users rather than vice versa, but has also missed the opportunity to create an integrated solution. The design process is meant to enable the translation of a learning philosophy and vision into built form. The philosophy aims to connect the learning process to the needs of industry yet the industry played no part in the design process or in the establishment of the philosophy and vision. Similarly, in terms of community involvement the design process has been established privately and imposed onto the learners disabling any feeling of citizenship or ownership amongst the learning body.

Location

Fig 35: Map of Umbilo Skills Training Centre (Author, 2014)

The location of the facility is a significant contributor to its success. USTC is highly accessible as it is situated on the main transport line that links the industrial sector to Durban. This is the most prominent line and is the route of least resistance between North and South in this precinct. This contributes to the success of the facility because the catchment area for students in Umbilo is considerable. The public transport network enables the catchment area to include the immediate surroundings such as Durban, the Bluff area, Chatsworth, Umlazi, Amanzimtoti, KwaMakhutha, Illovo, as far North as Maphumulo, Ozwathini, Ndwedwe, Stanger and as far South as Scottburgh. This enables a diverse body of potential learners which contributes to achieving higher mean SES, a factor that often comes naturally to urban areas.

Umbilo is an urban environment that is predominantly an industrial sector. Figure 35 shows the location of the educational centre in relation to the city of Durban and in relation to Durban's industrial sector. The location promotes integration with this sector which, as discussed in the literature review, has a positive impact on educational outcomes. Learners are empowered by the fact that they are integrated with the industry and most importantly with the job market, therefore they are motivated to succeed. This is enhanced by the fact that students are learning in an authentic context. Similarly, the industry has the potential to interact with the institution and invest in specific skills developments.

Physical Design

Fig 36: Building Entrance (Author, 2014)
Fig 37: Roof Area (Author, 2014)

The philosophy aims to integrate skills development with the needs of the industry however the physical design does not respond to this. The building is a double-story double-skin brick wall shell and core structure with a suspended first floor slab and a sheet metal roof. The exterior of the building is punctured by the existing doors and windows which do not indicate the educational or industrial functions that transpire inside it and, in this sense, the building suffers from a lack of identity. Due to this the built environment cannot effectively integrate with its surrounding context which has been demonstrated to be critical to the success of impacting the perception of skills training. Although the location of the USTC enables interaction with the industry, the physical design deters integration. The building physically connects to the site poorly, the windows on ground level are placed high and the door is raised above street level and accessed via stairs which further disconnects the building from its context.

The building features large workshops and classroom spaces situated throughout both floors with bathroom and kitchenette services situated in the central core. Each workshop is dedicated to a specific trade, the heavy machinery used in the fitting, turning, welding and boiler-making workshops forces these to be located on the ground floor. The millwright and electrical workshops are located on the second story with the storeroom and classroom spaces. The workshop sizes are also determined by the existing structure limiting the amount of learners per workshop to around ten.

The interior of the USCT works efficiently in terms of subdividing trades into the existing workshops however these spaces do not offer spaces for collaborative, informal learning opportunities or social aspects which are major contributors to improving learning outcomes. There are distinctive boundaries between trades which is largely dependent on the existing planning of the building. Despite this there remains a strong focus on blurring boundaries between staff and learners to enable to formulation of a learning community. The management and administration offices are situated at the building entrance and are not closed off from learners but are open to visitors and to learners which maximizes the contact between staff and learners. This enables a sense of community and a sense of accountability which has an impact on staff performance and in turn, learning outcomes.

Micro-design

Fig 38: Audio-Visual Classroom (Author, 2014)
Fig 39: Electrical Workshop (Author, 2014)

In terms of the micro-design of the learning spaces, the workshops are relatively adaptable due to the large floor areas however the machines and the physical boundaries of the walls combine to disable ample flexibility in the workshops. Load bearing brickwork structures are not suitable when looking to adapt spaces to future needs and changing spatial requirements as renovations are costly and difficult to

execute. A column and slab structure is far more flexible in this regard. The workshops offer a social learning style whereby the educator interacts with the learners in an authentic context amongst the relevant machinery or materials. This is appropriate for the simulated learning mode however the machinery disables any different learning modes due to the fact that it defines the floor layout. Other learning modes cannot be accommodated due to spatial and audible challenges. Theoretical learning typologies can only be accommodated in the audio-visual room or in the neglected classrooms which are currently being used as the only social spaces or as lunch break areas. The audio-visual room provides the only immersed learning environment as there are no computer facilities for the learners.

Fig 40: Fitting and Turning Workshop (Author, 2014)

The learners work predominantly on the machinery and for that reason there is very little moveable furniture as they are required to work on their feet. This decreases comfort levels which has the potential to restrict learning outcomes via not creating spaces to allow for learners to rest. The furniture that is provided is not comfortable or appealing which encourages fatigue and discourages learners from spending leisure time at the facility. This removes the opportunity for informal learning and socializing, important components when aiming to improve educational outcomes and create a learning community.

Fig 41: Boilermaking Workshop (Author, 2014)

The learning spaces are predominantly arranged around the central service spaces which mean that these functional spaces have access to the windows on the exterior of the building to allow for natural daylight and ventilation. The windows are not treated with any solar shading devices to give control to the building users which can be problematic when dealing with glare or controlling light. For the most part, there is sufficient light and ventilation, the deeper spaces and screened off areas are more limited in terms of light and ventilation which can be seen in Figure 40, and rely on electrical lighting to maintain healthy lighting conditions. On the ground floor the windows are placed high for practical and for safety reasons. This enables machinery and drawing boards to be placed along the length of the wall however it disables light from falling onto these workstations. Electrical lighting is provided as a solution to this problem. This also means that learners on the ground floor cannot see out of the windows which negatively impacts their concentration levels and learning outcomes.

The study was conducted during the winter when temperatures are much milder than in the summer in Durban. Despite this the temperature difference between downstairs and upstairs was significant. The ground floor used electrical fans as

seen in Figure 41 to recycle air through the windows due to a lack of cross ventilation opportunities, these areas proved to be cool and comfortable for learning spaces. The second story had larger windows which offer distant views and enabled cross ventilation. Despite this the spaces were very warm which is a result of the existing roof, which can be seen in figure 39, that was not sufficiently insulated and enabled hot air to build up without a ventilation solution being provided. It can be assumed that the learning spaces on the second storey have the potential to be unbearable during the summer which has a negative impact on learning.

The machinery creates a significant amount of noise which can be expected in these types of working environments. The finishes found within these high noise zones are not conducive to dealing with this problem. Plaster and painted walls, concrete soffit ceilings and screeded floors combine to ricochet the noise around the workshops and into the in-between spaces rendering communication problematic. This has an impact not only on the learners' health but also the educators who have to strain their voice to communicate with the learners. Systems should be put in place to try and absorb the sound waves or disable sound from reaching the adjacent workshops.

The entire interior centre is painted in two shades of blue which psychologically is a calming colour and is conducive to learning environments. The problem with using this colour for all the workshops is that there is no differentiation or identity to the various trades which would help to create a sense of place and identity for each trade and would have also helped greatly with way finding.

4.2.4 Conclusions

This case study has provided insight as to the nature of privately owned skills training centres in Durban. This case study showed strengths in three areas, it demonstrated how the location can contribute to its success, it exhibited the functional needs and requirements of the simulated leaning spaces in the development of artisans and it successfully blurred the boundaries between staff and learners to formulate a learning community. There were distinctive weaknesses however: where the location of the centre contributed to enable interaction between the industry and the learning facility, the built environment disabled the centre from integrating with its industrial context, a significant component of the philosophy and vision. The physical design therefore failed as a manifestation of the philosophy and vision of the institution which also to the detriment of impacting the perception of such facilities.

The centre failed to provide blended learning environments to empower the individual learners. The institution showed a lack of understanding of the needs of 21st century learning environments and it failed to understand the impact of the micro-design of the learning process. These factors are significant contributors to positively impacting learning outcomes. It can be concluded therefore that this facility falls far below the standards set by the theoretical framework and the standards of the international precedents in the aim of improving the quality of educational outcomes and the perception of skills development institutions.

4.3 COASTAL KZN FET COLLEGE

4.3.1 Introduction

Architect: Unknown | Location: Durban, South Africa | Date: Unknown

Fig 42: KZN Coastal FET College (Author, 2014)

The motivation for using this particular case study is based on its sustained success as a vocational education facility in Durban in the artisan and engineering sectors. This learning facility encompasses the typical FET College and provides vocational skills training according to the NC(V) and the NATED programmes. The FET College is owned by the government and managed under the policies established by the higher education and training department. This case study provides insight into the needs of learning facilities that promote engineering and artisan training and provides insight into the condition of the built environment of public FET colleges.

4.3.2 Learning Philosophy and Vision

The vision of the institution is a "*Pioneering Centre of Excellence, serving the socio-economic needs of a diverse community, with world class education and training, leading to life long learning."* (Web 27: coastalkzn.co.za) The institution prides itself on a set of 7 values which include: pioneering, accountability, integrity, teamwork, social responsibility, commitment and respect. These principles and the vision of the institution should guide the design of the built environment in order to achieve a holistic development and empower the turnaround strategy by improving educational outcomes and the perception of further education and training centres. This cannot be the case because the principles are being applied to the existing building is not an embodiment of these principles to begin with.

4.3.3 Response of the Built Environment

Design Process

The design process of this particular college is based on the previous requirements of the Trade School which was designed and constructed prior to FET Colleges being introduced. The design approach is therefore based on outdated information. As stated in the literature review, there have been significant advancements in the understanding of teaching practices, learning processes, human development, human psychology and the impact of the built environment on learning which should have significantly modified the way learning spaces are designed. Due to the fact that this centre has not been developed according to these advancements suggests that the design process is outdated in terms of what the theoretical framework prescribes as good practice.

Location

Fig 43: Map of KZN Coastal FET College (Author, 2014)

The location of the facility is a significant contributor to its success. KZN Coastal FET College is located in the same industrial precinct in Umbilo as the USTC which means it is also highly accessible, and also features the same considerable catchment area for students resulting in a diverse body of potential learners. Figure 43 shows the location of the educational centre in relation to the city of Durban and in relation to Durban's industrial sector. Although this college offers a large variety of courses, the engineering and artisan studies form a connection to the surrounding context and enables integration with this sector which as discussed in the previous case study, empowers learners by integrating them with the industry and most importantly with the job market, therefore motivating learners to succeed. This, as in the previous case study, is enhanced by the fact that students are learning in an authentic context.

Physical Design

Fig 44: 3D Map of KZN Coastal FET College (Author, 2014)

The campus is made up of a series of three story column and slab buildings that are spaced apart in order to create courtyard spaces in between. The physical design of the campus can be associated more to modernism high school design as opposed to college campus design. The building mass is centered on the site, away from the site extents which have been fenced to create a sense of privacy and seclusion. The spaces between the building and the streets are only being utilized for green open spaces and for parking which is a traditionally modernistic approach which restricts integration between the public and the learning facility. Integration is an important component of impacting the perception of the facility and, in this context, disables integration between the engineering and artisan training with the surrounding industrial context. These definite boundaries do create a sense of security within the campus however it also isolates the engineering and artisan learners from the

industrial context which squanders the opportunities that arise from the location of the campus.

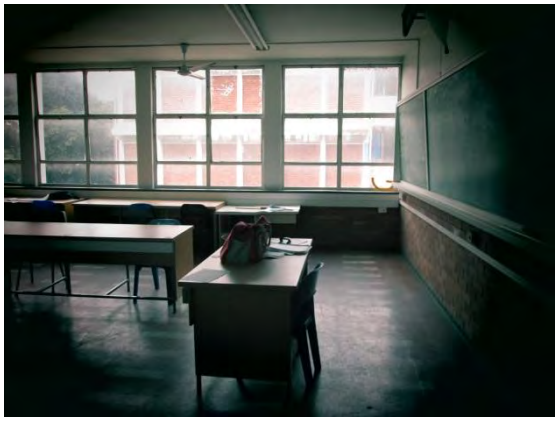
Fig 45: Interior Photo of Entrance Space (Author, 2014)
Fig 46: Photo of Exterior (Author, 2014)

The layout of the building groups the highest percentage of administration and staff activities in the entrance building which links to the educational and multipurpose spaces through a series of corridors and pedestrian bridges. This contributes to disconnect the staff from the learners which is detrimental to the formulation of a learning community and to enabling accountability. The classrooms, lecture theatres and workshops are all aligned and compartmentalized along the row buildings with circulation placed along one outer edge. This approach to the physical design creates monotonous spaces and with a lack of colour or signage is not for way-finding or place-making.

The courtyard spaces between the buildings do provide sufficient restitution from the formalized learning spaces to allow students to socialize, do individual work and collaborate however there isn't a human scale to these spaces which can be seen in the proportion of the space to the height of the adjacent buildings. There are also not sufficient furnishings or services such as food establishments, leisure activities or educational resources to activate these spaces as potential informal learning spaces or as successful social spaces that encourage learners to spend as much time as possible at the college.

Fig 47: Disabled Access from Courtyard (Author, 2014)

Micro-design



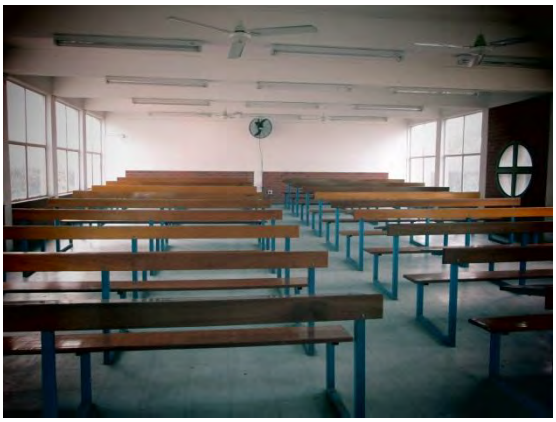


Fig 48: Typical Classroom (Author, 2014)

Fig 49: Raked Lecture Theatre (Author, 2014)

The college features a large hall, a canteen, several large multi-purpose rooms, typical classrooms, workshops and raked lecture theatres. The micro-design of the typical learning spaces such as the classrooms and raked theatres follow the traditional methods of education whereby learners sit in rows in front of the educator who portrays information to the body of learners verbally or visually on the blackboards. The typical classrooms are flexible in the sense that the furnishings are

moveable and adaptable to suit different learning modes which enables collaborative and social learning modes. Due to the fact that the classrooms are used for a variety of different courses, it is not convenient to change the layout of the classroom for individual lessons and is generally discouraged. The workshops contain the technological and mechanical equipment to create simulated environments which follows the principles of the situated learning theory. These workshop environments are very well equipped and managed and enable the learners to apply knowledge in the context as they would in the industry which can be seen in Figure 50.

Fig 50: Fitting and Turning Workshop (Author, 2014)
Fig 51: Canteen (Author, 2014)

Fig 52 Prefabricated Classrooms Situated in Parking Lot (Author, 2014)
Fig 53: Prefabricated Classroom Interior (Author, 2014)

The demand for learning spaces is so high at the college that there are shifts for courses whereby some trades are held in the mornings and others courses are held in the afternoons in order to facilitate the amount of learners that are seeking educational opportunities. There are also prefabricated structures constructed in the

parking lot that can accommodate additional classes. The hall and the canteen are being used as multi-purpose rooms that can hold functions, large assemblies or exams.

In terms of the technological requirements of the college, there isn't an emphasis on digital learning modes and as such there are no notable dedicated computer facilities nor is there digital support for teaching and learning within the learning environments. This is a setback for an institution that aims to pioneer. There is a library however similarly it is simply not compatible with the volume of students that the college accommodates.

Physical Conditions

Despite the draw-backs that the physical design of the college has on integrating the college into its context and facilitating a sense of community, the design does enable high amounts of light and ventilation into the learning spaces which facilitates comfortable environments for learning. The narrow floor plates are easily ventilated which allows for comfortable learning temperatures to enhance the quality of the learning environment. Typically the classrooms enable the building users to control the temperature and air quality through windows and fans however windows predominantly have no form of solar control to regulate heat gain and glare. The design also enables pleasant views outside of the classroom into courtyards or into distant views which contributes to empowering learning and improving the quality of educational outcomes. In this sense the physical conditions of the percentage of the learning environments are good. Outside of the typical learning environments, the workshops, the hall and the canteen which are bigger floor plates and bigger room volumes tend to require electrical fans and lighting to maintain acceptable light, air and temperatures. The workshops are finished with plaster and painted walls, screed floors and non-acoustic ceiling finishes which resonate the noise from within, negatively affecting the ability to communicate and collaborate with educators and learners. Similarly, some of the classrooms lack acoustic finishes and in some cases where classrooms can accommodate seventy to a hundred learners, the ambient noise levels can reach too high and negatively impact the quality of learning.

There is a uniform finish and colour to the entire college. This is partially due to the cost of maintenance and also due to the fact that the college allows many different courses throughout the facility rather than in specific buildings. This results in a lack of identity, sense of place and makes way-finding unclear.

4.3.4 Conclusions

This case study has provided insight as to the nature of public governmental FET Colleges in Durban. This case study showed strengths in three areas: it demonstrated, like the USTC, how the location can contribute to its success, it exhibited the functional needs and requirements of the blended leaning spaces in the development of artisans and it showed a good understanding of the physical conditions of learning spaces. There were distinctive weaknesses which suggest the areas that can improve in the aim of improving the quality of educational outcomes and the perception of skills development institutions. The weaknesses included the lack of a physical design and design process that was a manifestation of the philosophy and vision on the institution. This rendered the philosophy and vision of the college untenable in terms of effectively executing the values laid out. The built environment disabled the engineering and artisan educational sectors from integrating with its industrial context which also to the detriment of impacting the perception of such facilities.

The centre did not provide sufficient blended learning environments in order to empower the individual learners and promote social learning processes. There was a lack of individual learning spaces, a lack of efficient group work opportunities, a lack of informal learning opportunities and a lack of technological support to effectively consider itself a centre for pioneering excellence. In terms of the micro-design of the learning spaces, it failed to demonstrate an understanding of the learning process in order to improve the quality of educational outcomes in this day and age. These factors are significant contributors to positively impacting learning outcomes. It can be concluded therefore that this facility, despite the demand for learning opportunities, falls below the standard set by the theoretical framework.

It can be seen in that in terms of the theoretical framework set out in this dissertation that both case studies fail to meet the requirements in the aim of empowering education through the built environment by improving the quality of education and the perception of further education and training institutions. This shows that the effects of the built environment on education is not sufficiently understood by the individuals responsible for the development of these facilities and that, if the turnaround strategy is to be achieved, the built environment must be improved significantly in this regard.

CHAPTER 5
ANALYSIS AND DISCUSSION

5.1 INTRODUCTION

The empirical research carried out included questionnaires answered by 77 learners who were selected using maximum variation sampling in order to establish the predominant perspectives of the institution and the learning facilities. Statements were made about the college and the learners were asked to respond whether they strongly agreed, agreed, were unsure, disagreed or strongly disagreed. Spaces were provided for learners to comment or justify their responses should they choose too. It must be noted that unanswered questions were categorized under the unsure category. This section will review the key points and patterns within the responses with a detailed report included at the end of this chapter.

5.2 UMBILO SKILLS TRAINING CENTRE

5.2.1 Questionnaire Analysis

50 questionnaires were handed out, as was the maximum capacity of learners at the institution, of which there were 32 respondents, 79% of which African, 3% Caucasian, 6% Indian and 6% unanswered or other. 87% of the respondents were male and 13% were female. This section will also discuss the interview carried out with Mr. Glendon, the director and owner of the institution.

General

Under this category, it was stated that the college had a sense of community and three out of four learners agreed with no learners disagreeing or strongly disagreeing. Several comments were made by learners that this was as a result of equal opportunities being provided by the institution. It was asked if the learners wanted to spend as much time as possible at the college and just over half the respondents agreed with exactly a quarter of the learners strongly agreeing. Several learners commenting this is due to the fact that by spending time at the facility, it would enable them to learn more and it would better equip them to find better jobs and opportunities. This speaks more to the motivation of the learners than on the quality of the built environment which was the intended focus of the question.

Philosophy and Vision

The learners were asked if they were aware of the learning philosophy and vision for the school: half agreed, a quarter strongly agreed and a quarter were unsure. The

comments suggested that the philosophy and vision was confused with the purpose and the function of the facility. When asked if there is a focus on the individuality of learners and on social learning, half the respondents agreed with 16% of the respondents disagreeing.

Location

Just over a quarter of the learners strongly agreed that the location of the facility is easily accessible with just over half the respondents agreeing with this statement. This is an overwhelming indication that Umbilo is highly accessible to a large percentage of learners who aim to become artisans.

Physical Design

Over half of the learners agreed that the facility is a safe environment with 22% strongly agreeing. Several comments were made on the importance of safety requirements working with the machinery in the workshops. One respondent suggested that there was a drug usage problem within the learners of the college. When asked if the college is visually appealing a quarter of the respondents strongly agreed with 40% agreeing. This suggested that the learners' standards of these training facilities are generally very low rather than the built environment being aesthetically acceptable.

Micro-design

In terms of the micro-design of the learning spaces, the learners were asked if the learning spaces were adaptable and almost three quarters of the respondents agreed. Just over half of the respondents agreed that the furniture is comfortable, which again suggested that the expectations of the learners is too low, and that there is sufficient technological support to support their learning needs.

Physical Conditions

Under the physical conditions category, the learners were asked to rate temperature of the learning spaces and almost three quarters of the respondents agreed that the temperatures were comfortable for learning. Half of the learners believed that there was sufficient light in the learning spaces for reading with the majority of the remaining learners strongly agreeing. Half of the learners believed there was sufficient fresh air and ventilation in the learning spaces with 15% indicating they were unsure. When asked if there were nice views outside of the learning environments the respondents were divided into three. One third agreed, the other

third indicated they were unsure and the final third indicated they disagreed. When asked if was easy to hear and concentrate inside the learning spaces, half of the respondents agreed, just under a quarter were unsure and 16% disagreed.

Perception

When questioning the perception of the institution, half the learners strongly agreed that FET Colleges can improve social-economic conditions in South Africa with 34% further agreeing with this. When analyzing the perception of the college according to the public, just under half the learners agreed that the perception is good and a third of the respondents strongly agreeing.

5.2.2 Detailed Questionnaire Results

Questionnaires Handed out to Learners **50** | Respondents **32**

African **79** % | Caucasian **3** % | Indian **6** % | Coloured **6** % | Unanswered/Other **6** %

Male **87** % | Female **13** %

Category: General Average for Section: 19 % | 65 % | 14 % | 1 % | 1 %

- **The college has a sense of community.**

Strongly Agree **9** % | Agree **75** % | Unsure **13** % | Disagree **X** % | Strongly Disagree **X** %

- **The college is a place that I want to spend as much time as possible at.**

Strongly Agree **25** % | Agree **60** % | Unsure **9** % | Disagree **3** % | Strongly Disagree **3** %

- **The college is a place for social and economic opportunity.**

Strongly Agree **22** % | Agree **59** % | Unsure **19** % | Disagree **X** % | Strongly Disagree **X** %

Category: Philosophy & Vision Average for Section: 14 % | 53 % | 23 % | 8 % | 2 %

- **I am aware of the Philosophy and Vision of the College.**

Strongly Agree **25** % | Agree **50** % | Unsure **25** % | Disagree **X** % | Strongly Disagree **X** %

- **There is a focus on the individuality of learners and on social learning.**

Strongly Agree **3** % | Agree **56** % | Unsure **22** % | Disagree **16** % | Strongly Disagree **3** %

Category: Location Average for Section: 28 % | 54 % | 9 % | 9 % | 0 %

- **The college is easily accessible to me in terms of its physical location.**

Strongly Agree **28** % | Agree **54** % | Unsure **9** % | Disagree **9** % | Strongly Disagree **X** %

Category: Physical Design Average for Section: 24 % | 50 % | 14 % | 13 % | 0 %

- **The college is a safe environment.**

Strongly Agree **22** % | Agree **60** % | Unsure **9** % | Disagree **9** % | Strongly Disagree **X** %

- **The college is visually appealing to me.**

Strongly Agree **25** % | Agree **40** % | Unsure **19** % | Disagree **16** % | Strongly Disagree **X** %

Category: Micro-design Average for Section: 18 % | 62 % | 15 % | 5 % | 0 %

- **The learning spaces are adaptable to changing learning needs.**

Strongly Agree **13** % | Agree **71** % | Unsure **13** % | Disagree **3** % | Strongly Disagree **X** %

- **The furniture is comfortable in the learning environments.**

Strongly Agree **19** % | Agree **59** % | Unsure **19** % | Disagree **3** % | Strongly Disagree **X** %

- **There is enough technology to support my learning needs.**

Strongly Agree **22** % | Agree **56** % | Unsure **13** % | Disagree **9** % | Strongly Disagree **X** %

Category: Physical Conditions Average for Section: 19 % | 51 % | 17 % | 11 % | 2 %

- **The temperature of the learning spaces is comfortable for learning.**

Strongly Agree **13** % | Agree **71** % | Unsure **13** % | Disagree **3** % | Strongly Disagree **X** %

- **There is enough light in the learning spaces for reading.**

Strongly Agree **41** % | Agree **53** % | Unsure **6** % | Disagree **X** % | Strongly Disagree **X** %

- **There is fresh air and enough ventilation in the learning spaces.**

Strongly Agree **28** % | Agree **51** % | Unsure **15** % | Disagree **6** % | Strongly Disagree **X** %

- **There are nice views outside of the classroom.**

Strongly Agree **3** % | Agree **31** % | Unsure **31** % | Disagree **29** % | Strongly Disagree **X** %

- **It is easy to hear and concentrate inside the learning spaces.**

Strongly Agree **9** % | Agree **50** % | Unsure **22** % | Disagree **16** % | Strongly Disagree **3** %

Category: Perception Average for Section: 42 % | 39 % | 14 % | 2 % | 3 %

- **FET Colleges can improve social and economic conditions in South Africa.**

Strongly Agree **53** % | Agree **34** % | Unsure **13** % | Disagree **X** % | Strongly Disagree **X** %

- **According to the public, the perception of the college is positive.**

Strongly Agree **31** % | Agree **44** % | Unsure **16** % | Disagree **3** % | Strongly Disagree **6** %

5.2.3 Interview Analysis

Mr. Glendon was interviewed as the owner and director of the Umbilo Skills Training Centre in order to understand his perspective on the importance of the built environment in empowering education and in relation to the responses from the learners.

When asked what the role of FET Colleges is in terms of empowering individual learners, he suggested that these educational facilities improve the livelihood of individuals by giving them skills. He believes that this institution enables this to the best of its ability and further stated that there are on average 15 learners per educator and that the trades being taught are done so effectively by working in simulated environments.

Mr. Glendon defined the philosophy of the institution as giving learners the best possible knowledge that enables them to participate efficiently in the working environment. This means that the learning material is based directly on the needs of the industry and on common practice. He rated the quality of the learning environments highly however he did not indicate any understanding of the effects of these spaces on learning but rather focused on the functional requirements of the various trades. My Glendon believed that the location of the facility was a major contributor to its success not so much because it was in an industrial sector but more so because of how accessible it is via public transport. This related more to its ability to attract learners rather than its ability to integrate with the surrounding industry. He makes the point that there are similar facilities in the middle of other industrial areas such as Jacobs that are closing down due to their lack of accessibility to students. When asked if the physical design of the centre contributes to its success he agreed and stated that the compartmentalization of the workshops enables distinctive trades to be applied in each of these areas and believes that this is the most successful

aspect of the built environment. He believes there is a sense of community at the institution which is mostly enabled through the layout allows for communication and integration between staff and learner.

When asked what the perception of this type of education is he stated that it is good due to the fact that the industry is seeking out such educational facilities in the aim of filling the need for artisan skills. He believes that there is a need to move away from higher education and training in order to fulfill the severe skills shortages and improve socio-economic conditions. Mr. Glendon believes that the perception of these educational facilities in the eyes of the society can be improved through transparency. He stated that one of the largest contributors to the negative perception is based on the corruption that litters the past private skills training establishments which he further adds is created by the amount of money that is being invested into this type of education. He also believes that private FET Colleges are less prone to corruption due to the fact that they are run as businesses are accountable to errors and poor performance financially and through their reputation. In terms of the learners' perception of these educational facilities he believes that the perception of higher education is just far superior. Learners believe that by going a university or a college they will be guaranteed a good income and a better future despite that not being an exact truth.

Finally, he believed that the quality of educational outcomes can be improved by attracting better educators with current experience in the industry. He also stated that learners who look into becoming an artisan should not base their decisions on financial reasons but rather aim to base their decisions on passion and a desire to do what is required of them in the industry sectors.

5.2.4 Conclusions

The questionnaires and interviews indicated that there is a unanimous perspective on the potential of facilities that teach vocational skills in improving socio-economic conditions in South Africa. Problems with corruption and a lack of understanding of the impact of the built environment on the quality of educational outcomes and on changing the perception of these institutions are undermining this process. By investing in the built environment to change the stigmas surrounding FET Colleges and improving learning outcomes, this form of education can be empowered.

5.3 KZN COASTAL FET COLLEGE

100 questionnaires were handed out of which there were 45 respondents, 71% of which were African, 0% Caucasian, 2% Indian and 25% were unanswered or other. 60% of the respondents were male and 40% were female. This section will also discuss the interview carried out with Mr. Pinto, the HOD of engineering and artisan studies.

5.3.1 Questionnaire Analysis

General

Under this category which stated that the college had a sense of community, half of the learners agreed with no learners disagreeing or strongly disagreeing. One interesting comment mentioned that the community involved the industry as companies often visit the campus to integrate with the learners; another comment suggested that a sense of community was achieved through the many different people that are brought together at one facility through a common interest. It was asked of the learners if the college was a place the learners wanted to spend as much time as possible at and just under half the respondents agreed with 20% of the learners strongly agreeing. One interesting comment mentioned by a learner that he could not spend all his time at the facility due to the need to work and earn an income while studying while several learners stated by spending more time at the facility, it would empower them to be able to enrich their own futures.

Philosophy and Vision

The learners were asked if they were aware of the learning philosophy and vision for the school, just over half agreed and over a third was unsure suggesting a lack of clarity in this respect. When asked if there is a focus on the individuality of learners and on social learning, just over half the respondents agreed with 27% of the respondents indicating they were unsure. This demonstrated that the built environment did not correlate with the type of learning at the college as it was designed to suit traditional teaching methods.

Location

18% of the learners strongly agreed that the location of the facility is easily accessible with over half the respondents agreeing with this statement. This again is an overwhelming indication that Umbilo is highly accessible to a large percentage of learners who are looking to partake in engineering or artisans studies which is a large contributor to this college’s success.

Physical Design

Over half of the learners agreed that the facility is a safe environment with 20% strongly agreeing. Several comments were made on the presence of security personnel at the facility. This is a costly solution to the problem of addressing safety and security, the built environment could be designed in order to lessen the need for hiring security throughout the campus and rely rather on the vitality of spaces and enable supervision through intelligent design to deter ill-discipline and criminal activity. When asked if the college is visually appealing only 13% respondents strongly agreed with just under half of the respondents agreeing.

Micro-design

In terms of the micro-design of the learning spaces, the learners were asked if the learning spaces were adaptable and just over half of the respondents agreed with a third stating they were unsure. This confirms that the classroom layouts are seldom arranged to suit different learning modes. Just over half of the respondents agreed that the furniture is comfortable and a third of the respondents were unsure over this matter. A third of the respondents stated they agreed that there is sufficient technological support to support their learning needs with half of the respondents stating they were unsure.

Physical Conditions

Under the physical conditions category, the learners were asked to rate temperature of the learning spaces and half of the respondents agreed that the temperatures were comfortable for learning with 37% stating they were unsure. Just over half of the learners believed that there was sufficient light in the learning spaces for reading. Just under half of the learners believed there was sufficient fresh air and ventilation in the learning spaces with 42% indicating they were unsure. When asked if there were nice views outside of the learning environments almost half the respondents agreed with the other half indicating they were unsure. When asked if was easy to hear and concentrate inside the learning spaces, 42% of the respondents agreed, just under a half were unsure and 5% disagreed. One interesting comment stated that in a class of 70 learners it can be very difficult to hear and concentrate.

Perception

When questioning the perception of the institution, a quarter of the learners strongly agreed that FET Colleges can improve social-economic conditions in South Africa with 58% further agreeing with this. When analyzing the perception of the college

according to the public, just under half the learners agreed that the perception is good and 38% of the respondents stated they were unsure.

5.3.2 Detailed Questionnaire Results

Questionnaires Handed out to Learners **100** | Respondents **45**

African **71** % | Caucasian **X** % | Indian **2** % | Coloured **2**% | Unanswered/Other **25** %

Male **60** % | Female **40** %

Category: General Average for Section: 18 % | 53 % | 26 % | 3 % | 0 %

- **The college has a sense of community.**

Strongly Agree **15** % | Agree **56** % | Unsure **29** % | Disagree **X** % | Strongly Disagree **X** %

- **The college is a place that I want to spend as much time as possible at.**

Strongly Agree **20** % | Agree **47** % | Unsure **27** % | Disagree **6** % | Strongly Disagree **X** %

- **The college is a place for social and economic opportunity.**

Strongly Agree **20** % | Agree **56** % | Unsure **22** % | Disagree **2** % | Strongly Disagree **X** %

Category: Philosophy & Vision Average for Section: 13 % | 53 % | 30 % | 3 % | 1 %

- **I am aware of the Philosophy and Vision of the College.**

Strongly Agree **13** % | Agree **53** % | Unsure **34** % | Disagree **X** % | Strongly Disagree **X** %

- **There is a focus on the individuality of learners and on social learning.**

Strongly Agree **13** % | Agree **53** % | Unsure **27** % | Disagree **5** % | Strongly Disagree **2** %

Category: Location Average for Section: 18 % | 58 % | 18 % | 6 % | 0 %

- **The college is easily accessible to me in terms of its physical location.**

Strongly Agree **18** % | Agree **58** % | Unsure **18** % | Disagree **6** % | Strongly Disagree **X** %

Category: Physical Design Average for Section: 17 % | 54 % | 25 % | 4 % | 0 %

- **The college is a safe environment.**

Strongly Agree **20** % | Agree **58** % | Unsure **22** % | Disagree **X** % | Strongly Disagree **X** %

- **The college is visually appealing to me.**

Strongly Agree **13** % | Agree **49** % | Unsure **29** % | Disagree **9** % | Strongly Disagree **X** %

Category: Micro-design Average for Section: 5 % | 48 % | 38 % | 9 % | 0 %

- **The learning spaces are adaptable to changing learning needs.**

Strongly Agree **6** % | Agree **56** % | Unsure **33** % | Disagree **5** % | Strongly Disagree **X** %

- **The furniture is comfortable in the learning environments.**

Strongly Agree **6** % | Agree **53** % | Unsure **32** % | Disagree **9** % | Strongly Disagree **X** %

- **There is enough technology to support my learning needs.**

Strongly Agree **5** % | Agree **31** % | Unsure **51** % | Disagree **13** % | Strongly Disagree **X** %

Category: Physical Conditions Average for Section: 11 % | 46 % | 40 % | 3 % | 0 %

- **The temperature of the learning spaces is comfortable for learning.**

Strongly Agree **6** % | Agree **51** % | Unsure **37** % | Disagree **6** % | Strongly Disagree **X** %

- **There is enough light in the learning spaces for reading.**

Strongly Agree **13** % | Agree **53** % | Unsure **34** % | Disagree **X** % | Strongly Disagree **X** %

- **There is fresh air and enough ventilation in the learning spaces.**

Strongly Agree **20** % | Agree **36** % | Unsure **42** % | Disagree **2** % | Strongly Disagree **X** %

- **There are nice views outside of the classroom.**

Strongly Agree **5** % | Agree **46** % | Unsure **47** % | Disagree **2** % | Strongly Disagree **X** %

- **It is easy to hear and concentrate inside the learning spaces.**

Strongly Agree **11** % | Agree **42** % | Unsure **42** % | Disagree **5** % | Strongly Disagree **X** %

Category: Perception Average for Section: 19 % | 54 % | 27 % | 0 % | 0 %

- **FET Colleges can improve social and economic conditions in South Africa.**

Strongly Agree **25** % | Agree **58** % | Unsure **15** % | Disagree **X** % | Strongly Disagree **2** %

- **According to the public, the perception of the college is positive.**

Strongly Agree **13** % | Agree **49** % | Unsure **38** % | Disagree **X** % | Strongly Disagree **X** %

5.3.3 Interview Analysis

Mr. Pinto was interviewed, as the HOD of Engineering and Artisan Training at the KZN Coastal FET College who has worked at the institution for 30 years, in order to understand his perspective on the importance of the built environment in relation to the response from the learners.

When asked what the role of FET Colleges is in terms of empowering individual learners and in terms of empowering socio-economic conditions in South Africa, he suggested that the role of FET colleges, specifically the NATED courses which are industry related, was key to helping learners who have not qualified with a high enough of a matric an opportunity to enter the engineering and artisan sectors. This obviously plays an important role in providing learners with limited opportunities with a route into the job market and into these specific skills sectors. When asked about whether the college enables this process to the best of its ability, he suggested that it doesn't due to a number of reasons. The first of which was the fact that the NC(V) courses were clashing with the NATED courses and, similarly, by offering a number of alternative courses such as marketing and managing, the demand for space within the facility was undermining the potential of operating at its best ability. He suggested that niching was a very important component in the future success of this institution. Mr. Pinto further pointed out an issue that comes with a government funded and managed facility, as the HOD he cannot implement new courses as per the industries needs without permission from the Department Of Higher Education which is a troublesome process and that the government funding that is invested in the college is done so without sufficient supervision or structure which has provoked a lackluster attitude among both students and staff because there is no accountability.

Mr. Pinto spoke about the philosophy and vision of the institution being labelled a 'pioneering centre of excellence' and about the values discussed in the case study, he suggested that this was merely a façade for the public and that it had no effect on the practice of the college whatsoever. Due to the fact that the philosophy was not integrated in practice but only in theory, it has had no effect on the development of the learning spaces. He mentions that the state of the current facility does not inspire any form of motivation or sense of pride. When it was stated that the research showed that without an integrated philosophy and vision in the built environment, building users do not feel a part of a bigger project and therefore fail to feel any responsibility or pride in their surroundings, Mr. Pinto unequivocally agreed.

In terms of the quality of the learning environments, Mr. Pinto rated the quality of learning environments as 5/10 and stated that they were just coping. He was referring primarily to the lack of space in relation to the demand caused by the learners wanting to study. This challenge has caused higher ratios of educators to learners resulting in average classes of 40 students and with lecture theatres accommodating up to 100 learners per educator. Mr. Pinto did not show any understanding of the physical built environment on learning. When asked about the location of the college, Mr. Pinto suggested that the location a definite contributor to its success. He believes this is down partially to the fact that the college historically has been successful to it has established itself in this area. Secondly, the catchment area for students is vast which allows access to a large body of learners. Lastly, Mr. Pinto stated that because the college is located in the industrial sector, it has helped to establish relationships with many of the surrounding corporations in relationships that are beneficial to the college, the learners and the surrounding industries. When asked how the physical design of the centre contributes to the success of the centre, he reiterated that the biggest restraint was the lack of space to cope with the demand and the lack of opportunity to expand. The college is substantial in terms of the size of the facilities however the demand for space is still far superior. He believes there is a sense of community at the institution, amongst staff he believes that the NC(V) and the NATED courses created a rift in the faculty which has recently been resolved. Similarly, he believes there are distinctive groups amongst NC(V) and NATED students. He did not mention the relationship between learners and faculty which is a key relationship in the development of a sense of community at the college.

When enquiring about the perception of the institution, he believes that the perception of the college is good and states that the college used to be the “white college” and the perception remains that this is where education is superior in relation to the other colleges in the eyes of the students. In the eyes of the industry, the good reputation that has been built up especially in the NATED courses is vitally important in maintaining a good perception with the industry which empowers learners as they have a connection between their studies and job opportunities. He believes that not all FET colleges have such positive perceptions and believes that this is one of the more respected colleges in the Country. He stated that the perception of the college can be improved by ridding the institution of corruption by creating more accountability and by attracting better educators and campus managers that can enforce a more professional ethos within the philosophy of the college.

Finally, he believed that the quality of educational outcomes can be improved by regulating or even removing the bursaries that are being provided to learners as it is fostering a unmotivated culture within the university. He suggested that the bursaries are negatively affecting the motivation of students and teachers especially in the NC(V) courses. He believes that policies around FET education especially NC(V) have becomes too strategy orientated rather than results orientated.

5.3.4 Conclusions

The questionnaires and interviews indicated that many of the governmental policies that have been put in place to help FET Colleges achieve their roles in improving socio-economic conditions in South Africa have, to an extent, failed. There are still problems with corruption and a lack of understanding of the impact of the built environment on the quality of educational outcomes and on changing the perception of these institutions which is undermining this process. Despite this, the demand from learners for opportunities to enrich their own futures continues to grow and the college is unable to cope with this issues. The built environment plays a huge role in empowering education and it therefore needs to be invested in to not only change the stigmas surrounding FET Colleges and to improve learning outcomes, but also to enable a philosophy and a vision in practice. Each FET College should be dedicated to specific subjects such as artisan and engineering training and learning programmes such as the NATED and the NC(V) as they have different functional requirements and require a different response from the built environments.

CHAPTER 6
CONCLUSION AND RECOMMENDATIONS

6.1 INTRODUCTION

The research carried out in this dissertation aimed to address the research problem. The problem was to establish the nature of the impact of the built environment on education and, in turn, society. In the introductory chapter the main aim and correlated objectives of the study were stated which determined the key question and the correlated sub-questions. This section will revisit these elements to determine the outcomes of the study and to prove or disprove the hypothesis. Finally, this section will outline a number of recommendations for the future development of FET Colleges in order to create a framework of understanding as to how the built environment can empower education in order to contribute to the resolution of the skills paradox.

6.2 AIM, KEY QUESTION, OBJECTIVES AND SUB-QUESTIONS

The aim of this study which was directly related to the key question which was to investigate and determine how the built environment may be used as a tool for empowering education in order to contribute to the improvement of socio-economic conditions in South Africa. This aim was broken down into four individual objectives, which were also directly linked to the sub-questions, which will combine to inform how the overall aim may be achieved.

The first objective and sub-question was to understand what empowerment means in the context of the study. Empowerment was investigated and understood to have two definitions that related to both individual empowerment and group empowerment. Individual empowerment in the context of this study was illustrated to relate to the quality of education that individuals receive which gives them the power and the skills to gain control over their own lives. Group empowerment was understood as the process of formulating and enabling a community to acquire ability to control its relevant environment better and to influence its future. This was related to the perception of FET colleges which is currently detrimental to the institutions ability to be empowered as a community which is directly impacting the ability of this education to improve socio-economic conditions in South Africa.

The second objective and sub-question was to investigate how the built environment can empower learning which directly related to improving educational outcomes. This

entailed the understanding of learning theories that pertain to vocational education which illustrated a need for a focus on the individuality of learners and on a social learning process. This idea was developed into a learning philosophe which would become the guiding principle for the learning spaces. This led to understanding how the built environment can improve learning outcomes. This was illustrated by analysing and understanding, in relation to the philosophy and vision of the college, the impact of the design process, the physical location, the physical design, the micro-design and the physical condition of learning spaces on learning outcomes.

The third objective and sub-question was to investigate how the built environment can change the perception of FET colleges. Perception is a phenomenon which was explored and defined as a physically integrative between experience between a body and the built environment. It was determined that integration should manifest in the built environment of further education and training learning facilities which was understood through the linkages theory, ideas of physical connectivity and the concept of blurring boundaries which combine to enable integration from a macro scale to the micro scale.

The final objective and sub-question was to critique existing FET colleges in the context of the study in order to analyse whether the built environment is empowering education inadequately. It was determined through the empirical research carried out at the Umbilo Skills Training Centre and the KZN Coastal FET College that the built environment of these institutions is not sufficiently empowering education but was often, in fact, to the detriment of the aim set out in this study.

It has been demonstrated that the objectives of the study have been achieved and the sub-questions have been answered which has led to the resolution of the aim and answered the key question. The study has investigated and demonstrated how the built environment may be used as a tool for empowering education in order to contribute to the improvement of socio-economic conditions in South Africa.

6.3 HYPOTHESIS

The hypothesis stated that the built environment has the potential to empower education however FET colleges are not fully exploiting this opportunity in order to empower education and improve socio-economic conditions in South Africa. In this regard, through the research shown in this dissertation, the hypothesis has been proved to be true.

6.4 RECOMMENDATIONS

Introduction

This section will make recommendations based on this research in this dissertation in order to empower education and to inform the design of a proposed integrated skills development centre for Durban. The recommendations will formulate a set of guidelines consisting of the subsections used as the theoretical framework for analysing the precedent and case studies to set a benchmark for the proposed development and for future developments within the built environment of facilities within the further education and training sector.

Philosophy and Vision

The vision of skills based training centres within the FET colleges should be built around playing their role in empowering learners to play their role in the development of the country in terms of improving socio-economic conditions. The philosophy therefore should enforce the fundamental values such as professionalism, teamwork, engagement and quality. Professionalism includes elements such as integrity, commitment and competence. Teamwork includes elements such as equality, community and collaboration. Engaging includes elements such as responsiveness, integration and connectivity. Quality includes elements such as results driven processes, value and motivation.

Design Process

The design process should combine the values upheld by the philosophy in order to cement the philosophy of the school into the development. The design process should be a bottom up approach that includes the industry, the faculty and the learners where possible to enable the philosophy of the college to become integrated in the design process by enacting citizenship. This will enable a sense of community and ownership.

Location

The location of the developments should be based on two fundamental relationships, the relationship with the trade to which it is connected and the relationship between the learners and the accessibility of the college. By achieving a high accessibility as illustrated in the Umbilo area, the facility will be more integrated with its context, a greater body of learners are available as human capital to the college which enables the college to be more sustainable in the long term, it is more convenient and attractive to learners and it enables a higher mean SES which attracts learners from

more diverse backgrounds. By establishing a physical relationship with the industry it enables a support system whereby both parties can supplement each other's needs and it also serves to motivate learners to produce results as they can see the opportunities by doing so.

Physical Design

The physical design should enable fundamental values such as professionalism, teamwork, engagement and quality as defined in the philosophy. The design needs to allow for different learning modes to empower the individual learner, most importantly of which is the simulated environment which knowledge is shared and learnt in authentic contexts. The physical design needs to allow for integration, between the physical building and its context, between the learners and the faculty and between functional spaces. This is important in the development of a learning community. The development should enable building users to be provided with environments that encourage them to spend as much time at which has many considerations. Lastly, the physical design should create environments that make the building users safe and secure.

Micro-design

The micro-design of the learning spaces should be focussed on improving the quality of educational outcomes. This can be achieved by proxemics studies which can enable or disable interaction among learners, varied comfortable and adaptable learning environments that suit the various modes of learning. These include simulated environments such as workshops, immersive environments such as digital centres, peer to peer environments that allow for informal learning opportunities, clusters whereby collaborative learning can take place, individual work spaces and traditional classroom spaces that deal with more theoretical learning modes. The micro-design includes integrating the technological support required to supplement the learning process.

Physical Conditions

When designing the learning spaces, these spaces must be designed in order to achieve a high quality in terms of the conditions of the learning environments. This includes sufficient natural daylighting while enabling the building users control over their environments. There should be sufficient ventilation to enable a good indoor air quality. The indoor spaces should be able to be kept at a good temperature through intelligent design, mechanical systems or naturally. The learning spaces should

provide opportunities to see pleasing views. The acoustics of the learning spaces should be carefully designed to absorb any noise that detracts from the ability of the learners to concentrate, listen and communicate. Finally, colour and semiotics should be utilised to give identity to spaces, to relieving eye fatigue, increase productivity and to help in way-finding throughout the facility.

Policies and Management

This study has been guided by the need for skills in the artisan and engineering sectors. The proposed design henceforth will be focussed on the development of these skills with a specific focus on the industry related NATED programmes. It has been shown that the private FET Colleges tend to be less prone to corruption due to there being significantly less financial support from the government due to the need for maintaining a good perception within the industry and with learners to be successful. Therefore it is proposed that there be public-private partnerships in place whereby the government or private corporations can subsidise the construction of educational facilities to cater for the need of skills shortages such as in the artisan and engineering sectors. These facilities can be owned managed by industry related corporations such as the Umbilo Skills Training Centre as shareholders or as tenants of the building. By investing in the built environment and subsidising the construction and maintenance of these skills training centres, the fees for learners can be reduced rather than the government providing the predominant allocation of funds for registered learners. This approach will ensure that the government will get due returns by addressing the lack of quality infrastructure in the FET sector, improving the lack of skills within the skills sectors and by providing more opportunities for the unemployed to gain skills and integrate into the economy. The management of the facilities will be provided with subsidised facilities and a business opportunity in the development of learners and the industry. The learners will be empowered which in turn will empower the industry which establishes a relationship where each party is dependent on the other creating a system that enables accountability.

The recommendations combine to create a framework upon which the design of educational facilities within the further education and training sector should be based. These will be applied to the design of a proposed integrated skills development centre for Durban for artisans and engineering studies.

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Anonymous General Research Questionnaire | Sample

This general research questionnaire is anonymous and aims to gain various opinions from the learners and/or educators of the facility in order to better understand how the built environment is contributing to the empowerment of education.

Date:_____ **Questionnaire Reference Number**:_____
Gender:_____**Race**:_____**Age**_____

SECTION 1: PARTICULARS OF QUESTIONNAIRE RESPONDENT

- **What is your educational background?**
    a. No Formal Schooling
    b. Grades 1- 9
    c. Matriculation
    d. Tertiary Education
    e. Other (Please specify)

_____

- **What is your role within the campus?**
    f. Learner
    g. Educator
    h. Management
    i. Other (Please specify)

_____

- **What specifically are you studying/teaching/managing?**

_____

SECTION 2: QUESTIONNAIRE STATEMENTS

The following are statements about the college and the process of learning and/or teaching. Please indicate the extent to which each statement characterizes your college facility by marking the most appropriate response. There is space below each statement for any further comments you wish to make with regards to the statement or to validate your answer.

- **FET Colleges can improve socio-economic conditions in South Africa.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

- **I am aware of the Philosophy and Vision of the College.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

- **There is a focus on the individuality of learners and on social learning.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

- **The college has a sense of community.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

- **The college is easily accessible to me in terms of its physical location.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

- **The college is a place for social and economic opportunities.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

- **The college is a safe environment.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

- **The college is a place that I want to spend as much time as possible at.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

- **The college is visually appealing to me.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

- **The learning spaces are adaptable to changing learning needs.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

- **The furniture is comfortable in the learning environments.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

- **There is enough technology to support my learning needs.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

- **The temperature of the learning spaces is comfortable for learning.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

- **There is enough light in the learning spaces for reading.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

- **There is fresh air and enough ventilation in the learning spaces.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

- **There are nice views outside of the classroom.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

- **It is easy to hear and concentrate inside the learning spaces.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

- **According to the public, the perception of the college is positive.**

☐ Strongly Agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly Disagree

Comments: _____

Focussed Interview | Sample

This focussed interview questionnaire is aimed at gaining the insight of the executive personnel who are involved in the design and/or management of the facility and/or building users. The questions are based on the data received back from the general questionnaires in order create an informed discussion around the issues raised in the questionnaire.

Interview Date, Time and Venue:_____

Interviewee Name and Occupation:_____

- What do you believe is the role of FET colleges in terms of empowering individual learners, and in terms of improving socio-economic conditions in South Africa?
- Do you believe that the college enables this to the best it can?
- What is the learning philosophy and vision of the College?
- How does this affect the learning spaces within the college?
- How highly do you rate the quality of the learning environments?
- How does the location of the College contribute to its success?
- How does the physical design contribute to its success?
- Is there a sense of community within the college?
- What do you believe is society's perception of the institution?
- How do you think that the perception of the college can be improved?
- How do you think the quality of education in the colleges can be improved?

Thanks very much for your input in this research, it is greatly appreciated.